EVALUATION OF PROBLEM-BASED LEARNING IN AN UNDERGRADUATE NURSING EDUCATION PROGRAMME

BY

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I hereby declare that this dissertation is my own work and that it has not been submitted previously for any degree to another university, school of Nursing or faculty. I submit this dissertation myself for the degree Masters Soc. Sc. in Nursing at the University of the Orange Free State.

.....

S. Becker

To my husband Peter,

and my three children

Tehilah, Juanita and Sepp

FLORENCE NIGHTINGALE SAID:

"To stand still

is to go backwards..."

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CHAPTER 1

Introduction and motivation for undertaking the study

1.1 INTRODUCTION

One of the most significant challenges of higher education is to create learning environments that are conducive to effective learning. This is particularly applicable in South Africa where learners have contrasting and diverse socio-cultural backgrounds, personal characteristics and aspirations.

Curriculum 2005, which is in the process of being implemented in South Africa's primary and secondary school levels, bears witness of the transformation of the education system of the country towards an outcomes-based system. Outcomes-based education as well as problem-based learning, emphasise that effective teaching and training should not be limited to the delivery of information, but that it should be based on a model of minds at work, which involves active participation and learning how to learn as a life-long habit.

The primary focus of this study was to evaluate problem-based learning at a particular stage of an undergraduate educational programme. The students in the programme came from traditional educational backgrounds where self-directed learning was not enhanced.

1.2 BACKGROUND OF AND ORIENTATION TO THE STUDY

1.2.1 International trends in the education of health professionals

Since 1989 world-wide developments in the economic, social and technological fields have been dramatic and different from anything that was before. A paradigm shift had to take place on the part of governments and organisations to survive, grow and develop. Some of the critical changes which took place were: the massification of higher education, diversification of programmes and programme delivery, greater financial pressure and even greater demands, critical questioning of the social field of higher education and growing diversity on campuses world-wide. Globalisation and the increasing interdependence of countries are becoming evident as knowledge, technology and information grow at a phenomenal pace (University of the Orange Free State, 1998: 4-5).

Since the 1960s the trend in curricula was mainly discipline-oriented. The integrated model started to make sense in the 1990s as traditional, discipline-divided curricula became overloaded with too much time-consuming duplication among subjects and disciplines. Disciplines were seen as an artificial creation of man to organise his world and were often defined by political needs. This phenomenon caused students to learn in a fragmented and disconnected manner *"that has little resemblance to real life"* (Drake,

1993: 2). Integrated curricula allow subjects to be connected in ways that portray the real world, making curricula contextual of human experience and relevant for the next century.

1.2.2 National trends in the education of health professionals

South Africa has experienced dramatic developments in the field of education and health policies over the past few years. Transformation in higher education, the educational reform and the role of the National Health Policy will be discussed briefly.

The new higher education policy as contained in the White Paper (Republic of South Africa, 1997) and the Higher Education Act (South Africa, 1997) directed tertiary institutions in the country to broaden participation in education to satisfy the development needs of the whole society. The democratic transformation required human resource development, which was responsive to the social, political, economic and cultural needs of the country. An academic climate had to be established that was characterised by free and open debate, critical questioning and tolerance and respect among different cultures (Republic of South Africa, 1997: 14-15).

In the 1990s it became clear that the country was in need of an education and training system that was efficient, flexible and accessible to all the people of the country. A national qualifications framework (NQF) (Republic of South Africa, 1995: 5) was established in order to make it possible for all learners to achieve national qualifications through a wide variety of mechanisms. Problem-based learning has many interfaces with this newly established NQF, for example the activation of prior learning, the construction of problem-oriented semantic networks that will enhance general abilities such as communication, problem-solving and learning strategies, contextual cues derived from professionally relevant problems and the fostering of epistemic curiosity and integrated learning (Republic of South Africa, 1995: 5-28; Schmidt, 1993:431).

The National Health Plan for South Africa emphasises teamwork as a central component of the new health system, which is to be based on the Primary Health Care Approach. The aim is riddance of fragmented health and educational systems and the establishment of a new single, comprehensive, equitable and integrated National Health System. It is contended that integration of existing departments and co-ordination among all health delivery systems will lead to rational financial management, human resource management and a comprehensive health information system. For this to take place organisational structures throughout the country were (and still are being) reformed and support systems strengthened. The new National Health Plan for South Africa is in accordance with the philosophy of the Primary Health Care Approach, with full community participation in the planning, provision, control and monitoring of services. The best way to reach this aim is by education of health personnel that is *"multi-disciplinary, gender sensitive, problem oriented and community-based in character"* (ANC, 1994b:11).

1.2.3 The response of the School of Nursing

Over-qualification along with over-loaded curricula have been a trend in the South African educational history for many years and a balance had to be found between content coverage and core knowledge. After the School of Nursing at the University of the Orange Free State had conducted extensive research on problem-based learning, they decided to implement this innovative approach. Problem-based learning (PBL) is an innovative method to enhance self-directed learning. The precondition was that it should still reflect the subjects on macro-level as demanded by the Nursing Council, and that the highest possible standards in education should be maintained.

The students who registered for the undergraduate-nursing course came from school backgrounds where self-directed learning until recently has not been encouraged. In PBL the problem becomes a stimulus for the learning process and exposure to various

situations helps students to develop reasoning skills, teamwork abilities, cross-sectoral collaboration and initiative. PBL fosters life-long learning, a holistic view, academic and research interests later in life and is closely connected to community-oriented education. It *"is an alternative to the orthodox top-down transfusion of facts from teachers; it is instead a ground-up engendering of active skills in young, eager and naturally problem-solving minds"* (Foldevi, Sommansson & Trell, 1994: 474).

Problem-based learning as a teaching and learning strategy was implemented in the undergraduate nursing programme in 1997. The approach to curriculum design was community-based. The School of Nursing was the first academic unit to officially implement problem-based learning at the University of the Orange Free State. Evaluation of this learning strategy, which formed part of the first-year course, was necessary to determine its success and potential deficiencies. In this study the students registered for the first-year course (B.Soc.Sc. [Nursing]) at the University of the Orange Free State [UOFS] in 1998) formed the target population and the sample consisted of students who met the sample criteria. Students who repeated their first-year or those who were absent during administration of the questionnaires were excluded from the study.

1.3 AIM AND OBJECTIVES OF THE STUDY

The fundamental aim of this study was to evaluate problem-based learning as a learning strategy at a particular stage of an undergraduate education programme. This *"particular stage"* refers to the course of the first-year undergraduate nursing students.

Burns and Grove (1993:211) describe research objectives as *"clear, concise, declarative statements that are expressed in the present tense"* and focus on one or two variables or concepts. The following objectives were used to direct the study:

- to evaluate the methodology and process followed in the problem-based learning strategy;
- to audit the grades first-year nursing students obtained during their final assessment;

- to compare the course outcomes against critical and specific outcomes as required by the South African Qualification Authority;
- to describe the learning styles of first-year nursing students and to determine changes after exposure to problem-based learning; and
- to determine student satisfaction with the proposed teaching methodology.

1.4 RESEARCH METHODOLOGY

This study can be regarded as a quantitative study as the field of study was delimited, structured instruments were used, information was logically deductive, data were generalised and numerical data were used during statistical analysis. The design of the study was non-experimental (a survey) as well as quasi-experimental. A survey was done during which non-experimental research data were collected to describe and evaluate various phenomena with the aim to generate new knowledge about problem-based learning and programme development. Data were collected by means of questionnaires and checklists for audit as these methods had the potential to enhance the collection of information systematically and without bias. In this way the characteristics, opinions and views of the target population could be obtained while numerical values were allocated to their non-numerical characteristics.

A checklist was compiled to audit the first-year nursing course with special attention to programme development, problem-based learning and course outcomes.

The Demographic Questionnaire (DQ) was used to obtain personal information, while the Student Perception Questionnaire (SPQ) was used to obtain academic information.

Final examination results in problem-based subjects, traditional subjects (where conventional learning strategies were used) and Grade 12 results were described and compared by means of frequencies.

The quasi-experimental section of the study contained the administration of the Lancaster Approaches to Studying Inventory (LASI) before respondents were exposed to problem-based learning and again after exposure to this learning strategy. The cause-and-effect relationships between problem-based learning and learning approaches were determined to explain relationships, clarify why certain events happened and to examine causality. Using the LASI, problem-based learning was the independent variable and learning approaches the dependant variable. The aim was to determine the influence of problem-based learning on the learning approaches of students after they had been exposed to this learning strategy for a certain period of time.

The study was conducted with a holistic philosophy of education and training and based upon studies conducted in accordance with the theory and philosophy of problem-based learning.

1.5 CLARIFICATION OF CONCEPTS

1.5.1 Problem-based learning (PBL)

Problem-based learning can be defined as a method of learning (or teaching) that emphasises the study of clinical cases (either real or hypothetical), small discussion groups, collaborative independent study, hypothetico-deductive reasoning, and a style of faculty direction that concentrates on group process and small-group learning (Vernon & Blake 1993: 550-551).

This concept was measured by means of the audit.

1.5.2 Problem-based learning process

The problem-based learning process can be defined as a teaching and learning arrangement where a tutorial group of between five and seven students is used to evaluate and define different aspects of a problem. Four phases are included in the problem-based learning process: the first is reasoning through the problem; second, self-directed study; third, application of new knowledge to the problem and the fourth is a summary and integration of learning (Engel, 1995:326; Lewkonia, Harasym, Darwish, 1993: 588; Walton & Matthews, 1989:543; Barrows, 1985:55).

This concept was measured by means of an audit.

1.5.3 Programme development

Programme development can be defined as the dynamic process that will lead to socially-valued knowledge, skills and attitudes, to be offered to students through a variety of arrangements during the time that they are registered at an institution. The programme is determined by various factors, for example the needs of the community, the needs of the students, and the nature of subject-matter (Jansen, 1991:11-12). In the case of nursing education in South Africa, the statutory body for nursing (South African Nursing Council), the qualification authority (South African Qualification Authority), and the national health and educational policy of the country have a role to play in the process.

This concept was measured by means of an audit.

1.5.4 Programme evaluation

Programme evaluation can be defined as an active and continuous activity of delineating, obtaining and providing useful information to give judgement of the quality and effectiveness of the programme, and can be formative or summative. The most important

objectives of programme evaluation are to determine the following: whether the general philosophy and the beliefs of the curriculum have been realised; how effective the content has been dealt with; the extent and quality of learning that has taken place; whether the educational and vocational objectives have been met; the quality of management; and the use of resources (Greaves 1987:87-89).

This concept was measured by means of an audit, a student perception questionnaire, the LASI and calculation of assessment results.

1.5.5 Summative programme evaluation

Summative programme evaluation *"is normally carried out as an 'end-on' activity and its function is in its purpose of assessing a fully implemented course or curriculum programme"* and it may be carried out by statutory and professional bodies (external evaluation) or the institution itself (internal evaluation). Summative programme evaluation is *"concerned with a final judgement concerning the extent to which the intentions and purposes of the course have been met, and the degree to which it meets educational and professional needs"* (Paton, Potgieter, Botha, Tjallinks, & van der Wal, 1993:133-134; Greaves 1987:89).

This concept was measured by means of an audit, student perception questionnaire, the LASI (post-test) and calculation of assessment results.

1.5.6 Systematic evaluation

Systematic evaluation is *"used to evaluate institutions, courses or particular policy inputs"* (South Africa, 1996:16).

This concept was measured by means of an audit, student perception questionnaire, the LASI and calculation of assessment results.

1.5.7 Course outcomes

Course outcomes are defined as the contextually demonstrated results or end products of learning experiences and processes whether formal, non-formal or informal. Programmes of learning are designed to help learners to achieve these outcomes (Republic of South Africa, 1998: 4; South Africa, 1996: 15).

This concept was measured by means of an audit, student perception questionnaire, the LASI and calculation of assessment results.

1.5.8 Critical outcomes

Critical or generic (cross-field) education and training outcomes are defined as *"those generic outcomes which inform all teaching and learning"* (Republic of South Africa,1998:3) and extend across curricula, as they are not restricted to specific learning contexts. Therefore all curricular actions should start with critical outcomes which will lead to specific outcomes (Nel, Bezuidenhout and Botha, 1998: 21). Examples of critical outcomes are problem-solving skills, effective teamwork, and the gathering of information (Republic of South Africa, 1998: 8-9).

This concept was measured by means of an audit and student perception questionnaire.

1.5.9 Specific outcomes

Specific outcomes can be defined as contextually demonstrated knowledge, skills and values, which support critical outcomes (Republic of South Africa, 1998: 5). Specific outcomes endorse critical outcomes and they describe the competence a learner should have at a specific level in a programme, and are formulated in a way that enhance

transparent, fair and effective evaluation. Specific outcomes are similar to the programme objectives which were used in the past (Nel *et al.*, 1998: 22).

This concept was measured by means of an audit, student perception questionnaire, and calculation of assessment results.

1.5.10 Student outcomes

Student outcomes can be defined as the demonstration of mental, affective and manual activities and reflect the successful assimilation of programme outcomes (South Africa, 1996: 15; 25; 63; 3; 54). The word *"outcomes"* is used broadly as an inclusive term, referring to everything learnt, including social and personal skills, learning how to learn, concepts, knowledge, understanding, methodologies, values, attitudes and so on, and include both intended and unintended outcomes (South Africa, 1996: 25). The abilities, capabilities, performance and competence of students are closely interwoven with attained student outcomes. Performance is the integrated demonstration of mental, affective and manual activities (Republic of South Africa: 1995:3).

This concept was measured by means a student perception questionnaire and calculation of assessment results.

1.5.11 Assessment

Assessment is defined by Ewan & White (1989: 186) as the processes by which the progress and learning of students' are gauged. Assessment may or may not include marks or grades obtained by students. 'Examination' refers to the mechanisms by which assessment is sometimes accomplished (Ewan & White, 1989: 186-187). Various assessment methods are used, for example Objective Structured Clinical Evaluation (OSCE), multiple-choice examinations, essay questions, short-answer tests, continuous evaluation in small-group sessions, and self- and peer assessment. The performance of

students can be an indicator of the quality of the learning strategy as well as the evaluation techniques and value of content (Paton *et al.*, 1993: 137). The three terms assessment, evaluation and examination are often used interchangeably. Ewan and White (1989: 186) refer to 'evaluation' as *"the broader process of determining the effectiveness of the education students are receiving"* and assessment will contribute to evaluation.

This concept was measured by means of an audit, and a student perception questionnaire,.

1.5.12 Summative assessment

Summative assessment represents the final result of a student's learning which certifies him/her as competent and takes place at the end of the course or unit of learning (Ewan & White, 1989: 187-189).

This concept was measured by means of a student perception questionnaire and calculation of assessment results.

1.5.13 Course perceptions

Course perceptions can be defined as the way in which students experience a course and include learning environment, teaching, assessment, and course structures (Entwistle & Ramsden, 1983: 150) and may be 'student-centred' or 'control-centred'. A student-centred approach reflects effective teaching, which is coupled with a high degree of student choice over what is studied and how it is learnt. A control-centred approach reflects an excessive amount of pressure on students as a result of curriculum and assessment demands (Cotton, 1991: 149).

This concept was measured by means of a student perception questionnaire and the LASI.

1.5.14 Approaches to learning

A learning approach can be defined as the way in which a student approaches his/her learning task and may be a deep approach, a surface approach or a strategic approach:

(i) *The deep approach* is primarily aimed at gaining understanding and insight;

(ii) *The surface approach* is aimed at gaining facts anticipated in tests or exams; and

(iii) *The strategic approach* is aimed at the learner's self-esteem when recognition is gained through the achievement of high marks (Mokoena, 1997: 24-26; Entwistle & Ramsden, 1983:40).

This concept was measured by means of the LASI.

1.5.15 Learning styles

Learning style refers to the way in which students prefer to learn, to organise and experience information, and can be holistic (comprehensive), which means that students prefer to build on knowledge that they already have, or serialististic (operational), which means that a student prefers to concentrate on detail (Merrit, 1983: 367; Laschinger & Boss, 1984:375; Entwistle, 1981: 93).

This concept was measured by means of the LASI.

1.5.16 Meaning orientation

Meaning orientation can be defined as the interest students demonstrate in their subject, active and critical interaction with content and the ability to relate new knowledge to personal knowledge and the reality. Meaning orientation entails a deep approach, intrinsic motivation, relating ideas and using evidence:

(i) *Deep approach*: This approach is characterised by active questioning in learning where students relate the learning content to prior knowledge. Students actively

interact with the learning content and search for meaning. High marks in the LASI indicate that students are looking for meaning, while new knowledge is related to the reality (Mokoena, 1997:77; Joubert, 1996:203; Cotton, 1991:149; Entwistle & Ramsden, 1983: 77).

(ii) *Relating ideas*: Students relate to or integrate ideas with other subjects in the course and use previous knowledge to link up new information. High marks on the LASI indicate that students are actively integrating new knowledge with previous knowledge (Mokoena, 1997:77; Joubert, 1996:203; Entwistle & Ramsden, 1983: 77).

(iii) *Use of evidence*: Students relate evidence to conclusions and scrutinise the content in order to relate it to factual or empirical information. High marks on the LASI indicate that students critically analyse evidence and are cautious to jump to conclusions (Mokoena, 1997:77; Joubert, 1996:203; Entwistle & Ramsden, 1983: 77).

(iv) *Intrinsic motivation*: Students are dedicated to learning activities to expand their knowledge, skills and values and are interested in learning for the sake of learning. High marks on the LASI indicate that students engage in learning because of interest and to advantage themselves (Mokoena, 1997:77; Joubert, 1996:203; Entwistle & Ramsden, 1983: 77).

This concept was measured by means of the LASI.

1.5.17 Reproduction orientation

Reproduction orientation can be defined as a narrow approach to learning and entails a surface approach, syllabus-boundness, fear of failure and improvidence:

(i) *Surface approach*: Students are preoccupied with memorisation and learn by means of repetition or habituation without understanding. High marks on the LASI mean that students have a surface approach.

(ii) *Syllabus boundness*: Students rely on lecturing staff to define learning tasks and tend to concentrate only on the prescribed learning activities. They are not

prepared to learn anything, which are not defined in the syllabus. High marks on the LASI mean that students' learning are bound to the content of the curriculum and specified tasks.

(iii) *Fear of failure*: Students demonstrate pessimism and anxiety about academic outcomes and have a poor self-esteem regarding their ability to pass assessments. High marks on the LASI mean that students lack self-confidence and are preoccupied with the demands of assessments.

(iv) *Improvidence*: Students rely over-cautiously on details and are confined to facts. They demonstrate a reluctance to search for links between ideas. High marks on the LASI mean that students concentrate on facts and lack integration among ideas (Mokoena, 1997:77; Joubert, 1996:204; Cotton, 1991:149; Entwistle & Ramsden, 1983: 77)

This concept was measured by means of the LASI.

1.5.18 Strategic orientation

Students with a strategic orientation want to achieve and are motivated by the need to achieve higher grades than fellow-students and only study what is required for examinations. Students like to compete and are focused on the qualification they will obtain. Strategic orientation entails three sub-scales:

(i) *Extrinsic motivation*: Students are interested in courses for the academic qualification they offer and that interest is the main motivation to learn.

(ii) *Strategic motivation*: Students demonstrate an awareness of the implications of academic demands made by academic staff. They actively gather information about the evaluation of learning content to create a favourable impression for academic staff. High marks on the LASI indicate that students seek actively for information about assessments to impress lecturing staff.

(iii) *Achievement motivation*: Students are competitive and self-confident, and intent on attaining success. High marks on the LASI indicate that students are motivated by their hope for achievement (Mokoena, 1997:77; Joubert, 1996:204;

Newble & Entwistle quoted by de Volder & de Grave, 1989: 262; Entwistle & Ramsden, 1983: 77).

This concept was measured by means of the LASI.

1.5.19 Non-academic orientation

Students with a non-academic orientation are not concerned about academic requirements and poor academic performance is linked to study difficulties. A non-academic orientation contains three sub-scales:

(i) *Disorganised study methods*: Students are unable to work regularly and effectively, fail to manage study time and to plan in advance. Low scores on the LASI mean that students are able to manage time and plan in advance.

(ii) *Negative attitudes to studying*: Students lack interest and application and demonstrate disillusionment with the course. High scores on the LASI mean that students are not involved with their studies and may be disillusioned with tertiary education as such.

(iii) *Globetrotting*: Students are over-ready to jump to conclusions, therefore they are inclined to unfounded conclusions and make hasty generalisations. High scores on the LASI mean that students are inclined to generalise and draw conclusions that are unfounded and hasty (Mokoena, 1997:77; Joubert, 1996:205; Entwistle & Ramsden, 1983: 77; 180).

This concept was measured by means of the LASI.

1.5.20 Student-centredness

Student-centredness can be defined as a teaching and learning climate where freedom in learning is enhanced and entails good teaching and freedom in learning. Examples of factors that are involved are good teaching, freedom in learning, workload, formal

teaching methods, clear goals and standards, vocational relevance, openness to students and social climate. The student-centred perception of the course contains two sub-scales:

(i) *Good teaching*: This means that teachers are well prepared, helpful and committed to their work. Content is pitched at the appropriate level and lecturing staff makes an effort to understand difficulties students experience with their work. Staff members are always ready to help and give advice where needed.

(ii) *Freedom in learning*: Students are allowed to choose and organise their own work according to their own preference as lecturing staff encourage them to develop their own academic interests as far as possible. This means that students may use methods of studying which suit their way of learning (Ramsden quoted by Sadlo, 1997:103; Richardson, 1994: 59; Entwistle & Ramsden, 1983: 124; 238-240;152).

This concept was measured by means of the LASI.

1.5.21 Control-centredness

Control-centredness has to do with workload and the amount of freedom students are given in choosing and organising their own work. The control-centred perception of the course contains two sub-scales:

(i) *Workload*: Heavy pressures are put on students to fulfil task requirements and those demonstrated in the syllabus, that tries to cover too many topics, too much written work required from students, a lot of pressure put on students by means of too much work to get through.

(ii) *Freedom in learning*: This refers to the amount of freedom that is given to students to choose and organise their own work, whether they are encouraged to develop their own interests and whether they are allowed to choose how they want to learn (Entwistle & Ramsden, 1983: 124; 238-240;152).

This concept was measured by means of the LASI.

1.5.22 Enjoyment of learning

Student enjoyment can be defined as the joy of learning in an educational situation that fosters stimulation, where there is no limitation to the exploration of information that students are interested in, where learning is flexible to suit the needs of students, and where learning is according to the potential and motivation of students. Activities, which are included in the programme, should be meaningful, understandable and compatible to students' background knowledge. Strategies of learning should accommodate different cultures, age groups, students in need of remedial help, learning styles and maturity (Uys & Cassimjee, 1997: 136-137; Sims & Sims, 1995: 9-10; 21-23; 172; Tang, 1993: 127; Paton *et al.*, 1993: 67-69; Walton & Matthews, 1989:545).

This concept was measured by means of the LASI and the SPQ.

1.5.23 National Qualifications Framework (NQF)

South Africa's national qualification framework can be defined as a framework that provides lifelong learning opportunities through a wide variety of mechanisms by utilising nationally recognised levels of learning in order for qualifications to be flexible, efficient and accessible levels and provides for the registration of national standards and qualification (Republic of South Africa, 1998:5; South Africa, 1996: 15; Republic of South Africa, 1995: 3; 5-8).

This concept was measured by means of the audit.

1.5.24 South African Nursing Council (SANC)

The South African Nursing Council (SANC) is the statutory body that regulates the education and training of nurses and midwives in the Republic of South Africa (Paton *et al.*, 1993: 86) and is defined by Council itself as *"an autonomous, apolitical, financially*

independent statutory body initially established by the Nursing Act No. 45 of 1944, and currently by the Nursing Act No. 50 of 1978. The nursing and midwifery professions in South Africa are controlled by the South African Nursing Council" (South African Nursing Council, 1999: 9).

This concept was measured by means of the audit.

1.5.25 University of the Orange Free State (UOFS)

The University of the Orange Free State is the tertiary institution where the School of Nursing along with two other schools function within the Faculty of Health Sciences.

This concept was measured by means of the audit.

1.5.26 Community-based nursing (CBN)

Community-based nursing is a type of nursing care that reflects an understanding of the community, its demographics, and common ailments and problems experienced by the people of the community. Nursing should take place in the environment where graduates are expected to work once their studies have been completed (Iputo & Nganwa-Bagumah, 1996: 651).

This concept was measured by means of the audit and the SPQ.

1.5.27 Community-oriented approach

A community-oriented curriculum is designed to respond to the health needs of the community as a whole. Curative services are integrated with prevention and rehabilitation (Des Marhais, 1991: 235). In community-oriented nursing, the concepts of primary health care are integrated into nursing practice at all levels – home, dispensary, health centre,

and hospital. In providing health care, whether to individuals, the family or the community, the nurse is expected to employ care in three processes – assessment of needs, planning and implementing the measures required, and evaluation of the effectiveness of care provided (WHO, 1985: 9).

This concept was measured by means of the audit and the SPQ.

1.5.28 Primary health care (PHC)

Primary health care can be defined as *"the first level of contact of individuals, the family, and the community with the national health system, bringing health care as close as possible to where people live and work, and constitutes the first element of a continuing health care process"* (WHO, 1984a: 9).

This concept was measured by means of the audit.

1.5.29 Student nurse

A student nurse can be defined as a learner who is registered for an integrated diploma or degree course in nursing at a tertiary educational institution. This course will lead to registration as a professional nurse qualified as a general, psychiatric, community health nurse and a midwife. *"The learner is the primary focus of the instructional system"* (Sims & Sims, 1995:6).

This concept was measured by means of the LASI, the SPQ, and the DQ.

1.5.30 Aims

An educational aim (goal) can be defined as *"a broad, general statement of goal direction, which contains reference to the worthwhileness of achieving it"* [and] *"all the other objectives are derived from it"* (Quinn, 1989:237).

This concept was measured by means of the LASI, the audit and the SPQ.

1.5.31 Objectives

Instructional or specific behavioural objectives can be defined as *"highly specific statements that describe changes in behaviour that constitute learning"* (Quinn, 1989:237-238) and should *"always contain a verb* [which is stated as unambiguous as possible] *that indicates exactly what a learner must do in order to achieve the objective."* The taxonomy of objectives into a classification contains three domains of objectives: the cognitive domain (concerned with the knowledge and intellectual abilities); the affective domain (concerned with the attitudes, values, interests and appreciations) and the psychomotor domain (concerned with motor skills).

This concept was measured by means of the LASI, the audit and the SPQ.

1.5.32 Learning and educational programme

A learning and educational programme can be defined as the complete programme which is made up of courses, modules or learning units and contains the totality of educational opportunities. The programme includes all the aspects of the curriculum as well as arrangements for learning and education, objectives, and activities. An educational programme contains a variety of arrangements and is determined by three very important factors: the needs of the community, the needs of the students and the nature of the

subject matter (South Africa, 1996:17; Jansen, 1991:11-12; Bell, quoted by Quinn, 1989: 233).

This concept was measured by means of the LASI, the audit and the SPQ.

1.5.33 Curriculum

Authors have many different ways of defining curriculum and frequently interchange the concept *"curriculum"* with the concept *"programme"*, as they are very closely related. The term curriculum comes from Latin and means *"running, race, lap or course"*. Where the emphasis in curriculum is more on the content (race) and experience (running) of learning as meant in the original Latin word, the emphasis in a programme is on the totality of learning arrangements, which are conceptualised in terms of the objectives and the curriculum. For the purpose of this study a curriculum is defined as the socially-valued knowledge, skills and attitudes made available to students through the learning and teaching process (Bell, quoted by Quinn, 1989:233).

This concept was measured by means of the LASI, the audit and the SPQ.

1.5.34 Comprehensive curriculum

A comprehensive curriculum can be defined as a curriculum which is viewed in a holistic manner, to integrate subjects and to blur traditional subject boundaries. Core programmes, conceptual frameworks, the scientific nursing process and horizontal and vertical integration of content for example by means of problem-solving themes, foster a comprehensive curriculum. A comprehensive curriculum requires that content be integrated to form a functional whole, therefore each subject is interrelated with the other to help students to internalise content in a meaningful and holistic way. The South African Nursing Council therefore refers to the *"comprehensive four-year course"* that will lead to registration in general, psychiatric, and community nursing and midwifery to produce a comprehensive nurse who will be able to practise in any field within the

comprehensive health services (Paton *et al.*,1993:104-106; Paton, Botha, Durrheim, Wilson, Tjallinks & van der Wal, 1989: 80; Ewan & White, 1989:11-12).

This concept was measured by means of the LASI, the audit and the SPQ.

1.5.35 Philosophy

Philosophy can be defined as the love of wisdom and the advancement of human understanding about what is fundamentally true and good and contains virtues and values to which humans can aspire and provides answers to questions about human nature, knowledge and reason. In nursing education the philosophy forms the corner tone of learning and education and usually includes the following concepts: health, humans, society, nursing, learning, teaching, and nursing education. Philosophy in higher education is usually expressed in the mission, vision and value statements of the institution as such and in each faculty and department specific (Mashaba and Brink 1994: 4-5; Roth & Sontag qouted by Mashaba and Brink 1994:4; Paton, *et al.*, 1993: 29; Searle & Pera, 1990:58; Tanner & Tanner, in Mostert, 1985:49).

This concept was measured by means of the audit.

1.5.36 Integration

Integration refers to phenomena (concepts) that are perceived as holistic (conceptual framework) and where components (concepts) are in interaction with each other and with their environment (context). Integration allows for subjects to be connected in ways that portray the real world, making curricula contextual of human experience. Situations or problems rather than subjects are the basis for deciding what to teach, while concepts, principles and theories from the sciences (relevant physical, biological, social) are used. The curriculum is organised around problems rather than disciplines in order for students to learn how to integrate theory appropriately to practice and to stimulate higher order

thinking skills (Drake, 1993: 44; White & Evan, 1991:24; 50; Evan & White, 1989:9-10; 25; 35; Walton & Matthews, 1989: 555; Greaves, 1987: 30; 52). Integration is discussed in 2.2.4.3.3, 2.2.5.4 and 3.3.3.

This concept was measured by means of the LASI, the audit and the SPQ.

1.5.37 Active learning

Active learning can be defined as the process where students are encouraged by a facilitator to participate in their own learning in an active, independent, creative and self-reliant way in order to acquire relevant information. The approach to learning emphasises relevance, student participation, involvement, self-initiation, pervasiveness, meaningfulness and self-evaluation (Quinn, 1989:43-44). It is a student-centred learning approach and takes place in an atmosphere where questioning is welcomed. Learning usually takes place in small-groups to develop reasoning skills, a logical, analytical and scientific approach to learning and co-operation with other group-members (Walton & Matthews, 1989:544). Active learning is closely related to self-directed learning.

This concept was measured by means of the LASI, the audit and the SPQ.

1.5.38 Self-directed learning

Self-directed learning can be defined as a student-centred approach to learning where students are forced into an active role in learning. The emphasis is both on the process and content of learning as students choose their own direction, formulate their own objectives, discover their own learning resources, decide for themselves what the course of action will be and live with the consequences of these choices. Self-directed learning helps students to handle future problems, and foundations are laid to become independent, lifelong learners (Blosser & Jones, 1995:290; Rogers quoted by Machaba

and Brink, 1994:199; Barrows quoted by Dolmans & Schmidt, 1994: 373; Ryan, 1993:56).

This concept was measured by means of the LASI, the audit and the SPQ.

1.5.39 Critical, scientific thought

Critical and scientific thought refers to the stimulation of higher cognitive levels where students are stimulated to express their own opinions, argue for their views, relate, compare, apply and evaluate information (Tang, 1993: 127).

This concept was measured by means of the LASI, the audit and the SPQ.

1.5.40 Facilitator

A facilitator can be defined as a person who has specific attributes for teaching such as emphatic listening, acceptance and honest communication and the emphasis is on guiding rather than on telling. This guidance takes place by assisting clarification, stimulating exploration, exploring approaches, encouraging analysis, promoting interpretation, checking meaning, clarifying perceptions and prompting understanding. The aim is to lead students through their own paths of thinking to show how they come to conclusions. Facilitation should take place in a supporting, nurturing and understanding environment to be successful as the skill of shifting the students' dependence from the teacher to themselves is more difficult than it seems (du Rand, 1998: 113; de Young quoted by Machaba and Brink, 1994: 199; White & Evan, 1991: 112-113).

This concept was measured by means of the LASI, the audit and the SPQ.

1.5.41 Small group

The small group is also referred to as the tutorial group and is considered as the optimal teaching arrangement for problem-based learning. A small group can be defined as a group of five to seven students who meet their facilitator twice a week, has established group norms, roles, codes of conduct and procedures that are acceptable to all the group members and has randomly assigned group members to the group. In the small group all group members work towards consensus where each member offers different information and perspectives in a supportive and co-operative atmosphere (Blosser & Jones, 1995:291; Engel, 1995: 326; Mulholland, 1994: 42; Pelausa & Marsan, 1993:421).

This concept was measured by means of the audit and the SPQ.

1.6 CHAPTER OUTLINE

Chapter 1 The focus of this chapter is on the motivation for undertaking the study, background and orientation to the study, the aim and objectives of the study, the research methodology, and the conceptual and operational definitions.

Chapter 2 A literature review of factors that influence programme development is discussed in this chapter. It deals with internal as well as external factors.

Chapter 3 This chapter contains a literature review of problem-based learning, including the rationale for use, methodology and the development of a problem-based learning programme.

Chapter 4 The research methodology is discussed with special reference to design, methods, data analysis and limitations.

Chapter 5 Data analysis of the audit, questionnaires and student results are discussed and conclusions drawn.

Chapter 6 The research is interpreted and recommendations are made.

Chapter 7 The study is summarised.

1.7 SUMMARY

The focus of this chapter was on the motivation for undertaking the study, the background of and orientation to the study, the aim and objectives of the study, the research methodology, and the conceptual and operational definitions. The chapter outline of this study was also discussed.

Chapter two will focus on factors that influence programme development.

CHAPTER 2

Factors that influence programme development

2.1 INTRODUCTION

Programme development is a powerful force to give direction to the future of any professional field. Internal as well as external influences dictate the directions that programme development will follow. South Africa is at present in a very dynamic and exciting phase of change and the nursing profession will have to examine the current forces and trends to develop programmes that can respond to the betterment of health care services, and the production of professionally and socially responsible nurses. External factors considered important in this chapter are the World Health Organisation, the National Qualification Framework and the South African Nursing Council. Attention was also given to the Health Department and Higher Education. Internal factors taken

into consideration during programme development are the University of the Orange Free State, the Faculty of Health Sciences and the School of Nursing with their unique philosophical stances. Attention is also given to programme development as such and different models of programme development are discussed. The influence of society, and the community, the students and subject content as determinants are discussed to portray their influence on programme development.

2.2 PROGRAMME DEVELOPMENT

2.2.1 Introduction

Programme development is the process that leads to the formation of the totality of subjects that will be educated and is determined by three very important factors: the needs of the community, the needs of the students and the nature of the subject-matter (Jansen, 1991:11-12).

An educational programme is defined by Bell, quoted by Quinn (1989: 233) as *"the offering of socially-valued knowledge, skills and attitudes made available to students through a variety of arrangements during the time they are at school, college or university"*.

The educational programme will eventually be all the educational opportunities that will be encountered by students in an educational institution, therefore it is not a static concept, but a *"growing and dynamic creation"* (Quinn, 1989: 234) that will constantly be modified as new ideas, information, needs, and shortcomings are identified.

Various factors are closely interwoven with the process of programme development and are now briefly discussed, to help understand the process of programme development.

2.2.2 Influence of the society

The curriculum or programme does not exist in isolation, but incorporates the beliefs, values and developments both of society as a whole and of, in this case, nursing schools as such. Therefore it must reflect the changing nature of society (Quinn, 1989: 234). Table 2.1 illustrates this changing nature of society.

Table 2.1 Some key themes permeating aspects of society (Quinn, 1989:235)

Theme	Society	Psychology	Education	Nursing
CONTROL	Authoritarianism	Behaviourist	Traditional	Dependence
VERSUS	*Versus*	*Versus*	*Versus*	*Versus*
FREEDOM	Liberalism	Humanist	Progressive	Independence
PRODUCT	Quantity of food	Behaviourist	Objectives	Task-centred care
VERSUS	*Versus*	*Versus*	*Versus*	*Versus*
PROCESS	Quality	Cognitive	Processes	Nursing Process
PART	Class divisions	Behaviourist	Collection Curriculum	Body Systems
VERSUS	*Versus*	*Versus*	*Versus*	*Versus*
WHOLE	Classlessness	Humanist	Integrated Curriculum	Nursing Models
INSTITUTION	Custodial sentences	Laboratory	College-based learning	Hospital
VERSUS	*Versus*	*Versus*	*Versus*	*Versus*
COMMUNITY	Community work	Real life	Distance learning	Community

2.2.2.1 Control versus freedom

As can be seen in the first theme there is a move away from authoritarian stances towards more liberalistic stances. The emphasis is on individual freedom in contrast to

determinist stances, and the move is towards innovational forms of education in contrast to more traditional and didactic methods of teaching. Independence is encouraged where teacher-centred learning is replaced by student-centred learning (Quinn, 1989:234).

2.2.2.2 Product versus process

Education is moving away from the model of objectives where the emphasis is on the product of education. Instead the move is towards a more "process"-oriented approach where education is seen as a variety of learning experiences which are viewed as important variables in the learning process. Scientific nursing (nursing process approach) which consists of assessment, planning, implementation, evaluation and recording, has substituted the task-centred approach to a large extent (Quinn, 1989: 234). This is a phenomenon that has the advantage that it fosters patient care in a holistic way. Furthermore, theory and practice can be correlated and integrated in a meaningful way, while students learn problem-solving and decision-making skills in a practical manner.

2.2.2.3 Part versus whole

A more holistic approach substitutes the divisional explanations of behaviourism. Education is moving away from collections of separate subjects in curricula towards a more integrated and holistic approach, involving the breakdown of traditional subject boundaries (Quinn, 1989: 234). This phenomenon is also seen in patient care where there is a shift towards holistic patient care away from the past emphasis on illness or diagnosis.

2.2.2.4 Institution versus community

Real-life problems are gaining ground with the emphasis on the community as the most important health setting and not the institution (hospital) (Quinn, 1989:234). Expansion of scientific knowledge in big tertiary complexes became a mismatch to the community's

demands for relevance and affordability (Mazwai, 1996). Therefore a need has arisen for curricula to reflect the philosophy of primary health care (Schmidt, 1996).

Philosophies reflect the virtues and values of a society and should be reflected in the educational institutions that serve a particular community. The influence of philosophy in programme development as reflected in the mission, vision and values of an educational institution will now be discussed.

2.2.3 Influence of philosophy

The word philosophy is derived from the Greek words ***phileo*** that means to love and ***sophia*** that means wisdom. Mashaba and Brink (1994:4) quote the definition of Roth & Sontag for philosophy as *"the love of wisdom in the sense of advancing human understanding about what is fundamentally true and good"*.

Mashaba and Brink (1994: 4-5) define philosophy as *"a search for answers to questions about human nature, knowledge and reason, which distinguish human beings from animals. Philosophy embodies virtues and values to which one can aspire"*.

A philosophy should act as a compass in programme development to form the corner stone of the programme (Paton, *et al.*, 1993: 29). Unfortunately there is a tendency in many Western nursing schools to nullify the necessity of nursing philosophy in programme development (Searle & Pera, 1990:58). *"In the absence of a guiding philosophy, the curriculum tends to be a product of ad hoc decisions – typically stemming from a combination of traditional practice and more immediate expediencies"*(Tanner & Tanner, in Mostert, 1985:49).

Katen (quoted by Mashaba & Brink, 1994: 5) is of the opinion that when a philosophy has not only been found but also lived, a person is set free from the enslaving needs to seek fame or fortune, pleasure or power.

A philosophy's significance lies in the fact that educators do not embrace a philosophy for its own sake, neither as an end in itself, but that they concentrate on its significance to life to influence their approach to nursing and education in a way that will shape future professional nurses. Therefore, the philosophies of two disciplines need to be combined: one from the nursing discipline and one from the educational discipline (Mashaba & Brink, 1994:7).

In South Africa the philosophy of the South African Nursing Council should be reflected in the philosophy of a nursing school, because it is the statutory body of nursing (Paton *et al.*, 1993: 32). The South African Nursing Council holds the following philosophy:

"...PHILOSOPHY OF THE SOUTH AFRICAN NURSING COUNCIL

Objects of the South African Nursing Council

The objects of the South African Nursing Council are determined in section 3 of the Nursing Act, 1978 (Act 50 of 1978).

'3. The objects of the Council shall be –

(a) to assist in the promotion of the health standards of the inhabitants of the Republic;

(b) subject to the provisions of the Chiropractors Act, 1971 (Act 76 of 1971)* the Homeopaths, Naturopaths, Osteopaths and Herbalists Act, 1974 (Act 52 of 1974)* the Pharmacy Act, 1974 (Act 53 of 1974), and the Medical, Dental and Supplementary Health Service Professions Act, 1974 (Act 56 of 1974), to control, and to exercise authority in respect of, all matters affecting the education and training of, and the manner of the exercise of the practices pursued by, registered nurses, midwives, enrolled nurses and nursing assistants;

(c) to promote liaison of the education and training, and the manner of the exercise of practices, referred to in paragraph (b), both in the Republic and elsewhere, and to promote the standards of such education and training and the manner of the exercise of such practices in the Republic;

(d) to advise the Minister on any matter falling within the scope of this Act;

* *Substituted by the Associated Health Service Professions Act, 1982 (Act 63 of 1982).*

(e) to communicate to the Minister information on matters of public importance acquired by the Council in the course of the performance of its functions under this Act.'

Definition of nursing science

'Nursing science is a human clinical health science that constitutes the body of knowledge for the practice of persons registered or enrolled under the Nursing Act as nurses or midwives.

Within the parameters of nursing philosophy and ethics, it is concerned with the development of knowledge for the nursing diagnosis, treatment and personalized health care of persons exposed to, suffering or recovering from physical or mental ill-health. It encompasses the study of preventive, promotive, curative and rehabilitative health care for individuals, families, groups and communities and covers man's life-span from before birth.'

Definition of primary health care

'Primary health care is essential health care made universally accessible to individuals and families in the community by means acceptable to them, through their full participation and at a cost that the community and country can afford. It forms an integral part, both of the country's health systems of which it is the nucleus and of the overall social and economic development of the community.'*

Education in nursing

Council emphasises that the education and training shall be directed specifically at the development of the nurse on a personal and a professional level and that the principles of learning be observed, namely that learning leads to behaviour change in the cognitive, affective and psycho-motor aspects, through active involvement of the student.

The development of the ability for analytical, critical, evaluative and creative thinking and the stimulation of the exercise of independent judgement of scientific data are of the utmost importance." (South African Nursing Council, 1988: 1-2).

* *WHO definition of Primary Health Care*

The report on the Draft Nursing Amendment Bill, [Act 50 of 1978] (South African Nursing Council, 1998: 3-4) of the stakeholders meeting held on 18 February 1999 (South African Nursing Council, 1999: 10-13) states the following definition, objects, vision, mission and Code of Conduct for members of the Council:

(i) DEFINITION OF "***THE SOUTH AFRICAN NURSING COUNCIL***

This is an autonomous, apolitical, financially independent statutory body initially established by the Nursing Act No. 45 of 1944, and currently by the Nursing Act No. 50 of 1978. The nursing and midwifery professions in South Africa are controlled by the South African Nursing Council" (South African Nursing Council, 1999: 9).

(ii) ***"OBJECTS OF THE SOUTH AFRICAN NURSING COUNCIL***

- *to assist in the promotion of health standards of the inhabitants of the Republic;*
- *to control, and to exercise authority in respect of all matters affecting the education and training of, and the manner of the exercise of the practices pursued by, registered nurses, midwives, enrolled nurses and nursing assistants;*
- *to promote liaison of the education and training, and the manner of the exercise of the practices, both in the Republic and elsewhere, and to promote the standards of such education and training and the manner of the exercise of such practices in the Republic;*
- *to advise the Minister on any matter falling within the scope of this Act;*
- *to communicate to the Minister information on matters of public importance acquired by the Council in the course of the performance of its functions under this Act;*
- *to advise the Minister on the amendment or adaptation of this Act so as to support the universal norms and values of the nursing profession and to place greater emphasis on professional practice, democracy, transparency, equity, accessibility and community involvement"* (South African Nursing Council, 1999:12).

(iii) ***"VISION***

The South African Nursing Council shall at all times strive for equity, professional ethics, competence, efficiency, effectiveness, transparency, accountability and comprehensive

humane health services to the citizens and non-citizens in the Republic of South Africa and uphold democratic values and social justice. The interest and the integrity of individuals, groups, families, communities, the nursing profession and support staff shall be kept high in all activities and endeavours of this Council" (South African Nursing Council, 1999: 10).

(iv) "MISSION

The South African Nursing Council commits itself to assuring quality in health care by safeguarding standards of education and practice of nurses, midwives and support staff so that the South African public receive a competent, safe, compassionate and ethically based health service within the framework of comprehensive health care" (South African Nursing Council, 1999:11).

(v) CODE OF CONDUCT FOR MEMBERS OF THE COUNCIL

in the course of its activities, the task group also drew up a code of conduct for Council members i. e.

- *basic commitment to health care;*
- *sincere interest in nursing;*
- *credibility in the provinces, approachability, accessibility and availability for Council duties;*
- *accessibility to the community and the nursing profession;*
- *communication with own constituency in the provinces;*
- *conduct which is commensurate with the dignity, honour and standards of the nursing profession and the Council;*
- *attending meetings regularly and punctually;*
- *notifying the Registrar timeously of inability to attend;*
- *preparing thoroughly for and participating meaningfully at meetings;*
- *respecting confidentiality where indicated; and*
- *willing to represent Council where necessary"* (South African Nursing Council, 1999:13).

Searle in Searle and Pera (1990:100-101) describes five elements in a nursing philosophy: *"A philosophy deeply rooted in the Christian faith which leads one into nursing and keeps one there; a body of scientific knowledge which is utilised to provide support, care and treatment; a body of skills, with which the scientific knowledge is translated into service; a concept of accountability for professional actions towards the one in need of health care, towards society, towards the medical and nursing professions and towards the self; and finally the gift of love for those who need to be ministered unto."*

A philosophy is reflected in the mission, vision and values of a nursing school and should incorporate the philosophies of both the educational institution and the statutory body for nursing.

The philosophies of nursing schools usually include the following concepts: health, man, society, nursing, learning, teaching, and nursing education (Quinn, 1989: 259; Evan and White 1989: 11). These concepts are illustrated in a composition of a holistic philosophy in table 2.2, which has been compiled from the work of various authors.

Table 2.2: A philosophy of a nursing educational programme

Basis →	**Holistic philosophy**: This philosophy, as an independent and systematic philosophy, concentrates on the whole as a unity of parts, where the whole is bigger and totally different from the parts.
Health	• Health is the purpose of all nursing behaviours • Health is a right, not a privilege • People have a right to be involved in decisions about their own health • Health can be promoted by the individual, family or group's ability to set realistic goals and to mobilise energy towards attaining these goals • Health is closely related to lifestyle • Health is the integration, harmony and balance of body, soul and spirit • The whole person is the focus of nursing
Man	• Man is a unified, organist, psycho-social system • Man's body, soul and spirit are in harmony and integrate with one another

	• Man is greater than and different from the sum of his parts • Man has complex systems of values and beliefs • Man is holistic, therefore all of his subsystems are interdependent, each affecting all others • Man has freedom of choice and must be responsible for choices made • Man is caring and caring relationships enable acquisition of health, growth and self-actualisation
Society	• The basic unit for society is the family which provides intimacy, love, caring, protection and teaching • Families bind together in communities according to common goals, concerns, geography, and culture • Subgroups in the community develop their own values, beliefs, roles and folkways which can differ from those of other subgroups • Social differences and similarities are derived from characteristics such as geography (rural or urban), race, religion, sex, age, language, common life experiences.
Nursing	• Nursing is aimed on the whole person consisting of body, mind and spirit • Nursing is a profession with various roles • Nursing occurs in many different contextual settings • Nursing is primarily concerned with the quality of life and health of individuals, groups, families and communities • Nursing practice requires a substantial base of knowledge to provide support, care and treatment • Nursing means availability when needed • Nursing portrays a relationship between the nurse and the patient which is mutual and both grow and benefit by it • The holistic philosophy is portrayed in the basic steps of the nursing process
Learning	• Students are adults and therefore responsible for their own learning • A students is also viewed as a resource person with knowledge and experience from which other students and personnel can learn • Students must develop insight into their own learning styles • Students' experiences are an important source of learning • Learning needs among students may vary extensively, therefore students are met at their level and helped to progress from there • Change is inevitable as learners move from a stage of helplessness to a coping stage • Students are motivated to become self-directed and less dependent on educators • The creative and insightful potential of the human mind is emphasised to help learners to develop their intuition, creativity and supra-rationality • Skills and competencies that are learned by students may be

	viewed as hierarchical and overlapping • The teacher is a facilitator of learning, a counsellor and helper and a researcher who is committed to lifelong learning • The teacher uses both pedagogical and andragogical principles of learning and, depending on the circumstances, a mix of both • The learning environment fosters student autonomy • The learning environment provides trust and respect for individuals • The learning environment is stimulating, rigorous and challenging
Teaching	• Teaching strategies must be student-centred and individualised • Teaching methods must emphasise the understanding of principles rather than the memorisation of facts • Teaching methods should encourage a student to reflect on his/her experiences • Teaching methods should take into account both the left and the right brain function of students • Teaching methods should include the cognitive, affective and psycho-motor domains • Education should be confluent and multi-modal • Teaching methods should encourage the skills required for information technology • Teaching methods should encourage tolerance of different opinions rather than concentrating on correct answers
Nursing education	• The aim of nursing education is to produce whole human beings that are thinking, feeling and acting persons who can love, feel deeply, create and expand their inner self and not merely to become intellectuals • Nursing education means a comprehensive course that is integrated in a meaningful way to produce a generalist nurse • Nursing education aims to produce graduates who can practise their roles, functions and skills in any setting where there are people, whether it be in large urban tertiary centres or in primary rural settings • The characteristics and needs of the population influence the curriculum content including non-traditional and culturally influenced health practices • New knowledge is generated through research and theory building • Integration and synthesis of information from the biological, psychological, social sciences and other disciplines are viewed as important to prevent knowledge gaps, duplication and overlapping in these disciplines • Nursing education helps students to develop faith in themselves, to think critically and to remain open to other human beings and new experiences • This means that nursing education is a lifelong process

	• Holistic evaluation strategies include more mutual and formative strategies that are ongoing, than traditional and summative evaluation strategies • Outcomes of nursing education are often not measurable, nor are they realised immediately on completion of a programme but long after the learning programme has been completed • Outcomes of nursing education are expected to vary as there is less concern about curriculum elaborateness, accuracy and precision

(Compiled from: Mashaba & Brink, 1994:10; Brink, Alberts, Tjallinks, Van der Wal, & Campbell, 1993:31; Johnson, 1990: 137; Quinn, 1989:260-261; Rinke, 1982: 13-14; 25; Bevis, 1982:10; 50-51; and Fuller, 1978:700-704).

Although Evan and White (1989: 11) do not specifically underwrite a holistic philosophy of nursing and nursing education they state that *"[a] sweeping trend at present is to think in terms of an holistic curriculum. The basic concepts are generally, man, health, nursing and environment; the aim is to consider the person as a total human being within a number of contexts. This encourages the integration of subjects and the blurring of traditional discipline boundaries"*.

The philosophical stances of the University of the Orange Free State, the Faculty of Health Sciences and the School of Nursing are discussed in 2.4. No two nursing schools will embrace an identical philosophy, neither will two persons have exactly the same general philosophy of life. The mission, vision and value statements of an educational institution are deducted from its philosophical stance and must be reflected in the philosophy, mission and vision of each faculty, school and department operating in a particular institution. In the case of a nursing school, both a philosophy of education and a philosophy of nursing should be combined, while the mission, vision and value of the educational institution should also be incorporated. The philosophy of the statutory body for nursing in a particular country is usually portrayed in the mission, vision and value statements of all the nursing schools. The mission, vision and values of the nursing school include the concepts of health, man, society, nursing, teaching and nursing education as illustrated in Table 2.2. Factors which contributed to the formulation of a philosophy of nursing education in South Africa, and particularly the School of Nursing at the University of the Orange Free State, are illustrated in Figure 2.1, and these factors are interdependent on one another. External factors directly and indirectly influence

internal factors, for example the philosophy of the World Health Organisation (discussed in 2.3), the South African Qualifications Authority (discussed in 2.3.2.6.1) the South African Nursing Council (discussed in 2.2.3 and 2.3.3) the Department of Health and the Higher Education Bill.

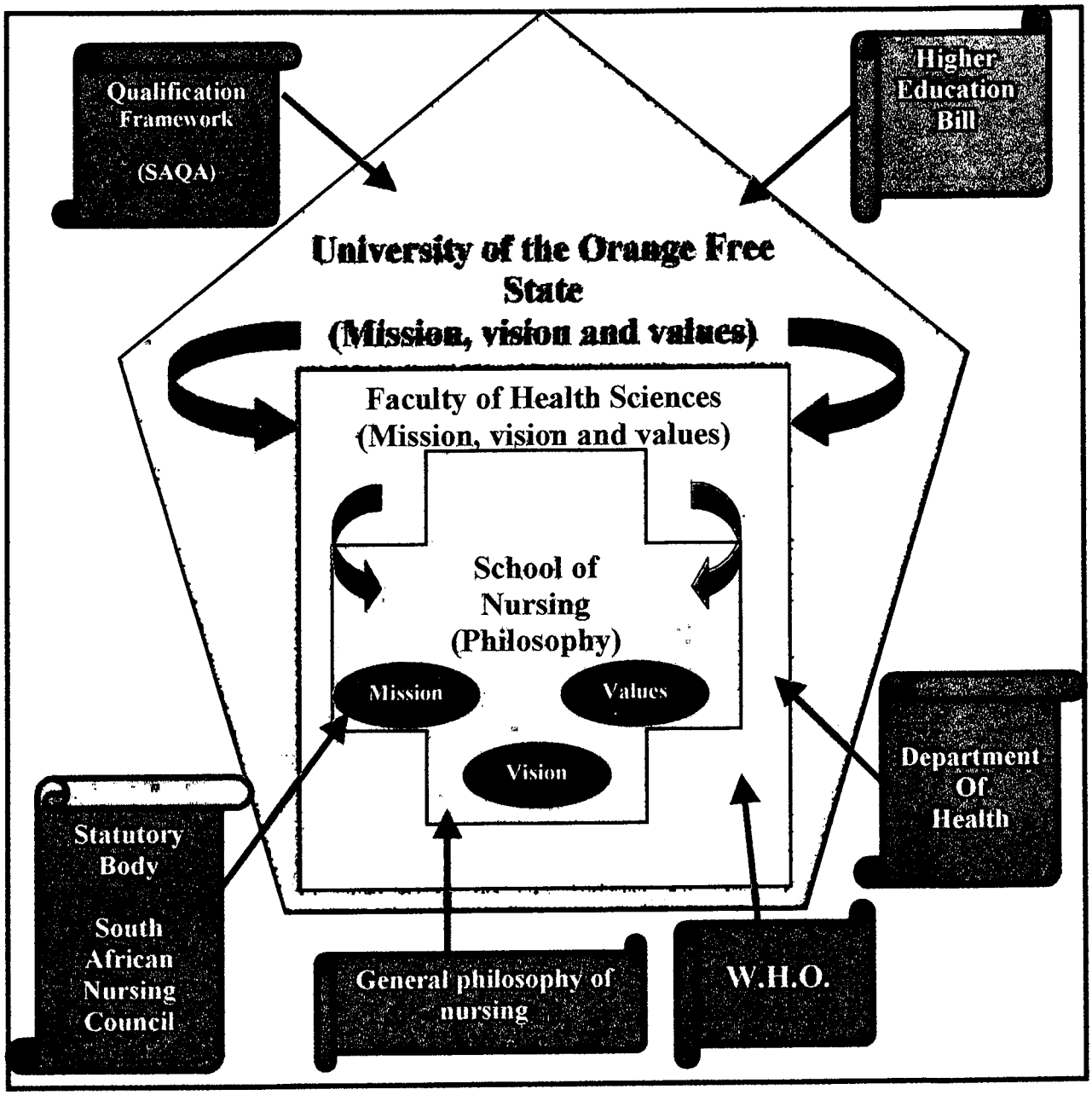


Figure 2.1: Factors which contribute to the formulation of a philosophy of nursing education

2.2.4 Determinants in the development of an educational programme

Paton *et al.* (1993: 54) quote the view of Saylor, Alexander and Lewis who are experts on the subject of programme development and they identify the three most important determinants of a curriculum:

"An effective curriculum is based on data from three major sources:

(1) the nature of the learners to be educated

(2) the society which provides and operates the educational institution and

(3) the accumulated knowledge available and feasible for educating learners."

For the development of an educational programme in Health Sciences it is important that the visions and/or regulations of the World Health Organisation, the Department of Health, the Higher Education Bill and the local Qualification Authority also be accommodated.

The community, which forms part of the society, the student, and the subject content, will now be discussed as three important determinants in programme development

2.2.4.1 The community as determinant

2.2.4.1.1 Introduction

The particular communities within a society are important variables in programme development, because their members will be the consumers of services rendered. The immediate geographical community of the educational institution should act as the most important determinant of programme development, although the communities of the whole country should also be taken into consideration, as students will not necessarily practise in the immediate community once their studies have been completed.

The programme should make provision for the identified needs of the community it serves and incorporate the beliefs, values and developments of the society at large (Paton *et al.*, 1993: 55; Quinn, 1989: 234).

2.2.4.1.2 Situation analysis of the community

A situation analysis of the community should be done with a view to programme development and factors that could evolve, according to Oliva quoted by **Jansen** (1991: 4), are illustrated in Figure 2.2.

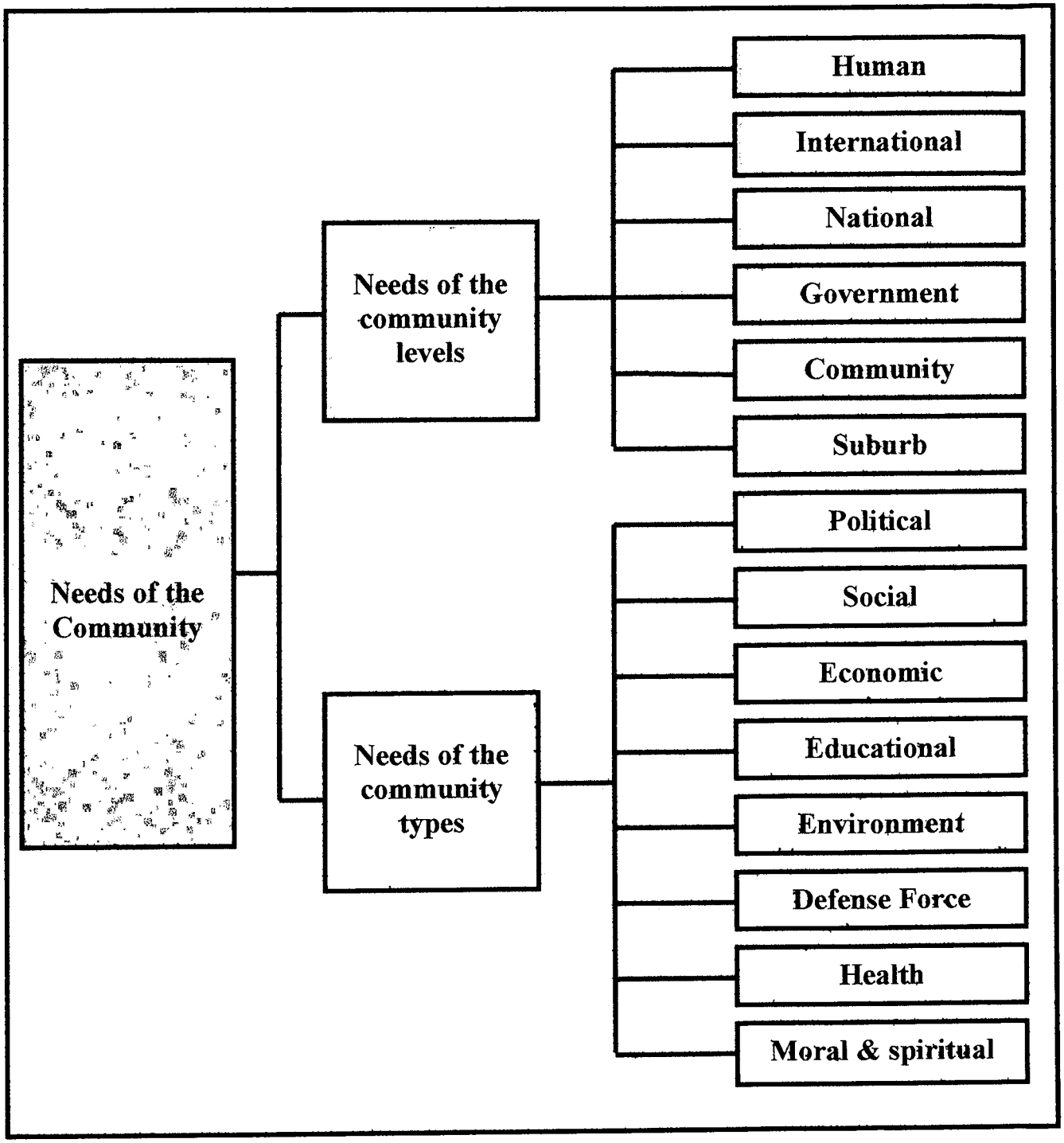


Figure 2.2 Classification scheme: The community as determinant according to Oliva (Jansen, 1991:4).

The classification scheme of Oliva (Jansen, 1991: 4) addresses some of the factors that could evolve during a situation analysis, but these factors will differ widely among various communities, especially in South Africa where many different cultural, language, ethnic and population groups are found.

During the situation analysis the important stakeholders in the community should be consulted. These stakeholders may include people with knowledge, expertise and insight in educational and health matters, parents, students, teachers, academic specialists, social specialists, influential politicians and groups, community organisations, employers, employees, and unions. (Paton *et al.*, 1993: 57).

Political needs may include the policy of the government, money available to render services, and health priorities (Paton *et al.*, 1993: 57). The requirements of the South African Qualifications Framework must be considered (as discussed in 2.3.2), as well as the requirements of the statutory body of nursing (as discussed in 2.3.3). Both were considered as external factors, which influence programme development. National as well as international needs must be addressed, i.e. the World Health Organisation's goal of *"health for all by the year 2000"* (discussed as an external factor, which influences programme development in 2.3.1) and the availability of funds to render certain services at national level.

Specific needs of a community and the geographical distribution play an important role in programme development as the needs of urban and rural communities may differ extensively. The geographical location of the nursing school and prevailing health problems in the particular community should be taken into consideration during the situation analysis. Problems like malnutrition, lack of transport to health services, and transport difficulties when students have to go to the community, bad roads, mountainous areas, and droughts should be reckoned with as they play an important role in the patterns of health problems. Urban communities have more hospitals and health workers to render services with easier access to health facilities, while rural communities experience lack of health services and personnel, poverty, vast distances to clinics and transportation

problems. More ethnic groups are found in urban regions and they seem to be better informed about the availability of sophisticated services. Prostitution, alcohol abuse, over-crowding, unemployment, crime, suicide, child abuse, high levels of stress and psychiatric problems characterise urban communities, while rural communities tend to suffer from malnutrition and transmittable diseases because of lack of sanitation facilities and clean water. Mortality rates of mothers and children are also higher in rural communities. Industrial regions, on the other hand, have their own health problems, for example health problems of the eyes and lungs, hypertension and heart diseases. All these factors should be identified during a situation analysis with a view to curriculum development (Paton *et al.*, 1993:58-59).

Another variable to take into account is the educational level of the people living in a particular community – the higher the level of education the more sophisticated and technologically advanced will the needs of the people be, and the lower the level of education the more basic will the need for services be. More health education will be necessary in communities where the level of education is low (Paton *et al.*, 1993:59).

The age of the community will also influence the content of the curriculum. Older communities tend to have more chronic ailments with increased needs for old age facilities, home visits and day care. Younger communities will need more mother and child health services with prevention measures and the availability of casualty departments as a higher rate of road accidents can be anticipated (Paton *et al.*, 1993:58-59).

The statistics of health will be an indicator of birth and mortality rates as well as contagious diseases. Demographic factors like the number of the total population, population density, the age profile of the population, life expectancy, and the growth of the population will indicate the type of health services that will be needed (Paton *et al.*, 1993: 60). In the United Kingdom a list of critical health problems is usually compiled after wide consultation with the community. It is important that the list stays relevant to

the needs of the community. Epidemiological analysis determines the curriculum or changes needed in the curriculum (Talaat, 1996).

Cultural and moral values differ widely among communities and should be addressed in the situation analysis to be included in the curriculum. The high incidence of single parenthood and unmarried couples living together may increase the need for family planning and treatment of sexually transmitted diseases. Traditional healers play an important role in the health care of rural communities and to maximise integration of health care efforts, their role needs to be understood better than ever before. Various religious groups have different approaches to health and illness and the differences will have to be accommodated (Paton *et al.*, 1993:60-61). In Hawaii students are exposed to different cultures for example to the Chinese, the Philippine, local and American groups to foster multi-cultural health care and to allow for experience in cultural orientation, the way family-links work and hand-on experiences (Feletti, 1996). Only when students live among members of a community can they learn about life styles, cultures, norms, customs and diseases of a particular community and be accepted by the community themselves (Pepeta, 1996). On the other hand Henry (1996) feels that it is important to assess the kind of health worker that a particular community wants and then to prepare and accommodate them in the best possible way.

2.2.4.1.3 Situation analysis of the educational institution

The situation analysis needs to include the university within which a nursing school operates, health service institutions surrounding the educational institution, as well as the nursing school where learning will take place.

The situation in the nursing school, as well as the surrounding hospitals, clinics and other health services needs to be analysed to determine deficiencies and strengths. The number of lecturing, administrative and supplementary personnel must be determined as well as their qualifications and positions within the structure. The logistic supply, for example the library, classrooms, media facilities, audio-visual aids, clinical laboratories, sport and

extra-mural activities should be assessed. The student numbers, traits, culture, language and distribution must be assessed as well as their needs for transport, housing and meals. Facilities available for practical experiences should be assessed, for example hospitals, clinics, schools, day-care centres, environmental services, rehabilitation centres and facilities for the handicapped (Paton *et al.*, 1993).

The roles of the university (discussed in 2.4.1), the faculty of health sciences (discussed in 2.4.2), and the nursing school (discussed in 2.4.3) as important internal factors that influence programme development and the role of the World Health Organisation (discussed in 2.3.1), the Department of Health, legislation on Higher Education, the Qualification Authority (discussed in 2.3.2), the statutory body of nursing (discussed in 2.3.3) and the general philosophy of nursing (discussed in 2.2.3) are illustrated in Figure 2.1. Their historical character, philosophy as portrayed in the mission and vision statements, language policies and the role of the Higher Education Bill should be carefully analysed as it will have to be reflected in the curriculum.

Data collected from the situational analysis in the educational institutions will determine student:lecturer ratios, available clinical experiences, and the number of students that can be accommodated.

2.2.4.2 Students as determinants

2.2.4.2.1 Introduction

The needs of students as well as the needs of the service component must be assessed, as both are equally important. Expectations should be realistic and students should be able to meet objectives (Paton *et al.*, 1993: 64).

2.2.4.2.2 Biographical data

The following biographical data about students must be obtained during a situation analysis:

- *Age*: Students who have just left school, will differ from students who are older. Older students will need more individualised learning strategies, while younger students will need more guidance.
- *Language*: A language choice within the group should be available to accommodate different languages, or groups can be divided according to their language of preference. It is important that students should be able to understand the language in which the course is offered.
- *Gender*: In regions where there is an increased need for mining services, more male students will be attracted.
- *Marital status*: Married students may need day-care facilities for their children, while unmarried students will need more structure such as that provided in hostels.
- *Culture*: Various culture groups may experience problems in accommodating each other's views and philosophies. Students may experience difficulty with new learning strategies that may differ extensively from their previous experiences. They will need to learn how to take care of patients from different cultures and semantic differences can pose unexpected problems.
- *Religion*: Students with different religious backgrounds may experience conflict during group discussions, especially about ethical issues such as abortion.
- *Educational level*: Students who come from disadvantaged backgrounds and lack knowledge in subjects such as biology and science may experience problems in mastering subjects such as anatomy, biochemistry, physiology and pharmacology. Remedial education may be needed to bridge knowledge gaps and solve specific problems.
- *Registration statistics*: An increase or decrease in student numbers plays an important role in the logistic planning of the educational institution and may lead to problems

such as over-utilisation or under-utilisation of facilities. Small student numbers may lead to future deficiencies in health services, while large numbers of students may cause surpluses in the labour market.

- *Pass and failure rates, and student drop-outs*: High failure rates and students that quit their studies are a cause of concern and research should be done during the situation analysis to determine the causes (Paton *et al.*, 1993: 64-66; 68).
- *Political status*: The South African history has been a bitter one dominated by apartheid, racism, sexism, poverty and repressive labour policies (African National Congress, 1994a:2). Most of the black students come from a segregated educational background, which has left them with a backlog when compared to white students. It is inevitable that the deep scars of inequality and economic inefficiency will be reflected in political status. Faculty should accommodate this phenomenon (more extensively described in 2.2.4.2.5) with the necessary compassion.

2.2.4.2.3 **The way students learn**

It is vital to be aware of how students learn to arrange the curriculum in a way that will optimise learning. Sims and Sims (1995:21) state that *"In light of the importance of learning styles to learning, it is natural to ask if the teaching, design, delivery, and facilities take the variety of learning styles of the anticipated audience in account."* Apart from learning styles, the level of student maturity, motivation and education styles must also be taken into consideration during programme development (Paton *et al.*, 1993: 67).

- **Learning styles:**

Van Rensburg (1995:9) defines learning style as *"a comprehensive term, referring to the internal organisation and perception of information, as well as external factors that influence learning"*. Learning style refers to the way students prefer to learn and to organise and experience information. This style can be holistic (comprehensive), which means that a student prefers to build on knowledge that he/she already has, or serialististic (operational), which means that a student prefers to concentrate on detail

(Laschinger & Boss, 1984:375; Merrit, 1983: 367; Entwistle, 1981: 93). Learning styles are more than just study skills, but are fairly stable and consistent approaches to learning across a variety of learning activities (Miller, Always, & McKinley, 1987: 399).

A comprehension learning style is similar to the holistic cognitive strategy and illustrations, analogies and intuition are employed during learning, while an operational learning style is similar to the cognitive strategy and focuses on details and topical analysis of the learning content (Mokoena, 1997: 21-22).

According to Ramsden (1983:9) the meaning orientation or "*deep approach leads to better learning in all subject areas, however 'better' is defined – in terms of complexity or quality of understanding, satisfaction, self-rated performance in comparison with other students, long term recall of factual material, degree results, course grades, or examination results. American, Australian, Swedish and British studies all point to this same conclusion.*"

Meaning orientation contains four sub-scales:

(i) *Deep approach*: This approach is characterised by active questioning in learning where students relate the learning content with previous knowledge. Students actively interact with the learning content and search for meaning. The Lancaster Approaches to Studying Inventory (LASI) is an instrument, which is used to determine the learning style students prefer. High marks in the LASI indicate that students are looking for meaning, while new knowledge is related to the reality.

(ii) *Relating ideas*: Students relate or integrate ideas to other subjects in the course and use previous knowledge to link up new information. High marks on the LASI indicate that students are actively busy to integrate new knowledge with their previous knowledge.

(iii) *Use of evidence*: Students relate evidence to conclusions and scrutinise the content in order to relate it to factual or empirical information. High marks on the LASI indicate that students critically analyse evidence and are cautious to jump to conclusions.

(iv) *Intrinsic motivation*: Students are dedicated to learning activities to expand their knowledge, skills and values and are interested in learning for the sake of learning. High marks on the LASI indicate that students engage in learning because of interest and to advantage themselves (Mokoena, 1997:77; Joubert, 1996:203; Cotton, 1991:149; Entwistle & Ramsden, 1983: 77).

Students with a strategic orientation want to achieve and are motivated by the need to achieve higher grades than co-students and only study what is required for examinations. Students like to compete and are focused on the qualification they will obtain (Joubert, 1996: 202; Newble & Entwistle quoted by de Volder & de Grave, 1989: 262).

Strategic orientation contains three sub-scales:

(i) *Extrinsic motivation*: Students are interested in courses for the academic qualification they offer and that interest is the main motivation to learn.

(ii) *Strategic motivation*: Students demonstrate an awareness of the implications of academic demands made by academic staff. They gather information about the evaluation of learning content actively to create a favourable impression for academic staff. High marks on the LASI indicate that students seek actively for information about assessments to impress lecturing staff.

(iii) *Achievement motivation*: Students are competitive and self-confident, and intent on attaining success. High marks on the LASI indicate that students are motivated by their hope to achieve (Mokoena, 1997:77; Joubert, 1996:204; Entwistle & Ramsden, 1983: 77)

The reproducing orientation is a serialist approach where the focus on learning is narrow and focused on details, processes, and passing the exam, while the broader perspectives and links with other topics are neglected. Reproduction orientation corresponds to the surface approach where students rely on rote learning, are bound to the syllabus, fear failure and are improvident. Students fail to understand the implications of what they have learned and are not interested. Rote learning is used to reproduce factual information, which was given in the syllabus. They are motivated by extrinsic factors,

for example to obtain a qualification (Mokoena, 1997:77; Joubert, 1996:202; Cotton, 1991:148; 149; Newble & Entwistle quoted by de Volder & de Grave, 1989: 262; Entwistle & Ramsden, 1983: 77).

Reproducing orientation contains four sub-scales:

(i) *Surface approach*: Students are preoccupied with memorisation and learn by means of repetition or habituation without understanding. High marks on the LASI mean that students have a surface approach.

(ii) *Syllabus boundness*: Students rely on lecturing staff to define learning tasks and tend to concentrate only on the prescribed learning activities. They are not prepared to learn anything, which are not defined in the syllabus. High marks on the LASI mean that students' learning are bound to the content of the curriculum and specified tasks.

(iii) *Fear of failure*: Students demonstrate pessimism and anxiety about academic outcomes and have a poor self-esteem regarding their ability to pass assessments. High marks on the LASI mean that students lack self-confidence and are preoccupied with the demands of assessments.

(v) *Improvidence*: Students rely over-cautiously on details and are confined to facts. They demonstrate a reluctance to search for links between ideas. High marks on the LASI mean that students concentrate on facts and lack integration among ideas (Mokoena, 1997:77; Joubert, 1996:204; Cotton, 1991:149; Entwistle & Ramsden, 1983: 77).

• Learning approaches

Learning approaches refer to the manner in which students are inclined to approach their learning tasks especially whether the approach is on understanding or reproducing and how they organise their learning environment (Entwistle & Ramsden, 1983:40). Three approaches to learning are used:

(i) *The deep approach*, which is primarily aimed at gaining understanding and insight;

(ii) *The surface approach*, which is aimed at gaining facts anticipated in tests or exams; and

(iii) *The strategic approach*, which is aimed at the learner's self-esteem when recognition is gained through the achievement of high marks (Mokoena, 1997: 24-26).

Approaches to learning are illustrated in Table 4.1 in Chapter 4. Three main approaches to learning are discussed:

(i) *Students with an achieving orientation*: They use a strategic approach and are motivated by the need to achieve higher grades than co-students and only study what is required in examinations.

(ii) *Students with a reproducing orientation*: Rote learning is used to reproduce factual information, which was given in the syllabus. They are motivated by extrinsic factors for example to obtain a qualification, or by their fear of failure.

(iii) *Students with a meaning orientation*: They are intrinsically motivated and their aim is to reach understanding of subject matter and vocational relevance. They are versatile students and use operation learning as well as comprehension learning (Newble & Entwistle [1986] quoted by de Volder & de Grave, 1989: 262).

- **Types of learners**

Mary Louise Sommers (1971) quoted by Sims and Sims (1995: 172), identifies three major types of learners:

"(i) the theorist, who uses a deductive approach to learning;

(ii) the empiricist, who uses an inductive approach; and

(iii) the practitioner, who learns through doing".

- **Brain hemisphere**

Programme developers should find out how individual students prefer to learn and learn from their experiences in classes and group work. Consider that 30% or more of students have thinking styles that are dominated by the right brain hemisphere, while the rest are left-brain dominated. Most individual students favour the thinking style of one side of the brain or the other, very much in the same way that people are right or left-handed. The individual whose left brain hemisphere is dominant, tends to be more analytical, structured, logical and organised, while an individual with a right brain dominance tends to think more holistically, is artistic in nature, quiet, less reliant on words and logic, and less organised. This explains why some students (usually with a left brain dominance) tend to be more rational, inflexible in decision-making and resisting during change, while other students (usually with a right brain dominance) tend to be more spatially oriented, creative in problem-solving, flourish during brain-storming sessions and do not like to follow through with the details of tasks. It should be the aim to provide strategies that encourage students to develop their brain hemisphere that is less dominant and to balance the curriculum to encompass the complete range of learning styles and brain functions (Sims & Sims, 1995: 9-10; 21-23).

- **Preference of learning material**

Some students are more visually oriented (learn best when everything is in print), while other students are more auditory-oriented (learn best by comparing and discussing ideas), while other students are more kinetically oriented (learn by doing hands-on projects) (Sims & Sims, 1995:172).

Educational strategies should promote learning and should be flexible to suit the needs of students, the capabilities of the teacher, the curriculum content, and the learning rate, potential and motivation of students. Activities, which are included in the programme, should be meaningful, understandable and compatible to students' background knowledge. Strategies of learning should accommodate different cultures, age groups and students in need of remedial help as learning styles and maturity may be quite divergent among students. Sometimes academic staff will have to use a pedagogical

model and as students mature, gradually switch to a more andragogical model of learning (Paton *et al.*, 1993: 67-69).

2.2.4.2.4 Student perceptions of the course

Course perceptions have to do with the learning environment and include teaching, assessment, and course structures. It reflects the good and bad features of the course and is associated with students' approaches to studying. (Entwistle & Ramsden, 1983: 150; 192).

The Lancaster Approaches to Studying Inventory (LASI), which was mentioned in 2.2.4.2.3, contains two sections. The first section aims to determine how students in higher education learn, while the second section aims to determine how students experience their courses. Ramsden [1983] has identified three of the sub-scales as particularly noteworthy because they represent aspects of the contexts, which are empirically and conceptually related to students' approaches to studying. They are as follows:

(i) workload;

(ii) good teaching; and

(iii) freedom in learning (Entwistle & Ramsden quoted by Jenkinson, 1991:129).

Students who have positive attitudes towards the course usually are intrinsically motivated, have a deep approach to studying, see the relevance of the course to their everyday lives, perceive freedom in learning, good teaching and avoidance of overloading. Perceptions of excessive and inappropriate assessment, a curriculum that is structured too rigidly and inhibition of student-centred learning, encourage extrinsic motivation, engender poor attitudes and enhance surface approaches to learning. The atmosphere of a discipline will be affected by subject area, as science departments will tend to be more formal in teaching strategies with less freedom in learning than social science departments (Entwistle & Ramsden, 1983: 202-203).

The course experience questionnaire (CEQ) of Ramsden [1991] includes factors which influence the quality of courses such as: good teaching, clear goals and standards, appropriate workload, appropriate assessment, student independence and choice, and emphasis on memory (Sadlo, 1997:101). The following factors in the learning environment play a role in students' perceptions of their course:

- the closeness of the relationships between the lecturer and students;
- commitment of staff to teaching;
- the workload demands;
- the formality of teaching;
- the vocational relevance of learning and teaching;
- social interactions between staff and students;
- the clarity of expected standards to be achieved; and
- the amount of freedom given to students in choosing and organising their work (Ramsden [1980] quoted by Cotton, 1991:148).

Students' perceptions of the academic environment distinguish two approaches:

- *A 'student-centred' approach* where effective teaching is coupled with a high degree of student choice over what is studied and how it is learnt, and
- *A 'control centred' approach* where there is excessive pressure from the demands of the curriculum and assessment (Cotton, 1991: 149).

The views of students on curriculum planning committees are encouraged because students who completed a course are an excellent source of useful advice. Students are the only people who actively experience the curriculum in action and to make use of their contributions will proof that faculty members treat them as adults (Walton & Matthews, 1989: 548).

2.2.4.2.5 The socio-political milieu of students

To understand the socio-political milieu of students (especially black students) in South Africa, it is necessary to understand it in the context of the South African history. This country's history was turned when the Dutch East India Company established a fort and a refuelling station in Table Bay in 1652. More and more immigrants from Europe came to South Africa, along with imported slaves from elsewhere in Africa, Malaya and India. Conflict between the Dutch and the Khoikhoi erupted in the Cape as colonial farmers moved northward. An European dialect evolved, which is known until today as the Afrikaans language. As the colonists moved across the country, more conflict arose between them and the African tribes such as the Xhosas and Zulus. After the British captured the Cape, more Afrikaners migrated north-eastwards and territories like the Orange Free State were established. *"As early as the 1860s, distinctions among four racial/ethno-cultural groups were emerging in the Cape Colony. Census data in 1865 reported 180,000 Europeans (British and Afrikaners), 200,000 Hottentots and others collectively called 'coloured', 100,000 Kaffirs – the black Africans who dominated eastern populations, and a few thousand Asians"* (Victor, 1997: 2). Diamonds and gold were discovered and more and more immigrants from Europe and Britain came to this country. Eventually this country became a white community served by the black labour from Cape Town to the Zambezi River in the north. Segregation and Apartheid laws were eventually enforced and the material gap between whites and blacks widened. Pass laws, homelands (where Africans were removed from farms and urban neighbourhoods and forced into separate lands), prohibition of mixed marriages, and various repressive acts to enforce apartheid were established. During this time the African National Congress (ANC) was established (1912) and expanded to oppose racism and develop a platform against segregation. Young professionals from the best missionary schools and colleges headed the ANC, including Oliver Tambo, Walter Sisulu and Nelson Mandela. While the Apartheid Government was in charge, the education of black Africans was severely constrained, black community structures broke down as a result of forced resettlements, poverty worsened and uneducated black children had to steal to survive. Years of struggle in South Africa followed and many lives were lost during this struggle,

while foreign countries started to enforce sanctions as foreign relations deteriorated because of the policy of apartheid. The economy was plunged into deep recession until the Apartheid Government realised that a negotiated settlement was the only feasible solution. In 1990 the bans on the African National Congress and other black political parties were lifted and political prisoners were set free. In 1994 the ANC came into reign of the country with 63% of the votes. Since then unbundling of apartheid and black empowerment were structural phenomena, which evolved to restructure business ownership. Social challenges like crime, education, unemployment, housing, electrification, water, and telecommunications (to mention a few) had to be addressed (Victor, 1997:1-8).

Today, five years after the election, and on the eve of the second democratic election, many problems still confront the citizens of this country. Crime has become endemic, the labour market is still distorted and the legacy of past labour and welfare inequalities is still powerful, while black students are still in a very vulnerable position. Unemployment rates are very high and continue to escalate with unskilled black people still in a disadvantaged position. Although discrimination in public schools was ended in 1996, the student-to-teacher ratios still range as high as 60-70 per teacher in some areas. Under-qualification of African teachers and lack of funds still remain a problem in many areas. Although the situation in South Africa's tertiary education is better, the pass rate for black students is still far below that of white students (Victor, 1997: 8-9). Nursing schools are confronted with students coming from disadvantaged backgrounds and bitterness stretching over years of oppression.

Many factors play a role in the way in which students will be socialised in the nursing profession, for example: the influence of culture, moral values, financial stability, and social problems. Student support services should provide additional guidance, support, and counselling to students who come from disadvantaged backgrounds (Paton *et al.*, 1993:66-69).

Although segregated education is no longer in the statute books, the tenets of this education are still visible. Schools for black people are still separate from those for other race groups and are overcrowded, poorly equipped and with a poor teacher-to-pupil ratio. Many teachers in black schools are not appropriately qualified, therefore teaching cannot be based on learning theories as teachers hardly know of the existence of learning theories (Luthuli, Masiea & Zuma, 1992: 32). Entering behaviour of black students in health faculties are still influenced by their background of segregated education, which were characterised by racism, apartheid, sexism, poverty and inequality. This causes the entering behaviour of black students to be inadequate when compared to that of white students and the *"examination performance of black school children and university students in this country is comparatively poor"* (Luthuli *et al.*, 1992: 31-32). Not only are their cultural backgrounds different, but their education is impoverished, and their home environment lacks the items and commodities that are found in a Western socio-political milieu. Poverty and the fact that the majority of students' parents are illiterate or semiliterate mean that educational supplementation with television, computers, radios and books are rather the exception than the rule. *"School children therefore are disadvantaged because their world is small and narrow. Their thinking and imagination* [are] *restricted compared to that of a child of broad, wide and enriched world experience"* (Luthuli *et al.*, 1992: 31-32). When a black student with a matric certificate embarks on a nursing course, he/she has to adapt to a foreign language as well as the sub-culture of nursing. Students are therefore not only confronted with a foreign language (Afrikaans or English), but also with technical medical terms and foreign technological equipment. Furthermore, they must reach educational outcomes in record times. Their learning must take place in a Western model of learning, which does not portray learning theories which are altogether that relevant to black students (Luthuli *et al.*, 1992: 33; 30).

Educational enrichment, bridging courses, student support and remedial programmes are possibilities that have frequently been mentioned and implemented to overcome the hurdles of black students in South African universities. Educational enrichment programmes, which were implemented at Chicago State University College of Nursing, contained the following:

- Students' academic and study skills were assessed during their entrance year to determine learning needs, to diagnose existing and/or potential problems and to predict college success.
- Students who were at risk were then provided with the following generic skills:
  (i) information technology by means of a library workshop;
  (ii) time-management skills;
  (iii) study methods;
  (iv) strategies on how to write term papers;
  (v) note-taking strategies;
  (vi) active listening skills;
  (vii) test-taking skills;
  (viii) directed reading lessons; and
  (ix) correlation of the above-mentioned with material from the nursing course.
- Individual learning needs were continually identified, while students were monitored for progress and success.
- Interactive and creative teaching/learning strategies were developed and utilised.
- Active rather than passive methods of learning were fostered; in other words students need to be highly involved in their own learning.
- Application of the above-mentioned skills to become responsible learners in all their courses (Mashaba & Brink, 1994:184-187).

Great opportunities lie ahead for nursing educators and student support services in South Africa during programme development and evaluation. Academic enrichment will not only benefit the studies of black students, but will lead to a philosophy of lifelong learning, continued academic achievement, excellence, independence, confidence and competence. It is possible to break the vicious cycle of inequality and lack of achievement, but it will take time; only then will the deep scars of apartheid begin to heal.

2.2.4.3 Subject content as a determinant

2.2.4.3.1 Definition

Subject content can be defined as the knowledge, skills and attitudes/values that will be learned. This means that the student will not only be taught knowledge (cognitive), but to experience certain feelings (affective) and to acquire certain skills (psychomotor) (Paton *et al.*, 1993 70-71; Jansen, 1991: 181).

2.2.4.3.2 The role of the situation analysis

The situation analysis is the first step in the cyclic model of programme development according to Nicholls and Nicholls (see 2.2.5.3 and Figure 2.3) and comprises an overall view of all the content that will be of interest in a particular course or programme. All the important determinants are intensively analysed to answer the following questions: What, to whom, why, when and how? Some authors refer to the situation analysis as a needs evaluation or a diagnosis where data are gathered about the students and the necessary knowledge that students will need to compile objectives. Various methods can be used to gather information, for example questionnaires, observations and interviews. Although the situation analysis is the first step in the process of programme development, it is something that should happen on a continuing basis and includes the student, the discipline and the community (Paton *et al.*, 1993:16-19). Internal as well as external factors which could influence programme development should be considered on a continual basis (see 2.3 and 2.4).

2.2.4.3.3 The importance of integration of subject content

The way in which practice and theory will be integrated to be meaningful and to prevent fragmentation is becoming an increasingly important variable in programme development (Greaves, 1987: 28-30). Kruger (in Mostert, 1985:65) states that *"the problems that*

people encounter do not come in subjects or disciplines, but in situations in which man has to act according to his entire frame of reference...". To confront real-life problems Greaves (1987:30) recommends that *"the curriculum should incorporate the relevant applications of knowledge whereby the student can develop the necessary insights and clinical judgements which take account of that knowledge".* Providing students with potential problems to deal with can do this. The focus of the study becomes problems that will require input from various subjects, disciplines or experts. This strategy encourages inquiry, provides a stimulating environment for learning, integrates theory and practice, and integrates various subjects in a meaningful way (Greaves, 1987: 30; 52).

2.2.4.3.4 Dynamics of subject content

Subject content is dynamic, as new information and technologies are becoming available at a faster rate than ever before. New information is added and older information gets out-dated. It is therefore important to stay up to date regarding the significance, reality, and validity of learning content. There should be a balance and content should always stay in line with the present reality (Paton *et al.*, 1993:76).

2.2.4.3.5 Statutory prescriptions regarding subject content

The statutory body for nursing usually determines subjects included in a curriculum. In South Africa this body will be the South African Nursing Council and it describes the subjects to be taught at macro-level. The curriculum team of the nursing school determines the content of these subjects at meso-level, while the refining of the content into workable units takes place at micro-level (Paton *et al.*, 1993:86-87). Programme development at macro-, meso-, and micro-levels are discussed in 2.3.3.2 and illustrated in Figure 2.6. Greaves (1987: 34) is of the opinion that the syllabus with its close guidelines and regulations, as provided by the statutory body, places almost impossible constraints on nursing schools and dampens any real curricular creativity. The subjects prescribed

by the South African Nursing Council are stated in 2.3.3.3.4 and are applicable for the course which will lead to registration as a nurse (general, psychiatric and community) and midwife. Prescriptions of the South African Qualification Authority, the Higher Education Act and the Department of Health should also be adhered to along with prescriptions of the South African Nursing Council.

2.2.4.3.6 Criteria for the selection of subject content

During the situation analysis the following criteria for the selection of subject content must be considered (Paton *et al.*, 1993:76-77; 87-88;103):

- *There should be a balance between the scope and depth of content*: The depth of content refers to the amount of detail that will be required, while the scope refers to the amount and comprehensiveness of information to enable students to apply their knowledge in all possible situations
- *Subject content should stimulate critical and analytical thought*: This can only happen if content is challenging and relevant.
- *Subject content should be valid, significant and balanced*: The content should portray contemporary scientific knowledge. Fundamental and basic knowledge is more valid than superficial detail, therefore preference should be given to the education of principles. Knowledge acquired through problem-solving is more significant and balanced than knowledge acquired by means of facts.
- *Subject content should correlate with the social reality*: A curriculum should contain an adequate amount of material and learning experiences to equip a nursing practitioner intellectually and emotionally to handle change and problems in an independent way. Therefore the reality of contemporary social issues should be included in the curriculum.
- *Subject content should be organised effectively concerning the sequence, continuity and integration*: Presenting content that has educational impact will enhance synthesis and integration among disciplines. To have educational impact content can be organised in a core-curriculum, (see the definition of core curriculum in 2.2.4.3.7). To have educational impact the content should be organised carefully to provide

continuity and sequence. This means that content should move from the simple to complex elements, from the concrete to the abstract, from previous knowledge to more extensive knowledge, from immediate issues to future or past issues, from universal aspects to individual aspects, from normal conditions to pathology, from wholes to parts and from principles that can be taught easily to detail that is complicated. Content should be arranged in a chronological order (Paton *et al.*, 1993:76-77; 87-88; 103).

- *Subject content should reflect all the necessary variables including variables in the international arena* (World Health Organisation described in 2.3.1), *national level* (the regulations of the South African Nursing Council, the South African Qualification Authority, the Department of Health and the Higher Education Act), *local level* (the University, the Faculty of Health Sciences and the School of Nursing) *and the student* (see Figure 2.7).

2.2.4.3.7 Content and core curriculum

A core curriculum can be defined as the fundamental learning experiences students need and are organised without the traditional boundaries of conventional subjects. In other words, all the fundamental elements are identified to be presented in an integrated way in order to place emphasis on the core of interest and to involve students actively in their own learning (Uys, 1982 in Paton *et al.*, 1993:94; Greaves, 1987: 25).

A core curriculum is structured by integrating eclectic subjects such as anatomy, physiology and sociology with nursing subjects in such a way that traditional boundaries are crossed to create an unity. This will not be possible by simply combining eclectic subjects as subject boundaries would not be crossed and one subject will tend to dominate over other subjects (Greaves, 1987: 25-28).

According to Paton *et al.* (1993:105) integration among subjects and disciplines can be accomplished by using the following strategies:

- select a common core content;

- use broad conceptual frameworks;
- draw up organisational working schemes;
- compile problem-solving themes;
- create projects and assignments; and
- make use of resource units.

2.2.4.4 Conclusion

Other methods apart from a situation analysis that can be used during programme development, especially when a new programme is developed are task analysis, job descriptions, future forecasting, competencies, objectives, problem-solving and concept mapping (Evan & White, 1989: 47-48). Most of the information will come from the surrounding community, hospitals, clinics and services where the nursing school is situated.

2.2.5 Models for programme development

Models used for programme development will differ from nursing school to nursing school, depending on the underlying philosophy and other determinants of programme development as already discussed. Although most schools will incorporate the guidelines of their statutory body, no two educational programmes will look the same (Quinn, 1989:234).

As discussed in 2.2.2, some key themes permeating aspects of society somehow have changed over the past few decades. Educational programmes in nursing schools reflect this changing nature of society and its emerging themes (Quinn, 1989: 234). Change had and still has a great influence on nursing education and a number of writers suggested various models for programme development, i.e. the product model, the process model and specific models like the model of Nicholls and Nicholls, Kerr's model and the

generic systematic models of Tylor, Taba and Wheeler (Paton *et al.*, 1993: 12-17, Quinn, 1989: 236-254; Greaves, 1987: 2-4;). A curriculum model explains the view of an individual or institution about how programme development should take place (Paton *et al.*, 1993:13). The following models of programme development are briefly discussed: the product model, the process model, the model of Nicholls and Nicholls, and the integrated model.

2.2.5.1 Product model

This curriculum model is usually ascribed to Ralph Tyler and uses behaviour in the broad sense to educate learners; therefore it is also called the behavioural-objectives model. This model has influenced education world-wide. A number of writers like Taba and Wheeler took this notion of behaviourism up and it led to a generic systematic model of curriculum as consisting of four main components: objectives, content, method and evaluation. These objectives are stated in terms of student behaviour and the emphasis is on the achievement of objectives. Other proponents of this model limited these behavioural objectives to observable and measurable changes in behaviour. Unfortunately little room is left for understanding and appreciation of the learning matter. Other points of criticism of the behavioural objectives model is that it narrows the learning field, that it is difficult to formulate higher level-outcomes, that it emphasises the learning of factual information rather than scientific inquiry, that it encourages conformity rather than diversity, that it ignores unanticipated outcomes of learning and that it is very time-consuming to formulate (Quinn, 1989:236-237; Greaves, 1987:2).

Advantages of the product model are that it provides students with clear direction, is self-instructional, makes it easy to assess progress and achievements of students and that it offers a rational system for curriculum planning (Quinn, 1989: 239).

2.2.5.2 Process model

Stenhouse believed that it was possible to organise the curriculum without behavioural objectives as it set *"arbitrary limits to speculation"* (Quinn quoting Stenhouse, 1989:249). He was of the conviction that a nursing curriculum should be chosen for its worthwhileness to provide key concepts and general principles and that unpredictable outcomes were unavoidable. He saw teachers as couches that encourage students to reflect on experiences and assessments as a form of critic, rather than grades obtained. He felt that assessment was about the teaching of self-assessment. Stenhouse identified the greatest weakness of the process model: its *"dependence upon the quality of the teacher"* (Quinn, 1989:250-251). To be a teacher in a process model curriculum means regular participation in professional development programmes and viewing him/herself as a lifelong learner, rather than an expert (Quinn, 1989:251).

This is not an outcomes-based model, therefore it is difficult for the teacher to provide the students with clear direction. It does not provide a rational system for curriculum planning as unanticipated outcomes could be produced, as there are no limits on students' exploration. Furthermore, without formalised outcomes to direct assessment, it is problematic to evaluate the competency of students (Quinn, 1989: 251).

2.2.5.3 Nicholls and Nicholls model

The Nicholls and Nicholls model for programme development represents the idea of a simplified curriculum model and is only applicable at institutions where programme development, implementation and evaluation are done by the institution itself. Programme development is a never-ending cycle as portrayed in Figure 2.3. The activities within this model happen all the time and are interdependent of one another. This model comprises five activities:

- *The situation analysis*: Data collected during the situation analysis will influence the formulation of objectives, the selection of content, as well as the evaluation of the programme.
- *The selection of objectives*: When objectives are formulated it happens in an interdependent way along with the situation analysis. The formulation of objectives will also influence the selection of content, learning strategies and methods, while evaluation of the curriculum are guided by the programme objectives. Objectives give direction to learning.
- *Selection and arrangement of content*: The data that were gathered during the situation analysis determine the selection of content, while the objectives guide the arrangement of the content. The content guides the educational strategies, which are aimed at reaching the objectives. Interaction between content and evaluation improves standards on a continual basis.
- *Selection and arrangement of methods*: The educational strategies depend on the content and the knowledge, skills and attitudes that students will need in practice.
- *Evaluation*: The success, quality and efficiency of the curriculum are determined by evaluation and guide remedial action back into the cycle (Paton *et al.*, 1993:15-28; Greaves, 1987:8).

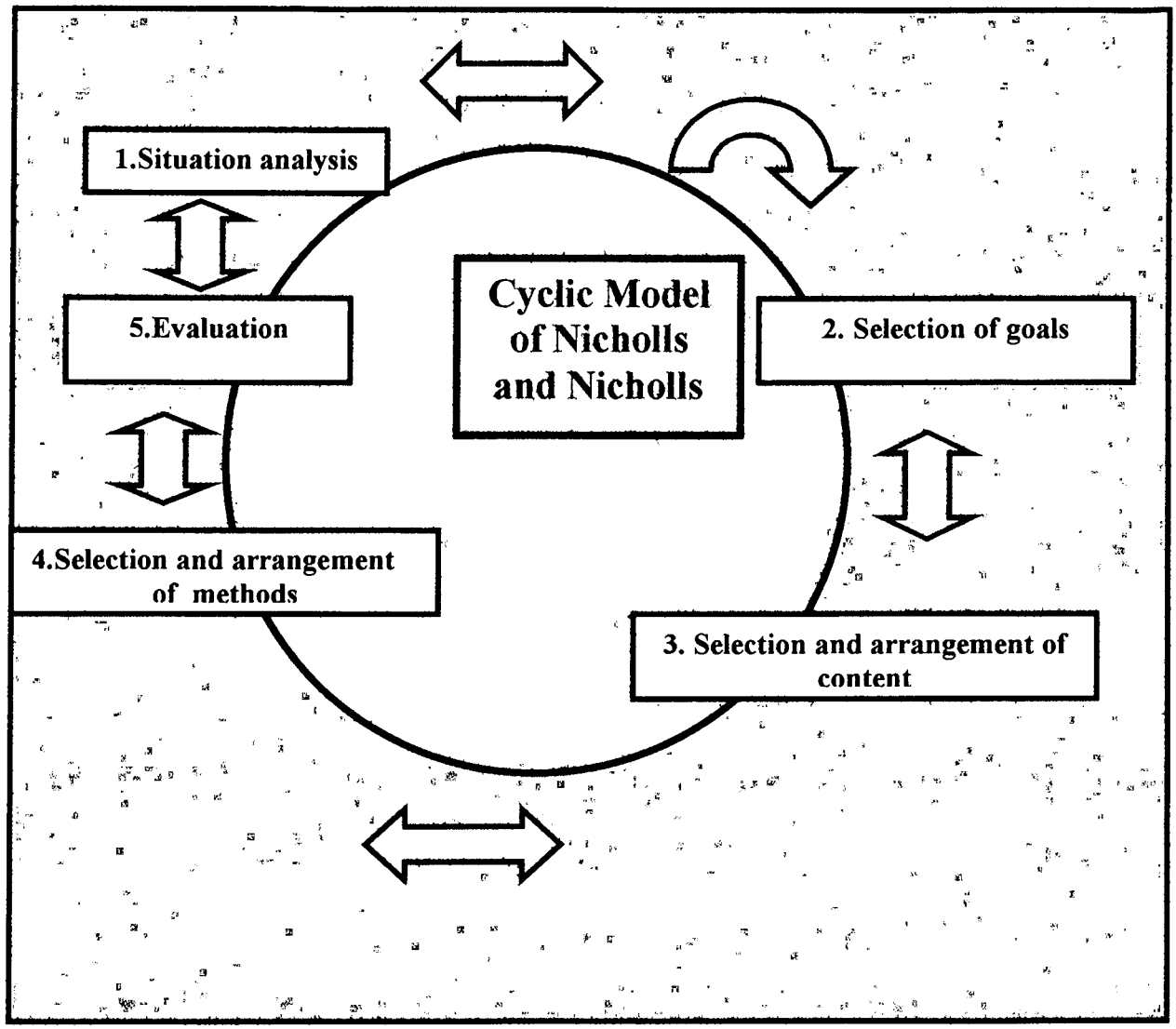


Figure 2.3: The adapted model of Nicholls and Nicholls 1972 (Mostert, 1985:17).

2.2.5.4 Integrated model

In the 1920s curricular integration through themes was advocated during the progressive movement in education. Proponents of this movement believed that disciplines prevented *"students from seeing the relationship between subjects and therefore decreased the content's relevance"* (Drake, 1993: 2). Jerome Bruner's concept of curriculum development in the 1960s shifted towards a discipline-oriented curriculum, away from the integrated approach of programme development. Drake (1993: 2) quotes Beane who believes that disciplines are an artificial creation of man to organise his world and are often defined by political needs. This phenomenon causes students to learn in a fragmented and disconnected manner *"that has little resemblance to real life"* (Drake, 1993: 2).

The integrated model started to make sense again in the 1990s as traditional, discipline-divided curricula became overloaded with too much time-consuming duplication among subjects or disciplines. Integrated curricula allow subjects to be connected in ways that portray the real world, putting curricula within the context of human experience and relevant for the next century. Because integrated curricula make use of real issues and problems, higher-order thinking skills are stimulated and discipline boundaries start to dissolve. The human brain searches for interconnections and patterns to make sense of his world, therefore it makes sense to teach through connections (Drake, 1993: 2-3).

To build an integrated curriculum, educators must let go of old models of curriculum design and dare to leave their comfort zones as the old models won't work for this process (Drake, 1993: 12).

Two metaphors are used by Horwood quoted by Drake (1993: 16) to describe different approaches to integration, *"the fruit cocktail and the fruit cake. In the fruit cocktail approach the chefs are teachers faced with selecting the proportion and variety of fruit to be put together to create a melange. 'Fruit cocktail is a very fine dish with much capability for variation and high quality nutrition, but the component fruits retain their*

identity.' In the fruit cake approach the disciplines persist in recognisable chunks that make sense, but they are embedded in a pervasive and unifying batter in which raw materials are unrecognisably transformed".

Drake (1993: 33-40) labelled three different ways of structuring an integrated curriculum:

- *The multidisciplinary integrated curriculum*: Focus is put on separate disciplines while tackling the same theme. The curriculum is viewed through the lens of a discipline, which includes content from other disciplines in order to increase relevance.
- *The interdisciplinary integrated curriculum*: Focus is on the generic that could be found across the curriculum. This approach emphasises meta-cognition and learning how to learn. The focus is on the commonalities across disciplines and by integrating the subject areas, students realise that higher-order thinking skills are generic and that they can make use of these skills in various situations outside the class.
- *The transdisciplinary integrated curriculum*: Disciplinary boundaries are transcended by the curriculum, as it is a "real-world" approach. Interconnections in this approach are limitless and disciplines are transcended although they are embedded naturally within the connections.

A final product seems impossible when an integrated curriculum is drafted, and an unfinished product can be expected as *"the process is more important that the product"* and *"there is no 'right way' and there will never be enough 'experts' to produce a product"* (Drake, 1993: 51).

2.2.6 Conclusion

It is clear that programme development requires various actions and is influenced by philosophical stances and a curricular model of preference. For a programme to be improved and kept as relevant as possible, mere chance is not ideal. It should be a systematic and scientific process carried out according to specific criteria and procedures.

In 2.3 and 2.4 some specific external and internal factors that influence programme development will be discussed.

2.3 EXTERNAL FACTORS

2.3.1 World Health Organisation (WHO)

The World Health organisation provides a useful framework to synthesise the health needs of the global population of the world with programme development in health sciences. Input from the WHO is therefore a very important external factor in programme development.

2.3.1.1 Objectives and functions of the World Health Organisation

The most important goal of the WHO is to promote international co-operation to obtain the highest possible level of health for all the populations of the world. It sees health as a fundamental right of every member of the world population without discrimination on the basis of people's race, religion, political conviction, and economic and social circumstances. Its interest in nursing is based on this goal of global health for all (Paton, *et al.*, 1989: 98).

The WHO also strives to supply a central information service, to develop all kinds of health services, to develop health care workers to work in a team, to control infectious diseases, to provide health education, environmental health, health research, etc. (Paton *et al.*, 1989: 98).

In 1977 a significant decision was made at the Alma Ata WHO meeting that was accepted unanimously by all the participants: *"health for all by the year 2000"*. The World Health Organisation declared that the main social target of governments,

international organisations and the world community as a whole should be to attain a level of health for all the peoples of the world that will permit them to lead a socially and economically productive life. The key to attain this target was through primary health care (WHO, 1984: 5).

2.3.1.2 Primary health care philosophy

A year after the target of *"health for all by the year 2000"* was accepted an international conference was held where the primary health care concept was explained as a method to attain this target.

The WHO defines primary health care as:

"Essential health care based on practical, scientifically sound and socially acceptable methods and technology, made universally accessible to individuals and families in the community through their full participation and at a cost that the community and country can afford to maintain at every stage of their development, in the spirit of self-reliance and self-determination... (it) forms an integral part both of the country's health system, of which it is the central function and main focus, and of the overall social and economic development of the community. It is the first level of contact of individuals, the family, and the community with the national health system, bringing health care as close as possible to where people live and work, and constitutes the first element of a continuing health care process" (WHO, 1984: 34).

Doherty (1994: 2-6) defines primary health care as the promotive, preventive, curative and rehabilitative ambulatory care which is made available at an outpatients' department in a hospital, a clinic or a generalist's office.

About a hundred terms were used in the Alma Ata Declaration of the World Health Organisation to describe primary care. Terms included were *"essential, practical, scientifically sound, socially acceptable, universally acceptable, affordable cost, central*

function and main focus of overall social and economic development, first level contact, and first elements of a continuing health care process" (Starfield, 1994: 1129).

Primary health care is based on eight critical elements:

- education in prevailing health problems to enhance identification, prevention and control;
- promotion of the supply of food and proper nutrition;
- safe and adequate water supply and basic sanitation;
- family planning, maternal and child health care;
- immunisation against major infectious diseases;
- prevention and control of locally endemic diseases;
- treatment of common diseases and injuries; and
- the provision of essential drugs (Luiz, 1994: 130; WHO, 1985: 16).

The primary health care approach has already necessitated a major revision of attitudes, social reorientation and changes in the ways that health care is delivered and promoted. Traditional health systems world-wide are in a process of being reorganised and the preparation of health workers is geared to operate as effective members of primary health care teams (WHO, 1984: 10).

Primary health care has more to do with the community in which people live than with high-technology hospitals. Two trends are seen in health care of the future: one trend is to increase medical specialisation and sophisticated technology to reinstate health and overcome disability. The other trend is to increase informality of health care as individuals, families and communities take more responsibility for their own health and in caring for the sick. These two trends are complementary, though it may seem that they are heading in opposite directions. A primary health care environment that supports and encourages health on the one hand, and specialist care as a back up for those who need it on the other hand are seen as an ideal (WHO, 1998: 7).

In 1979 representatives of 19 medical schools who were brought together by the World Health Organisation in Jamaica decided to adopt *"an approach in which the problem of communities played a major role in determining the curriculum"* and *"these schools emphasised problem-based learning, mainly because of its emphasis on actual health problems as a stimulus for learning and the promotion of student independence in learning"* (Schmidt, Neufeld, Nooman, & Ogunbode, 1991: 259-260). In reaction to the decisions, which were made in Jamaica, the Network of Community-Oriented Educational Institutions for the Health Sciences was established to accomplish these goals. The general aim of the network is to provide support to member institutions that wish to adapt curricula according to the health needs of the community. A community-oriented curriculum is defined as *"a program whose content takes into account the major health problems afflicting the population served by the program graduates"* (Schmidt *et al.*, 1991:39), while a community-based curriculum requires that *"students should be exposed to the realities of health care in the community as soon as they enter medical school. These postings in the community should not be brief, transient experiences but an important and integral part of the curriculum"* (Schmidt *et al.*, 1991:39).

The aims of community-based programmes are as follows:

- to encourage participation by the community as partners of health workers;
- to respond to the needs of the people (90% of the people of the world are served by 10% of the doctors);
- to bring about healthy, self-reliant communities;
- to move health care outwards to where the people are in order for care to be based in the community, not in the clinic or the hospital;
- to transfer healthy patterns onto the next generation;
- to increase awareness of healthier life-styles;
- to include all (the poorest, neediest, women, elderly, handicapped, and minorities); and
- to create a better community order where justice, equity and unity prevail (Lankester, 1992: 2-3).

Walton and Matthews (1989:542) indicate that the World Health Organisation has made a considerable investment in problem-based learning and emphasises active learning, which is community-oriented. The WHO reports stress that problem-based learning is a very valuable educational approach provided that it is *"based on relevant priority health problems of unchallengeable relevance"* (Walton & Matthews, 1989:542; Morrison & Murray, 1994: 139).

2.3.1.2 Programme development for nursing education and training

2.3.1.3.1 Comprehensive curriculum

The World Health Organisation published a comprehensive curriculum guide for nurse educators to prepare nurses for community-oriented practice. Nursing education has to be refocused to prepare students to be able to deliver community-oriented primary health care. This requires a substantial shift from acute health care to primary health and community-oriented care. The concepts of primary health care are integrated into nursing practice at all levels: the home, the dispensary, the health centre and the hospital. Whether health care is provided to individuals, families or the community, the nurse is expected to employ three processes: assessment of needs, planning and implementing required care and the evaluation of care delivered (WHO,1985: 9).

During the assessment phase students could gather data on personal traits in an individual such as age, gender, marital status, ethnic background, financial status, educational level, occupation and life style. When data are gathered about the family, demographic data such as distribution of age and gender in the family unit can be included, as well as socio-economic status, educational level and patterns of occupations. Risk groups in the community according to their age, gender, race, ethnic distribution, birth and mortality figures, and life expectancy can be determined. In this way prevailing health problems

can be identified, prevented and controlled. In the process students will also learn new skills, for example:

- To analyse aetiology and transmission of general health problems
- To adapt their nursing roles and functions to accommodate priorities and health policies
- To identify high-risk and neglected groups and to extend health services to include these groups
- To educate, train and use community workers
- To organise teams to take part in endeavours to better the health status of the community; this should include schools, agriculture and other community organisations (Paton *et al.*, 1989: 114-115).

2.3.1.3.2 Shift towards community health care

It is clear that the emphasis that historically used to be on institutionalised curative care for individuals has to be shifted to community health, with emphasis on independence of the members of the community to take responsibility for their own health. For health care to be community-oriented, care is now focused on the total population, not merely on institutionalised sick individuals. This means that nursing and nursing education should take place in communities. The role of the nurse becomes more general and interdependent, not only within the health-related sectors, but also in other related sectors like agriculture and education (Paton *et al.*, 1989: 116).

2.3.1.3.3 Fundamental principles of primary health care included in nursing education

The WHO emphasises that the five basic principles of primary health care should be included in the design of the nursing education curriculum. These fundamental principles are:

- the equitable distribution of health care;

- participation of communities in their own health care;
- technology that is applicable to specific circumstances;
- focus of health services to be rather on prevention of sickness than on curative care; and
- a multi-sectoral approach where all sectors play a role, not only the health care sector (WHO, 1984: 9).

2.3.1.3.4 Social and biological sciences

The WHO identifies the study of the following social and biological sciences:

- *The science of medicine*: Physiology, psychiatry, pathology, and pharmacology as they relate to the treatment of common health problems
- *The science of public health*: Epidemiology, statistics and administration of health care services to identify high-risk groups, methods of prevention and the extension of health care coverage
- *Social and behavioural sciences*: Life-style and behavioural patterns that can affect health, development of disability and disease, preventive mechanisms and community organisations for health (Mashaba & Brink, 1994: 249).

2.3.1.3.5 Content areas

The WHO suggests the following content areas:

- Identification of major health problems in a particular area
- Application of primary methods of prevention, treatment and control of prevailing problems including their aetiology, epidemiology and pathology
- Principles of maternal, infant and child health care including family planning and factors that influence growth and development of the individual and the family
- Assessment, therapeutic and rehabilitation processes
- Principles of prevention, continuity of care and influences of life-style factors on health

- Evaluation of the effect of care provided to individuals, families and groups in the community
- Training in the promotion of health through self-care
- Adaptation of health care to be in accordance with the needs of various social, cultural and occupational groups in the community
- Promotion of active participation of the community in their own health care
- Extension of health services to population groups that are under-serviced
- Modifying health services to be acceptable to various population groups
- Collaboration with multi-sectoral groups in effecting improved community health (WHO, 1985: 16).

It is important that learners must learn to *"meet ever-changing situations, acquire ways of using data, and identify and solve problems"* (WHO, 1985: 13).

The WHO provides specific content areas and skills needed to prepare nurses for the dynamic nature of services, which is predominantly based in the community. The WHO was viewed as an important external factor in programme development as it plays a central role in global health care through-out the world.

2.3.2 National Qualifications Framework

2.3.2.1 Introduction

An urgent need has arisen in South Africa to establish an educational and training system that is flexible, efficient and accessible to all the people of the country. Through a national qualifications framework it will now be possible for all learners to achieve national qualifications through a wide variety of mechanisms. The National Qualifications Framework (NQF) was established *"in the hope of finding a system which would take a holistic view of the personal, social, and economic needs of our rapidly*

developing society, and then propose ways forward to address all these concerns on a broad and integrated front" (Republic of South Africa, 1995: 5-8).

The NQF aimed at: the creation of a unified system from the multitude of educational bodies of the past; the creation of an equitable system of education and training; the inclusion of more general abilities such as communication, problem-solving and a variety of learning strategies in education and training; the equipment of learners with the desire and ability to become life-long learners obtaining new knowledge, skills and technologies; movement among occupations, areas and levels of learning, while obtaining recognition through credits for learning that has already taken place; integrated learning that benefits the individual learner, the education and training system and the country's economy; assessment modification, and the updating and refreshment of qualification systems of different professions are allowed (Republic of South Africa, 1995: 5-28).

2.3.2.2 Definition

South Africa's National Qualifications Framework can be defined as a framework that provides lifelong learning opportunities by utilising nationally recognised levels and provides for the registration of national standards and qualification (South Africa, 1996: 15; Republic of South Africa, 1998:5).

2.3.2.3 Structure of the National Qualifications Framework

The National Qualifications Framework is divided into eight levels to give recognition to a General Education and Training band, a Further Education and Training band, and a Higher Education and Training band (Republic of South Africa, 1998:5-6). The structure of the NQF is illustrated in Table 2.3.

Twelve organising fields are distinguished in the National Qualifications Framework:

- Field 1: Agriculture and Nature Conservation

- Field 2: Culture and Arts
- Field 3: Business, Commerce and Management Studies
- Field 4: Communication Studies and Language
- Field 5: Education, Training and Development
- Field 6: Manufacturing, Engineering and Technology
- Field 7: Human and Social Studies
- Field 8: Law, Military Science and Security
- Field 9: Health Sciences and Social Services
- Field 10: Physical, Mathematical, Computer and Life Sciences
- Field 11: Services
- Field 12: Physical Planning and Construction

(Republic of South Africa, 1998:6).

Table 2.3: Structure of the National Qualifications Framework (South Africa, 1996: 48a).

NQF Level	*Band*	*Types of qualifications and certificates*		*Locations of learning for units and qualifications*		
8	**Higher Education and Training**	Doctorates Further Research Degrees		Tertiary/Research Professional Institutions		
7		Higher Degrees Professional Qualifications		Tertiary/Research Professional Institutions		
6		First Degrees Higher Diplomas		Universities/Technikons/ Colleges/Private/Professional Institutions/Workplace etc.		
5		Diplomas Occupational Certificates		Universities/Technikons/ Colleges/Private/Professional Institutions/Workplace etc.		
Further Education and Training Certificate						
4	**Further Education and Training**	School/College/Trade Certificate/Mix of units from all		Formal High Schools/ Private/ State Schools	Technical Community/ Police/ Nursing/ Private colleges	RDP & Labour Market Schemes Industry Training Boards Unions Work- place, etc.
3		School/College/Trade Certificate/Mix of units from all				
2		School/College/Trade Certificate/Mix of units from all				
General Education and Training Certificate						
1	**General Education and Training**	Senior Phase	ABET Level 4	Formal Schools (Urban/ Rural/ Farm/ Special)	Occupation/ Work-based Training/ RDP/Labour Market schemes/ Upliftment/ Community Programmes	NGOs Churches/ Night schools ABET- programme / Private provider/ Industry/ Training/ Boards/ Unions/ Workplace etc.
		Intermediate Phase	ABET Level 3			
		Foundation Phase	ABET Level 2			
		Pre-school	ABET Level 1			

2.3.2.4 Rationale for a qualification framework in South Africa

According to the Government Gazette (Republic of South Africa, 1997: 7) the purposes of higher education read: *"In the context of the present-day South Africa, they must contribute to and support the process of societal transformation outlined in the Reconstruction and Development Programme (RDP), with its compelling vision of people-driven development leading to the building of a better quality of life for all."*

The Government Gazette (Republic of South Africa, 1997: 7-8) adds that the transformation of higher education will have the following purposes:

- to develop the intellectual abilities, aptitudes, learning needs, and aspirations of individuals throughout their lives by making the best use of their talents and opportunities offered by society;
- to achieve equity in the distribution of opportunity and achievement among South African citizens;
- to address the development needs of society;
- to provide the labour market, which will in its turn lead to growth and prosperity of the economy;
- to develop a reflective capacity and a willingness to review and renew ideas, policies and practices; and
- to contribute to knowledge through research, learning and teaching.

2.3.2.5 Important principles of the NQF

Key words to describe the principles of the NQF are legitimacy, integration, relevance, coherence, flexibility, quality, access, progression, portability, articulation, recognition of prior learning, guidance of learners, democratic participation and equality of opportunity (South Africa, 1996: 22). Three key words that were considered exceptionally important in this study are "integration", "relevance" and "coherence".

Education and training are brought together to establish an "integrated" approach. In this way theory and practice, and academy and vocation are brought together (South Africa, 1996: 22).

"Relevance" is equally important to integration as education and training should be responsive to the economic, social and political development needs of a nation. The needs of learners as well as the needs of the country are taken into account for an education and training system to be relevant (South Africa, 1996: 21).

For "coherence" it is necessary that areas of learning are connected to form a whole as learners move from one learning situation to another. Therefore credits are linked into a meaningful learning and career pathway (South Africa, 1996: 21).

2.3.2.6 Main bodies involved

Five main bodies are involved with the implementation of the NQF. They are the South African Qualifications Authority (SAQA), the National Standards Bodies (NSBs), the Standard Generating Bodies (SGBs), the Education and Training Quality Assurance Bodies (ETQAs) and the Qualifications Councils (QCs).

2.3.2.6.1 South African Qualifications Authority (SAQA)

The SAQA *"will be a national body that will, inter alia, define levels, formats for unit standards and requirements for the registration of qualifications"* (Republic of South Africa, 1995:3).

The functions of SAQA are:

- It approves and registers standards and qualifications on the NQF

- It oversees and monitors the work of the National Standards Bodies (NSBs), the Standard Generating Bodies (SGBs), the Education and Training Quality Assurance bodies (ETQAs) and the Qualifications Councils (QCs).
- The SAQA Act, 1995 establishes SAQA (clause 5[a]{i}) and the implementation of the NQF, including the registration of national standards and qualifications (clause 5[b]{ii}. The terms "standard" and "qualification" are defined in the Act (South Africa, 1996:25).

2.3.2.6.2 National Standards Bodies (NSBs)

A National Standard Body *"means a body registered in terms of section 5(1)(a)(ii) of the Act, responsible for establishing education and training standards or qualifications, and to which specific functions relating to the registration of national standards and qualifications have been assigned in terms of section 5(1)(b)(i) of the Act* (Republic of South Africa, 1998:4). NSBs form an integral part of the Authority, report to them, and one National Standards Body is established per field in terms of section 5 of the Act. Their certificate of registration will be valid for three years after which they must be re-registrated (Republic of South Africa, 1998: 12).

The functions of the NSBs are to:

- define and recommend the boundaries of a discrete field to the Authority;
- define and recommend a framework of sub-fields to the Authority which can be used as a guide for the establishment or recognition of Standards Generating Bodies;
- recognise, establish, withdraw or rescind recognition of Standards Generating Bodies;
- recommend registration of standards on the NQF to the Authority;
- update and review qualifications;
- liase with Education and Training Quality Assurance bodies when new standards and qualifications are recommended or amended;
- define the requirements and mechanisms of moderation applied to Education and Training Quality Assurance bodies;

- appoint office-bearers, committees and members of committees to carry out the functions in consultation with the Authority;
- perform functions delegated to them by the Authority;
- abide by decisions of the authority relating to the development and implementation of the NQF;
- consult with experts in defined fields to determine accuracy and acceptability of results and to subject these results to their scrutiny;
- publish results in the Government Gazette of comment by those interested; and to
- ensure that results are also scrutinised by the Reference Grouping contemplated in regulation 17 (Republic of South Africa, 1998: 16-17).

2.3.2.6.3 Standard Generating Bodies (SGBs)

A Standard Generating Body *"means a body registered in terms of section 5(1)(a)(ii) of the Act, responsible for establishing education and training standards or qualifications, and to which specific functions relating to the establishing of national standards and qualifications have been assigned in terms of section 5(1)(b)(i) of the Act"* (Republic of South Africa, 1998:5). SGBs are bodies that are recognised or established by the National Standard Bodies in their own defined field as recommended to and accepted by the Authority. Registration of SGBs is valid for three years and shall dissolve on completion of their briefs, although extensions may be requested (Republic of South Africa, 1998: 17-18).

The functions of the SGBs are to:

- generate standards and qualifications in accordance with the requirements of the Authority in identified sub-fields and levels;
- review and update standards;
- recommend standards and qualifications to NSBs;
- perform other functions delegated by their National Standards Body;

- abide by decisions of the Authority concerning the development and implementation of the NQF;
- consult with experts concerning the accuracy and acceptability of results and to subject results to their scrutiny;
- publish results in the Government Gazette for comment; and to
- subject results of activities to the scrutiny of the reference grouping contemplated in regulation 17 (Republic of South Africa, 1998: 20).

2.3.2.6.4 Education and Training Quality Assurance bodies (ETQAs)

An Education and Training Quality Assurance body *"means a body accredited in terms of section 5(1)(a)(ii) of the Act, responsible for monitoring and auditing achievements in terms of national standards and qualifications, and to which specific functions relating to the monitoring and auditing of national standards and qualifications have been assigned in terms of section 5(1)(b)(i) of the Act"* (Republic of South Africa, 1998: 3).

The functions of the ETQAs are to:

- accredit constituent providers for specific standards or qualifications registered on the NQF;
- assure that courses are of a high quality;
- evaluate assessment and moderation among constituent providers;
- monitor provision by constituent providers of education and training;
- register constituent assessors by means of established criteria;
- be responsible for certification of constituent learners;
- co-operate with relevant bodies and to moderate across Education and Training Quality Assurance Bodies;
- recommend new standards or qualifications to NSBs;
- modify existing standards of qualifications;
- submit reports to the Authority;
- maintain a data-base which is acceptable to the Authority; and

- perform other functions assigned from time to time by the Authority (Republic of South Africa, 1998: 8).

2.3.2.6.5 Qualifications Councils (QCs)

- The QCs are responsible for setting rules of combination for all the qualifications registered on the NQF. There will be three QCs, one for each band on the National Qualifications Framework: the General Education and Training, the Further Education and Training and the Higher Education and Training band. The QCs will work with all the relevant stakeholders in establishing the rules of combination, including the existing academic, business and professional bodies (South Africa, 1996: 45).

2.3.2.7 Important Concepts of the National Qualifications Framework

2.3.2.7.1 Qualification

According to the Government Gazette of 28 March (Republic of South Africa, 1998:9-12) a qualification is the formal recognition that the required number and range of credits have been completed. This includes completion of an integrated assessment to ensure that the purpose of the qualification is met. Requirements for a qualification are that it shall:

(a) "Represent a planned combination of learning outcomes which has a defined purpose or purposes, and which is intended to provide qualifying learners with applied competence and a basis for further learning;

(b) *add value to the qualifying learner in terms of enrichment of the person through the: provision of status, recognition, credentials and licensing; enhancement of marketability and employability; and opening-up of access routes to additional education and training;*

(c) *provide benefits to society and the economy through enhancing citizenship, increasing social and economic productivity, providing specifically skilled/professional people and transforming and redressing legacies of inequity;*

(d) *comply with the objectives of the National Qualifications Framework contained in section 2 of the Act;*

(e) *have both specific and critical cross-field outcomes which promote life-long learning;*

(f) *where applicable, be internationally comparable;*

(g) *incorporate integrated assessment appropriately to ensure that the purpose of the qualification is achieved, and such assessment shall use a range of formative and summative assessment methods such as portfolios, simulations, work-place assessments, written and oral examinations; and*

(h) *indicate in the rules governing the award of the qualification that the qualification may be achieved in whole or in part through the recognition of prior learning, which concept includes but is not limited to learning outcomes achieved through formal, informal and non-formal work experience"*(Republic of South Africa, 1998: 9).

2.3.2.7.2 Outcomes

Outcomes are defined as the contextually demonstrated results or end products of learning experiences and processes whether formal, non-formal or informal. Programmes of learning are designed to help learners to achieve these outcomes (Republic of South Africa, 1998: 4; South Africa, 1996: 15).

Two types of outcomes are recognised: critical or generic outcomes and specific outcomes.

- <u>*Critical or generic outcomes*</u> are defined as *"those generic outcomes which inform all teaching and learning, and 'critical cross-field education and training outcomes' has a corresponding meaning"* (Republic of South Africa,1998:3). Nel, Bezuidenhout and Botha (1998: 21) explain critical outcomes as outcomes that extend across curricula, as they are not restricted to specific learning contexts. Therefore all

curricular actions should start with critical outcomes which will lead to specific outcomes. According to the Government Gazette of 28 March 1998, the following outcomes can serve as examples of critical outcomes: responsible and creative problem-solving; effective team work in a group, organisation or community; the gathering, categorisation, analysis and evaluation of information; effective communication, whether it be written or spoken; effective use of science and technology; effective learning/study strategies; cultural and esthetical sensitivity across various social contexts; the ability to select effective career and educational opportunities; the ability to develop entrepreneurial opportunities (Republic of South Africa, 1998: 8-9).

- *Specific outcomes* can be defined as contextually demonstrated knowledge, skills and values, which support critical outcomes (Republic of South Africa, 1998: 5). Specific outcomes endorse critical outcomes and they describe the competence a learner should have at a specific level in a programme, and are formulated in a way that enhance transparent, fair and effective evaluation. Specific outcomes are similar to the programme objectives which were used in the past (Nel *et al.*, 1998: 22).

An additional outcome referred to as *vocational or professional outcomes* is also mentioned. Vocational outcomes can be defined as outcomes that provide empowerment in one's occupation (Bezuidenhout, 1998: 7), e.g. the outcomes prescribed by a professional board.

2.3.2.7.3 Learning programme

A learning programme can be defined as a programme that is made up of courses, modules or learning units. Through a learning programme learners can achieve agreed learning outcomes as stated in the unit standards (South Africa, 1996:17).

2.3.2.7.4 Evaluation and assessment

Assessment can be defined as the process whereby a capability is determined through observing and evaluating performances. Various methods are used to obtain information about a learner's competence i.e. in the workplace, through coursework, work in the classroom, homework, projects and examination papers. Assessment criteria are used as an attachment to an assessment task and are designed to determine the achievement of specific outcomes (South Africa, 1996: 16; Republic of South Africa, 1995:1).

The Government Gazette (Republic of South Africa, 1998: 4) defines integrated assessment as *"assessment which permits the learner to demonstrate applied competence and which uses a range of formative and summative assessment methods"*.

Evaluation is defined as *"the process whereby the information obtained through assessment is interpreted to make judgements about a learner's competence"* (South Africa, 1996:16).

Systematic evaluation is defined *"as a process whereby an education and training system (national, provincial, local), or an aspect of it is assessed and evaluated. This process may also be used to evaluate institutions, courses or particular policy inputs. It may be a routine event, repeated on a cycle (i.e. quality audit of ETQAs every four years), or it may be commissioned for a specific purpose (improving the performance of girls in technology). Systemic evaluations targets quality factors and examines the system holistically"* (South Africa, 1996: 16).

A few definitions are important throughout the process of evaluation and assessment. They are: *"unit standard"*, *"ability"*, *"capability"*, *"performance"* and *"competence"* (Republic of South Africa, 1995:1).

A *"unit standard"* can be defined as a statement of the outcomes that are to be achieved by a student to obtain a credit which are nationally agreed on and internationally comparable (Republic of South Africa, 1995: 4).

"Ability" is the mental and physical processes people use, i.e. communication, decision-making, problem solving and the utilisation of tools. It is a generic term and underwrites the core of all training and education because it provides the means of learning and performing tasks in everyday situations (Republic of South Africa, 1995: 1).

"*Capability*" is defined as *"the expression of generic abilities as they relate to specific content areas, contexts and value frameworks"* and more capabilities are described as *"enablers of competent performance"* (Republic of South Africa, 1995:1; 63).

"*Performance*" is the integrated demonstration of mental, affective and manual activities. Particular values are expressed and performances are holistic (Republic of South Africa, 1995:3).

"Competence" refers to *"the integrated application of capabilities within specified contexts (which may stretch from being familiar and predictable to completely uncertain, unfamiliar and unpredictable, depending on the level of competence required"* (Republic of South Africa, 1995:54) and can be recognised as a qualification, which expresses different levels/combinations of competence.

Competence comprises an integrated set of capabilities, which become associated with unit standards, while a qualification is the recognition of competence, and a unit standard is the formal recognition of capability. The relationship between qualification, unit standards, competence and capabilities are demonstrated in Figure 2.4.

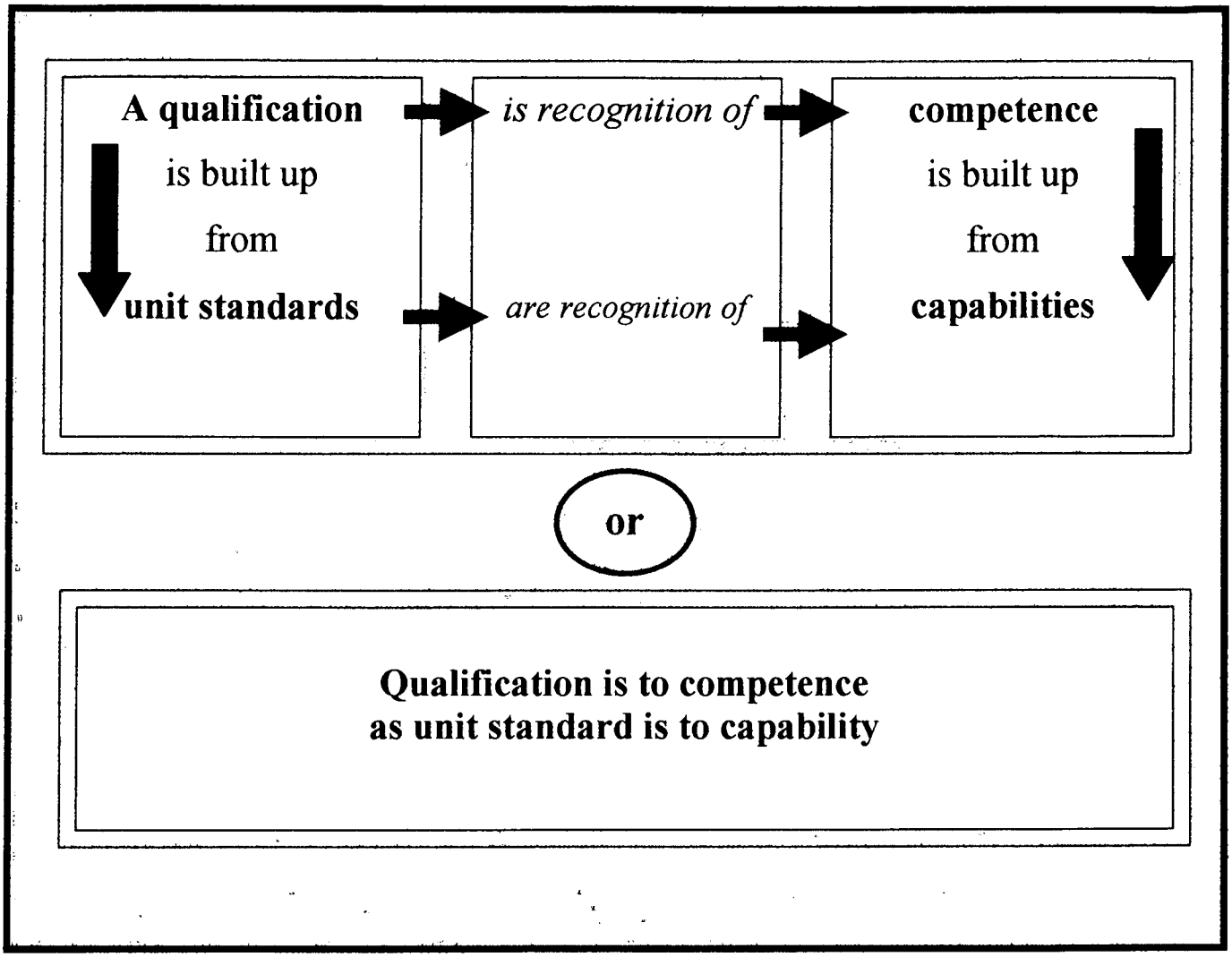


Figure 2.4 The relationship between qualification, unit standards, competence and capabilities (Republic of South Africa, 1995:64).

2.3.2.8 The National Qualifications Framework and programme development

Flexibility is provided in the way that an educational programme will be developed and does not prescribe the combination of unit standards within programmes. It is important that programmes should be in accordance with the requirements of the national curricula. Programme development should be a dynamic process and six critical factors demonstrate the relationship between the National Qualifications Framework and programme development as illustrated in Figure 2.4 (South Africa, 1996: 50-53).

(i) *The development of level descriptors*: SAQA, in co-operation with other national stakeholders, concentrates on descriptions of cross-curricular aspects such as essential outcomes like communication and problem-solving before essential outcomes are drafted

(ii) *The setting of standards*: Standards are set for various fields. Unit standards are developed to be transferable and must be approved for registration on the NQF by SAQA

(iii) *The registration of qualifications*: The agreed rules of combination are received from competent bodies for registration.

(iv) *The drawing up of curriculum frameworks*: A National Curriculum Framework is drawn up and care is taken that learning programmes are balanced and according to internationally acceptable standards.

(v) *The development and provision of actual learning programmes*: These are developed, adapted, evaluated and piloted by practitioners according to the nationally agreed Curriculum Frameworks.

(vi) *Quality assurance of programmes*: Providers are supported in improving quality and building capacity where shortcomings are detected until criteria are met (South Africa, 1996: 50-53).

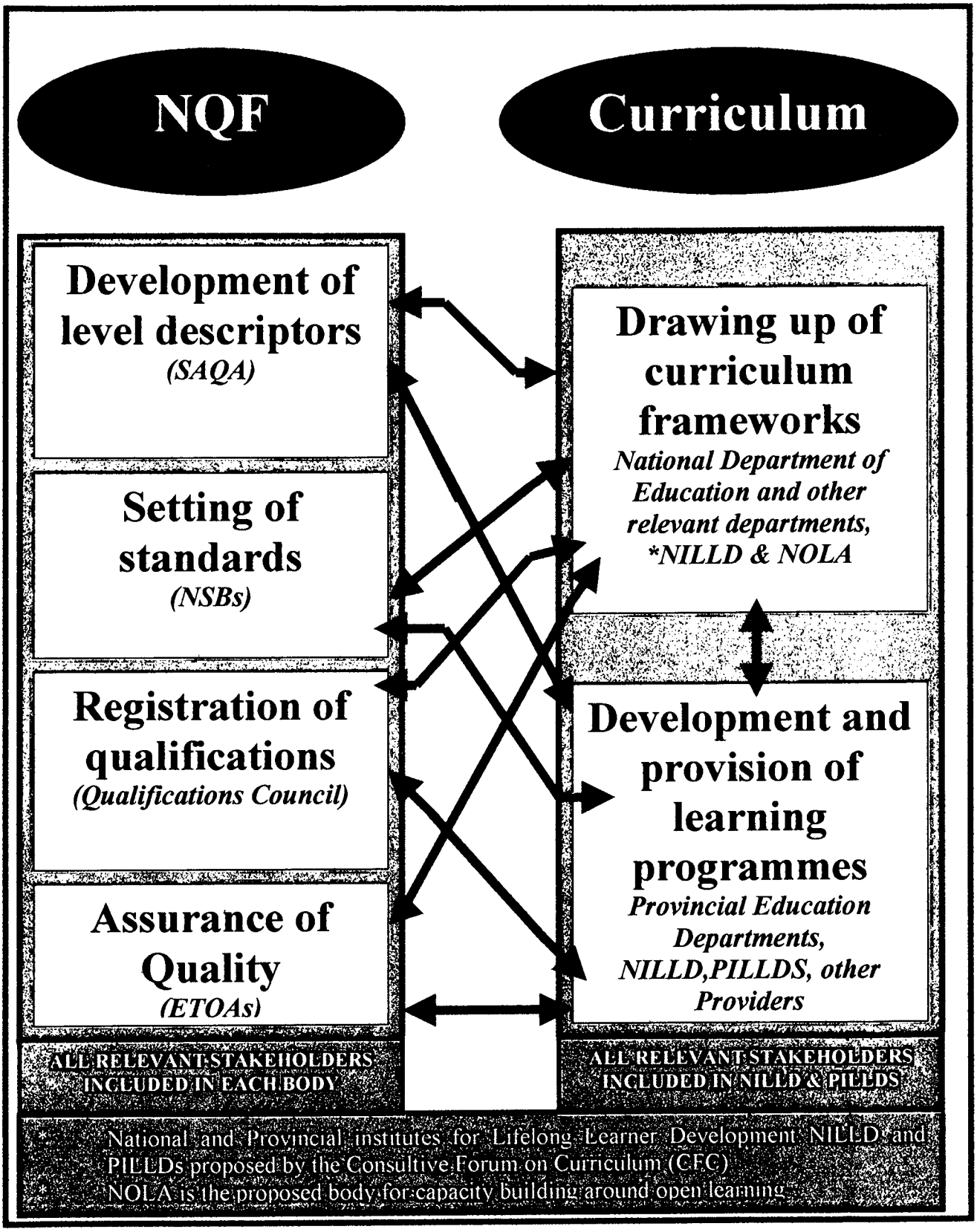


Figure 2.5 Interactive relationship between the National Qualifications Framework and programme development (South Africa, 1996: 50a).

2.3.2.9 Conclusion

The South African Qualifications Act has been firmly established; therefore it will become necessary for all educational institutions in South Africa to develop their programmes to be recognised on the National Qualifications Framework. The benefits of the Act were summarised at a conference on the National Qualifications Framework as: *"The SAQA Act symbolises the move from the old to the new: from a patchwork of systems, riven by division, inequality, segmentation, centralisation and poor accessibility to a coherent and integrated national system characterised by openness, articulation, devolution, high participation, creativity and built-in quality assurance"* (Conference on the National Qualifications Framework, 1996).

The Act is compatible with the holistic philosophy of education and problem-based learning and seems to enhance programme development in institutions where problem-based learning is implemented.

2.3.3 South African Nursing Council

2.3.3.1 Functions

As mentioned before, the statutory body of the nursing profession influences programme development in a nursing school. The South African Nursing Council is the professional body for registered nurses in South Africa and states the curriculum for nurses at macro-level. The nursing council determines the minimum requirements for registration as a professional nurse. Apart from the minimum requirements, Council also states general standards according to which education and training, as well as planning should take place. The minimum requirements can be compared to a road map, which shows how to reach the destination. Nursing schools can follow the main route, but are free to make use of divergent routes to reach their ultimate destination. This means that the Council

requires certain subjects for the four-year comprehensive course, but regulations are stated as broad principles (main road map) and the nursing school decides on the detailed curriculum; in other words the precise route that will be followed to reach the stated outcomes. This means that individual nursing schools have the freedom to decide how they want their students to reach their destinations. The levels of programme development (Paton *et al.*, 1989: 147-192) can explain this phenomenon.

2.3.3.2 Levels of programme development

The South African Nursing Council is a very important external factor to take into account when programme development at meso- and micro-level is done. The three levels of programme development will now be discussed. They are illustrated in Figure 2.6.

2.3.3.2.1 Programme development at macro-level

Programme development at macro-level is the function of the statutory body of a profession and in South Africa, this is the South African Nursing Council (SANC). The SANC functions according to Nursing Act 50 of 1978 and sees to it that nursing education and teaching maintain a satisfactory standard. Minimum requirements and guidelines describe the syllabus (discussed in 2.3.3.3). These documents are flexible and provide for changes in the health needs of the country (Paton *et al.*, 1993: 40-41).

2.3.3.2.2 Programme development at meso-level

Programme development at meso-level is also called programme development at institutional level. The content prescribed at macro-level is now evenly distributed over three to four years, depending on the type of course. It makes out the vertical component of programme development. On completion of the curriculum by the relevant bodies in the nursing school, it must be submitted to the statutory body for approval. This

curriculum gives guidance to faculty members about the nature of learning content, the distribution of content into levels for the different stages, programme and level objectives and the way in which assessment and evaluation will take place for each subject (Paton *et al.*, 1993:42).

2.3.3.2.3 Programme development at micro-level

Programme development at micro-level concerns education and training at ground level where the programme will be implemented. This has to do with the daily planning of how and when learning should take place. When the programme is developed at micro-level the following components should be included: the subject, title and theme; the amount of 40-minute periods; specific behaviour objectives; teaching strategies; learning aids and facilities; student activities; clinical applications and learning experiences; and strategies for evaluation (Paton *et al.*, 1993: 43).

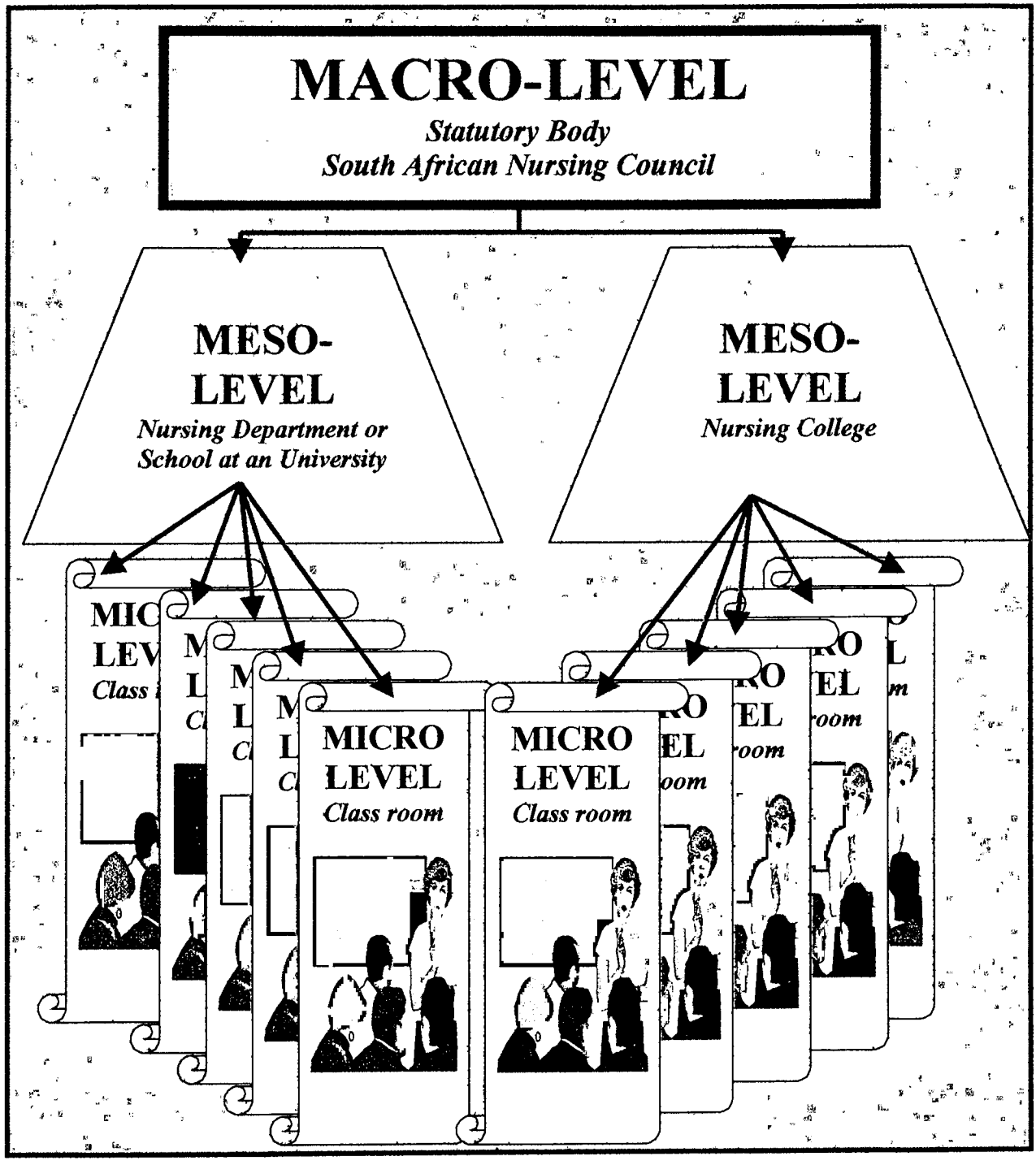


Figure 2.6 Levels of programme development

2.3.3.3 Regulations and acts applicable to nursing education

The following regulations and acts are applicable to nursing education:

- R2598: Scope of practice;
- R387: Violations or neglect of service;
- R2488: Conditions for practice;
- Act 50 of 1978: Standards and regulations for education; and
- R425: Regulations of the course, which will lead to registration of a nurse (general, psychiatric and community) and midwife.

The Regulations of the course which will lead to registration of a nurse (general, psychiatric and community) and midwife (R425), are important in programme development and will be discussed briefly.

2.3.3.3.1 Conditions

In Regulation no. R425 the following conditions are stated: conditions for registration, conditions for the approval of a nursing school, conditions for admission to the course of study, duration of the course of study, the submission of a nursing school's curriculum according to programme objectives, subjects, examinations and the applications of the regulations (South African Nursing Council, 1985:1-4).

2.3.3.3.2 Time factor, approval of schools and admission standards

The length of an academic year is stated as at least 44 weeks in any calendar year and the duration of the course which will lead to registration of a nurse (general, psychiatric and community) and midwife is four academic years. During programme development the time factor must be taken into consideration when planning is done at meso-level at a

particular nursing school. This school must be an institution that was approved as a post-secondary educational institution, which offers professional nursing education at basic and post-basic level according to section 16 of the nursing act. Students admitted should be holders of at least a senior certificate or an equivalent certificate, which gives admission to formal post-secondary education (South African Nursing Council, 1985:1-2).

2.3.3.3.3 Programme objectives

The programme objectives of the South African Nursing Council R425 of 22 February 1985 for the curriculum are as follows:

The curriculum should provide for the personal and professional development of the student so that the student will on completion of the course be able to

- show respect for the dignity and uniqueness of the patient in his social-cultural and religious context in a way that approaches and understands him as a psychological, physical and social being;
- diagnose individual, family, group and community health problems;
- plan and implement therapeutic action and nursing care for these health problems at any point along the health/illness continuum in all stages of the life cycle (including care of the dying);
- evaluate the therapeutic action and nursing care plan;
- interact with consumers of health in a sympathetic and empathetic way;
- maintain the ethical and moral codes of the profession;
- practise within the relevant laws;
- collaborate harmoniously within a nursing and multidisciplinary team to attain common goals;
- delineate personal practice independently and accept responsibility therefore;
- evaluate personal practice and continuing professional and personal development;
- evince a scientific approach towards problems of practice;

- initiate or accept change;
- manage health services effectively;
- provide training within the health service;
- be acquainted with environmental health services and able to take up his/her professional role and responsibilities where no services are available;
- promote community involvement along the health/illness continuum in all stages of the life cycle;
- practise effectively with the necessary cognitive, psychomotor and affective skills; and
- take part in continuous education to maintain the necessary cognitive, psychomotor and affective skills (South African Nursing Council, 1985:2-3).

2.3.3.3.4 Subjects

Subjects within the curriculum are prescribed and the integration of various fields of study is encouraged. The following subjects must be included during the course: Fundamental Nursing Science, Ethos and Professional Practice, General Nursing Science (medical, surgical, operating theatre, casualty, outpatients and paediatric nursing), Psychiatric Nursing Science, Midwifery, Community Nursing Science, Biological and Natural Sciences (anatomy, physiology, chemistry and biophysics; microbiology and para-cytology and nutrition), Pharmacology, and Social Sciences (psychology, sociology and social care and social security) (South African Nursing Council, 1985:1-4; South African Nursing Council, 1988: 5-10).

2.3.3.3.5 Guidelines

Guidelines for the course leading to registration as a nurse (general, psychiatric and community) and midwife should also be taken into consideration when programme development takes place. These guidelines include the philosophy of the South African Nursing Council, the policy concerning the educational task of the South African Nursing

Council, subjects and subject content and guidelines for the teaching of clinical practice (South African Nursing Council, 1988: 1-11).

The objectives of the Council, the definition of nursing science and the primary health care approach are emphasised. The development of a nursing practitioner that displays ability for analytical, critical and creative and independent evaluation of scientific data is emphasised as of the utmost importance (South African Nursing Council, 1988: 1-2; 3).

The guidelines for the teaching of clinical practice require active involvement in the nursing of patients within a comprehensive health team. No practice during the night is allowed in the first semester of the nursing student's first year. The nursing process, including assessment and diagnosis, planning, implementation and evaluation, forms part of the requirements for practice (South African Nursing Council, 1988: 10-11).

Practical examinations should be submitted to the Council at least one month before the commencement of such an examination (South African Nursing Council, 1988: 11).

2.3.3.3.6 Proposals of the South African Interim Nursing Council

The South African Interim Nursing Council believes that nursing education must meet the health needs of South Africa's diverse population within the National Qualifications Framework (NQF) and that it should accommodate the aspirations of both the newcomers to the profession and those already practising nursing. Some of the proposals are as follows:

- Admission requirements for the comprehensive four-year course will be Standard 10 and the course must be offered either at a university with a department of nursing or a nursing college in association with a university or technikon. Considerable autonomy is provided to these nursing departments or schools.
- Outcome standards for each level of training are defined to comply with the requirements of the South African Qualifications Authority (SAQA).

- During the first two years emphasis is at a preventive/promotive level, while more attention will be given to the curative level during the last two years.
- The objectives of the programme are based on a systematic approach and include assessment, diagnosis, planning, implementation and evaluation.
- The essential and specific skills required include management, communication, problem-solving, technology, contextual understanding, inter-personal skills, professional responsibility, professional development, learning and health behaviour (see Appendix G, H and I).
- On successful completion of a four-year programme, *"the student will be registered as a comprehensive generalist nurse with generic knowledge and skills as well as knowledge and skills applied to all the basic disciplines of nursing and functions as the designer, executor, co-ordinator and evaluator of care plans/programmes. She/he operates within preventive, promotive, curative and rehabilitative services at primary, secondary and tertiary levels"* (South African Interim Nursing Council, 1996: 4).
- All the basic nursing diplomas or qualifications should be placed at level 5 of the NQF and professional nurses should be either recognised as generic nurses or comprehensive nurses.
- Specialist nursing diplomas or qualifications should be placed at level 6 of the NQF, for example unit specialisation, specialisation or super specialisation.
- The emphasis is on comprehensive training to equip a nurse to work as an independent member of a health team.
- Compulsory updating of knowledge and skills to ensure that competence is maintained: This should take place every three years and may be in the form of symposia, workshops of structured continuing education programmes.
- A unitary system of nursing education will accommodate the principles of flexibility, access, progression and recognition of prior learning (South African Interim Nursing Council, 1996: 1-8).

2.3.3.4 Conclusion

Legislation for nursing as a profession is there to regulate members of society and to protect the community as a whole. Legislation is in a process of continual change as no society is stagnant; therefore legislation must keep up with the complexities and changes that take place in society. It is there for the protection of the clients of health care. Nursing legislation gives structure and guidance to students, professional practitioners and educators. It is an essential external determinant of programme development and the proposed Unified Nursing Education System for South Africa is closely linked to the objectives of the National Qualifications Authority and World Health Organisation. It has been accepted in principle by most of the Nursing Departments and Schools in South Africa, though it has not statutory status yet.

2.4 INTERNAL FACTORS

2.4.1 University of The Orange Free State

2.4.1.1 Introduction

Since 1997 the University of the Orange Free State, as well as other universities in the country, have been in a process of change to position themselves for the challenges of the 21st century. The political transition in the country had an important impact on higher education as universities were expected to meet the demands of the Higher Education Act, which was promulgated in December 1997 within a time space of a few months. On the international arena developments in the political, social, economic and technological fields were vast and the outcome differed radically from that of the past. Some of these changes demanded a new perspective on higher education, especially on issues such as diversification of programmes and greater financial pressures. New purposes and goals

of the new higher education policy, and design requirements for the new millennium led to the modification of visions, missions and strategic planning of university. These changes should be reflected in the curricula of all the faculties and departments of university.

2.4.1.2 Higher education policy of South Africa

The new Constitution in South Africa requires of all universities to subject themselves to the same demands as public institutions. The broad aims of the new policy are as follows:

- Lifelong development of the intellectual abilities of individuals to satisfy their learning needs and abilities.
- Providing competencies and expertise required for the growth and development of a modern economy by satisfying the development needs of society and providing the labour market.
- To contribute to the socialisation of citizens who are well-informed, responsible and constructively critical.
- To contribute to *"the creation, sharing and evaluation of knowledge"* (Republic of South Africa, 1997: 7-8).

The White Paper states the following goals at institutional level:

- The governance structures of higher education must be transformed and democratised.
- Interaction among institutions of higher education should be encouraged through co-operation and partnerships.
- Promotion of human resource development programmes of high quality that are responsive to the social, political, economic and cultural needs of the country.
- Establishment of an academic climate that is *"characterised by free and open debate, critical questioning of prevailing orthodoxies and experiment with new ideas"*.

- Demonstrate social responsibility by offering expertise and infrastructure for community service programmes.
- Encouragement and building of culture-based institutional environments that foster tolerance and respect (Republic of South Africa, 1997: 14-15).

2.4.1.3 National and international trends in higher education

Knowledge and information are growing at an exponential rate within tertiary education and specialisation is increasing. Therefore it is necessary to emphasise lifelong learning to keep ahead of technological and economic changes as embodied in the labour market. International globalisation and interdependence among countries require that tertiary education stays up to date. High unemployment figures, poverty, and under-development, especially among young people should be addressed to prevent disruption of solidarity and stability in democratic communities. Tertiary education must make an active contribution to the environment, health and drugs, and civil and democratic values of the country. Financing of tertiary education and limitation of financial resources by the public services and the government, together with increased demands for after-school learning opportunities, place new burdens on tertiary institutions. Demands and expectations are increasing in the light of limited finances (University of the Orange Free State, 1998:5-6).

Client-orientation, pro-active transformation and a democratic, participative and empowering management style are needed in higher education for the 21st century to renew education, adapt research and develop new competencies that will be needed. Open learning, distance education, telematic learning and resource-based learning are becoming viable options to cut cost and to shift the emphasis from teaching to learning. For change to take place, a revitalised system must be deducted from the mission of the university (University of the Orange Free State, 1998: 6-7).

2.4.1.4 Vision

The vision statement of the University of the Orange Free State (UOFS) reflects its philosophy and reads as follows:

*"**To be a top-quality university in the new South Africa.***

*The UOFS is and remains a **university**. This implies that the practising of science is the focus and reason for the existence of the institution and that the creation, preservation, transmission and application of knowledge are its principal activities.*

In addition the vision statement emphasises two aspects:

***Quality** (top) and*
***Relevance** (new South Africa)*

The pursuit of quality and relevance must comprise the following:

- *Excellence in the academic and all other fields must be maintained.*
- *Creative, independent thought and critical debate must be encouraged.*
- *The UOFS must be a centre of scholarship.*
- *Internationalisation must be promoted and an atmosphere must be created which will prove attractive to academics of international quality.*
- *The UOFS must contribute to the solving of national and international social problems and must take the whole spectrum of the development needs of the region and country into account.*
- *New partnerships and alliances must be forged in order to utilise available talents, technology, expertise and resources optimally for the promotion of education, research and community service.*
- *An ethos of quality and supportive rendering of service must be promoted.*
- *The inequalities of the past must receive attention.*

- *A unity of endeavour accompanied by accommodation of cultural diversity must be promoted.*
- *An environment must be created for quality students and student development"* (University of the Orange Free State, 1998: 8).

2.4.1.5 Mission

The mission of the University of the Orange Free State is embedded in its philosophy and reads as follows:

"The mission of the University is the pursuit of scholarship as embodied in the creation, integration, application and transmission of knowledge by

- *promoting an academic culture within the university community;*
- *developing the ability of critical scientific thought;*
- *providing relevant scientific education;*
- *expanding the body of scholarly knowledge by both pure and applied research;*
- *performing community service as a supplement to its core functions of education and research; and by*
- *comprehensively developing its students within its academic culture"* (University of the Orange Free State, 1998: 8-9).

2.4.1.6 Values

The values of the University of the Orange Free State are stated as follows:

- *Excellence*
- *Academic freedom, freedom of speech and the right to differ*
- *Tolerance of diversity, including cultural and other differences*
- *Openness and transparency*
- *Inclusive and democratic decision-making*

- *A culture of learning*
- *Respect for all forms of life and the environment*
- *Order and stability*
- *Client orientation, a service disposition and a society orientation*
- *A business orientation and entrepreneurship*
- *Freedom of religion and respect for different views of* life (University of the Orange Free State, 1998:9).

2.4.1.7 Strategies to implement change

In reaction to the environment, the University had to formulate strategies to address change. Many of these strategies are in the process of being implemented and are as follows:

2.4.1.7.1 The management of diversity

Management of diversity has made significant progress and includes the following:

- *Affirmative action:* Targets have been set for faculties and support services.
- *Parallel-medium language policy*: It has been implemented and needs refinement (University of the Orange Free State, 1998:9).

2.4.1.7.2 Student transformation and representation at all levels

Students have been granted representation on Senate and the Council since 1994 and the Student Transformation Forum was established in 1998 to establish a mutual, cultural accommodation and residence placement policy. Attention is given to student support services in the light of the Act on Higher Education (University of the Orange Free State, 1998:10).

2.4.1.7.3 Establishment of a Transformation Committee

Transformation has started in various fields as the UOFS has been committed to transformation for a considerable time (University of the Orange Free State, 1998:10). Among others a Transformation Forum with broad representation was established in 1997 to facilitate the transformation process (Viljoen, 1999: Conversation).

2.4.1.7.4 Accessibility and bridging programmes

R1 million was made available to facilitate access to the University while accessibility and bridging programmes were refined. It still receives attention from the portfolio committee on accessibility, recruitment and student development (University of the Orange Free State, 1998:10).

2.4.1.7.5 Regional co-operation

Co-operation with the Technikon Free State is actively promoted and co-operation with Technikon SA is underway. Discussions were held with the Rector of Uniqwa on co-operation. Rectors of higher institutions agreed to meet regularly to discuss co-operation in the field of higher education in the Free State (University of the Orange Free State, 1998:10).

2.4.1.7.6 Task groups

Ten task groups investigate and recommend action in the following fields:

- *Reformulation of the vision*: This has already been completed.
- *Image, marketing and business orientation*: The Public Relations Bureau and UOFS Foundation are being repositioned to become involved and a new approach to recruitment and sponsor recruitment is followed.

- *Focus areas for strategic positioning*: Generic focus areas, which extend across thematic focus areas have been identified.
- *Consolidation of programmes and structures*: First-phase consolidation of faculties has been completed and is still receiving attention.
- *Financial framework for faculties*. This has already been implemented
- *Decentralisation of decision-making structures and systems*: The decision has been made in respect of funds for personnel provision to deans and heads of support services and a new management model has been approved.
- *Sustainable human development and capacity building*: Recommendations are being made regarding a programme for sustainable human development
- *Structure of academic and other support services*: Overlapping is investigated and specific support services will be repositioned with consolidation and retrenchment where needed.
- *Mechanisms for the reduction of personnel cost*: Progress has been made and is continued.
- *Quality management and quality assurance*: Policy is formulated and a guide has been compiled for the process.

(University of the Orange Free State, 1998:10-12).

2.4.1.8 Conclusion

Change in tertiary education has become inevitable, not only in South Africa, but globally as the next millennium is around the corner. The Higher Education Act and changes in the international arena forced change in South Africa's higher education system. The formation of the National Qualifications Framework, limitation of financial resources and the ever-increasing body of knowledge, forced tertiary education in South Africa to renew education, to adapt research and to develop programmes for new competencies that will be needed in the 21st century. All these factors had an impact of the vision, mission and value statements of tertiary education institutions. Strategies to implement change are geared towards the diversity of students, as well as academic

personnel, and can be seen in the transformation process especially at the UOFS. The UOFS used to be a traditional Afrikaans university, but parallel-medium education has been implemented, as well as bridging programmes. The transformation process is on track and has an impact on all the faculties, including the Faculty of Health Sciences and the School of Nursing. Various faculties are presently in the process of consolidation. All these changes will have to be reflected in programmes.

2.4.2 Faculty Of Health Sciences

The Department of Nursing used to be part of the Faculty of Social Sciences for many years. Various initiatives of this department as well as the Faculty of Medicine to be united into one faculty failed. Professor Charlotte Searle was one of the first persons to mention the advantages of a merger of medical and nursing sciences at the University of the Orange Free State shortly after the Faculty of Medicine was established in 1970. In the 1980s an investigation was undertaken into the potential insertion of nursing into the Faculty of Medicine, but a decision was taken against it. In 1996 Professor C.J.C. Nel (Dean of the Faculty of Medicine) brought this issue up again, but resistance from the Faculty of Social Sciences was strong and the initiative failed yet again (Nel, 1999: Conversation). In the mean time the new National Health Plan for South Africa emphasised teamwork as a central component of the new health system which was to be based on the Primary Health Care Approach. The aim was to get rid of fragmented health and educational systems and the establishment of a new single, comprehensive, equitable and integrated National Health System. Integration of existing departments and co-ordination among all health delivery systems would lead to rational financial management, human resource management and a comprehensive health information system. For this to take place organisational structures had to be reformed and support systems strengthened. A quote from the National Health Plan for South Africa reads: *"Health personnel education will be multi-disciplinary, gender sensitive, problem oriented and community-based in character"* (ANC, 1994b:7-12).

After a working group had been established and the advantages and disadvantages had been discussed, the decision was eventually made to establish the Faculty of Health Sciences. This new Faculty of Health Sciences was established in 1997 in response to all the above-mentioned initiatives, as well as in reaction to the consolidation of faculties at the University of the Orange Free State. Three Schools were established and were to function in the Faculty of Health Sciences: The Medical School, the School of Nursing and the School of Supplementary Health Sciences (Nel, 1999: conversation).

According to Nel (1999: conversation) the formation of the Faculty of Health Sciences is a positive experience for most of the health science personnel in the three schools involved in this faculty. Duplication and fragmentation decreased, money is saved, research can be co-ordinated among schools with larger impacts as test samples will increase and endeavours will be combined in triangulative research. Instrumental and expressive functions of both the nursing and medical sciences can be exchanged in a way that can benefit both schools. A collective philosophy, mission, vision and value statement is in the process of being compiled, without compromising the autonomy of any one of the three schools.

It is the mission of the Faculty of Health Sciences to be a centre of excellence and to promote the welfare of the community by means of teaching, research and comprehensive health care, both nationally and internationally.

2.4.3 School of Nursing

2.4.3.1 Educational reform and change

Change was inevitable as educators started to react world-wide to the call for emphasis on primary health care by the World Health Organisation. In the 1990s it became clear in South Africa that the country was in need of an educational and training system that was efficient, flexible and accessible to all the people of the country (Republic of South

Africa, 1995: 5-28). *"In the past mismatches between education and consumer needs have resulted in education programmes not appropriate for the health needs of the community"* (Fichardt, 1996:15).

Staff in the Nursing Department became *"dissatisfied with their students' lack of independent thinking, passive behaviour and inability to retain and integrate basic sciences in the clinical context"* (Fichardt, 1996:14). It became an important goal among the staff of the Nursing Department to produce graduates who were assertive, scientific thinkers, and lifelong learners (Fichardt, 1996:14).

2.4.3.2 Shift to problem-based learning and community-based nursing

The Head of the School of Nursing initially became interested in problem-based learning after she had read about this methodology in the literature. She also came into personal contact with nursing schools who implemented problem-based learning with success in 1992 (Fichardt, 1996:16).

Problem-based learning as a strategy for learning seemed an appropriate strategy as it was being introduced successfully at various health faculties world-wide. It seemed that this learning strategy was successful in overcoming student passivity, integrating basic science with clinical courses and reinforcing lifelong learning in students (Eisenstaedt, Barry & Glanz, 1990:511).

Furthermore, problem-based learning had many interfaces with the newly established National Qualifications Framework, for example the activation of prior learning, the construction of problem-oriented semantic networks to enhance general abilities such as communication, problem-solving and learning strategies, contextual cues derived from professionally relevant problems and the fostering of epistemic curiosity and integrated learning (Republic of South Africa, 1995:5-28; Schmidt, 1993:431).

The new National Health Plan for South Africa is in accordance with the philosophy of the primary health care approach, with full community participation in the planning, provision, control and monitoring of services. The best way to reach this aim is by education of health personnel that is *"multi-disciplinary, gender sensitive, problem-oriented and community-based in character"* (ANCb, 1994:11).

As a result the School of Nursing became the first academic unit of the University of the Orange Free State to officially implement problem-based learning in 1997. The school implemented problem-based learning and a curriculum design that was community-based in the first-year undergraduate-nursing programme.

2.4.3.3 Model used for programme development

The School of Nursing at the University of the Orange Free State took on a relatively process-oriented model of programme development although products (outcomes) as stated by the South African Nursing Council and the newly established South African Qualifications Authority had to be taken into consideration. The approach to programme development was integrated, student-centred, problem-based, community-based and *"a portfolio of meaningful personal experiences"* (Quinn, 1989:253) for the student as such. Action research forms part of the development of the programme as an ongoing process as an education programme is not a static concept, but a dynamic and growing creation that is never finished.

2.4.3.4 Philosophy of the School of Nursing

The philosophy of the School of Nursing at the University of the Orange Free State addresses the following aspects: university, human being, health, nursing and nursing education.

UNIVERSITY: The university is viewed as multi-cultural and strives towards excellence, equity, and no discrimination on grounds of gender or race. Freedom of religion is acknowledged and no student may be disadvantaged on grounds of religion. Parallel-medium tuition is provided and students have a right to receive education in either English or Afrikaans, and utilisation of Sesotho is enhanced.

HUMAN BEING: A human being is viewed as created by God, unique and with a value system that is grounded in various aspects of reality and a developmental phase. Active participation in all the aspects of reality is continuous and the universal existence of humans cannot be associated with any temporary aspect of reality, nor can it be terminated in one or another form of human life. Humans have intellectual and ethical functions apart from many other functions.

HEALTH: Health is a dynamic, non-quantifiable, multi-dimensional and dependant variable portrayed on a continuum. Health is viewed as a quality of man, which is influenced by the environment and does not necessarily exclude sickness. Health is viewed as integrated and influenced by the Christian view the School of Nursing holds of humans. Health is a process, which is influenced by the developmental phase of humans; therefore it is a dependant variable, which is dynamic, not static. Humans are multi-dimensional unitary beings, according to the Christian view. As all the dimensions of the human being are interdependent, no single dimension can be approached as an entity, nor can it be prioritised. Health is an inherent quality of humans and has the same multi-dimensional characteristics, which cannot be viewed or approached separately. The dimensions of humans are as follows:

- physical (functional, chemical, biomedical and natural);
- social (social, economical and esthetical orientation);
- psychological (a partly holistic and partly eudaemonistic orientation);
- spiritual (ethical and religious aspect); and
- historical (cultural and juridical).

A human being is in interaction with his environment with his health as a dependant variable, influenced by his external and internal environments. Health and sickness are not placed on the same continuum as sickness may form part of health. Health and sickness influence one another, but not as opposites on a continuum but in parallel.

NURSING: Nursing is a unique relationship between humans, nurses and patients where the nurse utilises both the art and science of nursing to enable patients to lead a meaningful existence or to die while being accompanied and supported. Nursing takes place according to the norms of humanity.

Nursing science is a human, clinical health science, which forms the corpus of knowledge of people who are registered or enrolled as nurses in terms of the Act of Nursing.

A nurse is involved in the development of knowledge within nursing diagnosis, treatment, and personalised health care with the prerequisite that it falls within the boundaries of nursing philosophy and ethics. This care is delivered to individuals who are exposed, suffer, or recover from a physical of mental ailment. These include the rendering of preventative, promotive, curative, and rehabilitative health care to individuals, families, groups and communities and cover the life span from before birth.

Nurses make use of problem-solving skills to plan care along with individuals, families and communities in order for these people to take responsibility for their own welfare. Nursing aims to modulate the health needs and behaviour of individuals, families and communities to reach health in every dimension.

A health need is a demand, which has been made known by an individual, or a group in order to maintain, protect and promote health. Health personnel fulfil the basic health needs of individuals and groups by means of their actions. The basic health care needs are as follows:

- self-concept and hygiene needs;
- nutritional needs;

- eliminatory needs;
- activity needs;
- needs for internal homeostasis;
- safety needs;
- sensorial needs;
- interpersonal needs;
- reproduction and sexual needs;
- spiritual needs; and
- learning needs.

Health care behaviour is an activity, which is undertaken in an individual and voluntary manner, to prevent illness or to establish a symptom-free state. This may include an activity, exclusively for the maintenance or promotion of health. Health care behaviour manifests in promotive health behaviour and is aimed at actualisation and stabilisation.

Health care behaviour includes activities to prevent an illness by means of actively protecting the body against unnecessary stresses or identification of illness at an early stage. Health care behaviour is illness-specific and includes avoidance of behaviour that may cause illness.

Health care behaviour is aimed at the maintenance or promotion of the well-being of the individual. To promote health is a continuous activity, which forms an integral part of the individual's life style and is expressed in the actualisation abilities of the individual. Interaction with the environment enables the individual to attain higher levels of well being. This interaction means that the individual influences his/her environment, rather than to react to the external environment.

Self-care within the framework of health behaviour, which is aimed at promotion of health, emphasises self-care, personal commitment and the responsibility to attain knowledge, skills and attitudes that will promote and maintain health.

Health care behaviour is divided into three levels:

- Primary prevention (specific protection against certain illnesses and the promotion of health)
- Secondary prevention (early diagnosis and action)
- Tertiary prevention (rehabilitation as illness is irreversible)

The integrated approach to health boils down to comprehensive health care, which is embedded in the philosophy of primary health care and reads as follow:

"Primary health care is essential health care based on practical, scientifically sound and socially acceptable methods and technology, made universally accessible to individuals and families in the community through their full participation and at a cost that the community and country can afford to maintain at every stage of their development, in the spirit of self-reliance and self-determination...(it) forms an integral part both of the country's health system, of which it is the central function and main focus, and of the overall social and economic development of the community. It is the first level of contact of individuals, the family, and the community with the national health system, bringing health care as close as possible to where people live and work, and constitutes the first element of a continuing health care process" (WHO, 1984: 34).

NURSING EDUCATION: Nursing education is a process whereby the art and science of nursing is internalised by students. Facilitation takes place by means of a team of experts who forms part of the institution of Higher Education, health care institutions, and communities. The aim of nursing education is to provide knowledge, skills and attitudes to be actualised in creative and therapeutic acts.

Nursing education is outcomes-based, as nurses should be able to practise in an independent, scientific, and problem-solving practice. Learning takes place by means of active participation of the learner as an individual and in a group. Students' critical and meta-cognition abilities are developed by integrating mental, natural, management and health care sciences. At the nursing school in the UOFS integration takes place by means

of problem-based learning based on defined clinical problems. Students use problems as a stimulus to acquire understanding and answers to a defined problem. The problem-solving process includes awareness of the problem, analysing the problem, setting priorities and describing the problem, the generation of problem-solving possibilities, implementing problem solving, and evaluation of the results. The learning experiences take place in small groups to enhance communication skills, interaction and self- and peer-group evaluation.

An outcome is a result of the learning process and can take place in a formal, non-formal or informal way. The SA higher education authorities demand two types of outcomes to be pursued in all education and training: critical and specific outcomes.

Critical outcomes are cross-curricular, broad generic outcomes that inform teaching and learning for example management, communication and interpersonal skills, problem solving skills, skills in technology, professional responsibility and development and learning how to learn.

Specific outcomes refer to the application of knowledge, skills, attitudes and norms in the context of the content and vocation and support critical outcomes.

The objectives of nursing education in the UOFS correlate with the health needs of the community as the community is used in a comprehensive way to provide opportunities for learning. The health needs of the community are determined, students, facilitators, members of the community and other sectors take part in the educational process. Therefore nursing education at the UOFS is community-based and takes place with the help of partners.

A partnership is a collaborational agreement and ensures ownership, self-governance and participation to attain the shared objectives of the partnership.

A community can be defined in geographical terms as a group of people who live together in a defined region and adhere to the same values. When health services are planned, groups in the community who share the same basic interests are considered as a community, although the interests may change from time to time just as the membership may change. According to the epidemiological view the community is considered as a group of people who are exposed to certain health risks and are viewed as a target population. The definition will depend on the discussion (Viljoen, Botma, Joubert, Mulder, van der Berg, 1999).

2.5 CONCLUSION

World-wide changes in societies are reflected in new, creative and innovative educational programmes. To evaluate these programmes, extensive research is necessary to recommend and implement change where it is needed. Years ago the World Health Organisation already started to stimulate the visions of educators and health professionals for the year 2000, which is now less than a year away. The formation of qualification frameworks was initiated in the United Kingdom, New Zealand, Canada, Australia, and various other countries world-wide. Philosophies started to change to more humanist and process-oriented philosophies, which include whole communities with less emphasis on class divisions, authoritarianism, super-specialisation and institutionalised services. Educational institutions are beginning to portray these changes in their missions, visions, values and philosophies. Students with different cultures and languages are accommodated in educational institutions without compromising quality and excellence. This phenomenon causes students to be an important determinant in programme development. The right of academic freedom invited new individualised learning strategies like problem-based learning. But Uys and Cassimjee (1997:133) add *"Although students participate to a much greater extent than in traditional programmes, there are certain basic requirements* [internal as well as external factors] *which they have to meet. These include practica requirements, which are linked to professional competence and registration; academic requirements, which are linked to the degree*

requirements of the university, and educational requirements, which are linked to the programme objectives set by the Department of Nursing as directors of the programme". Like so many times in the past, the nursing profession was not hesitant to take on this challenge. Evaluation of nursing education programmes is necessary to determine whether their pioneering was worthwhile. In conclusion the internal and external factors which influence programme development (as discussed in this chapter) are portrayed in Figure 2.7

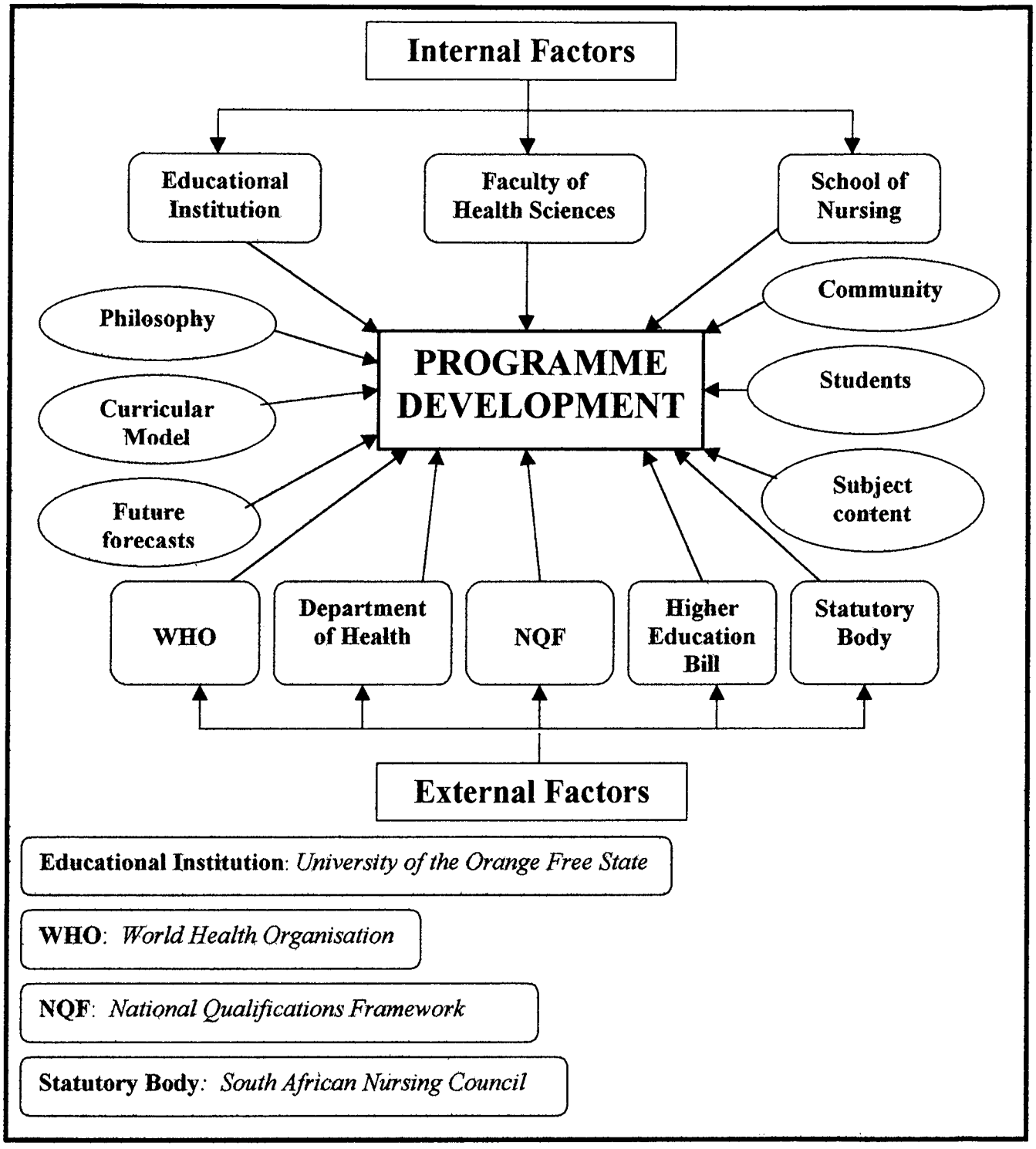


Figure 2.7 Variables that influence programme development

CHAPTER 3

Problem-based learning

3.1 INTRODUCTION

Why have more than 60 medical schools world-wide adopted problem-based learning curricula? And why are so many health sciences professions changing to this mode of instruction? Change, proliferation of knowledge, pressure on educators to cover content of overloaded curricula in record times and frustrated, ill-prepared students led to an increase in the use of more self-directed instructional methods in tertiary education. Self-directed instructional methods prevent students from having to digest an indigestible amount of *"fish"*, but teach them the skill of fishing in order to live up to the Chinese aphorism of *"Give me a fish and I eat today. Teach me to fish and I will eat for a life-time"*. This chapter describes problem-based learning (PBL) as one of the self-directed instructional methods in tertiary education, which helps students to become lifelong learners or *"fishers"* who will be able stay abreast of new information as it becomes available in their future professions. The history, rationale and methodology of PBL will be explored where after the role of PBL in programme development will be discussed.

3.2 PROBLEM-BASED LEARNING

3.2.1 Definition

There are various definitions of PBL of which a few will be discussed.

Foldevi *et al.* (1994:474) define PBL as a student-centred and holistic educational strategy where the problem becomes a stimulus for the learning process. Exposure to various situations helps students to develop reasoning skills, teamwork abilities, cross-sectoral collaboration and initiative.

Barrows (1985:15) outlines the problem-based learning process as follows: *"encountering the problem first, problem-solving with clinical reasoning skills and identifying learning needs in an interactive process, self-study, applying new gained knowledge to the problem and summarising what has been learned"*.

Foldevi *et al.* (1994:474) add that PBL is an alternative to the top-down transfusion of facts; instead it is *"a ground-up engendering of active skills in young, eager and naturally problem-solving minds"*.

Quinn (1989:19) defines PBL as *"learning that results from the process of working towards the understanding or resolution of a problem"* and it *"is different from other problem-solving teaching strategies, because the problem is given to the student prior to any form of input; usually, traditional methods involve the giving of information followed by the application of that information by use of clinical problems"*. She adds that PBL starts with the problem and that students have to find out what they need to know to solve the problem, making it a discovery-type approach that can be very motivating.

Albanese and Mitchell (1993:53) synthesised the following definition of PBL from various key sources: PBL can be defined as *"an instructional method characterised by*

the use of patient problems as a context for students to learn problem-solving skills and acquire knowledge about the basic and clinical sciences".

Vernon and Blake (1993: 550-551) in their meta-analysis of PBL integrated various definitions of PBL as it was defined by different authors over the years as *"a method of learning (or teaching) that emphasised (1) the study of clinical cases, either real or hypothetical, (2) small discussion groups, (3) collaborative independent study, (4) hypothetico-deductive reasoning, and (5) a style of faculty direction that concentrated on group process rather than imparting information".*

3.2.2 History

Dewey was the first one to introduce problem-based learning (PBL) in the beginning of this century. Dewey suggested that organising the work of students around significant problems was the best way to encourage critical intelligence in students and that it led to a break with traditional curricular patterns (Mason, quoted by White & Evan, 1991: 23). In the 1930s the discovery method and the inquiry approach to learning were initiated in medical teaching. This led to problem-based learning as we know it today (Pelausa & Marsan, 1993:421). Problem-based learning has spread to many parts of the world since the late 1960s when it was started at McMaster's University in Ontario, Canada, where PBL was adopted as part of a comprehensive reorganisation of the medical programme. Students with unusual educational backgrounds were selected to enrol in this, student-directed, PBL tutorial medical programme. Written examinations were abolished, and the emphasis was on community integration (Donner & Bickley, 1990:882). Other well-known medical programmes followed, for example in Maastricht in the Netherlands, and Newcastle in Australia. Some schools adopted problem-based tracts, others tried problem-based segments and others adopted problem-based courses (Donner & Bickley, 1990:882). A problem-based course of nursing was also introduced in the mid-1980s at the MacArthur Institute of Education in Sydney (White & Evan, 1991:23-24).

3.2.3 Theoretical basis of problem-based learning

Problem-based learning is strongly influenced by cognitive psychology, where available cognitive structures (knowledge stored in the long-term memory) must be activated in learners to deal with new information (Schmidt, 1993:423). Jerome Bruner was a cognitive psychologist who was particularly interested in discovery learning and saw learning as involving three processes: (1) activation of prior knowledge; (2) transformation of information and (3) evaluation and elaboration of knowledge. The purpose of learning is that it should be useful in the future by transfer of specific skills or general principles (Bruner, 1960:7). Prior knowledge provides a schema to incorporate new information. Performance will be enhanced if the situation, in which something is learned, resembles the situation where it will be applied. Knowledge is elaborated when students *"develop the information by means of discussion, note-taking, teaching peers, formulating and criticising hypotheses or answering questions"* (Chang, Cook, Maguire, Skakun, Yakimets & Warnock, 1995: 15). Situations should be created where students can learn actively and on their own, while they are stimulated to discover content through problems, which need to be solved. Bruner emphasises inductive reasoning where students move from a specific example to a general principle by involving intuitive thought. By stimulating students' curiosity they are motivated to keep on seeking answers, while their independent problem-solving skills and analytical thought are developed. Probing questions encourage guessing and curiosity is satisfied even though it has no direct link with the stated problem (Slavin, 1988:215-216-228; 283).

The roots of cognitive psychology can also *"be traced in Dewey's (1929) plea for the fostering of independent learning in children"* (Schmidt, 1993: 423), and the importance of using real-life events. Principles of cognitive learning and its relation to problem-based learning are discussed in 3.2.4 to elaborate on the theoretical basis of problem-based learning in cognitive learning.

Some authors use closely related theoretical underpinnings of problem-based learning for example:

- Schmidt (1983) suggests an *"information-processing orientation"* to support PBL. It has three principles: (1) prior knowledge, which influences current learning; (2) encoding specificity and (3) elaboration of knowledge.
- Barrows (1985) proposes *"structure of the knowledge through a problem-based format"* to organise learning around problems.
- Coles is a proponent of the *"contextual learning theory"* with three time-dependent phases: (1) context, (2) information, and (3) relating together. PBL provides a suitable context for subsequent learning (Albanese & Mitchell, 1993: 54).

3.2.4 Principles of problem-based learning

The focus of PBL is on two main processes: first, the students are placed in small tutorial groups and then they are to investigate real problems that might arise in the treatment of patients (Aspy, Aspy & Quinby, 1993: 22).

Barrows (1985:15) describes an outline of the process of problem-based learning: the problem is encountered first, then the group applies problem-solving using clinical reasoning skills and identifies learning needs. Group members then use these learning needs during self-study to obtain the necessary information and come back to the next tutorial and apply the newly gained knowledge to the problem. Thereafter they summarise what has been learned. All this takes place in an interactive process. *"The principle of PBL is to put learners in a particular situation, and then to give them a task or challenge as a source for learning, and arrange it to be of a kind similar to work with which they will be confronted in their professional future"* (Walton & Matthews, 1989:543). Instruction is provided to help students investigate real problems that might arise in the treatment of patients (Aspy *et al.*, 1993:22).

After confrontation with the problem, students actively attempt to define, analyse and solve the problem through a process of shared experiences. This process includes, first, a discussion of the problem and then the studying of relevant resources (Schmidt, 1993:427).

Fichardt (1996:102) outlines six underlying principles incorporated in problem-based learning:

(i) learners are shifted toward independence and move away form the narrow world of text and teacher;

(ii) analytical and creative thinking skills are developed;

(iii) self-directed learning abilities are developed;

(iv) co-operative learning is encouraged;

(v) skills and knowledge are applied in an integrated way into the context of practice; and

(vi) motivation for learning is encouraged.

"The essential characteristics of PBL include: curricular organisation around problems rather than disciplines; an integrated curriculum rather than one separated into basic sciences and clinical sciences components, and an inherent emphasis on cognitive skills as well as on knowledge" (Walton & Matthews, 1989: 555).

Schmidt (1993:424-431) suggests five fundamental principles of cognitive learning and the way in which problem-based learning facilitates learning:

(i) *"Activation of prior knowledge"*: The preliminary discussion of the problem has four goals. First it helps students to mobilise their prior knowledge about the problem which also helps to facilitate understanding of new concepts. Second, the group discussion helps them to expand their knowledge, which with the contribution of group members will lead to enrichment of their cognitive structures. Third, the accumulated knowledge at this stage becomes related to the context of the problem. Fourth, epistemic curiosity is stimulated by the discussion. In this way students are motivated to find out more about the problem discussed. This means that the initial analysis of the problem at hand in a small group, has a strong effect in the retrieval of prior knowledge.

(ii) *"Elaboration on prior knowledge":* Elaboration is promoted by small-group discussions used in PBL. New information is actively processed, both before and

after new information has been obtained. This is enhanced by questions students ask to explain problems they encountered. This facilitates the understanding and retention of new knowledge even if students have only limited knowledge of the subject. Questions students ask also serve as cues and learning goals when they are engaged in self-directed learning. A more comprehensive semantic network of knowledge is built up about the problem at hand, as resources such as textbooks and articles are reviewed. Report back to the group then leads to further elaboration and retention of knowledge.

(iii) *"Restructuring of knowledge"*: In PBL this restructuring revolves around the problem presented and students adapt general prior knowledge to fit the problem-at-hand. The way in which knowledge is structured in the memories of students makes it more or less accessible for use. Appropriate semantic networks are constructed, which help students to understand the principles and mechanisms underlying the problem.

(iv) *"Learning in context"*: Problems serve as *"a scaffold for storing cues that may support retrieval of relevant knowledge when needed for similar problems"* (Schmidt, 1993:428). Retrieval and storage of knowledge in the memory are enhanced when students elaborate on the problem presented to them during group discussions. Contextual cues activate further knowledge from the long-term memory.

(v) *"Emerging of epistemic curiosity"*: Because problems are relevant and analysed in open-ended discussions, students' curiosity is stimulated. Curiosity motivates learning and extends the amount of study time, which improves achievement (Schmidt, 1993: 424-426; 428).

It is clear that PBL is not only instrumental in solving problems, but it also promotes the exploration of fundamental concepts of health and disease in the context of problems (Walton & Matthews, 1989: 550).

3.3 RATIONALE FOR USING PROBLEM-BASED LEARNING

3.3.1 Acquisition of critical outcomes

One of the main reasons for the use of PBL as a broad educational strategy is to help students to acquire critical skills (also referred to as generic outcomes). Critical or generic outcomes are defined as *"those generic outcomes which inform all teaching and learning"*(Republic of South Africa, 1998:3). Examples of critical outcomes provided by SAQA are:

- responsible and creative problem-solving;
- effective teamwork in groups, organisations and communities;
- scientific decision-making by gathering information, categorising, analysing and evaluating it;
- effective communication in written and spoken form;
- effective use of science and technology;
- effective learning/study strategies;
- cultural and aesthetical sensitivity across various social contexts;
- ability to select effective career and educational opportunities; and
- ability to develop entrepreneurial opportunities (Republic of South Africa, 1998: 8-9).

Uys and Cassimjee (1997:133) add that students are not only to be taught the content of a discipline, but also the skills of learning, while Tang (1993:116) agrees that co-operative learning *"enhances perceptions of positive support from other group members"* and tends to be superior in accomplishing student achievement when compared to both competitive and individualistic learning methods. Therefore co-operative learning prepares students to acquire the generic skill of working effectively in a team. Evan and White (1989:129) along with many other authors agree that group work and independent learning involve students as active participants, who develop teamwork skills, communication skills, the application of knowledge to problems, reliance on their own

judgement, independence, learning outside the classroom and lifelong learning skills. Self-directed learners are more confident of their own abilities once they enter practice because they do not rely on someone else to tell them what to do. Self-assessment helps them to recognise their own limitations and to overcome them. Students know that the educational institution is not the only place where learning occurs as everyday activities provide many important sources of knowledge and skills. (Evan & White, 1989: 119-122).

Walton and Matthews (1989:548) emphasise the importance that students are taught skills of collecting facts, verifying facts, assigning a value to facts, testing conclusions and forming judgement. This is a very important generic skill and closely related to life-long learning. *"The true aim of the teacher is to impart an appreciation of method rather than a knowledge of the facts, for method is remembered when facts have been forgotten, and method can be used when there are too few facts"* (Sir George Pickering, quoted by Walton & Matthews, 1989:548).

3.3.2 Acquisition of specific outcomes

Specific outcomes can be defined as contextually demonstrated knowledge, skills and values, which support critical outcomes (Republic of South Africa, 1998: 5). Specific outcomes endorse critical outcomes and they describe the competence a learner should have at a specific level in a programme, and are formulated in a way that enhance transparent, fair and effective evaluation. Specific outcomes are similar to the programme objectives used in educational programmes (Nel, *et al.*, 1998:22).

"Since facts are learnt in context, they are remembered within the appropriate framework" (Uys & Cassimjee, 1997:133). Therefore problem-based learning fosters the advantage of learning in context where learning will eventually be applied. Students can learn to make informed decisions after problem-solving skills have been applied thoroughly. Problem-solving may include diagnosis, therapeutic management, monitoring, reviewing outcomes, rehabilitation and the recognition of related problems

apart from the principal problem (Walton & Matthews, 1989: 544). Dolmans, Gijselders, Schmidt and van der Meer (1993:207) add that situated knowledge is more accessible, as cues in the meaningful situation activate the stored prior knowledge.

Problem-solving skills can be very useful when students are confronted with nursing problems in the course of their work and they learn how to integrate theory appropriately to a variety of clinical problems which is an excellent way to be prepared for clinical practice (White & Evan, 1991:24; Evan & White, 1989: 122).

3.3.3 Integration

The integrated model of programme development is discussed in the previous chapter in 2.2.5.4 where the traditional discipline approach is criticised as being an artificial creation of man to organise his world. Traditional discipline-based curricula have little resemblance to real life, force students to learn in a fragmented way and are not contextually relevant. The world-wide emergence of integrated curricula in the 1990s was a response to the overloading of curricula, duplication among disciplines and frustrations among students as well as faculty members. Problem-based learning stimulates higher-order thinking and causes discipline boundaries to dissolve (Drake, 1993: 2-3).

One of the many educational objectives described by Barrows (1983: 3077-3080) is to acquire a basis of knowledge that is better retained, integrated from all the relevant disciplines, applicable in the clinical context and extended by self-directed study into the future. Donner and Bickley (1990: 881), when comparing PBL with the lecture-based analogue, notice that PBL goes beyond the lecture because in PBL basic medical sciences are learned concurrently (integrated into the same programme) and in the context of a health problem. This means that basic sciences and theory and practice are integrated in a meaningful way. Effective integration among the different disciplines and learning within the context of problems rather than in the context of disciplines is one of the main aims of problem-based-learning (Walton & Matthews, 1989:545). Albanese and Mitchell

(1993: 53) and Gist (1992:8) agree that basic science, clinical knowledge and clinical reasoning skills should be integrated to help students obtain critical thinking skills. Lack of vertical integration has been noted as a serious problem in problem-based learning and *"decisions are needed as to whether clinicians will teach from the very start of the curriculum and, conversely, whether basic science teachers will concern themselves with clinical and community aspects of medical education also"* (Walton & Matthews, 1989:552), while tutorial sessions *"provide horizontal correlation across disciplines because the cases employed in tutorial sessions lack discipline-related barriers"* (Sivam, Iatridis & Vaughn, 1995: 289).

At the Indiana University School of Medicine the integration of pharmacology into the PBL curriculum resulted in the following advantages:

- a mutually beneficial integration took place between pharmacology and other basic sciences;
- information overload, with too many drug names and classes within a short period of time, was avoided;
- students were better able to retain the length and breadth of pharmacology knowledge; and
- students found this integrated way of instruction more enjoyable (Sivam *et al.*, 1995: 293).

A core curriculum is an ideal way to organise fundamental learning experiences without traditional boundaries of conventional subjects by using problems to involve students actively in their own learning (Uys, 1982 in Paton, *et al.*, 1993:94; Greaves, 1989: 25).

The holistic (comprehensive) approach of problem-based learning and the attainment of cumulative integrated learning are some of the most advantageous aspects of this type of learning. Kruger (in Mostert, 1985: 65) states that *"the problems that people encounter do not come in subjects or disciplines, but in situations in which man has to act according to his entire frame of reference"*.

3.3.4 Active participation

Blosser and Jones (1995:290) state that *"PBL works because it forces students into an active role in learning. This role requires students to: (1) ask the right questions; and (2) search for the best answer"* and *"PBL teaches both how and what to learn"*.

Problem-based learning promotes the activation of prior knowledge (Schmidt, 1993: 422) and because students are actively involved in problem solving they remember information better. This along with many other advantages of PBL is illustrated in Figure 3.1. Furthermore, curiosity or interest to learn relevant information motivates students. They learn how to learn and keep up to date with new discoveries and facts, as they become available. Because learning takes place in an active way students tend to remember information better. They seek opportunities for learning whether it is formally or informally. A variety of resources and experiences for learning helps students to discover which methods they prefer and which types of activities or resources help them to learn best (Evan & White, 1989: 119-122). Active participation encourages personal development in many areas of the student's life, for example verbal interaction, self-confidence and group leadership (Uys & Cassimjee, 1997:133).

According to Ryan (1993: 56) the educational environment requires the following characteristics for effective self-directed learning to occur:

- there should be both emphasis on the process of learning and the content of the course;
- control of learning must be progressively turned over to students;
- focus should rather be on key concepts and principles than on detailed knowledge; and
- learning should be integrated and active by utilising students' own experiences.

Students learn in small groups how to constantly practise a logical, analytical and scientific approach to learning. In this way effective and efficient reasoning skills are developed and a store of relevant and retrievable knowledge is built up. Active

participation takes place in an atmosphere where questioning is welcomed and encouraged. The emphasis is on co-operation, not on competition as is the case with traditional learning methods. Students eventually learn how to question one another critically without causing offence and to obtain and give feedback on information gathered during self-study activities (Walton & Matthews, 1989:544). Blosser and Jones (1991:290) agree that *"what the students do and do not know becomes not only immediately apparent, but also relevant"*, as it will become a *"learning issue"* and *"a personal responsibility"*. Some *"do not know"* issues will belong to the whole group, while individuals may probe additional issues in an atmosphere of free inquiry.

The main advantages of active participation in PBL are that students learn how to handle future problems and foundations are laid to become independent, lifelong learners (Barrows quoted by Dolmans & Schmidt, 1994:373).

3.3.5 Other advantages of problem-based learning

Another important reason for introducing PBL is that learning problems experienced by individual students become more visible in problem-based courses, whereas in traditional didactic courses problems would have gone unnoticed (White & Evan 1991:25).

Professional practitioners need to be able to adapt to and to participate in "change", and these abilities require critical thinking, which is frequently practised in PBL. Student satisfaction, motivation and excitement of the pursuit are fostered when problems are successfully solved (Walton & Matthews, 1989:545).

Collaborative learning leads to a deeper approach to studying and better learning outcomes as higher cognitive levels are stimulated when group members *"try to express their own opinions, argue for their points, relate, compare and apply information"* (Tang, 1993: 127).

Students participating in PBL curricula remember facts better than students from traditional programmes, prefer this way of studying, avoid being subjected to over-teaching, and are inherently motivated as the problem acts as a motivator (Uys & Cassimjee, 1997:133; Sobral, 1995: 281; Blosser & Jones, 1991:291-292). In addition, students learn how to develop time-management skills as the PBL format provides minimal structure (Blosser & Jones, 1991:289; 291).

Uys and Cassimjee (1997:133) state the essence of PBL as *"the analysis of problem situations as a basis for acquiring relevant knowledge, skills and attitudes"*. Lecturing staff have identified the following benefits of this method:

- Students participate in an active way and demonstrate understanding of the process.
- Learning problems experienced by individual students are detected and diagnosed earlier than would be the case in a conventional programme.
- A wide range of skills and information networks is generated.
- A high level of involvement in community issues is fostered.
- Students develop assertiveness and belief in their own abilities.
- Interpersonal and inter-group conflicts are explored and resolved.
- Students acquire experience in group-work (teamwork) and practise how to resolve potential difficulties (Uys and Cassimjee, 1997:136).

Students enjoy this way of instruction, because of the stimulation and fun generated during the process. The fact that there is no limitation to the exploration of information which students are interested in leads to increased enjoyment. Students appreciate group work and the team spirit it fosters, as well as independent learning (Uys & Cassimjee, 1997: 136-137).

Rolfe, Andren, Pearson, Hensley and Gordon (1995: 226) quoting Barnsley *et al.* [1994] state that an Australian study suggested that interns from the Newcastle medical school (who followed a PBL curriculum) were rated as having greater interpersonal and organisational skills than graduates from traditional schools. They were also considered as more reliable and better self-directed learners (Rolfe *et al.* 1995: 228).

Assets gained from skills applied during PBL are summarised and illustrated in Figure 3.1.

3.3.6 Conclusion

PBL is an educational method with its own logic which is based on cognitive science and pedagogy and is applicable in any educational setting. It addresses the following questions: Why could students not recall or use basic science? Are teachers teaching the wrong things or are they teaching the right things, *"only to have their teaching habitually forgotten?"* (Walton & Matthews, 1989:546).

Donner and Bickley (1990: 881) summarise three very important reasons for using PBL when comparing PBL to traditional lectures. They noticed comparability between the two methods, except that PBL goes beyond the lecture method in three ways:

(i) the fact that students participate actively in their education;

(ii) basic medical sciences are learned concurrently (integrated into the same programme) and in the context of a health problem; and

(iii) students practise skills which encourage them to become self-directed learners for the rest of their lives.

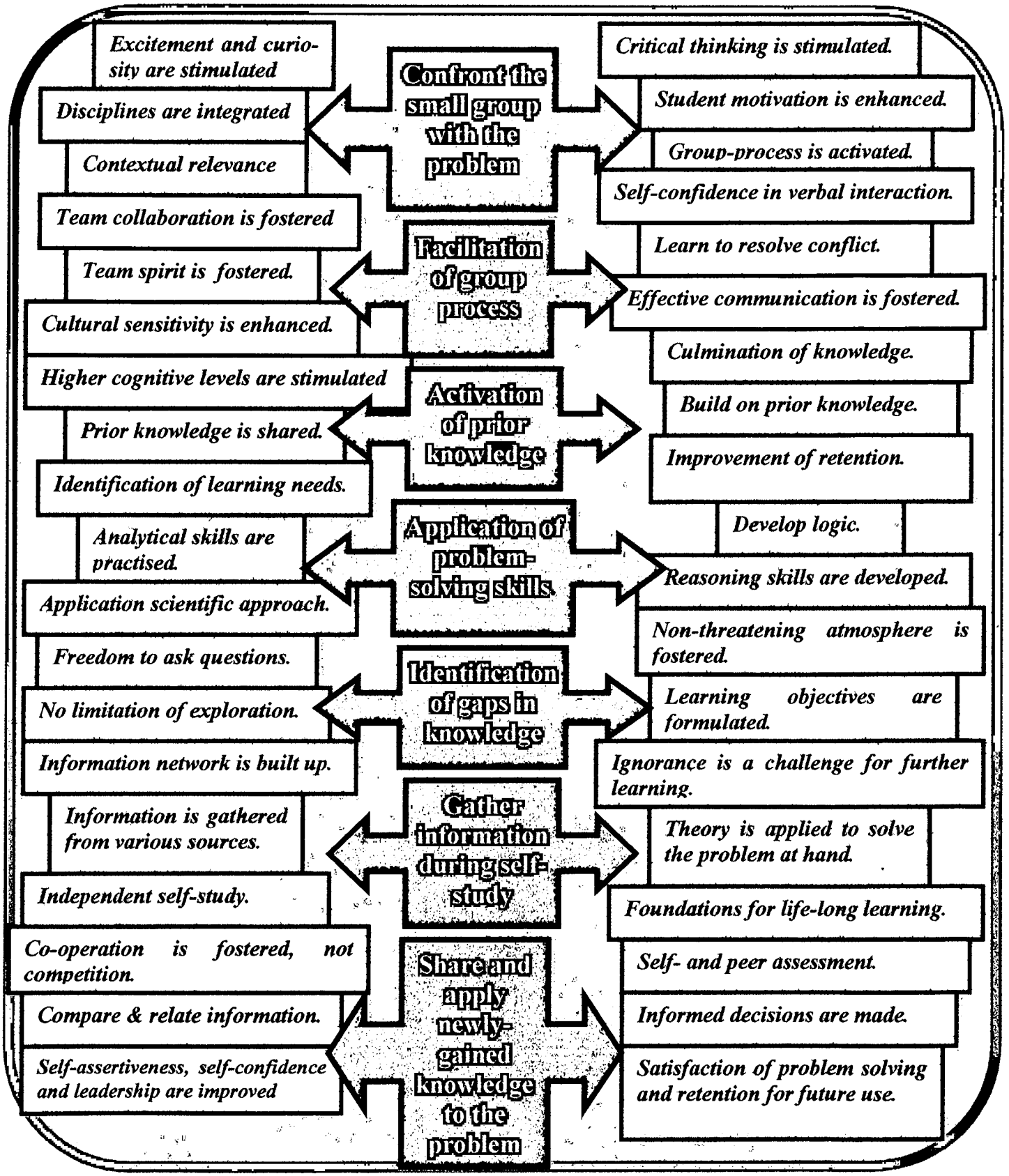


Figure 3.1 Benefits of PBL

3.4 METHODOLOGY OF PROBLEM-BASED LEARNING

3.4.1 Objectives

It should be the overall objective of the learning institution to produce professional practitioners that have the abilities and willingness to serve the community who subsidised their education (Walton & Matthews, 1989: 547).

The teaching staff of the institution is responsible for mapping out a broad framework of objectives. Students use this framework to develop their own detailed objectives. The contributions of students on curriculum planning committees are encouraged because students who have completed a course are an excellent source of useful advice. Staff should also endeavour to state their objectives and directions as general guidelines to allow students to extend their studies in directions and depths of their own choice. At the University of Calgary's Departments of Internal Medicine and Paediatrics, a list of activities, approximate amounts of time for each activity and suggestions for faculty-guided discussions is provided along with an outline of objectives for each session. It is distributed in the form of a brief printed handout to each group before commencement of each group session (Walton & Matthews, 1989: 548; Lewkonia *et al.*, 1993: 58).

At the University of Limburg, in Maastrich, global course objectives are listed in each course book. Teaching objectives provide students with a framework of what is expected from them during a course. Information about the subject matter is reflected in these course objectives and students use them to check whether they covered the subject matter intended to be studied during the course. Course objectives also aid students during their self-study activities to select study material (Dolmans & Schmidt, 1994:377; 372-373). Almy, Colby, Zubkoff, Gephart, Moore-West and Lundquist (1992: 570) suggest that tutors should keep the main learning objectives in mind while guiding the group, but are allowed to modify this strategy when they see it fit.

Some schools deliberately prevent students from seeing course or individual case objectives on the grounds that it will redirect students' study from the case. Failure to reach one or more of the objectives may result; therefore, care must be taken to detect deficiencies that may come up under these circumstances (Chang, *et al.*, 1995:14).

Dolmans *et al.* (1993:207) did a study of the research that had been done to compare the objectives stated by lecturing staff to those that students generated during problem-based tutorials to determine whether students generated the same objectives as lecturing staff. The result of their study suggested that students generally succeed to generate an average of 64% of the objectives stated by the lecturing staff. Other objectives students came up with reflected deficiencies in knowledge, anticipations of future course work, non-small-group curricular activities and personal interests and experiences. This proves that students are able to generate objectives or learning issues that are relevant to their learning and their own needs and interests. To avoid gaps in the knowledge students generate, it is important that problems are formulated in an effective way in order for students to identify all the necessary learning issues. *"The percentage of overlap between faculty objectives and learning issues provides opportunities to detect ineffective problems, i.e., problems that do not lead students to generate the appropriate learning issues"* (Dolmans *et al.* 1993:211).

Barrows (1983: 3077-3080) describes the educational objectives of PBL as follows:

- to acquire a basis of knowledge that is better retained, integrated from all the relevant disciplines, applicable in the clinical context and extended by self-directed study in the future;
- to develop clinical reasoning skills;
- to develop self-directed learning skills;
- to obtain sensitivity for the patient's needs as a whole: medical and psychosocial;
- to provide learning methods that are student-centred in order to enhance motivation, to be relevant to the student's career, and are capable to individualise each student needs; and

- to encourage independent and critical thinking skills.

Some PBL faculties are more directive than others. The New Mexico Primary Care track is highly student-centred, as students must produce their own objectives, as faculty-generated objectives are not available. The Michigan State PBL track, on the other hand, is more faculty-centred as students use objectives generated by lecturing staff with reading assignments to guide learning. Other PBL schools require that students must first generate their own objectives before faculty objectives are revealed (Albanese & Mitchell, 1993:73).

Sadlo (1997:101) did a study to determine the perceptions of occupational therapy students of their course experience and found that PBL students reported some lack of clarity of objectives. The lack of clarity may reduce the quality of learning. Therefore, attention should be given to who, when and why objectives should be generated in a PBL course, although PBL students are expected to play a major role in the formulation of their own goals. Students from a traditional and didactic school backgrounds may need time to become comfortable with the self-directed style of PBL, and problems should be formulated in a way where built-in triggers will foster identification of the intended objectives by students (Sadlo, 1997: 106).

Objectives in problem-based learning do not only provide for specific objectives (contextually demonstrated knowledge, skills and values), but also for critical (generic) objectives. Some PBL curricula are more directive than others, depending on the availability of lecturing staff-generated objectives or not and the experience of students in problem-solving or not.

3.4.2 Formulation of problems

3.4.2.1 Introduction

Effective integration among the different disciplines and learning in the context of problems rather than in the context of disciplines requires a major planning input when problems are formulated, whether it takes place in a new or a long-established school (Walton &Matthews, 1989:545). Basic science, clinical knowledge and clinical reasoning skills should be integrated to help students obtain critical thinking skills (Albanese & Mitchell, 1993:53; Gist, 1992:8). Carefully formulated problems should be aimed towards placing students in a functional context that resembles the working context in which they will function as professional practitioners. Students can be placed either in a task environment that can be real or in a simulated task environment, but with the prerequisite that it allows students to carry out all the cognitive steps that are present in a real life situation. In this way the whole range of thinking can develop that is used in problem-solving as the core of PBL is the problem which focuses learning (Bligh, 1995:324; Lewkonia *et al.*, 1993: 59; Walton & Matthews, 1989:548).

3.4.2.2 Definition of the problem

Walton and Matthews (1989: 543) define a problem as *"a set of circumstances in a particular setting which is new to the student, where the use of pattern recognition alone is insufficient, but where specific items of knowledge and understanding have to be applied in a logical analytical process in order to identify the factors involved and their interaction*", while Dolman *et al.* (1993:208) define the effectiveness of a problem as *"the degree of correspondence between student-generated learning issues and preset faculty objectives"*. This means that there should be a match between the objectives students generated and those lecturing staff generated before a problem can be effective. If students focus on just one detail of the problem, the problem is not effective and should be reformulated.

3.4.2.3 Selection of problems

Dolmans *et al.* (1993:212) suggest that problems should be selected to be compatible to the knowledge level of students; be formulated concretely; be contextual to their future professions; be formulated briefly and to be open enough to stimulate discussions.

Berkson (1993: S83) is of the opinion that beginning students may experience trouble *"discerning important details from background noise"* and that more structured foundations should be provided to prevent them from encoding misleading details along with relevant knowledge.

At the School of Nursing and Health Studies at the University of Western Australia situation packages are drawn from reality to be presented as problems, but with the prerequisite that problems should:

- include situations that are common and frequently encountered;
- involve individuals, groups and communities;
- be applicable in institutional and non-institutional contexts;
- include cases of all age groups;
- include acute and chronic health problems;
- cover health as well as health problems;
- include all relevant roles and functions of nursing;
- relate to relevant practice areas;
- include theoretical, philosophical, and ethical issues;
- include technical and procedural activities; and
- reflect issues from the applied and allied disciplines (Townsend, 1990:61).

Almy *et al.* (1992: 569) choose cases to resemble patient encounters in future practice as closely as possible and protocols are based on real events, and are only modified in order to protect the patient's anonymity or to focus a problem more precisely. The sequence of

problems is arranged to build an increasing body of knowledge in each of the represented disciplines, allowing for *"progressive growth in the depth and breadth of learning in a 'spiral' fashion"* (Almay *et al.*, 1992:571). Lewkonia *et al.* (1993: 59) of the Departments of Internal Medicine and Paediatrics at the University of Calgary (Canada) select clinical cases to illustrate important basic science concepts concurrently with didactic sessions of the introductory course.

Prototypical cases (those with the greatest number of features in common with other members of a specific category) promote quicker recall, more accurate classification, and easier and more accurate learning of diseases, because they serve as an anchor point in students' memories. Experienced doctors should develop prototypical problems (Albanese and Mitchell, 1993:71-72).

According to the meta-analysis of Albanese and Mitchell (1993:17) quoting Majoor *et al.* [1990]; Neame [1981]; Sibley [1989] and Thomas [1992] a problem is appropriate if it meets the following criteria:

(i) *present a common problem that graduates would be expected to be able to handle;*

(ii) *be serious or potentially serious – where appropriate management might affect the outcome;*

(iii) *have implications for prevention;*

(iv) *provide interdisciplinary input and cover a broad content area;*

(v) *lead to an encounter of faculty members' objectives;*

(vi) *present and actual (concrete) task; and*

(vii) *have a degree of complexity appropriate for the students' prior knowledge.*

Problems should have content and construct validity. This is not always easy to attain as

- it is difficult to create suitable problems;
- medical educators are not particularly creative;
- problems may not be comprehensive, leading to students getting qualifications without an appropriate knowledge base; and

- students may not initially have the knowledge and skills to solve problems, while educators do not necessarily have the skills to guide students (Mitchell, 1988:58).

3.4.2.4 Format of problems

Problems can be presented in brief paragraphs or lengthy case studies of real life situations and may include descriptions of symptoms, results of investigations, and real or simulated cases (Barrows, 1985:84-85).

Other formats in which problems may also be presented are audio tapes, video tapes, slides, written notes, summaries, computer outlines, various results, problem-oriented medical records, patient management problems, packs, and role play (Neame, 1981: 97; Menahem & Paget, 1990:58).

Uys and Cassimjee (1997:134) of the Department of Nursing at the University of Natal decided not to use paper problems, but rather to let their students explore situations or data sets, which they bring from the clinical area to the tutorial. If students find that their information is inadequate, they have to go back to the clinical area to gather more information. This has the advantage of fostering the establishment of adequate databases in communities and institutions. They contend that inherent problems in the paper problem approach are as follows:

- teachers begin to focus on the content again;
- problems and sub-problems are selected to cover content;
- if paper problems are used, students cannot establish the almost perfect correlation between theory and practice as is the case when a real problem is used; and
- paper problems are only paper problems, where real problems allow for plans to be implemented and consequences to be evaluated.

An example of problem-generation at the University of Natal is as follows: *"The students are divided into groups of between 8 and 12 students and are allocated to an under-served community. They then collect information in these communities during*

university vacation times to form the basis of their studies. They begin with an assessment of the community and produce a community profile that highlights the problem areas and needs of that particular community. These are discussed and prioritised during term time in class discussions. They return to the community in their next vacation to validate the prioritised needs with the community concerned" (Uys & Cassimjee, 1997:134).

Facilitators could provide students with structured problems in which only part of the information is available. An effectively formulated problem should help students *"to propose hypotheses, and then develop the ability to review what all the possibilities are, to infer a number of diagnostic options, and then to achieve gradually the rigorous deductive logic necessary to try and recognise the hypothesis which is best supported by the evidence"* (Walton & Matthews, 1989: 547).

Information obtained could be conflicting, ambiguous and confusing, but students must learn to come to the most likely diagnosis and to be comfortable even if a concept is probable and not certain. Problems should help students learn how to tolerate doubt and make decisions on inadequate grounds (Walton & Matthews, 1989: 547). More structured problems with built-in cues can be presented to junior students, while senior students may need more complicated and advanced problems to match their level of theoretical and clinical knowledge (Heliker, 1994:46; Albanese & Mitchell, 1993:71).

Problems can be presented in three ways:

(i) open-ended, relatively unorganised and unsynthesised;

(ii) focal problems that are more structured; and

(iii) guided-design problems that are very structured (Albanese & Mitchell, 1993:72).

Barrows (quoted by Albanese and Mitchell, 1993:72) suggests that the application of reasoning skills, structuring of knowledge in useful contexts, motivation and the development of self-directed learning will be enhanced if problems are relatively unorganised, unsynthesised and open-ended.

The Focal Problem has been developed at Michigan State. It provides a written narrative of a clinical problem in a real life situation and describes the problem as it unfolds. Questions are inserted to help students think (Wales & Stager quoted by Albanese & Mitchell, 1993:72).

The Guided-Design problem has specific built-in questions that help students to focus on the decision-making steps used during problem solving (Albanese & Mitchell, 1993:72).

Before problems are designed, educational staff should compile a master chart with skills and knowledge students need to learn. After problems have been formulated they must be compared to this master chart to determine whether the necessary skills and knowledge can be obtained by solving the specific problems. The physical format of a problem statement should include specific learning objectives, resources and references where students can locate relevant information (Gist, 1992:8-9). Engel (1992: 327) suggests that the best means to ensure that academics will implement the curriculum in the spirit in which it was conceived *"is to involve them in the selection and presentation of the sequence of problems for the students"*. This means that integrated study around a sequence of problems needs close interdepartmental collaboration in the planning, implementation and assessment of the course (Engel, 1992:328).

Ineffective problems will lead to difficulties in generating appropriate learning issues and may result in a lack of content coverage and knowledge gaps (Dolmans *et al.*, 1993: 208).

3.4.3 Group process

3.4.3.1 Introduction

The optimal teaching arrangement for PBL is the tutorial group. The task of the group is to evaluate and define different aspects of the problem, including the physical aspects,

social aspects, and environmental aspects. In this way the group achieves an understanding of the mechanisms involved in the particular problem (Walton & Matthews, 1989:543). Usually a group of five to seven students will meet with their facilitator twice a week for up to three hours (Engel, 1995:326). At the first meeting after groups have been formed, each individual group's members will get acquainted with one another and agree on how the group will work, while a learning climate is established. Norms for the group are established, for example roles and codes of conduct and procedures that are acceptable to all the group members. Group processes, different roles, and handling of tension are learned and practised, and group feeling is fostered (Mulholland, 1994:42).

"Students are randomly assigned in groups of eight, each with an experienced faculty tutor/facilitator" at the University of Calgary in Canada (Lewkonia *et al.*, 1993: 58). The number of group members differs among faculties. Small groups usually contain five to seven students assigned randomly but *"to be financially feasible, the PBL approach at Shenandoah University employs groups of nine students per tutorial, rather than the more typical seven"* (Royeen, 1995:338; 341).

Dolmans, van den Hurk, Wolfhagen and van der Vleuten (1996: 4) did a survey of 31 schools using PBL and found that the average group size for most schools is between six and eight students. The few schools who reported on having larger groups had serious problems regarding the essential benefits of PBL.

Dolmans, *et al.* (1996: 4) suggest that tutorial groups be kept small with a maximum of eight students for three important reasons:

(i) to enhance elaboration, self-regulation and motivation as an increase of group size *"is associated with a decrease of student's participation"*, elaboration, motivation and self-regulation;

(ii) to maintain optimal group dynamics as *"group dynamics may be adversely affected if groups are large, because it is difficult to maintain positive interaction within such groups, ... individual contributions will be less visible and less*

comparable with other students' contributions", and *"social control will decline, which may subsequently negatively influence students' active participation"*, while the locus of control will be shifted from the students to the tutor; and

(iii) to give students more opportunities to train in co-operation and communication skills for example debating, reaching a decision, integrating information, sharing tasks, giving explanations, structuring meetings and distinguishing major from minor issues.

Although there is a valid argument regarding the increase of groups size to minimise expenditure, the argument that the number of ideas and solutions generated will increase as group size increases may backfire and lead to fragmented and superficial discussion. Groups with more than eight members may result in undermining of PBL benefits (Dolmans *et al.*, 1996: 4).

Group maintenance through the entire academic years or not, and retention of the group's initial facilitator or not are important subjects which were not discussed in the literature.

After groups have been formed it is important that members of the group become familiar with one another and each member is expected to provide and receive support and co-operation from other group members. In this setting it is difficult to hide or sleep; therefore each student must contribute and demonstrate responsibility which will lead to a better learning experience (Pelausa & Marsan, 1993:421). Blosser and Jones (1991:291) emphasise the need for students to understand the importance of other team members' contributions, and *"the necessity of working for consensus"* through a process where each member offers different information and perspectives, which must all be blended appropriately to form a solution to the case. Some additional advantages are that students learn how to resolve conflict, work in a team and receive and give both constructive and non-constructive criticism. Lewkonia *et al.* (1993: 57; 59) emphasise problem-solving as the central intellectual process of medical practice, therefore the following goals are included for each small group session:

"(i) *Create and validate a model which describes how doctors solve clinical problems.*

(ii) Identify behaviours which facilitate small group functioning.

(iii) Use a model to diagnose and manage clinical problems.

(iv) Identify and utilise appropriate learning and problem-solving resources."

Small group objectives, which read as follows are also included:

(i) Identify various roles used by small group members.

(ii) Evaluate the level at which a small group is functioning.

(iii) Provide constructive feedback to other members of the group.

(iv) Identify the growth processes that a group goes through."

A positive action of this departments is that students are invited on one or more occasions to write down positive and negative aspects of their own group performance to circulate among group members, while a review of dynamics of small group learning process is done at the final group session (Lewkonia *et al.*, 1993: 59-60).

After well-functioning groups have been established, the process of problem-based learning can begin. Barrows (1985:55) includes the following phases in the PBL process:

- Phase 1: Reasoning through the problem
- Phase 11: Self-directed study
- Phase 111: Application of new knowledge to the problem
- Phase 1V: Summary and integration of learning.

3.4.3.2 Reasoning through the problem

The problem may be presented to the group on videotape, audio-tape or paper and students encounter the problem without prior preparation (Engel, 1992:326). However, some institutions suggest that students should come to class prepared ahead of time (Olson quoted by Albanese & Mitchell, 1993:74), and according to Mitchell (1988:64) *"parallel teaching of content and problem-solving is essential for facilitating problem-solving. If no prior knowledge is available, the time to reach solutions is prolonged, and problem-solving becomes inefficient, time consuming and frustrating".* Other institutions like McMaster University and Barrows (1985:58) suggest that the problem

must always be encountered before any study. Problem-based learning, however differs from case studies, because the problem is presented before students have learned basic science or clinical concepts, not after (Albanese & Mitchell, 1993: 53). Barrows (1985: 60) claims that real problems serve as a challenge to students' reasoning skills and that they serve as an organiser for their learning. Bligh (1995a:323) adds that it is stimulating for students to challenge problems without prior preparation making use of existing experience, knowledge and skills. Other advantages of this method are: It helps students to mobilise their prior knowledge about the problem which also helps to facilitate understanding of new concepts; the group discussion helps them to expand their knowledge which, with the contribution of group members, will lead to enrichment of their cognitive structures; the accumulated knowledge at this stage becomes related to the context of the problem; and epistemic curiosity is stimulated by the discussion, so that students are motivated to find out more about the problem discussed (Schmidt, 1993:428).

Engel (1992:326) and Lewkonia *et al.* (1993: 60-61) describe the reaction to the case as follows: At first students will recognise some cues and formulate an initial problem. Hypotheses will be generated, more inquiries (after the data gathering stage) will be put forth, the problem will be reformulated and hypotheses will be reviewed and refined, based on data on medical knowledge. Depending on the problem, students will arrive at a working or differential diagnosis. *"During the initial brainstorming the students will be encouraged to explore the full spectrum of factors that may be involved. When the tutor comes to insist on a more critical examination of the group's thinking, the students will begin to identify what they do not know and do not understand. This leads to the formulation of questions to be followed up through individual learning before the next session* (Engel, 1992:326). After selection of a treatment or management plan, the outcome will be assessed again (Lewkonia, *et al.*,1993: 61).

Generation of hypotheses is a very creative part of the process of problem-solving and usually leads to revision or the generation of new hypotheses as students develop synthesis of the problem (Barrows, 1985:63). While discussing the problem, students

begin to realise whether they have the necessary knowledge and skills to deal with the problem or not, and this provides them with a sense of direction and the depth during self-study (Dolmans & Schmidt, 1994:373). Barrows (1985:65-67) describes inquiry strategies as a deductive process, which is narrow, vertical and logic. Students then summarize the essence of the problem and endeavour to form decisions.

Additional skills that may be practised during analysis of the problem are: *"listening – not just hearing; comparing their own understanding with that of their peers; summarising the outcome of what they have all elected to study; and teaching others when an individual has volunteered to follow up a question on behalf of the group. They will also practise how to correct each other and how to ask for supplementary information in a non-threatening fashion"* (Engel, 1992:326-327).

3.4.3.3 Self-directed study

According to research conducted by Dolmans and Schmidt (1994: 372) various factors determine the learning issues which students will engage in during self-study, such as the discussions in the tutorial group, content that will be tested, course objectives, lectures, reference literature cited in the reference lists, and the influence of the tutor. First-year students are inclined to use literature cited in the reference lists and content covered in the tests and lectures, while the influence of these elements diminishes over the four curriculum years with more learning issues arising from discussion in the tutorial group as students become better self-directed learners (Dolmans & Schmidt, 1994:372; 379).

Each group-member can take a learning issue or objective to explore during self-study (Uys & Cassimjee, 1997:133-134), or all the objectives could be shared by all members (Albanese & Mitchell: 1998:78). Both methods are beneficial as the first will foster group cohesiveness and the latter will foster independence (Fichardt, 1996:90).

Students are encouraged to consult different resources which can vary from textbooks and computer information to expert opinions and periodicals, as long as they match the

learning objectives and the preference of group members (Uys & Cassimjee, 1997:134; Fichardt, 1996:93; Househam quoted by Fichardt, 1996: 94; Barrows, 1985:73).

3.4.3.4 Application of new knowledge to the problem

Students report back to the group with a summary of the information they gathered during self-study. They discuss how they obtained the information and are prepared to analyse it. The group can only progress in a satisfactory manner if each group member fulfils his/her responsibility to participate. A scribe and a timekeeper are chosen during each group session to record progress of work. Time must be allocated during each group session to evaluate and discuss the group process, each student's participation, presentations made, resources used and the role of the facilitator (Uys & Cassimjee, 1997:134).

During this phase students analyse their initial approach to the problem and based on their self-study activities and knowledge gained, they revise their approach. They revise their hypotheses, inquiring strategies, data analysis, and problem synthesis. They acquire new information while learning from one another, evaluate their prior knowledge and performance, and choose the most appropriate way to handle the problem (Barrows, 1985:75).

3.4.3.5 Summary and integration of learning

New knowledge is summarised and applied to the problem enabling students to recall and attach newly acquired knowledge to problems which will be encountered again in the future. The successful solution of the problem *"cannot be overestimated, nor the excitement of the pursuit, nor the motivation for students"* (Walton & Matthews, 1989:544).

3.4.4 Resources

In a problem-based curriculum students are encouraged to consult different resources. At the University of Limburg in Maastricht each course book has suggested learning resources listed. Students in their first year are inclined to confine themselves to the reference literature cited in the course book when consulting resources, while students in the fourth curriculum year make less use of the reference literature cited in course books, probably because their learning skills have become more self-directed. Students at Maastricht prefer particular books based on previous experiences of usefulness and readability and books that are frequently used by other students in the tutorial group (Dolmans & Schmidt, 1994:378-379).

Research done by Dolmans and Schmidt (1994: 373-374) cites six major variables that influence students when they consult resources:

(i) the discussions in the tutorial group;
(ii) the content which will be tested;
(iii) the course objectives;
(iv) lectures received;
(v) the tutor; and
(vi) reference literature cited in course books.

Students in a PBL curriculum use more journals, access more online searches, feel more competent in information gathering (Chang *et al.*, 1995:15) and make more use of self-selected than lecturing staff-selected reading materials than students from a traditional curriculum (Vernon & Blake, 1993:557). Students in a PBL curriculum are also inclined to judge new information more critically than students in a traditional curriculum (Moore *et al.*, quoted by Engel, 1992:327).

At the Dartmouth Medical School in New Hampshire tutors provide each group with reference files of key publications about the problem and they use a bulletin board with current or recent press clippings on relevant issues. The display on the bulletin board is

changed weekly to reflect the problems of the case under study. They give students access to the photocopier and telephones of the department to encourage questions to the resource persons listed in the matrix (Almy *et al.*, 1992: 571).

At the University of Natal, students can arrange for resources to be brought to class. These resources could be an expert who can address the group, a video, or a group visit, but with the prerequisite that the group-members agree to participate (Uys & Cassimjee, 1997:134).

At the Indiana University School of Medicine (Sivam *et al.*, 1995: 291) students have access to a centralised facility where various commercially available computer-assisted learning materials, for example in the form of software, CD-ROM, audio and videotapes, are available.

Walton and Mathews (1989: 547) categorise the vast amount of resources:

- *Human resources* comprise teachers, other medical staff, professionals in the parallel profession such as physiotherapy and nursing, student peers with their unique expertise, patients, and the community.
- *Material resources* include textbooks, resources cited in the library, computer-assisted centre, X-rays in the X-ray department, audio-visual resources, for example slides, videos, computer programmes; nursing and science laboratories, and simulator models (Fichardt, 1996: 94; Sivam *et al.*, 1995: 290; Walton & Mathews, 1989: 547;).
- Fichardt (1996: 94) identifies two additional categories of resources: *Space resources* for example classrooms with facilities such as blackboards, chairs and tables and
- *Fiscal resources* (money).

Whatever the resources students use when gathering information, the most useful resources available are *"the ability to listen and look with insight"* (Walton & Matthews, 1989:549).

3.4.5 Role of facilitators

"The teacher's role in student-directed learning is mainly as a guide, a helper, and a source of encouragement to strengthen the students' own efforts and abilities. As students become more independent they will have less need for guidance, help and encouragement and will be able to find their own way to suitable resources and provide quite accurate judgements of the quality of their own work. That is the ultimate goal of independent learning (Evan & White, 1989: 127).

According to Davis (1973) the Sherbrook Medical School distinguishes eight tutor tasks which are according to a competency-based model:

- to manage the problem-based learning process;
- to ensure proper functioning of a small group;
- to guide discovery of specific content;
- to foster student autonomy;
- to foster humanism;
- to stimulate motivation;
- to evaluate learning during tutorials; and
- to participate in the administration of studies (Grand'Maison & Des Marchais, 1991:559).

The tutor must guide, not direct; facilitate learning, not dispense information, and keep interactions between students alive. The facilitator must make sure that all students contribute, that the process is active and stimulating, that there is opportunity for learning by discovery and that there is a climate of openness that allow students to say what they believe without fear of censure (White & Evan, 1991:25).

Because the facilitator guides the group process and uses his/her expert knowledge when necessary, he/she will influence what students will study. Some facilitators play a major

role, while others play a minor role, depending on their expertise and facilitating style (Dolmans & Schmidt, 1994:378).

Because Almy *et al.* (1992: 570) believe that students will benefit from diverse points of view, they provide each group with two facilitators. Facilitators are selected because of their willingness to participate in small-group learning and their interest in students. Facilitators are considered as colleagues in the learning process that facilitate independent discovery and guide the process, not as information sources. In other words, they enter discussions as facilitators who nudge, question and suggest, not answer questions. Facilitators are trained extensively and each new facilitator is paired with an experienced facilitator to develop skills in group facilitation.

Students in problem-based learning prefer facilitators who actively guide by asking the appropriate questions at the right time, facilitators who are able to bring students back onto the right track through appropriate feedback and corrective assistance. The facilitators guide, probe and support students in a way that help them to successfully focus learning on neglected aspects of the problem. Students enjoy facilitators who stimulate discussion and share personal experiences from clinical practice. A facilitator should not dominate the group, nor should he/she seem unconcerned with and uninterested in group progress. The facilitator is the person who helps students to make connections between their lives and the curriculum, the one who can help students to overcome lack of self-confidence and fear of mistakes in practise. By being an empathic listener, who accepts students and welcomes honest communication, he/she can help students to maintain self-esteem and minimise anxieties (Machaba & Brink, 1994:199; Des Marchais, 1991:236; Albanese & Mitchell, 1993:53).

Apart from being an effective facilitator who is able to bring out the best in his/her students, he/she should keep in mind the importance of being a good role model. Although facilitators may be products of didactic teaching and learning, the greatest problem experienced by schools is the variation in the quality of facilitators. It is in that link that the strength or weakness of the PBL chain lies, therefore extensive and well-

attended faculty development workshops are imperative for PBL to succeed (Walton & Matthews, 1989: 550; 552).

3.4.6 Role of students

3.4.6.1 Factors which influence self-study activities

Dolmans and Schmidt (1994, 372-380) did research to determine which factors influenced students' self-study activities. They came to the conclusion that *"it is unlikely that student-generated learning issues are the only factor influencing students' self-study, since students are not only confronted with problems, but also with tests, course objectives, lectures, tutors' ideas and reference literature"* (Dolmans & Schmidt, 1994: 379). These factors all have an influence on students' learning activities, with the first-year students' tendency to rely more on literature cited in the reference list and content covered in lectures and tests, than students in the other three curriculum years. The influence of discussion in the tutorial group is higher in curriculum years three and four than in curriculum years one and two. That can be explained by an increased experience of students in generating learning issues that provide better guidelines as they become better self-directed learners the longer they are on the PBL curriculum (Dolmans & Schmidt, 1994:376; 379).

3.4.6.2 Student approaches to learning

Varying student approaches to learning have been described in the literature. The Lancaster Approaches to Studying Inventory (LASI) is one example of an inventory, which was developed as a research questionnaire at Lancaster University in England. This questionnaire was used in a national survey to determine students' approaches to studying in the United Kingdom universities and polytechnics (Dumse, 1995:21-22). Since then it has been administered to more than 2000 students throughout the United Kingdom, Australia and the Open University. This inventory has also previously been

used in South African universities for example the University of the Orange Free State and the University of South Africa (Mokoena, 1997; Joubert, 1996; Dumse, 1995; and van Rensburg, 1995). The LASI is divided into two sections. The aim of the first section is to gather information about the students' approaches to learning and the second section is aimed at gathering information about the students' perceptions of the programme. The two parts relate to the way in which students learn and how they experience the assessment, teaching methods and the curriculum. This means that the LASI can be used to determine learning styles, and as part of course evaluation to ensure effective learning and academic achievement (Entwistle, 1981: 177; 93-96).

Approaches to learning are illustrated in Table 4.1 in Chapter 4. The three main approaches to learning are discussed in Chapter 2 (2.2.4.2.3).

Some studies have been done to determine the approaches of learning in PBL students of which some were compared to conventional programmes and will now be briefly discussed.

Coles (quoted by de Volder & de Grave, 1989: 262-263) did a longitudinal study to compare learning approaches of first-year students from a conventional medical school and a problem-based school at the beginning and the end of their first year. He found that students of both schools showed similar approaches to studying on entry: low reproducing, high meaning and high versatility. At the end of their first year the approaches of PBL students were maintained, while the students at the conventional school showed a shift towards poorer studying approaches: lower meaning, lower versatility and greater reproduction. Coles concludes that PBL *"may create an educational climate which enables students to learn in what seems to be a desirable manner"* (de Volder & de Grave, 1989: 262-263). This confirmed that PBL programmes seem to encourage different ways of learning in their students as opposed to conventional programmes.

Newble and Clark (quoted by de Volder & de Grave, 1989: 262-263) did a study to determine approaches to learning from the first, second and final years of study in two medical schools in Australia. Again the one school used a conventional and the other a PBL curriculum. In all the different years the PBL students were rated *"higher on meaning orientation and versatility, but lower on reproducing orientation, operation learning and learning pathology than students from the conventional school"* (de Volder & de Grave, 1989: 262-263). Achievement orientation and comprehension learning did not show significant differences between the two groups.

de Volder and de Grave (1989: 263-264) investigated how the introductory phase of the PBL medical programme in Maastricht (the Netherlands) influenced approaches to learning in students. The inventory for learning approaches (shortened version) was administered before and again after completion of the introductory phase of the PBL programme. Their results did not support the conclusion of Coles (1985) who stated that on *'entry'* the approaches to studying of students seemed desirable. Rather did the training in PBL, given during the introductory period, make these approaches to learning desirable, they found. De Volder and de Grave suggested that Coles's *"time of entry"* was too vaguely defined. *"Entry characteristics should be measured in the very first days of the programme, since we were able to show that even in a relatively short period of time during which intense training takes place, approaches to learning can be changed"* (de Volder & de Grave, 1989: 264). They changed the verbs of the first administration of the questionnaire to the past tense, as it seemed more appropriate *"for measuring the learning approaches students adopted 'before' they came to the medical programme"*. The reason for doing so was that *"the psychological present* [tense] *includes more than just the immediate moment and can vary from a few days to a few years, depending on the period of life a person is experiencing"* (de Volder & de Grave, 1989: 264). It makes sense as students see the span in the present as the year of study they are in. De Volder and de Grave prevented ambiguities in interpretations when they decided to use the past tense for the first questionnaire. In the second questionnaire, which was administered after the six weeks' introductory phase of the PBL programme, the verbs of the items were stated in the present tense to ensure that students reported

their current approaches to learning. This study indicated that study methods were fostered by the six weeks' introductory phase of the PBL programme.

Schwartz, Donnelly, Nash, Johnson, Young and Griffen (1992: 329) suggest that clinical problem-solving should embody deep approach and strategic approach and not the surface approach, as is the case in a traditional curriculum.

Sadlo (1997: 101; 103- 109) did a study on Occupational Therapy students and included students from PBL schools, traditional schools and "hybrid" schools. The "hybrid" schools were either subject-oriented (subjects remained separate, but the selection of content is more relevant to professional needs) or problem-oriented (content is selected to be relevant to some previously given problems, but remains relatively teacher-directed). The focus of this study was on the course experience questionnaire (CEQ) of Ramsden [1991] and included factors which influence the quality of courses such as: good teaching, clear goals and standards, appropriate workload, appropriate assessment, student independence and choice, and emphasis on memory. This study indicated that students who came from the PBL schools were much more positive about their experiences than students who studied in subject-based (traditional) curricula. Students who came from the most "pure" PBL schools had stronger perceptions of independence and choice than students coming from traditional and "hybrid" schools (Sadlo, 1997:101).

3.4.7 Evaluation

3.4.7.1 Introduction

Student assessment systems are necessary in all health educational institutions to demonstrate whether students learned the basic and clinical science concepts and to determine whether students are able to apply these concepts when confronted with clinical problems. Evaluation systems should be developed that are congruent with the

PBL philosophy, the instructional format, and the institutional context of the university, and should consist of instruments that demonstrate good psychometric properties (Des Marchais & Vu, 1996: 274-275; 280). Hammar, Forsberg and Loftas (1995: 456) agree that a *"changed medical curriculum also necessitates changes in the examination procedure"*. Where assessment in traditional learning used to concentrate on factual information, problem-based learning emphasised scientific reasoning, peer support, integration of knowledge, communication skills, group assessment and peer assessment (Felleti, Saunders & Smith, 1983:7; Gist, 1992:10). The aim of examinations is to provide support, guidance and reinforcement, rather than to rank students in order of achievement (Foldevi *et al.*, 1994:474). When Kaufman and Mann (1996:S52) did a comparison of examinations between traditional and PBL curricula, they found that the student evaluation system changed significantly with the implementation of PBL. Examinations were spread more evenly over the year, a pass/fail grading system replaced percentage grading of student performance and the number of examinations was reduced. PBL students wrote a maximum of seven examinations annually, while traditional students wrote up to 18 examinations annually.

3.4.7.2 What must be evaluated?

At Sherbrook Faculty of Medicine in Canada three domains of evaluation are identified:

(i) cognitive knowledge: skills of acquiring, interpreting, and applying knowledge are tested as well as analysing problems;

(ii) clinical abilities, including communication with patients and peers; and

(iii) professional abilities: including small group interaction and self-directed learning (Des Marchais & Vu, 1996:275).

At the Faculty of Health Sciences at Linkoping University in Sweden evaluation is aimed at evaluating qualities of a more general, holistic nature to be in congruence with the aims of the curriculum, which emphasises a holistic view of health problems, health promotion, disease prevention, interpersonal skills, multi-professional teamwork and lifelong learning. These aims are portrayed in the three stages of the programme, where

the first stage deals with normality, the second stage with patho-physiology and the third stage with clinical medicine. The intent of examinations is to obtain a general view of students and to test qualities such as the ability to communicate with patients, to synthesise learning material, and to search the literature (Hammer *et al.*, 1995: 452-453; 456).

It is not the primary intention of assessment to test the students' memory bank, but their clinical reasoning skills, clinical performance, for example the ability to observe information reliably, solve problems, behave humanely and communicate effectively with patients, their family, co-workers, fellow-students, teaching staff and members of the parallel professions. Students also need to be tested for their therapeutic and clinical decisions, as well as their ability to learn in a self-directed way (Walton & Matthews, 1989:548).

3.4.7.3 Evaluation instruments

According to Walton and Matthews (1989: 548) the *"conventional procedures used in didactic discipline-oriented curricula are entirely inappropriate, for these usually test isolated knowledge rather than competence in practice"*.

A series of evaluation instruments are used at Sherbrook Faculty of Medicine including:

- *written examinations,* containing multiple-choice questions (MCQs), short answer questions (SAQ's); problem-analysis questions (PAQs);
- *tutor rating forms* to evaluate small-group tutorial competencies (cognitive ability to analyse problems, communication, small-group interaction and self-directed learning);
- *instructor evaluation of clinical skills ;*
- *objective structured clinical examinations* (OSCEs) (Des Marchais & Vu, 1996:275-276).

At the Faculty of Health Sciences at Linkoping University in Sweden practical and theoretical skills are tested after each semester by using the following instruments: a performance test; an objective structured clinical examination (OSCE), a written examination (usually in the form of a modified essay question) and an oral examination (Hammer *et al.*, 1995:453), while they introduced a new kind of final examination to assess students at the conclusion of the medical curriculum. Instruments used in this final examination are:

- a videotaped patient consultation to measure clinical ability;
- a scientific project completed and presented by each student;
- an analysis of a scientific paper, and
- an oral examination based on the students' own scientific project (Hammer *et al.*, 1995:456).

At the University of Natal a learning contract is used for formative evaluation and the "Triple Jump Examination" to assess the process of learning rather than content material (Uys & Cassimjee,1997:135). The "triple jump" exercise is also used at McMaster University and contains three steps:

- *Step 1*: The students read a problem and present their first impressions, including some deductions to the facilitator. Critical issues should be identified and followed up to solve problems which are identified.
- *Step 2*: A period of time is allocated for self-study to identify tasks and to gather information from any resource.
- *Step 3*: The student returns to the facilitator and presents information which may include newly established evaluations, deductions and an analysis of the problem. The facilitator provides feedback directly to the student along with constructive criticism where needed (Pallie & Carr, 1987:69).

Methods and instruments frequently used for assessment in problem-based programmes are field reports; group projects; written critiques of problems; oral case presentations; essays; journal writings; ratings of individual performances in small-groups, objective structured clinical evaluations (OSCE) and limited utilisation of examinations (Uys &

Cassimjee, 1997: 134-135; Des Marchais & Vu, 1996:275-276; Fichardt, 1996:97; Hammer *et al.*, 1995:456; Gist, 1992:10; Felleti *et al.*, 1983:8).

Schwartz, Donnelly, Sloan and Young (1994:148) conclude that a *"reliable, valid appraisal of student achievement requires multiple assessments of students' knowledge and their ability to apply it"*, and *"this comprehensive evaluation system assesses both clinical knowledge and its application and provides a basis for fairly evaluating the effectiveness of the PBL-program"*.

3.4.7.4 Formative evaluation

At the University of Natal a learning contract is used for formative evaluation which leads to a year mark. This learning contract is a written agreement between each student and facilitator and contains the following:

- expected learning needs of the student;
- ways in which the student will address these learning needs;
- proof that learning objectives have been met; and
- a learning plan for the semester or year (Uys & Cassimjee, 1997:134-135).

The student and facilitator meet once a month for 10 to 30 minutes to discuss components in the contract until they reach consensus. No student is rendered entrance into the examination before the objectives in the contract have been met (Uys & Cassimjee, 1997:135).

Continuous formative evaluation is used at the Ottawa School of Medicine in Canada making use of various instruments. Students are continually evaluated during small-group sessions and clinical rotations and care is given to give feedback in a timely fashion. To prevent competition and enhance co-operation the grades are pass, fail or honours (Pelausa & Marsan, 1993:425).

Fichardt (1996:187) used the following formative methods when she implemented a problem-based education programme for registered nurses in advanced midwifery and neonatology at the Nursing Department of the University of the Orange Free State: pre- and post-tests, group process evaluations, video tapes, work books, case studies, free style writing and multiple choice questions.

It seems as if formative evaluation in most institutions tends to revolve around group-processes, which include informal oral self-assessments, peer-assessments, facilitator assessments of individual members in the group and regular oral review of the objectives attained in each teaching case. Students are evaluated for participation, problem-solving skills and attitude. Students are encouraged to assess their own progress on a regular basis, but they tend to resist the habit of rating each other in formal peer evaluations (Uys & Cassimjee, 1997:135; Fichardt 1996:187; Sivam *et al.*, 1995: 291; Almay *et al.*, 1992:572).

3.4.7.5 Summative evaluation

Uys and Cassimjee (1997:135) suggest summative evaluation that focuses more on the process of learning than on the content material; therefore one written examination paper is specifically aimed at evaluating different components of the problem-solving process. A "Triple Jump Examination" follows and the process contains the following:

- An oral examination forms the starting point.
- This is followed by free time for a resource search.
- Then a written section containing a paper problem is presented.
- The student may explore the problem by asking the examiner questions.
- After these data have been collected, a tentative problem must be identified as well as further learning needs.
- At the end of the oral period the student is given two hours to obtain additional information.
- Now the student must write down the final problem formulation and the relevant interventions.

Everything the student says or asks is written down. Using a structured evaluation instrument (Uys & Cassimjee, 1997:135-136), the examiner assesses the whole process.

The Dartmouth Medical School in New Hampshire uses a similar method of summative evaluation as used at the University of Natal, which is called the "five-step" evaluation. The "five-step" evaluation is a modification of the "triple jump" evaluation used at McMasters University and the Individual Process Assessment (IPA) used at the University of New Mexico (Almay *et al.*, 1992: 573).

At Sherbrook summative examinations are administered three times a year to obtain data for the annual promotion to the following year. Three types of questions are asked in the written examination. Multiple-choice questions (MCQs) measure strict recall and are aimed at assessing knowledge acquisition and recalling specific facts and concepts. Short answer questions (SAQs) assess students' abilities to interpret facts, explain principles and concepts from a physical phenomenon and to apply principles and concepts to specific clinical situations. Problem analysis questions (PAQs) are aimed at assessing the abilities of students to analyse information, to generate and evaluate hypotheses and to propose explanations to problems. A psychometrical assistant scores the examination with reliability indexes, individual question difficulty indexes, distribution of answers and discrimination indexes. Results are discussed by the Evaluation Committee, who is also responsible for assessing the psychometric quality of the examination, to confirm or change the passing score and authorising release of the results (Des Marchais & Vu, 1996:276-277). By decreasing the number of summative evaluations at Sherbrook competition among students decreased as *"this evaluation system was developed with the educational intention not to discriminate highly between the best student, thus attempting to reduce student competition while at the same time not allowing the weakest students to pass"* (Des Marchais & Vu, 1996:276; 282).

At the end of every four-week PBL instructional unit, students' performances in small-group tutorials are summatively evaluated by the tutor by using a rating form consisting

of 44 behaviours grouped into three categories: student reasoning skills on problems (50% of final mark), communication and group interaction (30% of final mark) and autonomy and humanism (20% of final mark) (Des Marchais & Vu, 1996:277).

Fichardt (1996:187) used the following summative methods when she implemented a problem-based education programme for registered nurses in advanced midwifery and neonatology at the Nursing Department of the University of the Orange Free State: assignments, short essay questions and OSCEs.

Summative evaluation at the Dartmouth Medical School in New Hampshire is determined by the performance of individual students in a final complex management of a problem where a simulated patient is used (Almy *et al.*, 1992: 569).

3.4.8 Conclusion

Various faculties of health sciences' approaches to student assessment have been analysed and it is clear that conventional assessment procedures are totally inappropriate in a problem-based programme. Competence in practice should be the ultimate goal of learning and traditional examinations with multiple choice questions and essays will encourage rote learning that will be habitually forgotten instead of learning for meaning and better retention. The skill of self-assessment should become as automatic as it is self-motivating, as students from a PBL curriculum become more expert in judgement.

3.5 PROBLEM-BASED LEARNING AND PROGRAMME DEVELOPMENT

3.5.1 Introduction

Albanese and Mitchell (1993:53) quote Neufeld *et al.*'s key features of a problem-based programme as *"the analysis of health care problems as the main method of acquiring and applying knowledge; the development of independent lifelong learning skills by students; and the use of small tutorial groups, with five or six students and a faculty tutor in each group, as the central educational event"*. The development of a problem-based curriculum demands careful and detailed planning and is not a fashion to be *"picked up and then dropped again"* (Engel, 1992: 328). The PBL curriculum should be organised by the faculty as a whole in order to be integrated, therefore close interdepartmental collaboration in the planning, implementation and assessment of the programme is necessary.

3.5.2 Development of a problem-based programme

A new educational institution implementing a PBL-curriculum differs a lot from a traditional one who tries to introduce problem-based learning as a teaching strategy. When PBL and traditional learning are mixed, students may find the dependence on the one hand and autonomy on the other hand very difficult. Different institutions may decide on different ways to introduce problem-based learning: an entire school may change to PBL, while another school may introduce PBL year by year, rather than all classes changing at once to PBL. A few departments can undertake PBL, while some schools may choose to adopt an alternative PBL track in parallel with a traditional track enrolling volunteers to the PBL track. In the latter case the major curriculum remains the same, although more staff time will be needed. It seems to be advantageous at first to phase in PBL gradually, as the planning required for the sequencing of a curriculum of cumulative

progressive learning in combination with practical work is intricate and time-consuming (Walton & Matthews, 1989:552- 554).

Staff members need to become familiar with the philosophy and techniques of PBL. Various disciplines should provide the subject expertise and participate in educational subcommittees and working parties to develop a PBL programme (Engel, 1992:328). Therefore a business plan was compiled in Virginia at the Shenandoah University's Occupational Therapy to ascertain the feasibility of implementing the PBL approach. The essentials of the business plan contained the following:

- Rationale for the programme.
- Student routes of entrance and exit.
- Programme format.
- Use of existing resources.
- Budget.
- Financial considerations.
- The anticipated effects on the institution (Royeen, 1995:341).

Many schools who want to implement a PBL curriculum but lack the necessary funds will take note of the above-mentioned strategies to save money with interest, especially the large-group format of PBL implemented in the third year at Shenandoah University's Occupational Therapy Department (Wetzel, 1995:347).

According to Uys and Cassimjee (1997:133) certain basic requirements must be met during programme development:

- practica requirements linked to professional competence and registration;
- academic requirements linked to the degree requirements of the university; and
- educational requirements linked to the programme objectives set by the Department of Nursing as directors of the programme.

Colleagues from different disciplines must agree upon clearly enunciated objectives with different backgrounds and viewpoints. Financial and time considerations must be taken

into consideration. Decisions have to be made whether there should be a division between the pre-clinical and clinical periods, or whether demarcation should be abolished altogether (Walton & Matthews, 1989:553- 554).

To identify material for learning, teachers must analyse their discipline for the critical elements that are essential for practice. Only when core elements are identified, problems can be composed and supporting learning activities arranged such as practicals (Bligh, 1995a:342). Even though a PBL curriculum is student-centred and self-directed, centring around small-group tutorials, the extent of student control differs across PBL curricula. Other supporting methods of instruction include lectures, seminars, laboratory demonstrations and exercises, and clinical skills sessions to learn skills that are not best learnt in a PBL session, but these methods are kept to a minimum and co-ordinated with patient problems (Walton & Matthews, 1989: 555; 552).

The views of students on curriculum planning committees are encouraging, because students who have completed a course are an excellent source of useful advice. Students are the only people who actively experience the curriculum in action and to make use of their contributions, proof should be given that faculty members treat them as adults. Faculty should also endeavour to state their objectives and directions as general guidelines to allow students to extend their studies in directions and depths of their own choice (Walton & Matthews, 1989: 548).

3.5.3 Change to problem-based learning

In traditional curricula where conventional instruction is applied learning objectives are provided by the teacher and may include the following activities: large group lectures; structured laboratory experiences; assignments and periodic multiple-choice tests. The curriculum tends to use a one or two-year basic science segment, which is composed of formal courses drawn from the basic science disciplines. Clinical clerkships and various elective clinical experiences usually follow this segment (Albanese & Mitchell:1993 54).

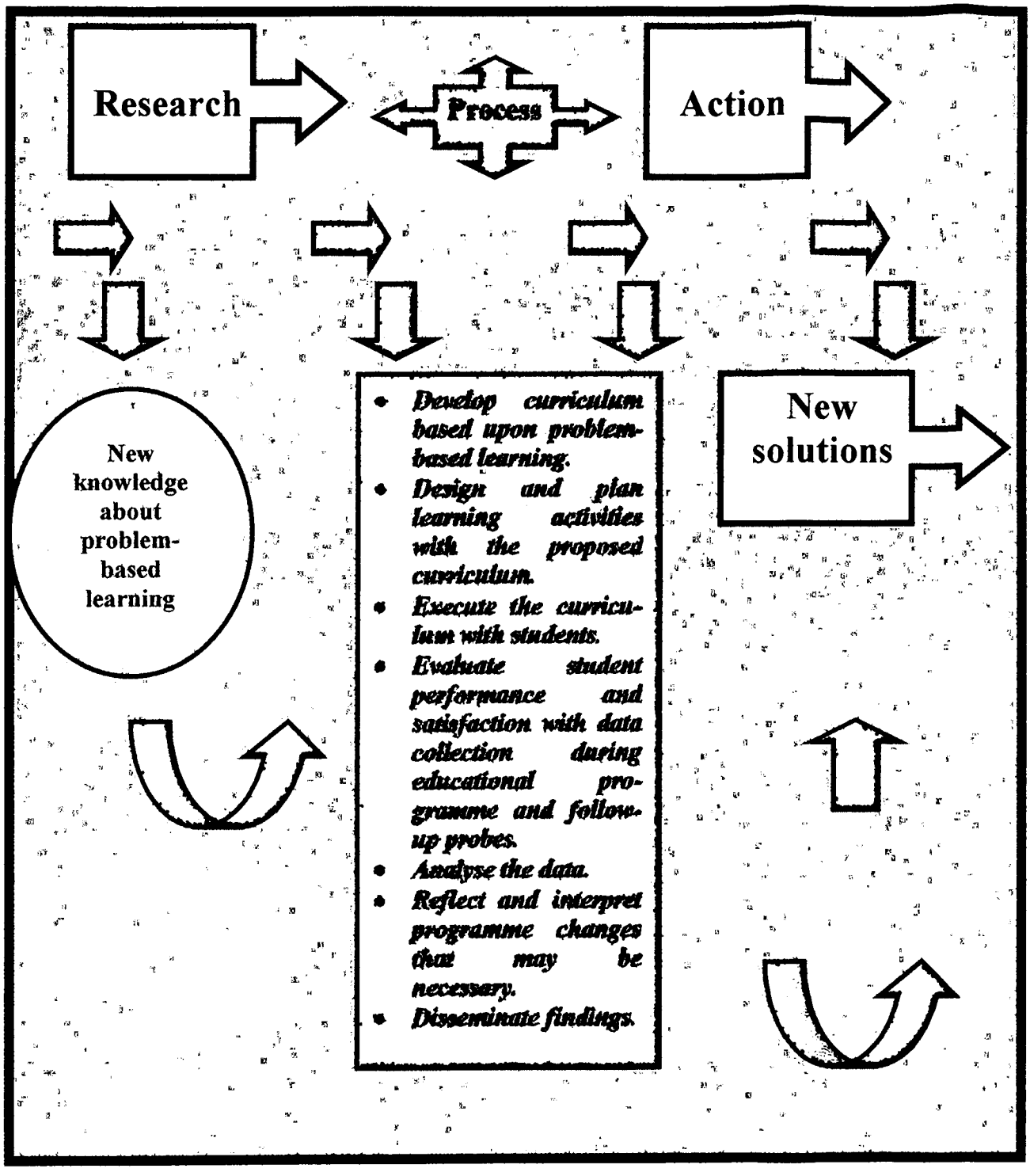


Figure 3.2 Action research employed to develop and improve a problem-based learning curriculum. Adapted from Royeen (1995:341).

Faculty members at the medical school in Sherbrook learned through experience that change from a traditional curriculum to a problem-based curriculum is best achieved through patience and tolerance. It is not always possible for all staff members to be equally committed to PBL and time is needed to come to terms with the innovations and disturbances associated with change (Des Marchais, 1993:235).

Grand'Maison and Des Marchais (1991:561) suggest some of the many factors that guide curriculum change as follows:

- strong political commitment;
- relevant expertise;
- an adequate reward system; and
- acceptance of change; and
- faculty development in pedagogy.

To prepare teachers for a PBL curriculum Sherbrook Medical School developed a series of faculty programmes in pedagogy. Sherbrook Medical School has since offered various faculty development programmes in pedagogy and their high participation rate, increased interest in medical education, modification of educational philosophy and efficient acquisition of specific skills are proof of their success. There they state that *"faculty development was and will remain a prerequisite of curriculum change in medical schools"* (Grand'Maison & Des Marchais, 1991:557-561).

At Shenandoah University the Occupational Therapy's Department (Royeen, 1995:341) uses a conceptual model based on action research for changing to a PBL curriculum. Action research is a specialised form of evaluative research, which is specifically directed at acting or effecting change in systems or organisations. Comprehensive evaluation of the programme by means of action research is illustrated in Figure 3.2.

3.5.4 Potential difficulties

3.5.4.1 Cost and time

"One question that must be asked before implementing any new educational innovation is whether the costs of changing the curriculum and then maintaining the new program will be justified in term of learning effectiveness and efficiency" (Albanese & Mitchell, 1993: 70).

Many factors must be considered when assessing cost, for example

- *Time commitment of faculty and students*: Time commitment in a conventional curriculum is comparable to time-commitment in a PBL curriculum, although PBL requires much more focused commitment of that time than does a conventional curriculum. The prerequisite for equal cost in both curricula is that PBL should have fewer than 40 students and no more than 100 students per class. For class sizes greater than 100, there are serious concerns about the cost of problem-based learning. Content covered per unit time in a PBL curriculum appears to be 82% of that covered in a conventional curriculum. Problem-based curricula can increase this rate of content coverage by adopting more directive teaching strategies, but that could compromise the development of self-directed learning approaches (Albanese & Mitchell, 1993:70-71; 76). Uys and Cassimjee (1997:133) agree that problem-based learning takes more time than traditional methods for both students and staff. More staff members are involved in student learning and for longer periods of time, making it more expensive than traditional methods of learning (Uys & Cassimjee, 1997:133). Students who partook in an experiment in problem-based learning at the University of Glasgow found problem-based learning definitely more interesting and useful than lectures, but too time-consuming. They found the process of collecting information particularly time-consuming and felt that *"time spent on the PBL was not justified for what was learned"* (Morrison & Murray, 1994: 143-144).

- *Requirements of support personnel*: PBL requires much more focused commitment to direct student contact time than does a traditional curriculum (Mennin & Martinez-Burrola, 1986: 187). Increased student contact may decrease the need for student support services as many problems will be detected and handled by the facilitator herself in a timely manner. Learning problems experienced by individual students may become more visible in PBL courses, whereas in traditional didactic courses problems would have gone unnoticed (White & Evan, 1991:25). This will mean an increase in the need and utilisation of support services.
- *Necessary physical support and instructional material*: This may include rooms, buildings, textbooks, and non-print media. Studies performed suggest that there are no significant differences between conventional and problem-based curricula concerning the cost of resources. Problem-based learning curricula may cite unexpected costs like rooms for small-group meetings and the need for additional library resources for small-group investigations (Albanese & Mitchell, 1993: 70-71).

Fichardt (1996:68) suggests that cost be reduced by increasing the size of the group, by decreasing the number of times groups meet per week and by utilising outside tutors for some tutorial group meetings.

Because of financial feasibility the Shenandoah University's Occupational Therapy Department introduced the following strategies to decrease cost:

- groups contain nine students per tutorial instead of the more typical seven;
- schedules for tutorials were organised in a way that first-years gathered in the mornings, second-years in the afternoons and third years in the evening to allow for multiple uses of the same educational space; and
- in the third year the problem-based approach was used with the entire class at once (Royeen, 1995: 341-343).

Although there is a valid argument regarding the increase of group size to minimise expenditure, the argument that the number of ideas and solutions generated will increase as group size increases may backfire and lead to fragmented and superficial discussion.

Groups with more than eight members may result in undermining PBL benefits (Dolmans *et al.*, 1996: 4).

Making use of advanced students as peer tutors may also prove as being economically advantageous (Sobral, 1994: 284).

3.5.4.2 Extent of lecturers' directive

Problem-based curricula *"differ in the extent to which faculty influence, or direct, the course of learning"* (Albanese & Mitchell: 73). Some curricula are highly student-centred like the New Mexico Primary Care track where no faculty-generated objectives are available for students, while the curriculum of the Michigan State PBL track is more faculty-centred as students use faculty-generated objectives with reading assignments to guide learning of basic science concepts. Some PBL schools only allow students to see faculty objectives after they have generated their own learning objectives (Albanese & Mitchell, 1993: 73). It is possible for a PBL programme to occur in a teacher-centred environment depending on the extent to which the school designs and chooses its PBL problems and learning objectives. Albanese and Mitchell (1993) did a meta-analysis of PBL curricula and found such diversity in what individuals call problem-based learning, that they suggest future research to attempt to document more concretely the types of PBL approaches being used in the various curricula (Albanese & Mitchell, 1993: 73).

Factors that influence the extent of lecturers' directive are:

- the problems selected by lecturing staff for students to use;
- the availability of lecturing staff-generated objectives;
- the extent to which students are encouraged to use lecturing staff-generated objectives;
- the measure of guidance students receive regarding the learning resources they should use;
- influence of facilitators during small-group discussions; and
- evaluation methods used to test students (Albanese & Mitchell, 1993:73).

The directiveness of tutorials (student-directed versus faculty-directed) is determined by five questions:

(i) Did the student or the facilitator initiate the topic for discussion?

(ii) Who asked the questions?

(iii) In what style and pattern does the facilitator talk?

(iv) What is the pattern of interactions between the facilitator and the students?

(v) How many pauses and interruptions occur during a discussion? (Wilkerson and colleagues quoted by Albanese & Mitchell, 1993:73).

About 50% of time can be saved if a tutorial is less student-directed which is difficult for facilitators to resist as they can feel that students can benefit from their expertise, that time can be saved and that facilitators can fulfil their need for control sharing. Some educators are of the opinion that lecturing staff should take a more directive role especially with younger students. Various studies on student perceptions of PBL suggest that students may want more direction, as they tend to complain about the lack of structure in the programme, the lack of definition of core material and poor feedback. Students rated their enjoyment of PBL higher in small-groups where the facilitator was more directive (Albanese & Mitchell,1993:74).

The "situational leadership" model of Hersey and Blanchard (1982) quoted by Albanese and Mitchell (1993:74) where the model of leadership style is used according to the situation and the interplay of the facilitators' task seems to provide a possible answer to the problem of directiveness, especially in the small group. This means that the amount of guidance and support the facilitator gives depends on the maturity of the students. Students who are motivated, experienced, competent and willing to take responsibility will cause the facilitator's leadership style to be altered to a less directive style where he/she can delegate leadership to the group. The opposite will be applicable to novice students.

Sometimes there is a need to add more structure to a PBL programme, especially in the early years of the programme (Mennin, Friedman, Skipper, Kalishman & Snyder, 1993: 624). Mennin *et al.* (1993:624) suggest four ways to add structure to a programme without dismantling the value of problem-based learning:

(i) enhance the access of students to self-assessment exercised in the basic sciences;

(ii) provide more opportunities for practice examinations, while applying a student-centred approach to monitor their own learning;

(iii) multi-method examinations must be developed, which are based on student learning issues derived in small-group discussions as well as lecturing staffs' objectives; and

(iv) allowing additional time to prepare for examinations.

3.5.4.3 Staff

It is a major paradigm shift for staff to change from a teacher to a facilitator, which requires much more effort and time from staff (Uys & Cassimjee, 1997:136). When a new curriculum is developed, the people who have been educated in a traditional system, are the ones that will be supposed to work as tutors, which can be very difficult (Foldevi *et al.*, 1994:474). Therefore the medical school in Sherbrook started to prepare their teachers to become tutors in PBL long before their university had officially assented to the programme. At first only a core of totally dedicated staff was convinced that change to PBL could work, but four years after implementation of the curriculum at least 85% of the lecturing staff favoured the programme. The reason for their success is the fact that staff was willing to put all their energy into the major institutional reform and that they were willing to accept modifications and constant revisions for the programme to stay as relevant as possible. This took a lot of the staff's time and energy, therefore a way to keep them motivated was implemented. A new reward system was introduced whereby every effort spent on curriculum development counted towards staff's promotion and time spent on designing the programme and tutorial activities was remunerated. Faculty teachers partook in workshops to be trained in problem-based learning. Pitfalls

experienced by staff at Sherbrook were: the fact that "problems" were not perfect; that even tutors found it difficult to stop in terms of generating objectives; that students tended to study some aspects of material very superficially; that tutors feared insufficient expertise and competence from their own side; and that tutors were frustrated because they felt underused because they could not share their expertise in the same way they did during lectures (Des Marchais, 1991: 236-237).

The question of using experts, non-experts or peers as facilitators led to many studies in which the following phenomena were detected:

- Experts are more inclined to intervene and ask questions during tutorials.
- Experts are more directive than non-experts.
- Experts are more helpful to balance basic science and clinical applications, to promote critical appraisal and to synthesise various perspectives than non-experts.
- Students led by experts are less likely to introduce their own ideas.
- Students led by expert facilitators score much higher on the relevant examination than those led by non-experts.
- Groups facilitated by an expert identify almost twice as many learning issues and spend twice as much time on self-study than groups facilitated by a non-expert.
- Groups are almost three times as likely to generate objectives that are congruent with case objectives and are better able to detect gaps and errors in their knowledge when led by an expert facilitator.
- Students rate expert facilitators as more effective as non-experts.
- Non-expert facilitators may leave more errors uncorrected, which may lead to misconceptions.
- Non-expert facilitators are more facilitative of student-centred and self-directed learning.
- Advanced students acting as a peer facilitator can facilitate learning as well as faculty facilitators, but faculty-led groups score higher in tests than in peer-led groups (Albanese & Mitchell, 1993:74-76).

There seems to be a deficiency in research concerning the attitudes and opinions of faculty tutors about problem-based learning, therefore Vernon (1995: 216; 220) decided to study the attitudes and opinions of tutors in PBL programmes. The most-liked aspect of the PBL discussion groups was the tutor-student relationship (25%) followed by student motivation (18%), group atmosphere (17%), student-directed learning (12%), and student problem-solving (9%). Attention will have to be given to the most disliked aspects of PBL, which were as follows: time-requirements (15%), poor student motivation (13%), student evaluation problems (11%), concerns about student-directed learning, including lack of structure or faculty control (8%) and basic science knowledge problems (8%).

3.5.4.4 Students

One of the problems when implementing PBL is that school leavers have become conditioned to didactic teaching. When required to become active learners in a problem-based environment they *"may suffer the culture shock of transition to a less teacher-dependant form of education"* (Walton & Matthews, 1989:543). This may lead to an initial period of anxiety and uncertainty, especially for students who come from a traditional educational background; therefore first-year students initially need more guidance and support. Another source of anxiety may be the transition from the secondary school where learning took place in an individual and competitive manner, in contrast to the co-operative nature of group work in PBL (O'Hanlon, Winefield, Hejka & Chur-Hansen, 1995:198).

Time demands take a toll of students and they often complain about the difficulty of courses and time needed to engage in research. Students also experience problems with the unstructured nature of a PBL programme, as the depth of exploration is not set. Some students would also like to have more feedback on their pace of learning. Sharing of group work can also pose some problems, especially if all group members do not participate equally (Uys & Cassimjee, 1997: 137). Some faculties endeavour to overcome this problem of too little time for students to engage in research, for example

the medical school at Sherbrook in Canada aims to put 20% of normal working hours aside as "protected" free time for students to study. Unfortunately this protection is not always achieved as students in the *"medicine and surgery rotations tend to become caught up in the service component"* of their studies (Des Marchais, 1991:235).

First year undergraduate medical students, of which a substantial proportion of students had a first language other than English, and who had no background knowledge of behavioural science, found PBL time-consuming and felt they needed more guidance. From the responses of these students it seems that language (not cultural background) is an impediment to effective participation (O'Hanlon *et al.*, 1995:198).

Where PBL considers lack of prior knowledge as ideal, it may be a major source of anxiety for new students. While group work may lay the foundation for future teamwork and provides mutual support, group assessment may be threatening, especially to high-achieving students (O'Hanlon *et al.*, 1995:198).

Other problems that O'Hanlon *et al.* (1995:200-202) reported after research done on first-year medical students were as follows:

- a need for more guidance, especially surrounding staff expectations, what students must do and provision of more background information;
- concerns that PBL was open to misinformation, maybe because of lack of corrective feedback;
- a need for more guidance on how to work in a group;
- lack of involvement of all group members because the groups were too large (tutorial groups consisted of 12-14 students);
- too much time needed to spend in the library and on reading;
- uncertainty about what is expected in PBL;
- difficulty of participating verbally and feelings of inferiority to others who were able to participate in that way; and

- lack of language skills, especially for those whose first language was not English (these were students coming from an Asian background, predominantly Malay and Chinese).

Students partaking in a PBL curriculum at the medical school in Sherbrook experienced similar problems, for example the *"no limit on content"* curriculum generated feelings of insecurity and the following questions were frequently asked by students: *"Am I studying the appropriate material?"*; *"Am I covering enough material?"* and *"Am I covering the same material as other students?"* (Des Marchais, 1991:236). Inter-student friction tends to be a problem in tutorials, especially during the first months of the programme. Circular arguments, students that either talk too much or too little, explanations that lack clearness and structure, and overly long tutorials were an initial problem, but it was gradually overcome as students gained more experience (Des Marchais, 1991:236).

It is obvious that first-year students will suffer uncertainty and anxiety when adapting to a new learning method, but once familiar with the methodology of PBL, less time will be spent on subsequent problems (Barrows & Tamlyn quoted by O'Hanlon *et al.*, 1995:202). The initial experience of confusion and lack of purpose can be avoided if strong emphasis is put on orienting and training students to understand the rationale and methodology of PBL (Walton & Matthews, 1989:552).

3.5.5 Programme evaluation

Greaves (1989:87) defines programme evaluation as an active and continuous activity of delineating, obtaining and providing useful information to give judgement of the quality and effectiveness of the programme. Evaluation is categorised as formative or summative.

3.5.5.1 Formative programme evaluation

Formative programme evaluation *"is the process which validates the curriculum during its on-going initial development phase"*, and *"is concerned with identifying and correcting weaknesses and generally with attempts to improve the curriculum"* through an effective feed-back process (Greaves 1989:88-89).

3.5.5.2 Summative programme evaluation

Summative programme evaluation *"is normally carried out as an 'end-on' activity and its function is in its purpose of assessing a fully implemented course or curriculum programme"* and could be carried out by statutory and professional bodies (external evaluation) or the institution itself (internal evaluation) (Greaves 1989:88). Summative programme evaluation is *"concerned with a final judgement concerning the extent to which the intentions and purposes of the course have been met, and the degree to which it meets educational and professional needs"* (Greaves 1989:89).

At the Department of Surgery at the University of Kentucky College of Medicine a yearly retreat is held to discuss strengths and weaknesses of programmes. A high value is put on a standardised process of rigorous objective and subjective feedback, which takes place at monthly intervals as well as per annum. This programme evaluation endeavours to accumulate data for long-term programme evaluation. Several changes are then implemented to improve a programme. Their surgery clerkship programme, which is run by means of problem-based learning, posed the following problems when it was summatively evaluated and the problems resolved in appropriate ways:

- *Students came into the clerkship unaware of how to utilise the library*:
  - (i) They did not know how to identify the most recent literature on a particular topic;
  - (ii) they were unfamiliar with how to obtain and use literature searches;
  - (iii) they tended to rely strictly on textbooks and accepted these sources as dogma;

(iv) they leaned more upon secondary sources than primary sources

The problems were resolved by establishing an introductory programme to deal with the correct use of the library resources during the clerkship orientation period of two days. This programme introduced students to the effective use of the library and computer data searches. Students were also given assignments for the mandatory use of computerised literature searches during the PBL sessions.

- *Some tutors found the instructional method of problem-based learning difficult*: Although all the members of faculty had completed formal tutor training for small group PBL sessions, some still found this method difficult. Therefore the decision was made to videotape each facilitator once during each five-week rotation. This videotape was reviewed with the facilitator by a member of faculty with feedback concerning group dynamics and student/faculty participation to improve the quality of group interaction and student learning. A master tutor programme was also instituted for faculty to increase their expertise in PBL.
- *The decision not to use expert tutors raised concerns about important learning isssues, which were not adequately resolved and discussed in tutorials*: The solution for this problem was to establish expert resource sessions as well as one weekly Socratic session on general surgery topics. (A Socratic session can be defined as learning experiences for which students prepare in advance to answer questions posed by a faculty member. These sessions proved to be an excellent corollary to PBL sessions.)
- *Variability between preceptors in clinical practice was significant*:

  (i) some preceptors were extremely demanding of student time and activities;

  (ii) other preceptors left much of the time and activities to the students' own discretion;

  (iii) this resulted in an improper balance between study time and clinical activity.

  This problem was addressed by formalising the clinical practice by means of a formal contract between student and preceptor for the sake of uniformity. This contract clearly delineates each student's clinical activities and lists times during which the student is expected to participate in the outpatient clinic, operating room, PBL session, and other educational activities. The contract also provides mandatory time

for self-study of 2-4 hours per day. The use of preceptor/student contracts has greatly improved the uniformity of student clinical experience. (Jones, Donnelly, Nash, Young, & Schwartz, 1993: 210-213; 214).

3.5.5.3 Principles of programme evaluation

Friedman, Krams and Mattern (1991:257) suggest programme evaluation by guidance of the following principles:

- Evaluation of the programme should be an annual cycle.
- Each new cycle should include a comprehensive view of data collected.
- There should be a co-ordinator for curriculum evaluation to develop standardised questionnaires and to manage and evaluate data collected.
- The evaluation should address instructional methods rather than individual instructors.
- The evaluation process should be phased in in all courses and clerkships.

3.5.5.4 People involved in programme evaluation

The following people should be involved in the process of programme evaluation: educators, *"students, managers, administrators, curriculum specialists, employers, statutory and professional bodies, and the health consumers themselves"* (Greaves, 1989: 88).

Royeen (1995: 344) suggests that an expert should be involved in the process of programme evaluation, but that external experts be used depending on additional funding available.

3.5.5.5 Which outcomes must be evaluated?

The most important objectives of programme evaluation are to determine

- whether the general philosophy and the beliefs of the curriculum are realised;
- how effective the content has been dealt with;
- the extent and quality of learning that has taken place;
- whether the educational and vocational objectives have been met;
- the quality of management; and
- the use of resources (Greaves 1989:87).

Vernon and Blake (1993: 550-551) identified twelve types of outcome variables in research reports they examined:

*"**Programme evaluation***

(i) student attitudes,

(ii) student mood,

(iii) class attendance, and

(iv) faculty attitudes,

academic achievement

(v) National Board of Medical Examiners Part 1 examination –NBME 1,

(vi) other knowledge tests,

(vii) and academic problems and attrition;

academic approach

(viii) approaches to learning, and

(ix) resource use, and

clinical functioning

(x) performance tests and ratings,

(xi) humanism, and

(xii) clinical knowledge".

Albanese and Mitchell (1993:57) identified the following outcomes (which are very similar to those of Vernon and Blake,1993) in their meta-analysis:

- basic science examination performance;
- clinical science examination performance;
- thought processes promoted;
- study behaviours promoted;
- learning environment promoted;
- students' satisfaction, selection and retention;
- graduates perceptions of their preparation;
- first choice of residency;
- clinical ratings of graduates and undergraduates;
- performance assessments of graduates;
- specialty choices and practice characteristics; and
- faculty members' satisfaction.

The findings of the meta-analysis done by Albanese and Mitchell (1993) are briefly summarised in Figure 3.3.

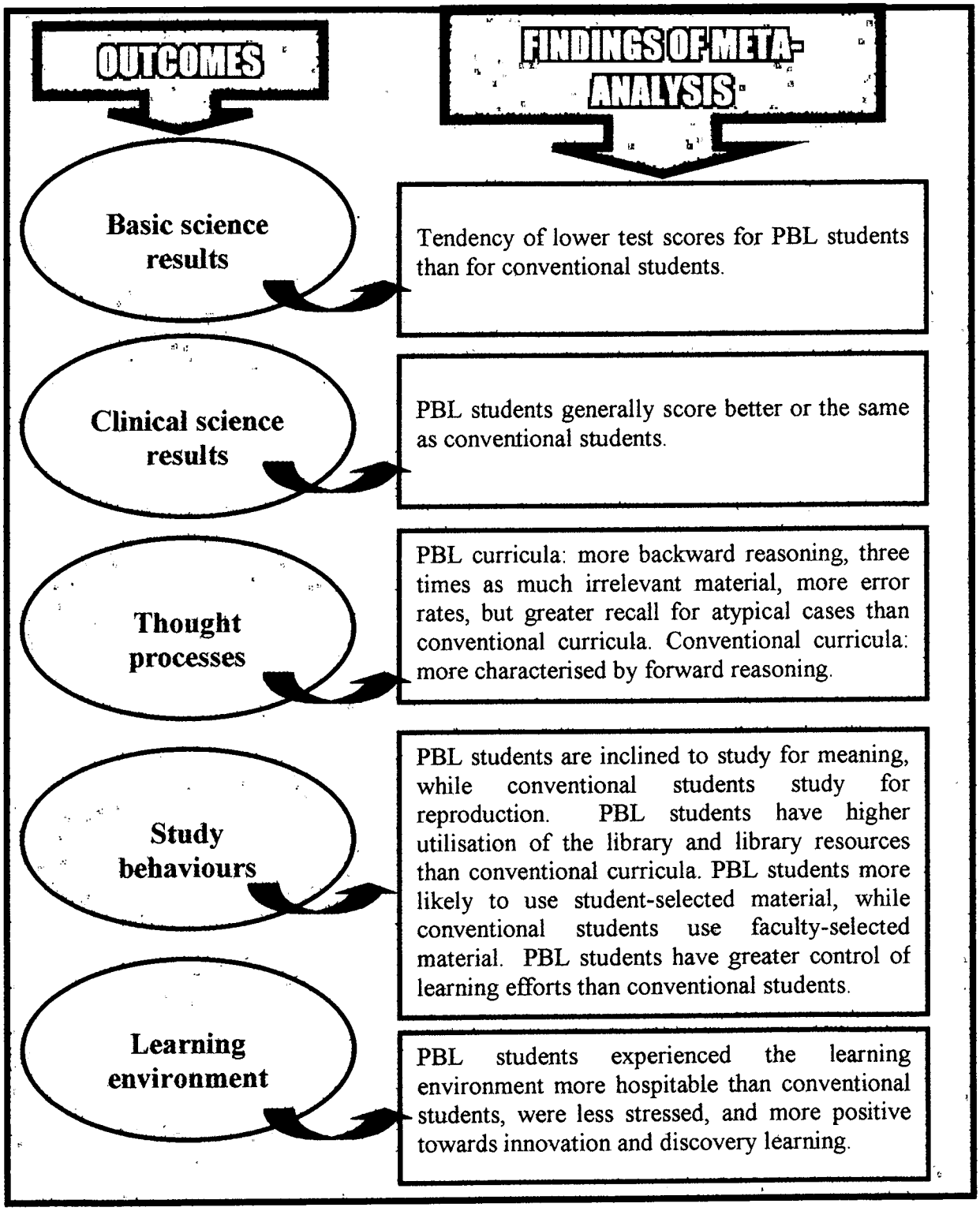
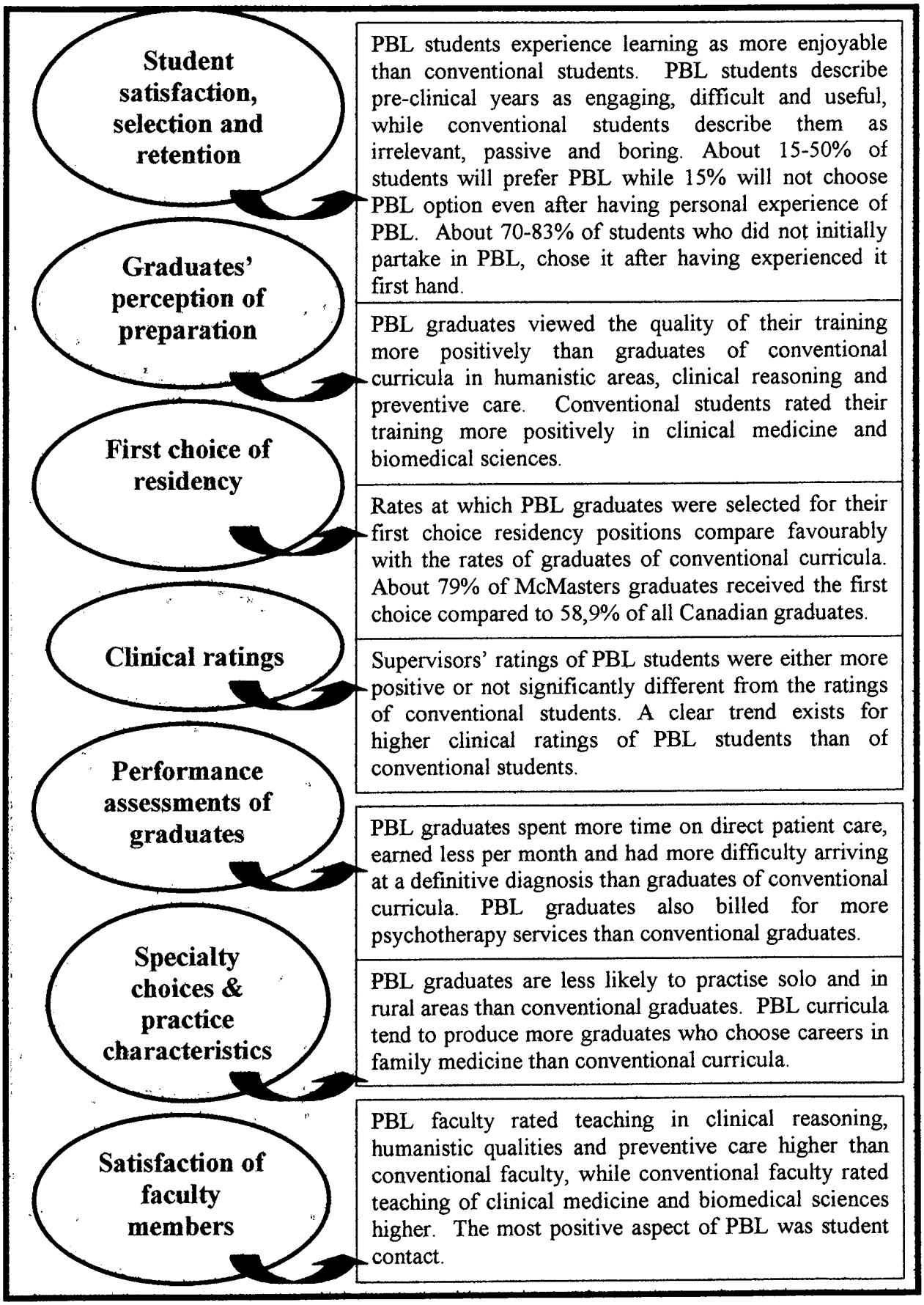


Figure 3.3 Summary of outcomes of the meta-analysis done by Albanese and Mitchell (1993).


Student satisfaction, selection and retention
PBL students experience learning as more enjoyable than conventional students. PBL students describe pre-clinical years as engaging, difficult and useful, while conventional students describe them as irrelevant, passive and boring. About 15-50% of students will prefer PBL while 15% will not choose PBL option even after having personal experience of PBL. About 70-83% of students who did not initially partake in PBL, chose it after having experienced it first hand.
Graduates' perception of preparation
PBL graduates viewed the quality of their training more positively than graduates of conventional curricula in humanistic areas, clinical reasoning and preventive care. Conventional students rated their training more positively in clinical medicine and biomedical sciences.
First choice of residency
Rates at which PBL graduates were selected for their first choice residency positions compare favourably with the rates of graduates of conventional curricula. About 79% of McMasters graduates received the first choice compared to 58,9% of all Canadian graduates.
Clinical ratings
Supervisors' ratings of PBL students were either more positive or not significantly different from the ratings of conventional students. A clear trend exists for higher clinical ratings of PBL students than of conventional students.
Performance assessments of graduates
PBL graduates spent more time on direct patient care, earned less per month and had more difficulty arriving at a definitive diagnosis than graduates of conventional curricula. PBL graduates also billed for more psychotherapy services than conventional graduates.
Specialty choices & practice characteristics
PBL graduates are less likely to practise solo and in rural areas than conventional graduates. PBL curricula tend to produce more graduates who choose careers in family medicine than conventional curricula.
Satisfaction of faculty members
PBL faculty rated teaching in clinical reasoning, humanistic qualities and preventive care higher than conventional faculty, while conventional faculty rated teaching of clinical medicine and biomedical sciences higher. The most positive aspect of PBL was student contact.

The meta-analysis done by Vernon and Blake (1993: 554-561) was quite similar in conclusion to the Albanese-Mitchell review:

(i) *Student programme evaluation* ("student satisfaction in the Albanese-Mitchell review): both studies favoured PBL. PBL students experienced less depression, anxiety, hostility and somatic complaints than traditional students (Vernon and Blake 1993: 554; Albanese & Mitchell, 1993:63).

(ii) *Clinical performance* ("clinical ratings of graduates and undergraduates" in the Albanese-Mitchell review): both studies favoured PBL. New Pathway students scored higher on five specific patient skills (empathy, patient-centred orientation, comfort with emotions, communication skills, and data collection) than traditional students (Vernon and Blake 1993: 557; Albanese & Mitchell, 1993:665-67).

(iii) *Clinical knowledge tests* ("clinical examinations" in the Albanese-Mitchell review): Vernon and Blake noted a trend favouring PBL, and Albanese and Mitchell a similar trend which they called "less than definitive" (Vernon and Blake 1993: 557; Albanese & Mitchell, 1993:57-60).

(iv) *Academic achievement* ("basic science examination performance" in the Albanese-Mitchell review): Both studies favoured traditional educational methods, though the Albanese-Mitchell review concluded that the trend favouring traditional methods was "generally true" but "not always true" (Vernon and Blake 1993: 555-556; Albanese & Mitchell, 1993:57).

(v) *Faculty programme evaluations* ("faculty satisfaction" in the Albanese-Mitchell review): The reviews of both studies were nearly identical reflecting the fact that PBL is a satisfying way to teach (Vernon and Blake 1993: 557, 560; Albanese & Mitchell, 1993:68-70).

(vi) *Academic process* ("study-behaviours" in the Albanese-Mitchell review): Both studies came to the conclusion that PBL was favoured, as PBL students tended to be more independent in study behaviours than traditional students (Vernon and Blake 1993: 556-557; Albanese & Mitchell, 1993:61-62).

The ability to recall content is not only related to the time lapse, but also to the manner of reinforcement and the problem format proves to be superior to the lecture format in this

regard (Shahabudin, 1987: 310-311). Sobral (1995:281) came to the same conclusion and states that *"students who had integrated teaching/PBL background did get higher scores in the structure in memory measure"*. Rolfe *et al.* (1995: 225) in their study of clinical competence of interns found that the following variables also played a role in performance differences among students, whether they came from a traditional or a problem-based background: *"different standards of education and training in undergraduate schools, individual differences in ability, variations in English language proficiency and country of origin"*.

Content is approached in a different way in a PBL programme when compared to a traditional programme. In a content-based course, the topic is introduced on a macro or theoretical level and illustrations are given on a practical or micro level. In PBL courses students approach topics from a practical or micro level, where-after generalisations and theoretical frameworks are formed (Uys & Cassimjee, 1997:137).

To make a major change to a PBL programme demands enthusiastic staff. This enthusiasm needed for implementation may bias endeavours to evaluate the process. Staff have put so much into making it a success that it could *"create a reluctance to declare it a failure"* (Uys & Cassimjee, 1997:138).

3.6 CONCLUSION

Three components of problem-based learning stand out when researching the subject. First, the essential characteristics include organisation of the programme around problems instead of disciplines; an integrated curriculum; emphasis on cognitive skills as well as knowledge. Second, conditions that facilitate PBL, for example small-group tutorial instruction; student-centred learning; active learning; independent study; simulation and the focus to be on relevant and high priority community issues. Third, certain outcomes are facilitated by PBL, for example: enhanced functional knowledge;

development of skills needed for life-long learning and development of skills of self-assessment (Walton & Matthews, 1989: 555).

Problem-based learning has come to stay. For successful implementation it is crucial that educational institutions should retrain their teachers according to the philosophy of problem-based learning. Contributions made by enthusiastic teachers must be acknowledged and they should be remunerated according to their input. Feedback from students, staff and the service component should be reckoned with when programmes are evaluated. The most outstanding advantage of this innovation in the education of health professionals is the creation of a pattern of lifelong learning to keep abreast of current knowledge and practice methods. Problem-based learning is a very valuable tool to adapt to change, to work as an effective member of the health care team, to acquire independent learning skills, to foster a deep approach to learning and to learn in an accumulating, integrated way to acquire a holistic approach to health care. On the other hand, the benefits of conventional curricula should not be totally banned as it has a place in problem-based learning. Shahabudin (1987: 312-313) suggests that the lecture method be used for subjects where information changes rapidly and where none of the textbooks can supply satisfactory answers, for example AIDS and oncology. He also suggests a lecture in the following instances: to order and synthesise diverse subject matter, to introduce complex issues, which often confuse students, and to introduce a coherent framework to subject matter. This means that the curriculum is problem-based but the learning methods may include lectures, problem-solving, practicals, and projects.

Further research is needed to explain and document the different problem-based learning approaches used in various programmes. In the present climate of limited resources and the shift to primary health care, problem-based learning seems to be the natural form of education for primary care.

CHAPTER 4

Research Methodology

4.1 INTRODUCTION

In this chapter the focus is on the design, research methods, population, the proceedings of the research and data collection and statistical procedures used for data analysis. The aim of this study was to evaluate problem-based learning in an undergraduate nursing programme, particularly a first-year course. The emphasis was on student perceptions and the effect of this learning strategy on students' learning styles, while attention was also given to content, the process of programme development and the outcomes of the programme.

4.2 RESEARCH DESIGN

Brink and Wood (1988:94) describe the design of a study as a plan to answer the research questions, while Burns and Grove (1993:282) describe it as the way in which the study

will be implemented, and therefore it is regarded as a *"blueprint for the conduct of a study that maximises control over factors that could interfere with the desired outcomes from studies"*. The design of this study was non-experimental (a survey), as well as quasi-experimental. This study can be regarded as a quantitative study as the field of study was delimited, structured instruments were used, information was logically deductive, data were generalised and numerical data were used during statistical analysis.

4.2.1 Survey method

During non-experimental research data are collected to describe various characteristics and conditions, to explain phenomena, to test theoretical propositions and to predict the occurrence and significance of phenomena, without introducing any change or new treatment (Polit & Hungler, 1993: 140-141). The survey method was used to describe and evaluate phenomena and to generate new knowledge about the topic. The Demographic Questionnaire (DQ) and Student Perception Questionnaire (SPQ) were used during the survey (see Appendix C, D, E, & F). Burns and Grove (1993:781) define a survey as *"a method of data collection used to describe a phenomenon by collecting data using questionnaires or personal interviews"*. Van Rensburg (1995: 74) adds that this method enhances the systematic and unbiased collection of information. In this way the characteristics, opinions and views of a specific population can be obtained. When the survey method is used, numerical values are allocated to the *"non-numerical characteristics of human behaviour in such a way that the interpretations of these values are generally valid"* (Uys & Basson and Polit & Hungler quoted by van Rensburg, 1995:74-75).

4.2.2 Quasi-experimental study

The quasi-experimental section of the study entailed the administration of the Lancaster Approaches to Studying Inventory (LASI) (see appendix A & B) before respondents

were exposed to problem-based learning and again after exposure to this learning strategy. Burns and Grove (1993:53; 777) describe quasi-experimental research as examining *"cause-and-effect relationships between selected independent and dependent variables"* to *"explain relationships, clarify why certain events happen, and examine causality"*. In using this questionnaire, problem-based learning was the independent variable and learning styles the dependent variables. The aim was to determine the influence of problem-based learning on the learning styles of students after they have been exposed to this learning strategy for a certain period of time.

4.2.3 Elements central to the study design

Elements central to the design of this study were the following:

(i) *The target population*: While all first-year nursing students studying at a university and following a problem-based programme form the population, this sample consisted of first-year nursing students at the University of the Orange Free State following a problem-based strategy of learning in 1998. All the first-year nursing students of the University of the Orange Free State who met the sample criteria were included in the target population. Students who repeated their first-year or those who were absent during administration of the questionnaires were excluded from the study.

(ii) *Presence of a treatment*: Problem-based learning (PBL) formed the central theme of the research and was viewed as the treatment to which respondents were exposed. PBL is a student-centred and holistic educational strategy in which the problem becomes a stimulus for the learning process and exposure to various situations helps students to develop reasoning skills, teamwork abilities, cross-sectoral collaboration and initiative (Foldevi, Sommansson & Trell, 1994:474). The sample population (one group of 43 first year nursing students) was exposed to PBL during the 1998 academic year.

(iii) *Measurements were done by means of questionnaires and an audit*: An existing questionnaire (the Lancaster Approaches to Studying Inventory [LASI]), newly developed questionnaires (Demographic Questionnaire [DQ] and Student

Perception Questionnaire [SPQ]) and a newly compiled checklist for audit (Programme Audit) were used to measure phenomena.

(iv) *Sampling method*: Sampling method can be defined as *"the process of selecting a group of people, events, behaviours, or other elements that are representative of the population being studied"* (Burns & Grove, 1993: 779). A non-random sampling method was used, which is described by Burns and Grove (1993: 777; 246) as a purposive sampling method and defined as *"judgmental sampling that involves the conscious selection by the researcher of certain subjects or elements to include in a study"*. Typical subjects (first-year nursing students) were chosen as well as a typical situation (instruction by means of problem-based learning). One homogeneous group was used, which consisted of 43 first-year nursing students following the B.Soc.Sc. (Nursing) degree at the University of the Orange Free State.

(v) *The time-frame for data-collection*: The time-frame for data-collection stretched over a period of one year. The 1998 academic year was used. The pre-test was administered in March 1998 and the post-test in February 1999.

(vi) *Comparisons were intentionally planned:* The LASI was administered as a pre-test and again as a post-test with one academic year in-between.

(vii) *Two variables were used:* Exposure to problem-based learning was the independent variable and learning styles were the dependent variable.

(viii) *Extraneous variables known to the researcher were controlled*: Students who repeated their first-year were considered as extraneous variables and therefore controlled by excluding them from the target population as they could bias and cause variance in the final outcomes of the study.

4.3 METHODS

4.3.1 Literature study

An extensive literature review was undertaken before data collection. Sources included periodical articles, essays, readings, proceedings of problem-based learning (PBL), community-based nursing (CBN), the National Qualifications Framework (NQF) conferences, theses and dissertations at doctoral and master's level on aspects of PBL, programme development and qualifications frameworks. The literature study provided a picture of what was known about PBL and programme development, revealed potential knowledge gaps and guided the format and design of the study.

4.3.2 Instruments

Treece and Treece (1986:237) define an instrument as *"the tool or equipment developed for collecting data"* and *"may take the form of a questionnaire, an interview schedule, a projective device, or some other type of tool for eliciting information"*. Decisions had to be made about the type of instruments to use in this study for example whether to develop and use new instruments or to use existing instruments. The decision was made to use an existing questionnaire (the LASI), newly compiled questionnaires (the DQ and SPQ) and a newly compiled checklist for audit. Burns and Grove (1993: 368) define a questionnaire as *"a printed self-report form designed to elicit information that can be obtained through written responses of the subject"*, and which comprises an array of questions, which will be completed by all the respondents in the target population (Treece & Treece: 1986:277). A checklist can be defined as *"a prepared list of items with marked columns"* to *"be checked off by the observer"* and *"may provide for only yes or no responses"*, or *"there may be categories such as often, seldom, or never"* (Treece & Treece, 1986: 353).

4.3.2.1 Lancaster Approaches to Studying Inventory (LASI)

4.3.2.1.1 Description

The decision was made to use the Lancaster Approaches to Studying Inventory (LASI) as this questionnaire is closely linked to the theoretical framework and the purpose of this study. The LASI can be used to determine learning styles and, as part of course evaluation, to ensure effective learning and academic achievement (Entwistle, 1981: 177; 93-96; Entwistle & Ramsden, 1983: 128-129).

The LASI has been developed as a research questionnaire at the University of Lancaster in England and further refined until an inventory of study skills was developed. The initial aim of the LASI was to determine students' approaches to studying in United Kingdom universities and polytechnics and was used in a national survey (Dumse, 1995:21-22). The LASI makes a distinction between deep approaches (meaning orientation) and surface approaches (reproducing orientation) to learning as well as students' perceptions of the learning context (Entwistle & Ramsden, 1983: 40; 128-129). Deep and surface approaches are independent strategies and not mutually exclusive as students may utilise both strategies for certain learning activities.

The LASI is divided into two sections. The items in both sections are stated in random order. The first section aims at gathering information about the students' approaches to studying and contains a total of 64 items, which are randomly grouped into sub-scales, and the latter into five-point scales, to improve the stability and reliability of responses to individual questions. The second section aims at gathering information about the students' perceptions of the first-year course and contains a total of 40 items, which are also randomly grouped into sub-scales, and the latter into five-point scales, to improve the stability and reliability of responses to individual questions. The aim of the second section is to determine whether the course is student-centred or control-centred. The two sections relate to the way students learn and how they experience the assessment, teaching methods and the curriculum.

The main scales contain meaning orientation, reproduction orientation, non-academic orientation, strategic orientation, student-centredness and control-centredness. The conceptual and operational definitions are formulated in Chapter one and the interpretation of the operational meanings of the scales and sub-scales is illustrated in Table 4.1.

Since the development of the LASI, it has been administered to 2000 students throughout the United Kingdom, Australia and the Open University. This questionnaire has also been used in South African universities, for example the University of the Orange Free State and the University of South Africa (Mokoena, 1997; Joubert, 1996; Dumse, 1995; and van Rensburg, 1995).

The LASI is available in English, as well as Afrikaans. It was translated from English to Afrikaans by the Department of Student Counselling Services who provided the questionnaires.

Letters of permission to use the LASI were obtained by the Department of Student Counselling Services at the University of the Orange Free State and are provided in Appendix L. The inventory was obtained from and analysed with the co-operation of the above-mentioned department. Therefore permission to use the LASI was not obtained from the authors.

Table 4.1 Scales and sub-scales of the LASI

Scale	Sub-scale	Meaning
MEANING ORIENTATION *(students intend to understand what is being studied)* *[Cronbach alpha=0,79]*	**Deep approach [Cronbach alpha=0,56]**	• Active questioning in learning. • Relates the learning content to previous knowledge. • Searches for meaning in learning content. • Actively interacts with the learning content.
	Relating ideas [Cronbach alpha=0,47]	• Relating or integrating ideas to other parts of the course. • Using previous knowledge to link new information.
	Use of evidence [Cronbach alpha=0,38]	• Relating evidence to conclusions. • Scrutinising the learning content and relating it to factual or empirical information.
	Intrinsic motivation [Cronbach alpha=0,72]	• Interest in learning for the sake of learning. • Dedication to learning activities to expand knowledge, skills and values.
REPRODUCING ORIENTATION *(Students intend to reproduce what they are studying)* [Cronbach alpha=0,73]	**Surface approach [Cronbach alpha=0,49]**	• Preoccupation with memorisation. • Learning without understanding by repetition or habituation.
	Syllabus-boundness [Cronbach alpha=0,51]	• Relying on teaching staff to define learning tasks. • Concentrating on prescribed learning activities only. • Not prepared to learn anything outside the learning activities.
	Fear of failure [Cronbach alpha=0,45]	• Pessimism and anxiety about academic outcomes. • Poor self-esteem regarding the ability to pass examinations and tests.
	Improvidence [Cronbach alpha=0,42]	• Over-cautious reliance on details. • Confined to facts. • Reluctant to search for links or connections between ideas.

Scale	Sub-scale	Meaning
STRATEGIC ORIENTATION *(Students study to gain qualifications for employment)* [Cronbach alpha=0,67]	**Extrinsic motivation [Cronbach alpha=0,78]**	• Interest in courses for the academic qualification they offer. • Motivation for learning to obtain the qualification.
	Strategic motivation [Cronbach alpha=0,32]	• Awareness of implications of academic demands made by academic staff. • Actively gathers information about the evaluation of learning content to create a favourable impression with academic staff.
	Achievement motivation [Cronbach alpha=0,58]	• Competitive and self-confident. • Intending to attain success.
NON-ACADEMIC ORIENTATION *(Students have little concern for academic requirements – poor academic performance is linked to study difficulties)* [Cronbach alpha=0,70]	**Disorganised study methods [Cronbach alpha=0,71]**	• Unable to work regularly and effectively. • Fails to manage study time. • Inability to plan in advance.
	Negative attitudes to studying [Cronbach alpha=0,60]	• Lack of interest and application. • Disillusioned about the course.
	Globetrotting [Cronbach alpha=0,36]	• Over-ready to jump to conclusions. • Makes generalisations. • Reaches unfounded conclusions.
OTHER APPROACHES TO LEARNING	**Comprehension learning [Cronbach alpha=0,65]**	• Readiness to map out subject area and think divergently. • Uses illustrations, analogies and intuition to form a gestalt of the learning content.
	Operation learning [Cronbach alpha=0,49]	• Emphasis on facts and logical analysis. • Focus is on the detail of learning content.

Scale	Sub-scale	Meaning
STUDENT-CENTREDNESS [Cronbach alpha=0,75]	**Good teaching [Cronbach alpha=0,67]** *Versus* **Freedom in learning [Cronbach alpha=0,72]**	• Teachers are well prepared, helpful and committed to their work. *Versus* • Discretion of students to choose and organise their own work.
CONTROL-CENTREDNESS [Cronbach alpha=0,75]	**Workload [Cronbach alpha=0,80]** *Versus* **Freedom in learning [Cronbach alpha=0,72]**	• Heavy pressures are put on students to fulfil the task requirements. *versus* Discretion of students to choose and organise their own work.
OTHER COURSE PERCEPTIONS	**Formal teaching methods [Cronbach alpha=0,70]**	• Perception that work and classes are more important than the individual students.
	Clear goals and standards [Cronbach alpha=0,76]	• Assessment standards and outcomes of studying are clearly defined.
	Vocational relevance [Cronbach alpha=0,78]	• The perceived relevance of the course to the students' careers.
	Openness to students [Cronbach alpha=0,70]	• Attitudes of staff friendly and a preparedness to adapt to students' needs.
	Social climate [Cronbach alpha=0,65]	• The quality of academic and social relationships among students.

(adapted from Entwistle & Ramsden, 1983: 180; 228-233;238-240; Mokoena, 1997: 77).

4.3.2.1.2 Reliability

The Cronbach Alpha coefficient was used to determine and evaluate reliability. Burns and Grove (1993:341-342) explain the Cronbach Alpha coefficient as *"testing the homogeneity of all the items in the instrument"* and *"although the mathematics of the procedure are complex, the logic is simple"* as *"it is as though one conducted split-half reliabilities in all the ways possible and then averaged the scores to obtain one reliability score"* to examine *"the extent to which all the items in the instrument measure the same construct"*, and to test *"internal consistency"*. Particular attention was given to the internal consistency of scales and sub-scales. The mean alpha values read: meaning orientation (0,79); reproducing orientation (0,73); non-academic orientation (0,70); strategic orientation (0,67); student-centrednes (0,75); and control-centredness (0,75) (Entwistle & Ramsden, 1983:228-233; 238-240). According to Richardson (1990:156) the LASI yields consistent results when used repeatedly under the same conditions. The fact that the LASI is not vulnerable to errors of measurement makes it reliable for test-retest situations.

4.3.2.1.3 Validity

Content validity *"examines the extent to which the method of measurement includes all the major elements relevant to the construct being measured"* (Burns & Grove, 1993: 765), while conceptual consistency refers to *"the adequacy of an operational definition to reflect the meaning of a construct or concept"* (Treece & Treece, 1986: 502).

The LASI's content validity and conceptual consistency are more or less satisfactory on the grounds of statistical and interview data after the questionnaire has been administrated to numerous groups of students in different disciplines (Meyer & Parsons, quoted by Mokoena, 1997:79). This means that the LASI can be equally applicable to students studying different disciplines. Even shortened versions of the LASI provided comparable findings when compared to the original LASI (Dumse, 1995: 23). The LASI

can also be regarded as valid as items were directly derived from the experiences of students in the natural setting of academic courses in higher education. The conceptual consistency was determined by the sub-scales, which were aimed at reflecting substantive components of approaches to studying (Entwistle & Ramsden, 1983:47-49). Meyer and Parsons (quoted by Mokoena, 1997: 79) are of the opinion that LASI's *"population validity was suspect in terms of the factor analytical structure, particularly with regard to strategic and non-academic orientation"*. The factor analytical structure refers to an *"analysis that examines interrelationships among large numbers of variables and disentangles those relationships to identify clusters of variables that are most closely linked together"* (Burns & Grove, 1993:768-769).

4.3.2.2 Demographic Questionnaire (DQ) and Student Perception Questionnaire (SPQ)

4.3.2.2.1 Development

The first step in the development of the questionnaires was to determine what information was relevant to the study. The Demographic Questionnaire (DQ) and Student Perception Questionnaire (SPQ) consisted of personal information and academic information respectively and were both administered along with the LASI - the DQ in March 1998 and the SPQ in February 1999.

The DQ elicited demographic information such as the student number, language, final grade twelve results, gender, age, type of secondary education, community of origin, marital status, dependants, institution of employment, benefits of employment, payment of a salary, and the way studies were financed.

Various research articles on problem-based learning, questionnaires cited in the relevant literature, discussions with those knowledgeable in the field of problem-based learning, statisticians, experts and existing questionnaires were used to explore ideas before and

after the items in the SPQ were compiled. The questionnaire included various open-ended questions as well as structured questions. The close-ended questions were mainly supplied by possible responses from which students had to choose one or more items.

Academic information covered the following: Motivation for studies; perceptions of the course; the group work; problem-based learning; the facilitator; changes in knowledge; skills and attitudes, assessments (evaluations/examinations/OSCEs/tests); aspects of the method of instruction they enjoyed most and least; ways in which the course could be improved and advice given to potential new-comers. Close-ended as well as open-ended questions were included to reveal additional information on respondents' experiences, feelings and thoughts. Some open-ended questions had some restraint imposed, as only the two most likely responses were required. Other open-ended questions had no restraint placed on the way respondents wanted to answer them.

A Likert Scale was used with various declarative statements clustered under a subject. Responses (always, mostly, sometimes, never) were included in the majority of the closed-ended questions. One range of declarative statements (the question on knowledge, skills and attitudes) included an evaluation response (yes or no) (see Appendix E & F, Section B, Question 6). Half of the statements were expressed positively and the other half negatively to avoid bias in the responses.

Because it was difficult to express half of the statements in Question 6 (Section B in the SPQ) in the negative (as it produced double negatives), which would be difficult to answer, items were initially all stated in the positive. It posed a problem in the pilot study and had to be changed to half of the questions in the negative and the other half in the positive (the pilot study is discussed in 4.3.3.1).

Open-ended questions were included after each range of close-ended questions to reveal additional information on respondents' experiences, feelings and thoughts.

Questions contained in the DQ and SPQ (see Appendix C, D, E and F) were designed with the help of two faculty members with experience in the development of research instruments and three statisticians of the Department of Biostatistics at the Faculty of Health Sciences.

The questionnaires were compiled in English and thereafter translated into Afrikaans. Both English and Afrikaans dictionaries and thesauruses were used in the translation process. Both Afrikaans and English versions were edited by an expert of the Division of Educational Development, an educational support division of the Faculty of Health Sciences at the University of the Orange Free State.

At the conclusion of both the DQ and the SPQ respondents were thanked for their contribution to the research project and assured of confidentiality.

4.3.2.2.2 Reliability

Burns and Grove (1993:778) define reliability as *"how consistently an instrument measures the concept of interest"*. Reliability therefore refers to the accuracy of a measuring instrument for example the consistency of respondents' scores when taking the test on more than one occasion (Dumse, 1995:23).

Stability, equivalence and homogeneity were not determined as a result of time-constraints and because the instruments were newly developed. Re-administration of these questionnaires in the future may provide opportunities to calculate the stability, equivalence and homogeneity of the instruments. Interpretative reliability was used, as the aim was to reach consensus among experts after the questionnaire had been presented to them for scrutiny. Interpretative reliability refers to the extent *"to which each judge assigns the same category to a given unit of data"* (Burns & Grove, 1993:771).

The decision was made not to administer the SPQ at the end of the first academic year (1998), because unstable traits were present such as mood (depression, exhaustion during

or after the exams, and end-of-year frustrations), that could produce low reliability estimates. Therefore the SPQ was administered during the first day of the second academic year (1999), after respondents had taken their end-of-the-year vacation.

4.3.2.2.3 Validity

The validity of an instrument can be defined as *"the extent to which the instrument actually reflects the abstract construct being examined"* (Burns & Grove, 1993:782). This means the degree to which an instrument measures what it is supposed to measure.

The internal validity of a study is concerned with the study reflecting the reality and not being the result of extraneous variables (Burns & Grove, 1993:771). Care was taken to exclude repeaters from the study as they would act as extraneous variables.

Construct validity was endeavoured as conceptual and operational definitions were carefully compared to ensure that theoretical constructs were measured.

External validity refers to *"the extent to which study findings can be generalised beyond the sample used in the study"* (Burns & Grove, 1993:768). The sampling method was non-random, which increases the possibility that the sample may not be representative of the target-population, therefore the external validity cannot be considered as high. The smaller a sample is, the smaller the power will be. Power is *"the capacity of the study to detect differences or relationships that actually exist in a population"* (Burns & Grove, 1993: 247), and refers to the probability that the power analysis test will detect a significant difference that exists and may lead to the risk of a type II error. This means that there may be a significant difference between the sample population and the target population.

Content-related validity refers to whether all the major elements relevant to the construct being measured are portrayed in the method of measurement (Burn & Grove, 1993:765; 343-345). Evidence should be obtained from three sources: the literature, representatives

of the relevant populations and content experts. Questions used in the SPQ were logically deducted from the literature, therefore content validity is assured. Furthermore, five content experts scrutinised the SPQ for the following:

- Whether it was appropriate, accurate and representative.
- Whether all the important items were included.
- Whether all the items in the questionnaire were assembled, refined and arranged in suitable order.
- Whether the questionnaire was readable.
- Whether the language used was simple, understandable and not offensive.

These experts included two lecturers from the School of Nursing at the Orange Free State, one language expert from the Division of Educational Development and three statisticians from the Department of Biostatistics.

Clustering related statements under one subject attained validity. Statements, which did not fit under a particular subject, were excluded.

Face validity gave valuable information about the perception of usefulness for first-year students.

The SPQ contained items, which were also addressed by the LASI, as it measured the same construct. This provided the potential to determine validity from convergence. Validity from convergence is established when two instruments measure the same construct (Burns & Grove, 1993:345-346). If the measures are highly positively correlated, the validity of the instruments will be strengthened. Measurement of validity from convergence was possible as some of the items were replicated in other sections of the same questionnaire as well as in the LASI. Validity from divergence could also be measured as items of opposite meanings were used under different headings.

Validity from convergence and divergence was determined by comparing and calculating the kappa of the responses where the same or opposite constructs were measured.

Altman (1996:403-405) describes the kappa (written as ***K***) as a measure of different raters' agreement between categorical assessments, in other words *"a method comparison study for categorical data."* The strength of agreement is perfect if it has an agreement of 1.00.

Values between 0 and 1 are interpreted by using the following guidelines:

Value of ***K***	Strength of agreement
<0.20	Poor
0.21-0.40	Fair
0.41-0.60	Moderate
0.61-0.80	Good
0.81-1.00	Very good

(Altman, 1996:403).

Validity of convergence was calculated by using the following questions:

(i) SPQ, Section B, Question 2, item 6 (*The level of difficulty was applicable throughout the course*),

and

LASI, Section C, Question 19 (*Lecturers in the department seem to be good at pitching their teaching at the right level for us*).

The kappa (***K***) was 0.024, which is regarded as a poor validity of convergence. An explanation for this poor ***K*** may be that the LASI measured the whole course (traditional and PBL subjects included), while the SPQ only measured the PBL subjects. Students could have had different perceptions of the course as a whole and PBL specifically. Furthermore, the intervals of the LASI were described as "***definitely agree***", "***agree with reservations***", "***disagree with reservations***" and "***definitely disagree***", while the intervals of the particular question in the SPQ were described as "***always***", "***mostly***", "***sometimes***" and "***never***". It may be possible that students read the declarative statements in a different way.

(ii) SPQ, section B, question 2, item 10 (*The language of tutoring was understandable*),

and

SPQ, section B, question 3, item 2 (*Language posed no barrier to my understanding of concepts*).

The kappa (***K***) was 0.402, which is regarded as a fair validity of convergence

(iii) SPQ, Section B, Question 3, item 8 (*Group work helped me to remember information for longer*),

and

SPQ, Section B, Question 4, item 5 (*PBL helped me to retain information for longer periods*).

The ***K*** was 0.513, which can be regarded as a moderate validity of convergence.

(iv) SPQ, Section B, Question 4, item 10 (*PBL taught me to study on my own too*),

and

LASI, Section C, Question 17 (*In this department you're expected to spend a lot of time studying on your own*).

The ***K*** could not be calculated as students gave responses to all four sections in the SPQ ("***always***", "***mostly***", "***sometimes***" and "***never***"), while students gave responses only to three of the four sections in the LASI ("***definitely agree***", "***agree with reservations***", "***disagree with reservations***" and "***definitely disagree***"). Nobody chose the option "***definitely disagree***" in the LASI. In such a case the ***K*** cannot be calculated.

(v) SPQ, Section B, Question 5, item 11 (*I could discuss any problem with her*),

and

LASI, Section C, question 35 (*The lecturers in this department always seem ready to give help and advice on approaches to studying*).

The ***K*** was 0.405, which can be regarded as a fair agreement (validity of convergence).

(vi) SPQ, Section B, Question 7, item 7 (*We were informed about the way in which assessment would take place*),

and

LASI, Section B, Question 20 (*Lecturers sometimes give indications of what is likely to come up in the exams, so I look out for what may be hints*).

The kappa (***K***) was 0.073, which is regarded as a poor validity of convergence. An explanation for this poor ***K*** may be that the LASI measured the whole course (traditional and PBL subjects included), while the SPQ only measured the PBL subjects. Furthermore, the intervals of the LASI were described as "***definitely agree***", "***agree with reservations***", "***disagree with reservations***" and "***definitely disagree***", while the intervals of the particular question in the SPQ were described as "***always***", "***mostly***", "***sometimes***" and "***never***".

Validity of divergence was calculated by using the following questions:

(i) SPQ, Section B, Question 2, item 1 (*During this course learning did not centre around the community enough*),

and

SPQ, Section B, Question 4, item 8 (*PBL brings problems from out of the community into the classroom*).

The ***K*** could not be calculated as students gave responses to all four sections in the SPQ, Question 2 [item 1] ("***always***", "***mostly***", "***sometimes***" and "***never***"), while students gave responses only to three of the four sections in the SPQ Question 4 [item 8] ("***always***", "***mostly***", "***sometimes***" and "***never***"). Nobody chose the option" ***never***" in Question 4, item 8. Therefore it was not possible to calculate the ***K***.

(ii) SPQ, Section B, Question 2, item 7 (*Subjects were continuously related to each other*),

and

SPQ, Section B, Question 4, item 9 (*PBL does not integrate subjects in a meaningful way*).

The ***K*** was 0.007, which can be regarded as a very poor agreement (validity of divergence).

(iii) SPQ, Section B, Question 3, item 10 (*I prefer traditional lectures to group work*),

and

SPQ, Section B, Question 4, item 7 (*I prefer PBL to traditional lectures*).

The ***K*** was 0.112, which can be regarded as a poor agreement (validity of divergence).

Calculations to determine validity of convergence and divergence were disappointing and problematic for the following reasons:

- Respondents completed the LASI twice: first as a pre-test in 1998 and then as a post-test in 1999. Data from the post-test were used as the LASI was administered together with the SPQ.
- To complete the LASI as well as the SPQ in one session took long. Therefore students might have been tired, causing their concentration to wane. For practical

reasons it was not possible to administer the questionnaires (LASI and SPQ) on separate occasions.

- The sample was very small (N=43) and together with too many categories, it posed a problem to calculate the kappa.
- Categories differed.
- The questions were not formulated in an identical manner.
- The LASI concentrated on the whole course (subjects instructed by means of traditional lectures, video-assisted tuition and PBL), while the SPQ only focused on PBL.

The response rate of the DQ and SPQ was high as the researcher distributed them in person to the group of respondents at a particular time and in the same way. After completion of the questionnaires they were gathered simultaneously. This guaranteed consistency in the way that the questionnaires were administered. Both response rate and consistency in the way that the questionnaires are administered are considered important to validity (Burns & Grove, 1993:373-374).

During the pilot study (discussed in 4.3.3.1) it took students between 20 and 30 minutes to complete the SPQ and 5-7 minutes to complete the DQ. Treece and Treece (1986: 289) state that a questionnaire should not take more than 20 to 25 minutes to complete. Because the LASIs (pre- and post-tests) were administered simultaneously with the DQ and SPQ, it took students between 20 and 50 minutes to complete both. The time needed to complete both the questionnaires posed the potential danger of respondents failing to mark responses to all the questions, which could have compromised the validity of the questionnaires. Treece and Treece (1986: 289) mention other dangers of questionnaires that are too lengthy: students may become fatigued and fail to give accurate responses; and students may not take the time to complete time-consuming sections of the questionnaire for example open-ended questions.

4.3.2.3 Audit

4.3.2.3.1 Description

A checklist (see Appendix G) was compiled to audit the first-year nursing course with special attention to programme development, problem-based learning and course outcomes (see Table 4.2). Treece and Treece (1986:353) define a checklist as *"a prepared list of items with marked columns"* to *"be checked off by the observer"* and *"may provide for only yes or no responses"*, or *"there may be categories such as often, seldom, or never"*. Arens and Loebbecke (1988:1) define auditing as *"the process by which a competent, independent person accumulates and evaluates evidence about quantifiable information related to a specific [economic] entity for the purpose of determining and reporting on the degree of correspondence between the quantifiable information and established criteria"* (my brackets). See the illustration of auditing in Figure 4.1.

To do an audit it is necessary to have criteria by which phenomena will be evaluated. A checklist was compiled by making use of several sources, which were used during the literature study. Literature on programme development, problem-based learning, and course outcomes (see Appendix H & I) were used to compile the audit. Conversations with experts and observation of the educational process refined the themes and main items which were used in the checklist. Evidence, which was audited, included oral testimonies, written statements and course material. As the researcher is an independent outsider and not part of the staff of the School of Nursing, it was possible to maintain an independent mental attitude. Objective thinking and an unbiased attitude are necessary for the judgements and decisions to be made (Arens and Loebbecke 1988: 2).

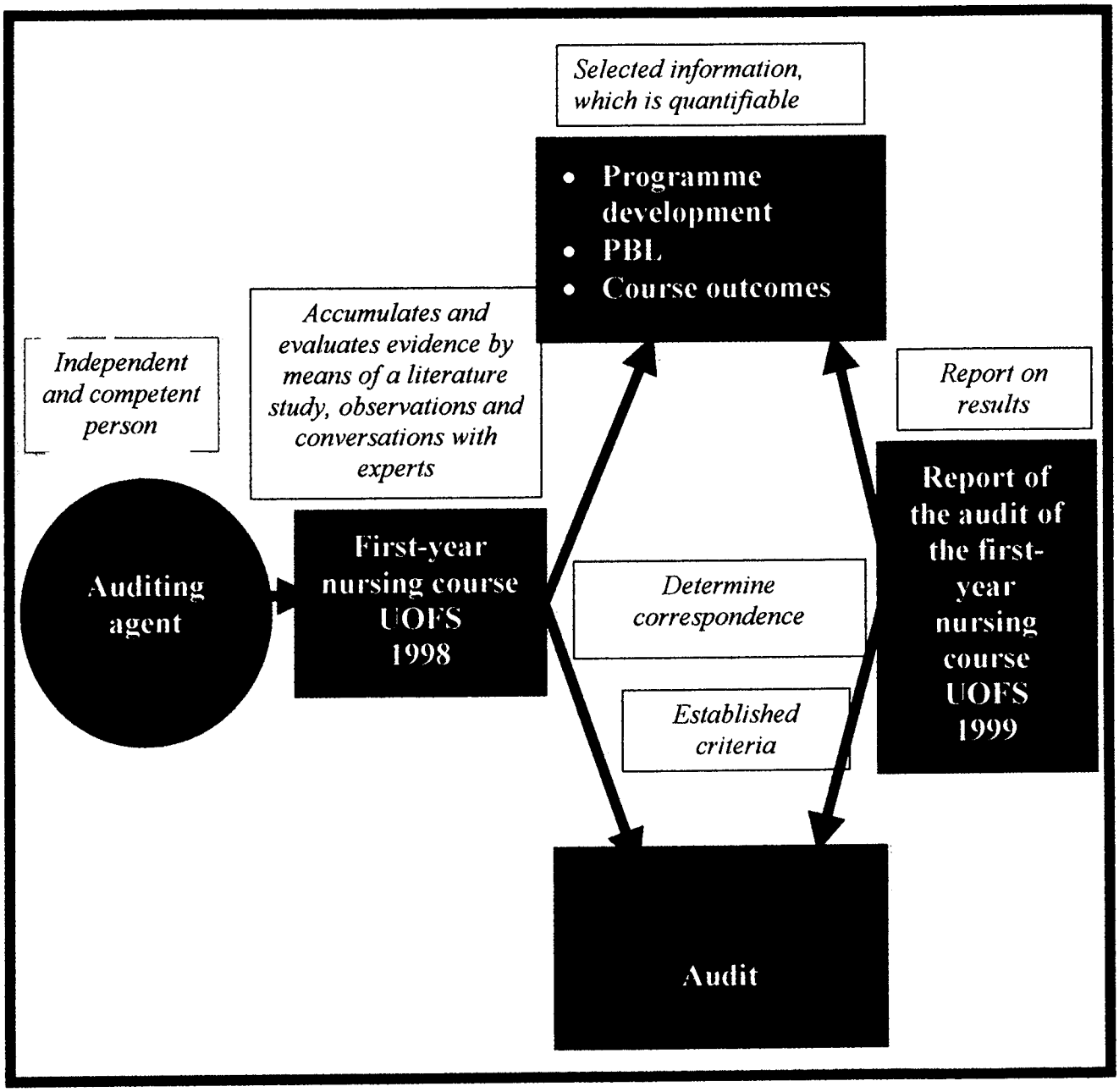


Figure 4.1 Illustration of an audit of a first year nursing course. Adapted from Arens and Loebecke (1988:3).

Table 4.2 Themes and main items on the checklist for audit

Theme	Main Items
Programme development	• *WHO recommendations* • *South African Qualifications Authority* • *South African Nursing Council* • *Department of Health* • *University of the Orange Free State* • *Faculty of Health Sciences* • *Curricular model* • *Philosophy*
Problem-based Learning	• *Methodology of PBL* • *Availability of resources* • *Programmes to develop facilitators* • *Cost, time and student retention* • *Study behaviour of students* • *Promotion of thought processes* • *Promotion of learning environment* • *Student retention* • *Satisfaction of faculty members*
Course Outcomes (content)	• *Scientific nursing process* • *Management* • *Communication* • *Problem-solving* • *Technology* • *Contextual understanding* • *Inter-personal skills* • *Professional responsibility* • *Professional development*

4.3.2.3.2 Reliability

Burns and Grove (1993:778) define reliability as the consistency of an instrument to measure the concept of interest. Characteristics of reliability are dependability, consistency, accuracy and comparability. When a newly developed instrument is tested a reliability of .70 is considered as acceptable. When an instrument is tested three aspects of reliability must be tested: stability, equivalence and homogeneity.

(i) *Stability*: When an instrument is used on more than one occasion the stability of the instrument is tested, but with the prerequisite that the factors to be measured stay exactly the same. Any change in the value or score can be attributed to random error. With paper-and-pencil measures a period of at least two weeks is recommended between two tests. After the retest correlation analysis is performed on the scores. The higher the correlation coefficient, the higher the reliability will be (Burns & Grove, 1993:339-340). Test-retest reliability (doing the audit on more than one occasion) was not done due to time-constraints, although use of this checklist for audit in the future may provide opportunities to calculate the correlation coefficient.

(ii) *Equivalence*: To determine the equivalence of the instrument where more than one rater complete the same checklist where after the coefficient alpha is calculated. This is referred to as unitising reliability and is defined as *"the extent to which each data collector consistently identifies the same units within the data as appropriate for coding"* (Burns & Grove, 1993:782). Any coefficient alpha below .80 is considered to generate serious concern about the reliability of the data. Values above .80 refer to inter-rater reliability (Burns & Grove, 1993:340). Equivalence testing was not done for the same reason as stated above, though experts enhanced interpretative reliability by means of scrutinising the items on the audit.

(iii) *Homogeneity*: The homogeneity refers to the correlation of various items within the instrument. Split-half reliability was the original approach to determine homogeneity and involves the splitting of items in half and then performing a

correlation procedure between the two halves. Nowadays the Cronbach-alpha and other procedures are used to determine homogeneity of items as these methods proved to be more accurate than the split-half method. The Cronbach Alpha coefficient is calculated to examine *"the extent to which all the items in the instrument measure the same construct"* and to test *"internal consistency"* (Burns & Grove, 1993:341-342), and items that do not correlate highly may be deleted from the instrument.

Re-administration of this checklist in the future may provide opportunities to calculate the stability, equivalence and homogeneity of the instrument.

Interpretative reliability was used, as the aim was to reach consensus among experts after the audit was presented to them for scrutiny. These experts included two lecturers from the School of Nursing at the University of the Orange Free State, a language expert from the Division of Educational Development and a statistician from the Department of Biostatistics. Interpretative reliability refers to the extent *"to which each judge assigns the same category to a given unit of data"* (Burn & Grove, 1993:771).

4.3.2.3.3 Validity

Burns and Grove (1993:782) define the validity of an instrument as *"the extent to which the instrument actually reflects the abstract construct being examined"*. Four types of validity are described in relation to the study: Statistical conclusion validity, internal validity, construct validity and external validity (Burns & Grove, 1993:265).

(i) <u>*Statistical conclusion validity*</u>: This validity type is concerned with *"whether the conclusions about relationships and differences drawn from statistical analysis are an accurate reflection of reality"* (Burns & Grove, 1993:780).

(ii) <u>*Internal validity*</u>: This validity type is concerned with *"the extent to which the effects detected in a study are a true reflection of reality, rather than being the result of extraneous variables"* (Burns & Grove, 1993:771).

(iii) *Construct validity*: This validity *"examines the fit between conceptual and operational definitions of variables and determines whether the instrument actually measures the theoretical construct it purports to measure"* (Burns & Grove, 1993:765).

(iv) *External validity*: External validity refers to *"the extent to which study findings can be generalised beyond the sample used in the study"* (Burns & Grove, 1993:768).

Content-related validity refers to whether all the major elements relevant to the construct being measured are portrayed in the method of measurement (Burns & Grove, 1993:765; 343-345). Evidence should be obtained from three sources: the literature, representatives of the relevant populations and content experts. Themes and items used in the checklist for audit were logically deducted from the literature, therefore content validity is reasonably assured. Furthermore, five content experts scrutinised the audit for the following:

- Whether it was appropriate, accurate and representative.
- Whether all the important items were included.
- Whether items in the audit were assembled, refined and arranged in suitable order.
- Whether the audit was readable.
- Whether the language used was simple and understandable.

Validity was endeavoured by clustering related items under one theme. Items, which did not fit in a theme, were excluded.

Face validity is not an acceptable measurement for validity and *"verifies whether an instrument 'looked like' or gave the appearance of measuring the content"* (Burns & Grove, 1993:768; 343-344), but it may give valuable information about the perception of usefulness. The same experts who scrutinised content validity examined face validity.

4.3.3 Proceedings of the research

4.3.3.1 Pilot study

Before the pilot study was conducted, the SPQ were submitted to three statisticians, two expert members of the Faculty of Health Sciences who were also knowledgeable in the field of problem-based learning and a language expert of the Division of Educational Development.

The DQ was administered to 4 students from the Faculty of Health Sciences. Two were Afrikaans-speaking and two were English-speaking. The SPQ was administered to ten students registered for their second year of studies (B.Soc.Sc.[Nursing]) at the University of the Orange Free State. (This second-year group of nursing students was the first group of students at the University of the Orange Free State who was officially instructed by means of problem-based learning the previous year.) Students were selected by means of a stratified sample, as the researcher was familiar with the variables in the group. Students were divided into two strata: the one group contained the English-speaking respondents and the other the Afrikaans-speaking respondents. Respondents were then selected proportionally from each stratum. Six students were Afrikaans- and four students were English-speaking. In this way the researcher ascertained that both Afrikaans and English questionnaires were included in the pilot study. The pilot study was conducted to determine any deficiencies in the formulation of instructions; to determine how long it took students to complete the questionnaire, and to detect whether questions were understood. The pilot study revealed problems with the direction of the yes-no-questions (SPQ, Section B, question 6 [see Appendix E & F]). Respondents in the pilot study had a tendency to answer questions in one direction, in other words students mainly selected the "yes" options. An endeavour to rectify this problem was to change the directions of about half the items in the question. Unfortunately this adjustment had the potential of making it difficult for students to respond, as some statements included double negatives.

The LASI was not administered in the pilot study, because it is a standardised questionnaire that had already been pre-tested in the past.

The researcher decided to add another open question to probe students for more responses. This was Question 11 in Section B (SPQ) and reads: "*What advice would you give to someone who plans to register for the same course you did the past year*?"

4.3.3.2 Implementation

4.3.3.2.1 Administration of the LASI and the DQ

The Lancaster Approaches to Studying Inventory (LASI) was administered in March 1998 to determine the learning styles of students. The DQ was administered along with the LASI (see the LASI in Appendix A & B and the DQ in Appendix C & D).

The target population consisted of 43 nursing students. The whole population was included in this study. This was done because the population was already small and because the class contained students from different cultural backgrounds, home languages, socio-economic backgrounds, genders and age variances. Furthermore, the larger the sample, the better the potential was to maximise the validity of the results and avoid biased results. Respondents who repeated their first year also received questionnaires, but their LASI data were not calculated along with the others. A computerised class list of all the first-year nursing students registered at the University of the Orange Free State was used to exclude repeaters. This class list was also used to determine which students were absent during administration of the questionnaire. The reason for excluding repeaters and absentees were that the repeaters were previously exposed to problem-based learning, which would bias the changes that took place in

learning styles. The absentees were excluded as the LASI was administered as a pre- and a post-test.

4.3.3.2.2 Students exposed to problem-based learning

Students started their academic year in February 1998. The School of Nursing officially implemented problem-based learning as a teaching and learning strategy in the undergraduate nursing programme in 1997. This group was the second first-year group to receive instruction by means of PBL in a curriculum design that was community-based. Their last academic day was in November 1998.

4.3.3.2.3 Administration of the LASI repeated

The LASI was administered in the post-test in February 1999 to allow for a longer period between the pre- and post-test. The LASI was administered along with the SPQ. The two sets of LASI data were compared to determine whether changes in learning styles had occurred after exposure to problem-based learning. The class list was used again to determine which students were repeaters, were absent during administration of the questionnaire or dropped out. All the repeaters dropped out together with three other students who quitted their nursing studies. Two completed LASIs had to be excluded as students were absent during the pre-test in March 1998.

4.3.3.2.4 Administration of the SPQ

The LASI and the SPQ were simultaneously administered to the whole class in person before commencement of the second academic year in February 1999.

4.3.3.2.5 Administration of the Audit

The checklist for audit was administered in May 1999.

A schematic representation of the collection of data during the administration of the checklist for audit is illustrated in Table 4.2.

4.3.3.2.6 Calculation of examination results

A computerised class list was used to obtain the results of examinations and was used to calculate and compare results.

Examination results were calculated and compared in the following way: Symbols obtained in students' final secondary school examinations were provided in the DQ (Question 6), while computer print-outs provided symbols obtained in the final first-year examination. Traditional and problem-based subjects were also calculated separately and compared with matric results. In this way the outcomes of problem-based learning could be compared to the outcomes of traditional learning. Anatomy, which was instructed by means of video-assisted instruction, could also be compared to traditional learning strategies and problem-based learning.

4.3.3.2.7 Conclusion

Data collection during this study is illustrated in Figure 4.2 together with the time frame for data collection.

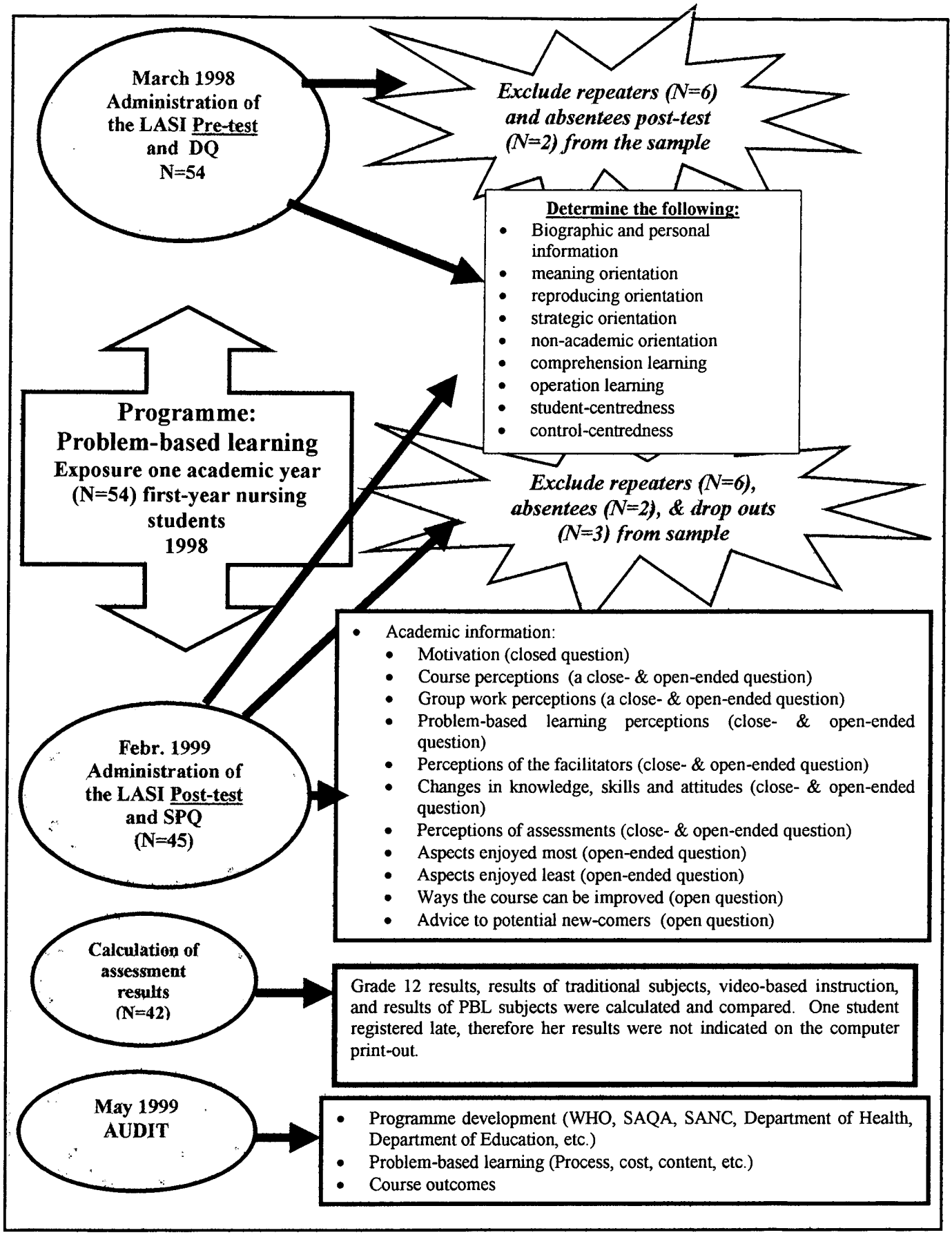


Figure 4.2 Schematic representation of data collection

4.3.4 Data analysis

The Department of Biostatistics did analysis of the close-ended responses of the DQ and SPQ, as well as the LASI, while the researcher analysed open-ended responses of the SPQ. A statistician of the Department of Biostatistics did statistical analysis, while a data typist of Computer Services of the UOFS did data capturing.

Descriptive statistics, namely frequencies and percentages for categorical data and means and medians for numerical data were calculated. The Wilcoxon Matched-Pairs Signed-Ranks test was also used to calculate p-values for data in the LASIs sub-scales to examine paired changes that occurred between the pre- and post-test. For a p-value under 0.05 the 0-hypothesis was rejected, which meant that a statistical significant change took place between the pre- and post-test.

LASI scores before and after exposure to problem-based learning were also compared by means of the non-parametric 95% confidence intervals for the median paired difference between the post-test and the pre-test (post-test minus pre-test). This method is sensitive to detect tendencies where no statistical difference exists and a change of one in the score was evaluated as clinically significant.

4.3.5 Ethical considerations

Permission was asked from the management of the University of the Orange Free State to make use of the B.Soc.Sc. [Nursing] first-year students to form part of the research project. Management and the Dean of the Faculty of Health Sciences granted permission (see Appendix K). The proposal of this study was submitted to the Ethical Committee of the Faculty of Health Sciences and was approved.

Students participated voluntarily after the aim of the research project as well as their power of choice to participate or not had been explained. Completion of the questionnaires implied their permission to be part of the project. Respondents had a choice as to whether they wanted to include their names or not, but because the student numbers had to be included for purposes of calculations of the LASIs, complete anonymity was not possible. The results of assessments were calculated and compared by making use of student numbers, but in a way that would not disadvantage any respondent. Confidentiality was also guaranteed in a statement at the end of the SPQ and the DQ.

4.3.6 Limitations of the study

The sampling method was non-random, which increases the possibility that the sample may not be representative of the target-population. Therefore this study was not intended for generalisation to large populations, but to increase knowledge of the field of study. The sample size of 43 subjects was small, because a larger size would be costly and time-consuming. The smaller a sample, the smaller the power will be. This means that there may be a significant difference between the sample population and the target population.

The fact that students were exposed to PBL for a couple of weeks before the pre-test was done, is a limitation of this study. By the time the students completed the first LASI, they had been exposed to a few problem-based learning tutorials, which could have biased the results of the LASI, as it was administered in March 1998. In 3.4.6.2 the effect of PBL exposure on results is described. It is suggested that the *"time of entry"* should not be defined too vaguely as *"[e]ntry characteristics should be measured in the very first days of the programme, since we were able to show that even in a relatively short period of time during which intense training takes place, approaches to learning can be changed"* (de Volder & de Grave, 1989: 264).

In this study both the pre- and post-test of the LASI were administered with the verbs stated in the present tense, which could have produced ambiguous results. De Volder and de Grave (1989:264), in their study, changed the verbs of the pre-test to the past tense, as it seemed more appropriate *"for measuring the learning approaches students adopted 'before' they came to the medical programme"*. The reason for doing so was that *"the psychological present* [tense] *includes more than just the immediate moment and can vary from a few days to a few years, depending on the period of life a person is experiencing.* It makes sense as students see the span in the present as the year of study they are in. De Volder and de Grave prevented ambiguities in interpretations when they decided to use the past tense for the pre-test. In the post-test, which was administered after the six weeks' introductory phase of the PBL programme, the verbs of the items were stated in the present tense to ensure that students reported their current approaches to learning. Unfortunately the verbs were not changed in this study, which may be seen as another limitation.

Comparison of the LASI scores of this study (N=43) with studies that were done with Mechanical Engineering and Manufacturing Systems students at Newcastle Polytechnic and studies on engineering students by Ramsden were done (illustrated in Table 5.89, 5.91, 5.93, 5.95, 5.97, 5.99, 5.101, 5.103. and 5.104). Results were also compared to ranges per discipline (See Appendix I). Comparison of LASI scores in this study would have been more appropriate when compared to nursing students' scores rather than engineering students' scores.

The time needed to complete the LASI and the SPQ were lengthy, which posed the potential danger of respondents failing to mark responses to all the questions and this could have compromised the validity of the study.

4.3.7 Conclusion

In this chapter the focus was on the study methodology and design. The data capture and results will be discussed in Chapter 5.

CHAPTER 5

Data analysis and conclusions

5.1 INTRODUCTION

In this chapter the results of the study are presented and interpreted, whereafter the findings will be discussed and conclusions drawn. The results will be presented in five sections:

- the personal information of students will be presented in 5.2;
- the academic information of students will be presented in 5.3;
- the results of the Lancaster Approaches to Studying Inventory (LASI) will be presented in 5.4;
- the calculations of assessment results will be presented in 5.5; and
- the results of the audit will be presented in 5.6.

5.2 PERSONAL INFORMATION

Forty-three (43) students' data from the Demographic Questionnaire (DQ) and Student Perception Questionnaire (SPQ) could be used. They were the same students who completed both the LASI pre- and post-tests. As one of the personal questions (question 13) was unclear in the DQ, it was included again (question 3 and question 4) in the SPQ. The reasons were that some students earned a salary, while others did not, and some students were employed by employers other than the Department of Health of the Free State Province. It can be explained as follows:

- Some students were employees of the Department of Health in the Free State Province and earned a salary.
- Some students were voluntary workers at the Department of Health in the Free State Province and earned no salary.
- Some students were employees of other institutions (the South African Defence Force and a private hospital) and earned a salary.

Question 14 of the DQ required information concerned with benefits of employment such as pension, medical insurance and subsidy for housing. Students misunderstood this question and responses did not portray the reality, therefore the data had to be excluded.

5.2.1 Age distribution of students

Data regarding age were obtained in the DQ: Question 8. As can be seen in Table 5.1 the age distribution of students was between 18 and 32 years with the median age being 29 years. Thirty-five percent (35%) of the students were 18 years old.

Table 5.1 Age distribution of students

Age (years)	18	19	20	21	22	23	24	26	27	28	29	32
% (N=43)	35	14	5	2	14	7	7	7	3	2	2	2

5.2.2 Gender, marital status and dependants

Data were obtained from the DQ: Question 7, 11 and 12. Most of the students were female, unmarried and without dependants as can be seen in Table 5.2. Twenty-eight percent (28%) of students had dependants, like children or parents, they had to support.

Table 5.2 Gender, marital status and dependants of students.

	Male (N=42)	Female (N=42)	Married (N=43)	Unmarried (N=43)	Dependants (N=43)	No dependants (N=43)
%	5	95	5	95	28	72

5.2.3 Language

Data about students' language were obtained in the DQ: Question 3, 4 and 5, and required information about their first language, language in which secondary schooling was received and second language of choice.

More than half the students spoke Afrikaans as first language. Sesotho, which is the official language of the black people in the Free State Province, was the vernacular of 26%, while the minority of students were Tswana-speaking (7%), Xhosa-speaking (5%),

English-speaking (2%), Zulu-speaking (2%) and Ndebele (2%). One spoke a foreign language (German) at home (See Table 5.3).

Table 5.3 Students' first language

(N=43)	Afrikaans	Sotho	Tswana	Xhosa	English	Zulu	Ndebele	Other
%	54	26	7	5	2	2	2	2

As can be seen in Figure 5.1 the vast majority of students (91%) used English as their second language.

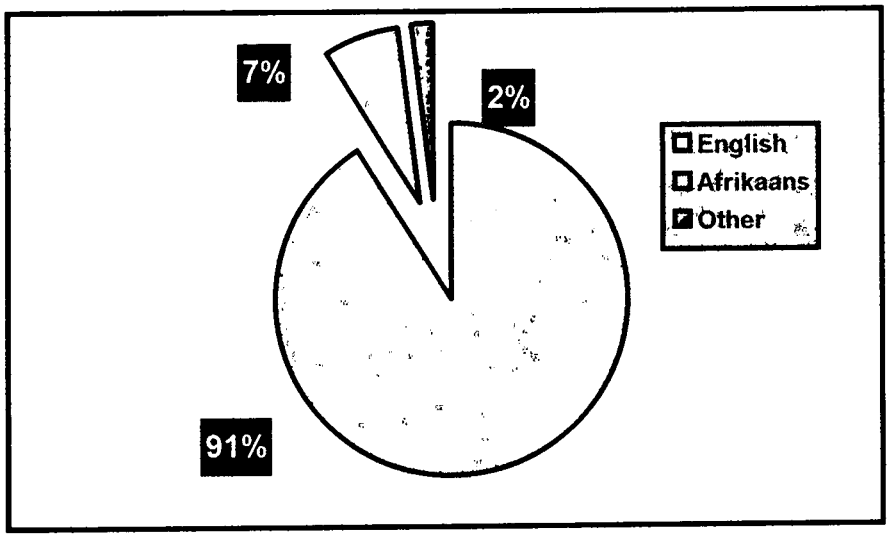


Figure 5.1 Second language of choice (N=43)

Fifty-six percent (56%) of students received their secondary schooling in Afrikaans, while 44% received it in English (See Figure 5.2).

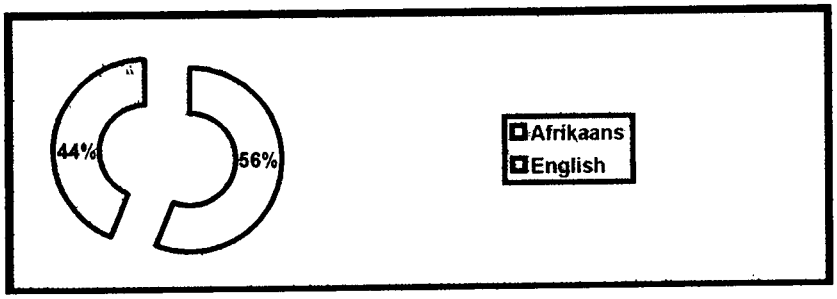


Figure 5.2 Secondary school language (N=43)

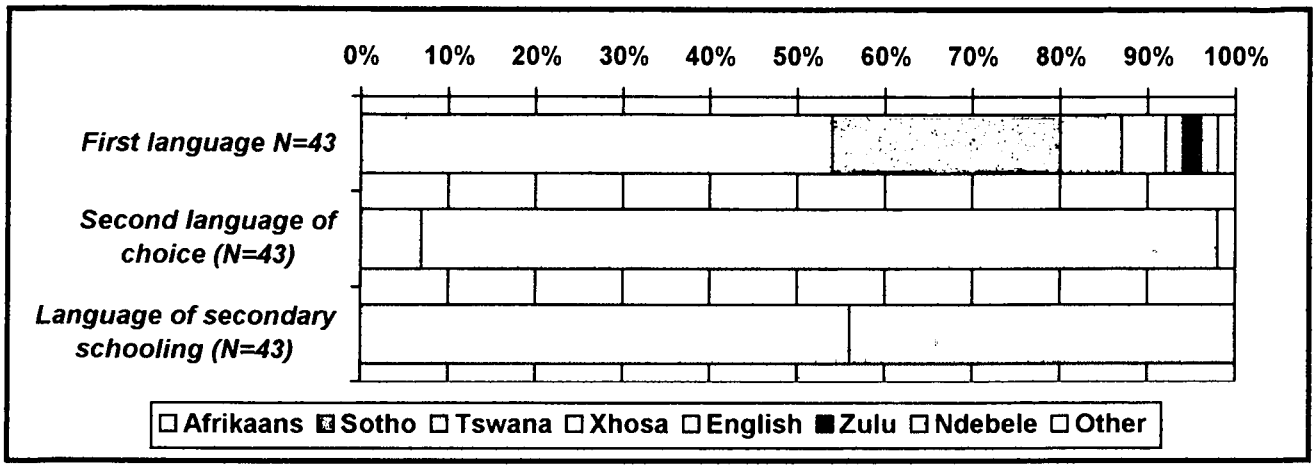


Figure 5.3 Summary of data concerned with language

Figure 5.3 is a summary of the data regarding the language used and preferred by the students.

5.2.4 Salary status and institution of employment

Data regarding salary status and employment were obtained from SPQ: Questions 3 and 4. As can be seen in Figure 5.4, 58% of the students were employees of the Department of Health in the Free State Province and earned a salary. Seven percent of the students were employees of the South African Defence Force, while 5% of the students were employees of a private hospital. Thirty percent of the students earned no salary and acted as voluntary workers for the Department of Health in the Free State Province (see Figure 5.4).

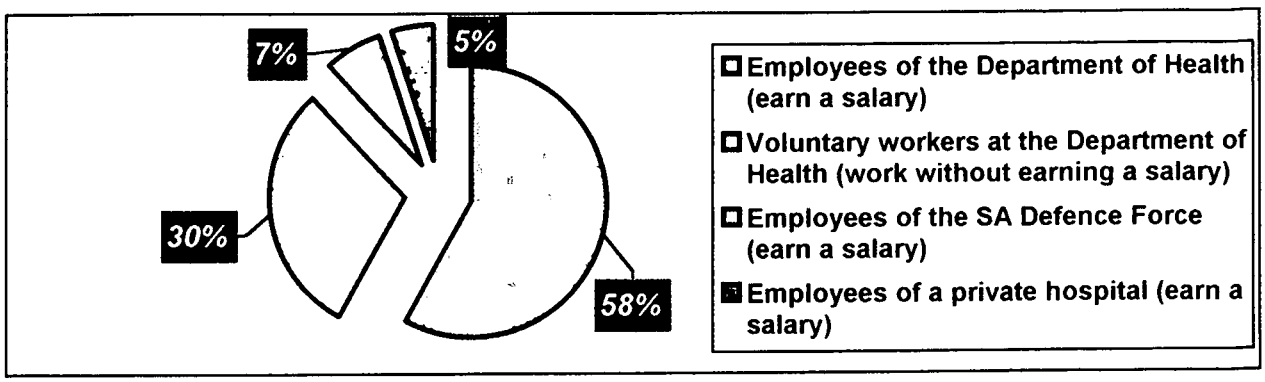


Figure 5.4 Employment status of students (N=43)

5.2.5 Grades obtained in final matriculation examination

Data with regard to final school grades were obtained from DQ: Question 6. Most of the students (32%) obtained a C symbol on average in their final matriculation examination, with 21% who obtained a B and an E symbol respectively, and 18% who obtained a D symbol. Eight percent of the students obtained an A symbol. Four students did not respond to this question. The data are depicted in Figure 5.5.

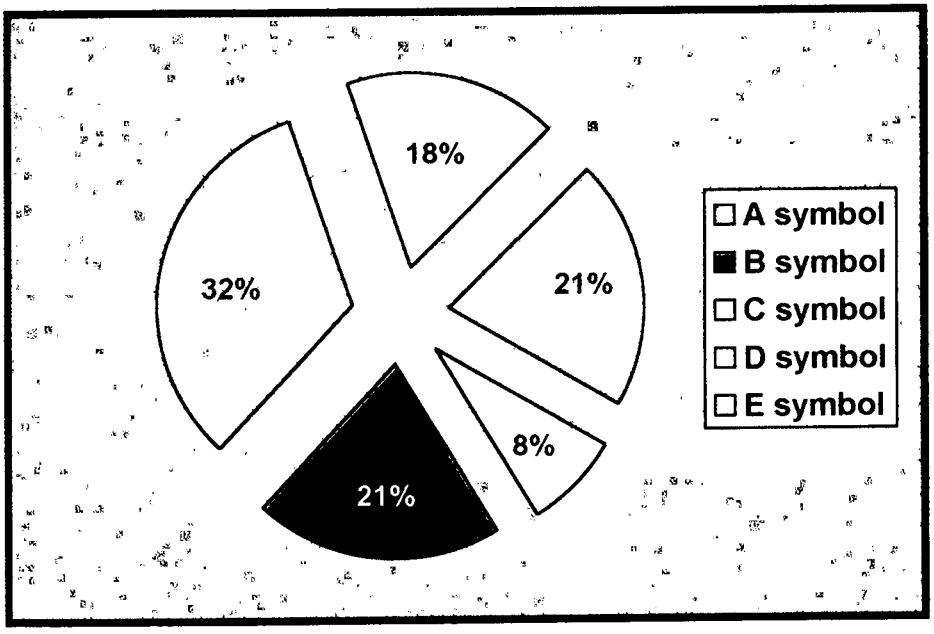


Figure 5.5 Symbols obtained in final secondary examination. N=39

5.2.6 Secondary school institution

Data regarding their secondary schooling were obtained from DQ: Question 9. The majority of students (98%) went to public schools. Sixty two percent (62%) of them went to public schools in predominantly white areas, while 36% went to public schools in black townships. One student went to a private school and one student did not respond to this question (see Table 5.4).

Table 5.4 Type of educational institution where final school year was spent.

	Public school in white area	Public school in black township	Private school
% N=42	62	36	2

5.2.7 Type of community where most of the students' lives were spent

Data regarding the type of community where most of the students' lives were spent, were obtained from DQ: Question 10. More students came from an urban background than from a rural background. The results of this item are depicted in Figure 5.6.

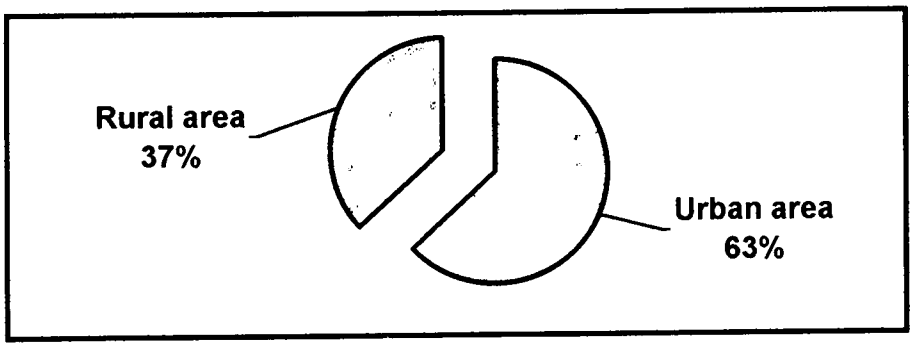


Figure 5.6 Type of community where students spent most of their lives (N=43)

5.2.8 The way studies were financed

Data regarding the way studies were financed, were obtained from SPQ: Question 5. Students' studies were financed in various ways. Forty percent (40%) of the students indicated that their studies were financed by means of a loan, while 37% of the students indicated that their parents financed their studies (see Table 5.5).

Table 5.5 The way studies were financed

	Loan (N=43)	Bursary (N=43)	Employer (N=43)	Self (N=43)	Parents (N=43)
%	40	12	2	26	37

5.3 ACADEMIC INFORMATION

This section comprises academic information, and data gathering was divided into ten sections: motivation to register for the nursing degree, student perceptions of the course, group work, problem-based learning as a learning strategy, the facilitator, the knowledge, skills and attitudes gained, assessments which took place, aspects of the course students enjoyed most and least, and advice students would give to a new-comer. Data were obtained from the SPQ: Section B.

5.3.1 Students' motivation to register for a nursing degree

Thirty-nine percent of respondents registered for a nursing degree to render a service to the community, while 37% did it because of a desire to become a nurse. Two students did not respond to this question (see Figure 5.7).

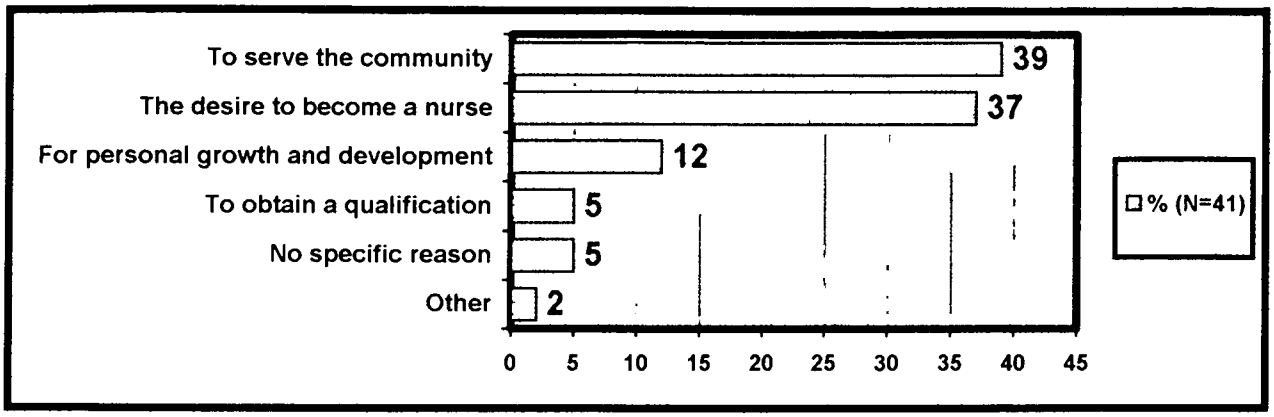


Figure 5.7 Students' motivation to register for a nursing degree.

5.3.2 Course: close- and open-ended responses

Data regarding the course were obtained from the SPQ: Section B, Question 2, which contained twelve close-ended items and one open-ended question. The close-ended questions required from students to indicate "always", "mostly", "sometimes" or "never", and the researcher explained to the group that only one option could be carefully selected, while students were free to respond in a free style manner to the open-ended question. The responses are depicted in Tables 5.6 – 5.17.

5.3.2.1 Learning did not centre around the community enough

Table 5.6 *During this course learning did not centre around the community enough*

	Always	Mostly	Sometimes	Never
% N=42	5	21	38	36

The majority of students felt that learning centred around the community adequately.

5.3.2.2 The course had relevance for South Africa

Table 5.7 *The course had relevance for the present day S.A.*

	Always	Mostly	Sometimes	Never
% N=43	30	56	14	0

The majority of the students indicated that the course was relevant for the present day South Africa.

5.3.2.3 Variety of activities in classroom

Table 5.8 *An appropriate variety of activities was included in the classroom situation*

	Always	Mostly	Sometimes	Never
% N=43	7	51	37	5

Student responses indicated an appropriate variety of activities in the classroom most of the time.

5.3.2.4 Scenarios did not portray the reality

Table 5.9 *Scenarios did not portray the reality*

	Always	Mostly	Sometimes	Never
% N=43	7	12	44	37

The majority of students indicated that scenarios portrayed the reality.

5.3.2.5 Workload was too heavy in the work situation

Table 5.10 *The workload in the work situation was too heavy*

	Always	Mostly	Sometimes	Never
% N=43	5	7	67	21

The majority of students did not indicate that the workload in the work situation was too heavy.

5.3.2.6 Difficulty of the course

Table 5.11 *The level of difficulty was applicable throughout the course*

	Always	Mostly	Sometimes	Never
% N=42	14	45	38	3

Three percent of the students indicated that the level of difficulty was not applicable.

5.3.2.7 Integration of subjects

Table 5.12 *Subjects were continuously related to each other*

	Always	Mostly	Sometimes	Never
% N=42	17	21	55	7

Seven percent (7%) of the students indicated that subjects were never related to each other, while the majority indicated continual relation of subjects to each another to a greater or lesser extent.

5.3.2.8 Practice activities were not adequate

Table 5.13 *Activities included during practice were not adequate*

	Always	Mostly	Sometimes	Never
% N=43	9	30	35	26

Twenty six percent (26%) of students indicated that practice activities were not adequate.

5.3.2.9 Course objectives were not clear

Table 5.14 *Course objectives were not clear*

	Always	Mostly	Sometimes	Never
% N=43	14	16	47	23

Objectives were experienced as unclear by 14% of the students, while 23% never experienced course objectives as unclear.

5.3.2.10 Language of tutoring was understandable

Table 5.15 *The language of tutoring was understandable*

	Always	Mostly	Sometimes	Never
% N=43	26	40	30	4

Only 4% of the students indicated the language was never understandable. The majority of students were able to understand the language that was used in tutorials.

5.3.2.11 Availability of theoretical resources

Table 5.16 *Theoretical sources were readily available*

	Always	Mostly	Sometimes	Never
% N=43	26	37	35	2

The majority of students were satisfied with the availability of theoretical resources, while 35% indicated that resources were available only sometimes and 2% felt resources were never available.

5.3.2.12 Course objectives were reached with ease

Table 5.17 *Course objectives could be reached with ease*

	Always	Mostly	Sometimes	Never
% N=41	7	42	46	5

The majority of the class sometimes, mostly or always reached course objectives with ease. Five percent (5%) of the class could never reach course objectives with ease.

5.3.2.13 Summary of close-ended responses on the first year course

A summary of students' responses to the close-ended items on the course is illustrated in Figure 5.8.

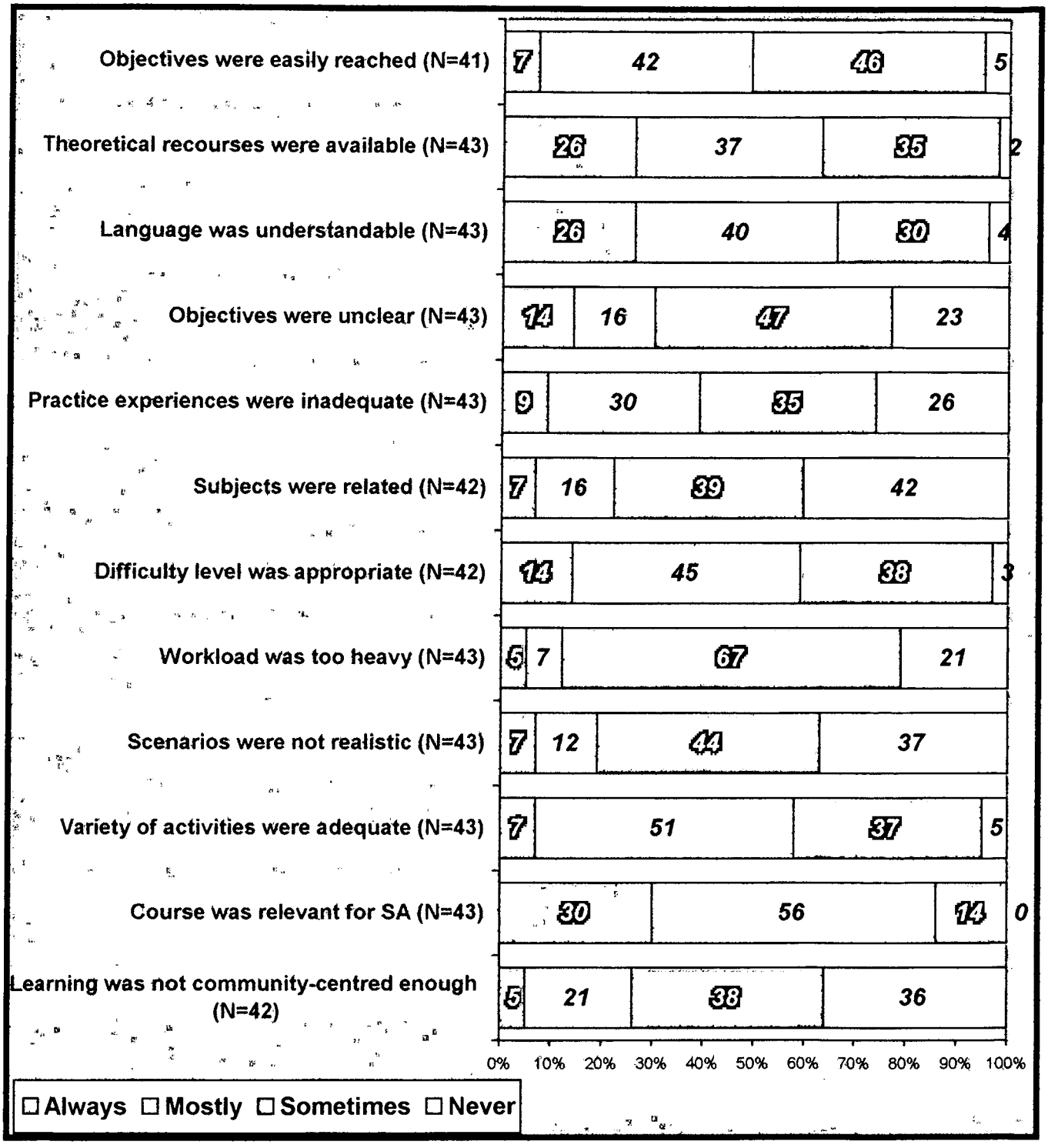


Figure 5. 8 Summary of student perceptions of the course (close-ended responses)

5.3.2.14 Course: open-ended responses

Twelve students complained that there was a lack of clear objectives, while four students indicated that they needed more guidance and structure. Two other students added that there were not enough broad guidelines to guide students through their work and two students recommended that the same objectives and resources should be given to all groups. In total more than half of the students indicated that they needed more structure, guidelines and objectives. This phenomenon is in congruence with the responses to close-ended responses.

Four students mentioned a lack of correlation between practice and theory and two students indicated that the course should be more practical. Three students recommended more practice experience in hospitals, while two students complained about too much emphasis on practice in the community. One student's response reads: *"I came to nurse, not to do social work in communities."*

Two students complained that the course was too time-consuming and another added *"progress was too slow..."*

Two students mentioned the language problem in this section while one Afrikaans-speaking student complained that notes were only available in English.

Three students complained that they were overloaded with work, while one student felt that too much pressure was placed on students. Another student felt that theory was too difficult when instructed by means of problem-based learning.

On the positive side three students indicated that the scenarios by which the course was instructed, were interesting and good, but that students needed more experience and maturity for it to work properly. One student stated that *"for the first time I learned to think for myself"*.

One Afrikaans-speaking student was very enthusiastic about the course and stated that *"PBL is the best thing that ever could have happened to this course!"* and that *"I never want to learn by any other way again."*

5.3.3 Group work: close- and open-ended responses

5.3.3.1 Effective functioning as a group member

Table 5.18 *I learned to function effectively as a group member*

	Always	Mostly	Sometimes	Never
% N=43	44	35	21	0

Most students indicated that they learned to function effectively as a group member.

5.3.3.2 No language problem in understanding of concepts

Table 5.19 *Language posed no barrier to my understanding of concepts*

	Always	Mostly	Sometimes	Never
% N=43	19	33	39	9

Some students had problems to understand concepts due to language problems.

5.3.3.3 Language problem in communication of concepts

Table 5.20 *Language posed a barrier to my communication of concepts*

	Always	Mostly	Sometimes	Never
% N=43	12	11	49	28

Language was sometimes a problem to communicate concepts for nearly half the class. Students who never had a language problem with the communication of concepts totalled 28%, while 23% always or mostly experienced language problems with communication of concepts.

5.3.3.4 Theory and practice were complementary

Table 5.21 *Theory and practice were complimentary*

	Always	Mostly	Sometimes	Never
% N=41	20	46	34	0

More than half the respondents indicated that theory and practice were complementary, always or most of the time.

5.3.3.5 Group work stimulated self-study activities

Table 5.22 *Group work stimulated self-study activities*

	Always	Mostly	Sometimes	Never
% N=43	32	28	33	7

The majority of students indicated that group work always or mostly stimulated self-study activities.

5.3.3.6 Learned how to consider problems from various viewpoints

Table 5.23 *I increased my ability to consider problems from various viewpoints*

	Always	Mostly	Sometimes	Never
% N=42	33	50	14	3

More than 80% of the students indicated that group work mostly or always increased their ability to consider problems from various viewpoints.

5.3.3.7 Group work was not adequately task-oriented

Table 5.24 *Group work was not adequately task-oriented*

	Always	Mostly	Sometimes	Never
% N=43	2	19	56	23

The majority of students indicated that group work was adequately task-orientated.

5.3.3.8 Better retention of information

Table 5.25 *Group work helped me to remember information for longer*

	Always	Mostly	Sometimes	Never
% N=43	26	23	35	16

Nearly half the class indicated better retention of information (always or mostly) as a result of group work. Sixteen percent (16%) of students indicated that group work never led to better retention of knowledge.

5.3.3.9 Obtained help from other team members with ease

Table 5.26 *I got help from other group members with ease*

	Always	Mostly	Sometimes	Never
% N=42	24	21	45	10

The majority of the class obtain help from other group members with ease.

5.3.3.10 Prefer traditional lectures to group work

Table 5.27 *I prefer traditional lectures to group work*

	Always	Mostly	Sometimes	Never
% N=43	30	23	28	19

More than half the students indicated that they prefer traditional lectures (always or mostly) to group work.

5.3.3.11 Summary of close-ended responses on group-work

Student perceptions of group-work are illustrated in Figure 5.9. The majority of students indicated that group work stimulated self-study activities, that they learned to function effectively as a group-member, that theory and practice were complementary, and that group work was task-oriented. More than 80% of the students indicated (always or

mostly) that they learned how to consider various viewpoints as a result of group work. Students had problems to understand concepts, although communication of concepts posed fewer problems. A summary of these responses is depicted in Figure 5.9.

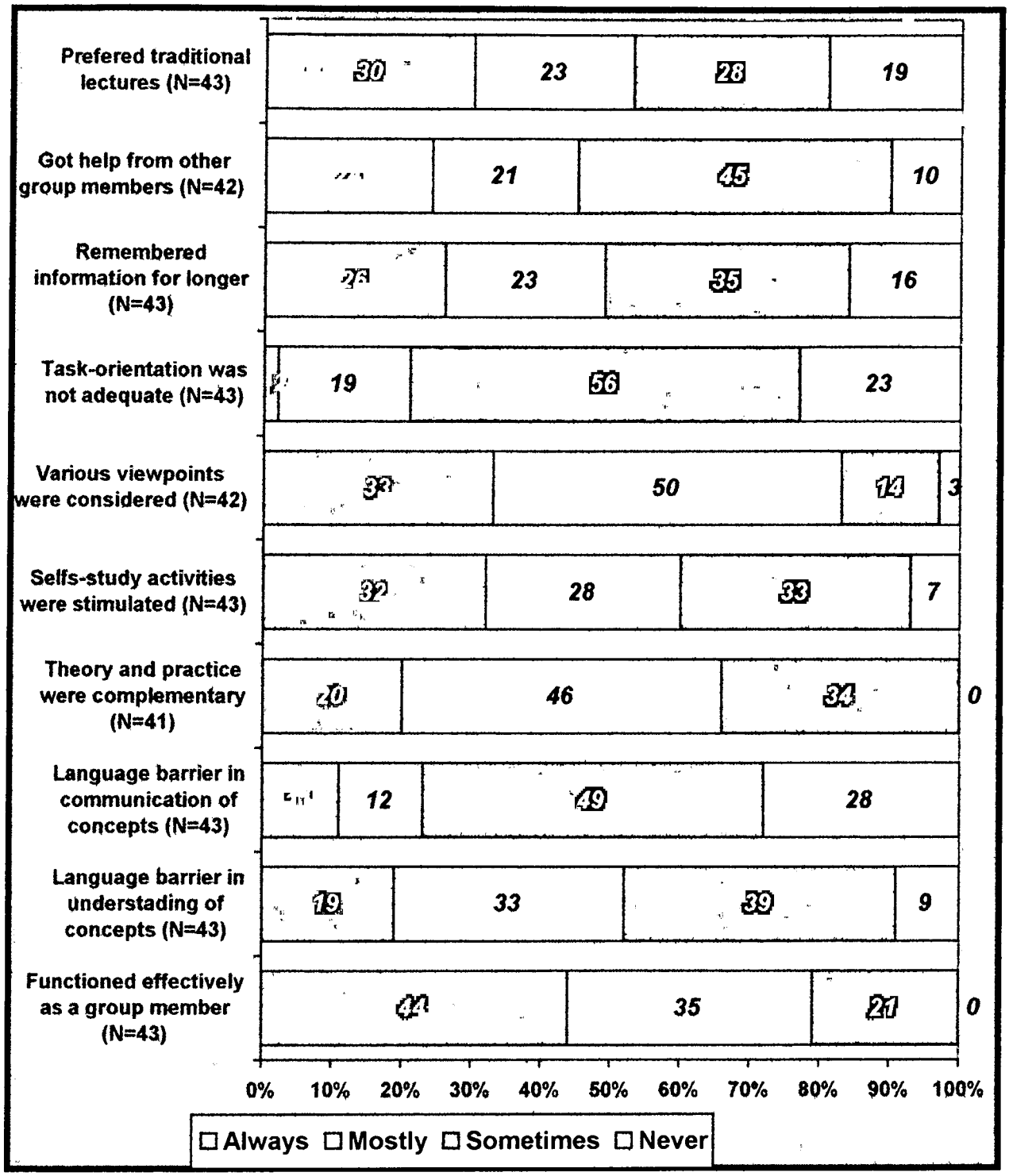


Figure 5.9 Student perceptions of group work (close-ended responses)

5.3.3.12 Group work: open-ended responses

The *"language problem"* was mentioned as a problem during group work by 27 of the students. Six students felt that it was a waste of time to repeat everything in two languages, while two students felt that there was no freedom of speech as they were interrupted constantly when they dared to speak Afrikaans. The responses of two Afrikaans students read: *"I learned to keep quiet, to accept English as the only language that could be used freely and to agree with diverse viewpoints just for the sake of peace"*, while the other student stated that *"I was never allowed to speak in Afrikaans"*. Another student felt that there was a general lack of co-operation among language and cultural groups. An Afrikaans student urged for regulations which could enforce fair distribution of both languages during group work. A student who preferred English complained that she could never copy the work other students prepared during self-study activities as *"it was always written in Afrikaans"*. The open responses regarding language are in congruence with the closed responses.

A second issue was student participation and co-operation. Ten students complained that the academically stronger students had to do all the work, while the rest of the students did nothing. Three students mentioned that there was a lack of co-operation among group members while one student felt that it was particularly noticeable between cultural groups. One student felt that only a few students participated actively during group work. Two responses of two students from different cultural groups read: *"The whites must always help the blacks..."*, and *"Why do the whites always look down on us?"* Two students complained about racism particularly, which usually advantaged the group of students who belonged to the same skin colour as their facilitator. These open-ended responses are in congruence with the close-ended response, which had to do with obtaining help from other group members with ease.

A third issue was the fact that students were at different motivational and educational levels, which hampered the pace of work, and caused conflict within groups. Six

students complained about this issue. One student's response reads: *"Not all students work at the same pace. The group can only progress as fast as the slowest group member."*

One student mentioned lack of objectives, structure and guidance in this section of the questionnaire.

Positive remarks on group work included the following: one student felt that group work fostered team work abilities and that it was important to exercise it as early as possible as united teamwork would be needed once they were in practice. Another student commented that group work gave valuable information about different cultures, their backgrounds and their experiences. One student stated that group work forced everybody to participate and another added that *"valuable skills are learned during group work"*. Two students indicated that they learned to work on their own.

5.3.4 Problem-based learning: close- and open-ended responses

5.3.4.1 PBL enhances a holistic view of the situation

Table 5.28 *PBL helps me to look at the whole situation*

	Always	Mostly	Sometimes	Never
% N=43	35	33	25	7

Most of the students indicated (always, mostly or sometimes) that PBL helped them to look at the whole situation. Seven percent of the students indicated that PBL never helped them to look at the whole situation.

5.3.4.2 The shift to PBL was difficult

Table 5.29 *I found the shift to PBL difficult*

	Always	Mostly	Sometimes	Never
% N=42	19	12	57	12

The majority of the students did not find the shift to PBL difficult, even though all the students came from traditional school backgrounds.

5.3.4.3 Problem-solving is intellectually unsatisfying

Table 5.30 *I found problem-solving intellectually unsatisfying*

	Always	Mostly	Sometimes	Never
% N=42	5	14	40	41

More than half of students found problem-solving intellectually unsatisfying.

5.3.4.4 PBL decreased motivation for learning

Table 5.31 *PBL decreased my motivation for learning*

	Always	Mostly	Sometimes	Never
% N=43	7	16	33	44

Forty four percent (44%) of students indicated that PBL did not decrease their motivation for learning.

5.3.4.5 PBL helps with retention of information

Table 5.32 *PBL helped me to retain information for longer periods*

	Always	Mostly	Sometimes	Never
% N=42	22	33	31	14

The majority of the students indicated better retention of information as a result of PBL, while 14% never experienced better retention of information.

5.3.4.6 PBL enhanced gathering of information from various sources

Table 5.33 *PBL helped me to obtain information from various sources*

	Always	Mostly	Sometimes	Never
% N=42	43	33	22	2

The majority of students indicated that PBL always or mostly helped them to obtain information from various sources.

5.3.4.7 Prefer PBL to traditional lectures

Table 5.34 *I prefer PBL to traditional lectures*

	Always	Mostly	Sometimes	Never
% N=43	16	12	33	39

Thirty nine percent (39%) of students indicated that they never prefer PBL to traditional lectures.

5.3.4.8 PBL brings community problems to the classroom

Table 5.35 *PBL brings problems from the community into the classroom*

	Always	Mostly	Sometimes	Never
% N=43	35	35	30	0

All the students felt that PBL brings community problems to the classroom always, mostly or sometimes.

5.3.4.9 PBL does not integrate subjects in a meaningful way

Table 5.36 *PBL does not integrate subjects in a meaningful way*

	Always	Mostly	Sometimes	Never
% N=42	17	12	50	21

The majority of students indicated that PBL integrates subjects in a meaningful way.

5.3.4.10 PBL fosters self-study

Table 5.37 *PBL taught me to study on my own too*

	Always	Mostly	Sometimes	Never
% N=43	37	23	26	14

The majority of students indicated that PBL fostered self-study activities.

5.3.4.11 PBL taught students clinical reasoning

Table 5.38 *PBL taught me clinical reasoning*

	Always	Mostly	Sometimes	Never
% N=43	40	30	21	9

The majority of students indicated that PBL fostered clinical reasoning

5.3.4.12 Summary of students' perceptions on PBL (close-ended responses)

Students' perceptions of PBL are illustrated in Figure 5.10. The majority of students indicated that problem-solving was intellectually satisfying, that PBL brought community problems to the classroom, that they did not find the shift to PBL difficult, that PBL fostered clinical reasoning, self-study activities, the use of various resources, retention of information, motivation for learning and a holistic view. In spite of all the above-mentioned advantages of PBL, most of the students indicated that they preferred lectures to PBL.

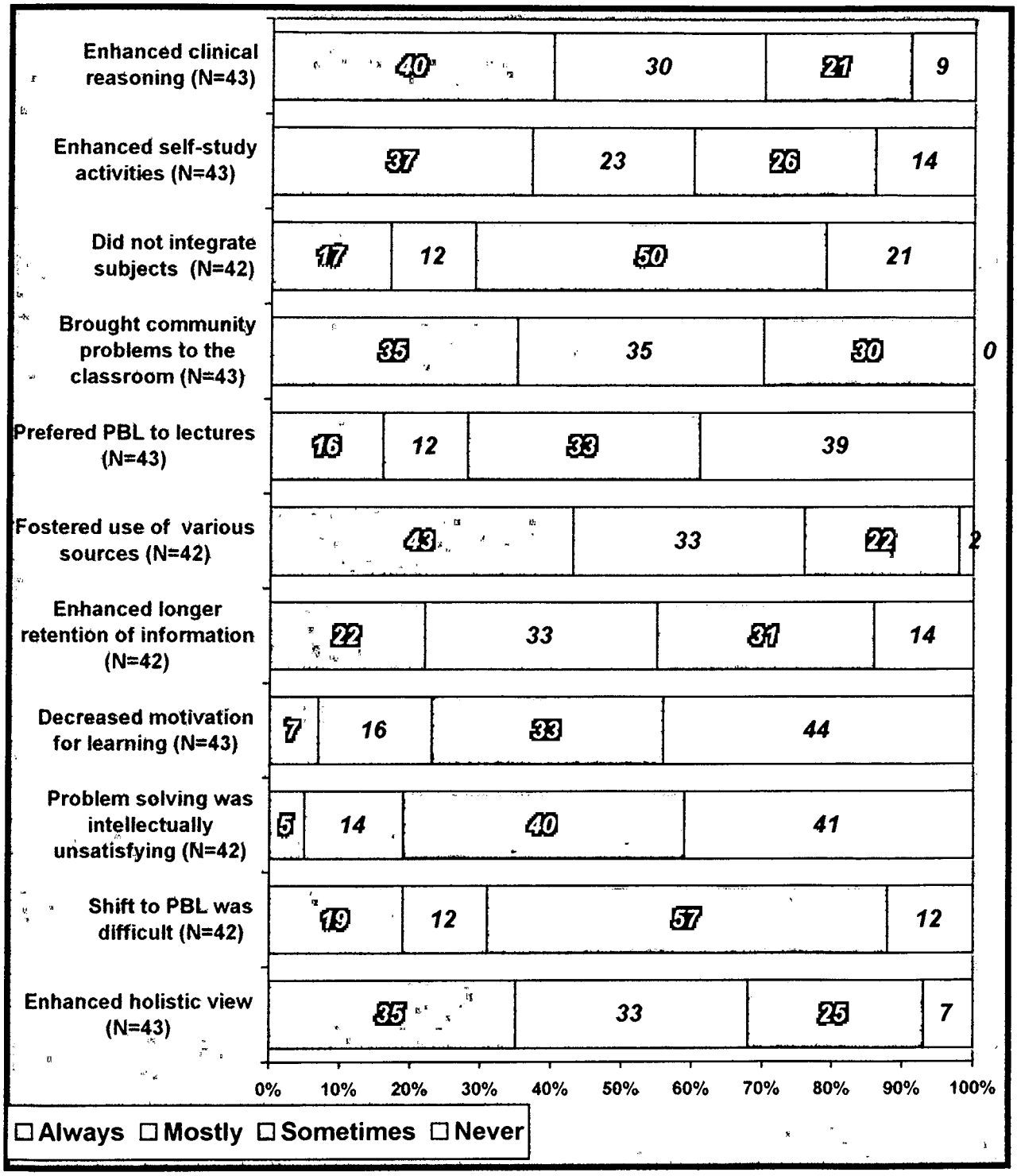


Figure 5.10 Students' perceptions of problem-based learning (close-ended responses)

5.3.4.13 Problem-based learning: open-ended responses

In this section eight students indicated that PBL was an unsatisfactory learning strategy and that they preferred traditional lectures. Three students complained that the shift from traditional classes to PBL tutorials in one day was very difficult. One student's response reads: *"I think PBL is a better strategy for post-graduate students than for first-years."* One student indicated that she preferred PBL, as it is important for the future of South Africa, but that there is not enough money to implement it. Another student felt that the tutors did not have enough expertise to instruct in a PBL manner. Two students felt that PBL worked on paper but not in practice.

Six students mentioned lack of structure, guidance, and objectives. Three students complained of a lack of clear objectives in this learning strategy, while two students indicated that they needed more guidance and one student indicated that she experienced problem-based learning as *"chaotic"*.

Five students mentioned the "language problem" in this section. One student's response reads: *"I found it so difficult to understand the language and follow the arguments that I eventually lost interest. Therefore I had to work very hard before tests and exams as I had to do all the work by myself."* Another student wrote, *"The language made communication very difficult with too little social interaction between students."*

Four students commented on resources: two stated that too many resources caused confusion, while two students felt that their knowledge base was broadened because of various resources.

Four students made remarks concerning the scenarios used in problem-based learning. Three students felt that the scenarios did not contain enough information, and one student felt that the scenarios did not portray problems that were relevant for South Africa.

Other remarks made by individual students in this section read as follows: *"Group spirit lacked"*; *"All students were not on the same level"*; *"Too much time was spent on weaker students"*; and *"It is frustrating for stronger students to lack intellectual stimulation."*

Various positive remarks were made by individual students, for example: *"It is a good strategy that fosters independence"*; *"PBL gives a good holistic picture"*; *"PBL helps students to think independently"*; *"I learned to think for myself this year"*; *"My scientific and analytical thought improved"*; *"My motivation and interest for community work increased"*; *"It was never boring. I am not a parrot any more"*; *"I learned to work on my own"*; *"I learned problem solving skills"*; and *"After this year I know more about certain aspects of health problems than some of the fourth year students."*

5.3.5 Facilitator: close- and open-ended responses

5.3.5.1 She followed the problem-solving process

Table 5.39 *She followed the problem-solving process*

	Always	Mostly	Sometimes	Never
% N=43	60	26	14	0

The majority of students indicated that their facilitators followed the problem-solving process.

5.3.5.2 Group activities were organised successfully

Table 5.40 *She was successful in organising group activities*

	Always	Mostly	Sometimes	Never
% N=43	33	35	30	2

Most of the students indicated that their facilitators organised group activities successfully. Two percent of the students felt that their facilitators never organised group activities successfully.

5.3.5.3 She led the group to discover knowledge gaps

Table 5.41 *She was able to lead us to discover gaps in our knowledge by ourselves*

	Always	Mostly	Sometimes	Never
% N=43	37	30	30	3

The majority of students felt that their facilitators led them to discover knowledge gaps by themselves. Three percent of the students indicated that their facilitators never led them to discover knowledge gaps by themselves.

5.3.5.4 She was unaware of students who did not follow

Table 5.42 *She did not recognise when students were not following*

	Always	Mostly	Sometimes	Never
% N=43	5	16	37	42

The majority of students indicated that their facilitators were aware of students who did not follow. Five percent of the students felt that their facilitators never were aware of students who did not follow.

5.3.5.5 She provided too little information

Table 5.43 *She gave too little information*

	Always	Mostly	Sometimes	Never
% N=43	7	19	46	28

The majority of respondents indicated that their facilitators provided enough information, while 26% indicated that their facilitators always or mostly provided too little information.

5.3.5.6 She welcomed divergent viewpoints

Table 5.44 *She welcomed divergent viewpoints*

	Always	Mostly	Sometimes	Never
% N=42	36	33	26	5

Most of the students indicated that their facilitators welcomed divergent viewpoints.

5.3.5.7 She did not help the group to handle conflict

Table 5.45 *She did not help the group to handle conflict*

	Always	Mostly	Sometimes	Never
% N=43	5	4	42	49

The majority of the students indicated that their facilitator helped them to handle group conflict. Nine percent (9%) were of the opinion that that she always or mostly did not help the group to handle conflict.

5.3.5.8 She did not acknowledge all the team members' contributions

Table 5.46 *She did not see to it that all team members' contributions were acknowledged*

	Always	Mostly	Sometimes	Never
% N=42	17	28	55	0

Most of the students indicated that their facilitators did not acknowledge the contributions of all the group members all the time. Fifty-five percent of the students indicated that facilitators sometimes failed to acknowledge contributions, while 28% of the respondents felt they failed most of the time, and 17% felt they always failed to do so.

5.3.5.9 She controlled disruptive speakers

Table 5.47 *She controlled disruptive speakers*

	Always	Mostly	Sometimes	Never
% N=43	39	33	26	2

The majority of students indicated that their facilitators controlled disruptive students, while 26% felt that they sometimes controlled disruptive speakers. Two percent of the students felt that they never controlled disruptive speakers.

5.3.5.10 She dominated group sessions

Table 5.48 *She was inclined to dominate group sessions*

	Always	Mostly	Sometimes	Never
% N=42	9	7	43	41

Forty-one percent (41%) of students indicated that they never dominated group sessions, while 43% felt that they did so sometimes.

5.3.5.11 She was approachable for any individual who experienced problems

Table 5.49 *I could discuss any problem with her*

	Always	Mostly	Sometimes	Never
% N=43	49	19	21	11

The majority of students could always or mostly discuss any problem they had with their facilitators. Twenty one percent felt that they could only sometimes discuss their problems. Eleven percent of students indicated that they could never go to their facilitator to discuss any problems.

5.3.5.12 She gave meaningful feedback on evaluations

Table 5.50 *She gave meaningful feedback on evaluations*

	Always	Mostly	Sometimes	Never
% N=43	37	23	28	12

Sixty percent of students felt that their facilitator always or mostly gave meaningful feedback on evaluations, while 28% felt she sometimes gave meaningful feedback and 12% felt she never gave meaningful feedback.

5.3.5.13 Summary of students' responses regarding their facilitators (close-ended responses)

The majority of students indicated that their facilitators followed the problem-solving process, organised group activities successfully, helped them to discover gaps in their knowledge, welcomed divergent views, gave enough information, helped solving group-conflict, acknowledged all contributions and gave meaningful feedback on evaluations.

Most of the students indicated that the facilitators did not dominate group-sessions, that they controlled disruptive students and were open for discussion of any problems individual students experienced, although nearly a third of students had problems in approaching their facilitators with problems they experienced.

More than 30% of the students indicated that their facilitators did not welcome divergent viewpoints, while 33% of students indicated that they needed more help from their facilitators to be led to fill gaps in their knowledge.

Thirty-two percent of the students indicated that their facilitator did not always organise group-sessions well. A summary of the responses is depicted in Figure 5.11.

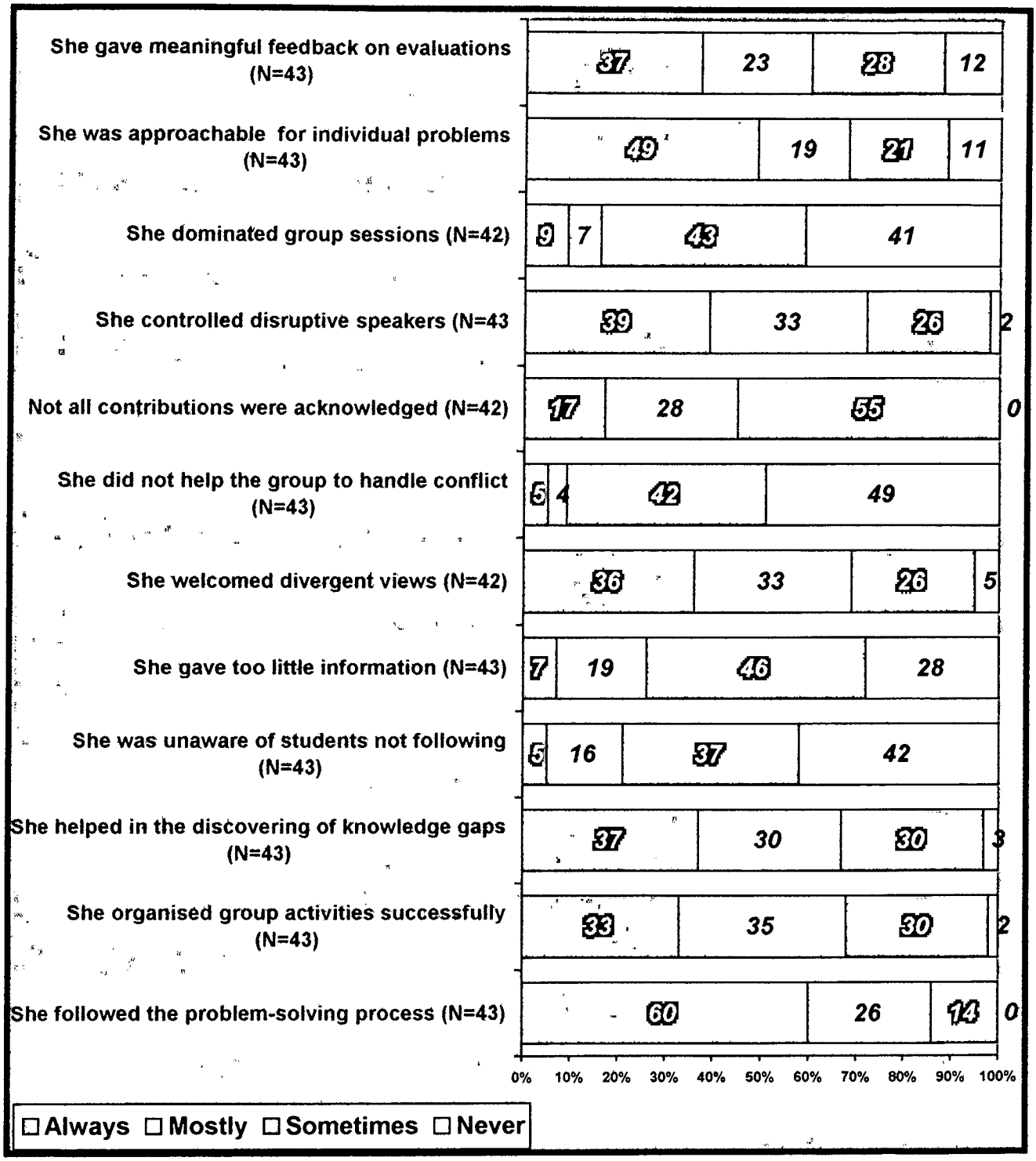


Figure 5.11 Summary of student perceptions of their facilitators' contribution (close-ended responses)

5.3.5.14 Facilitator: open-ended responses

Eight students felt that their facilitators provided a sense of belonging, security and warmth. Six students saw their facilitators as an ideal role model and one student said *"she made PBL easier because she was totally bilingual"*.

Negative responses included the following: three students complained because their facilitators were not punctual, two students felt that they did not treat all group members the same and individual students commented as follows: *"She did not recognise that some students did all the work, while others did nothing"*; *"The quality of the facilitators differs a lot and it causes conflict and jealousy among groups"*; *"Some facilitators still lack experience in problem-based learning"*; *"She did not adequately foster group unity"*; *"It sometimes seemed that she advantaged her own culture group"*; *"She spoke too much Afrikaans"*; and *"She was a bit unorganised"*.

5.3.6 Knowledge, skills and attitudes: closed and open-ended responses

5.3.6.1 Students could not use previous knowledge in a meaningful way

Table 5.51 *It was difficult to use previous knowledge in a meaningful way*

	Yes	No
% N=41	29	71

The majority of students (71%) indicated that they did not find it difficult to use previous knowledge in a meaningful way. Two students did not answer this question.

5.3.6.2 Students can analyse problems and develop learning objectives

Table 5.52 *I learned to analyse problems and to develop learning objectives*

	Yes	No
% N=43	86	14

The majority (86%) of students responded that they were able to analyse problems and develop learning objectives.

5.3.6.3 Students learned to identify psycho-social factors

Table 5.53 *I learned to identify psycho-social factors which could influence a patient's recovery*

	Yes	No
% N=43	95	5

The majority of students reported that they learned to identify psycho-social factors.

5.3.6.4 Students cannot apply knowledge and skills in all situations

Table 5.54 *I cannot apply my knowledge and skills in all situations*

	Yes	No
% N=43	40	60

Sixty percent of students can apply their knowledge and skills in all situations, while 40% of students indicated that they couldn't apply them in various situations.

5.3.6.5 Students are not yet able to take initiative in a creative way

Table 5.55 *I am not yet able to take initiative in a creative way*

	Yes	No
% N=40	23	77

The majority of the respondents (77%) indicated that they had no problem in taking initiative in a creative way.

5.3.6.6 Students cannot apply their knowledge to practice

Table 5.56 *I cannot apply my knowledge to practice*

	Yes	No
% N=42	12	88

The majority of students (88%) indicated that they could apply knowledge to practice.

5.3.6.7 Students learned to think independently

Table 5.57 *I learned to think independently*

	Yes	No
% N=43	95	5

The majority of the respondents (95%) indicated that they learned to think independently.

5.3.6.8 Students cannot yet synthesise information into a comfortable framework

Table 5.58 *I cannot synthesise information into a comfortable framework yet*

	Yes	No
% N=42	21	79

The majority of students indicated that they were able to synthesise information into a comfortable framework.

5.3.6.9 Students are well prepared regarding nursing judgement

Table 5.59 *I am well prepared regarding nursing judgement*

	Yes	No
% N=43	77	23

The majority of the students indicated that they were well prepared regarding nursing judgement.

5.3.6.10 Students are not well prepared regarding nursing skills

Table 5.60 *I am not well prepared regarding nursing skills*

	Yes	No
% N=43	40	60

Sixty percent of the students indicated that they were well prepared regarding nursing skills, while 40% indicated that they were not.

5.3.6.11 Students still lack confidence in the use of diagnostic apparatus

Table 5.61 *I still lack confidence in the use of diagnostic apparatus*

	Yes	No
% N=43	74	26

The majority of students indicated that they lacked confidence in using diagnostic apparatus.

5.3.6.12 Students developed competence in the documentation of patient information

Table 5.62 *I developed competence to document patients' information correctly*

	Yes	No
% N=43	91	9

The majority of students (91%) indicated that they developed competence in documenting information regarding patients.

5.3.6.13 Students have self-confidence to speak in public

Table 5.63 *I have self-confidence to speak in public*

	Yes	No
% N=43	74	26

The majority of students indicated that they had confidence to speak in public.

5.3.6.14 Students cannot function effectively as a member of the health team yet

Table 5.64 *I cannot function effectively as a member of the health team yet*

	Yes	No
% N=43	14	86

The majority of students have no problem to function effectively in a health team.

5.3.6.15 Students cannot solve real problems

Table 5.65 *I cannot solve real problems*

	Yes	No
% N=43	21	79

The majority of students indicated that they could solve real problems.

5.3.6.16 Students can gather information from various sources

Table 5.66 *I can gather information from various resources*

	Yes	No
% N=43	95	5

The majority of students (95%) indicated that they were able to gather information from various sources.

5.3.6.17 Students can educate patients and their families

Table 5.67 *I am competent in educating patients as well as their families about health issues*

	Yes	No
% N=42	79	21

The majority of students indicated that they were able to educate patients and their families about health issues.

5.3.6.18 Students developed the ability to communicate effectively

Table 5.68 *I developed the ability to communicate effectively*

	Yes	No
% N=43	93	7

The majority of students indicated that they could communicate effectively.

5.3.6.19 Students did not develop effective computer skills

Table 5.69 *I have not yet learnt how to use computer technology to my own advantage*

	Yes	No
% N=43	35	65

Thirty-five percent of students indicated that they couldn't use computer science to their advantage yet, while nearly two thirds of the class learned how to use computer technology to their own advantage.

5.3.6.20 Students developed leadership qualities

Table 5.70 *I developed leadership qualities*

	Yes	No
% N=43	81	19

The majority of the students indicated that they developed leadership qualities.

5.3.6.21 Students developed cultural sensitivity

Table 5.71 *I learned to be sensitive towards other cultures*

	Yes	No
% N=43	81	19

The majority of students indicated that they had developed cultural sensitivity.

5.3.6.22 Students' enthusiasm for nursing as a calling declined

Table 5.72 *My enthusiasm for nursing as a calling has declined*

	Yes	No
% N=42	24	76

More than three-quarters of the respondents maintained their enthusiasm for nursing, while 24% indicated a decline.

5.3.6.23 Students have more confidence in their interaction with people

Table 5.73 *I have more confidence in my interaction with the people to whom I am rendering a service, as well as my fellow-team members*

	Yes	No
% N=43	93	7

The majority of students indicated that they could interact more confidently with colleagues and clients of health services.

5.3.6.24 Students learned to respect the convictions of other people

Table 5.74 *I learned to respect the convictions of other people*

	Yes	No
% N=43	98	2

With the exception of one student, all students reported that they were better able to respect the convictions of other people.

5.3.6.25 Students developed a greater appreciation for problem-based learning and nursing

Table 5.75 *I developed a greater appreciation for problem-based learning and nursing*

	Yes	No
% N=43	65	35

Thirty-five percent of students still lacked appreciation of problem-based learning and nursing, while 65% learned to appreciate both.

5.3.6.26 Students did not enjoy teamwork

Table 5.76 *I did not enjoy working in a team*

	Yes	No
% N=43	28	72

Twenty-eight percent of students indicated that they did not enjoy teamwork, while 72% of students indicated that they enjoyed it.

5.3.6.27 Summary of students' perceptions regarding changes in their knowledge, skills and attitudes (close-ended responses)

(i) *Cognitive domain: Increase and changes in knowledge*

Student perceptions regarding changes in their knowledge are illustrated in Figure 5.12. Forty percent of the students had problems in applying their knowledge and skills in all situations, while 60% did not experience problems. Thirty-five percent of students indicated that they were unable to use computer technology to their own advantage.

Twenty-nine percent of the students found it difficult to use previous knowledge and 23% of the students indicated that they were not adequately prepared regarding nursing judgement.

The majority of the students (95%) indicated that they learned how to identify psycho-social factors, while 79% indicated that they could synthesise information and 77% indicated that they were well prepared regarding nursing judgement.

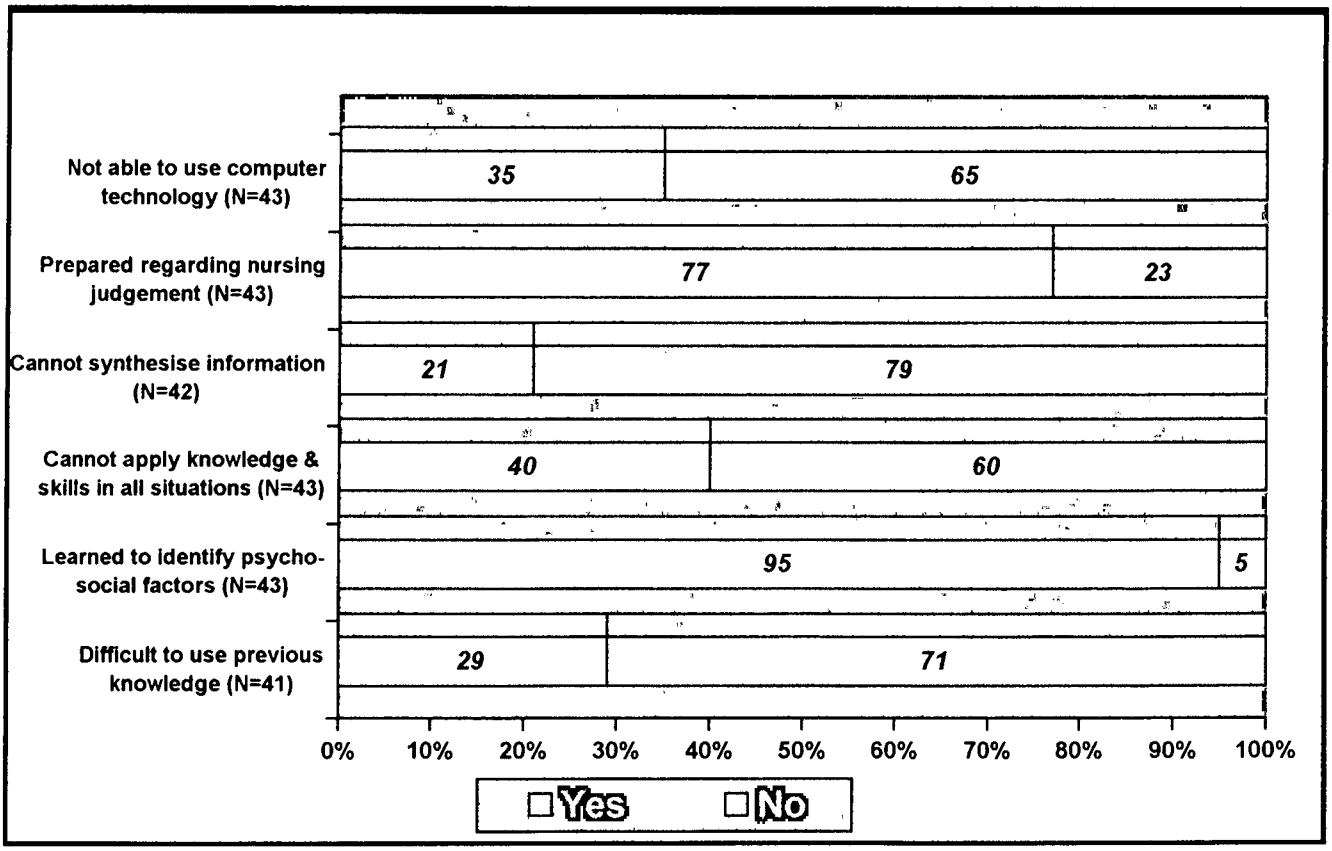


Figure 5.12 Students' perceptions regarding changes that took place in their knowledge (close-ended responses)

(ii) *Affective domain: Changes in attitude*

Students' perceptions about changes that took place in their attitude are illustrated in Figure 5.13. More than a third of the students did not learn to appreciate problem-based learning and nursing, while 65% indicated that they did. Twenty-eight percent of the students indicated that they disliked teamwork, while 72% indicated that they enjoyed it. Twenty-six percent of the students indicated that they still lacked confidence to speak in public, while 74% had self-confidence. Twenty-four percent of the students indicated that their enthusiasm for nursing as a calling declined.

Nearly all the respondents (98%) indicated that their respect for the convictions of others had increased, while 93% indicated that they had acquired confidence in their interaction with other people and 81% were of the opinion that their sensitivity towards other cultures increased.

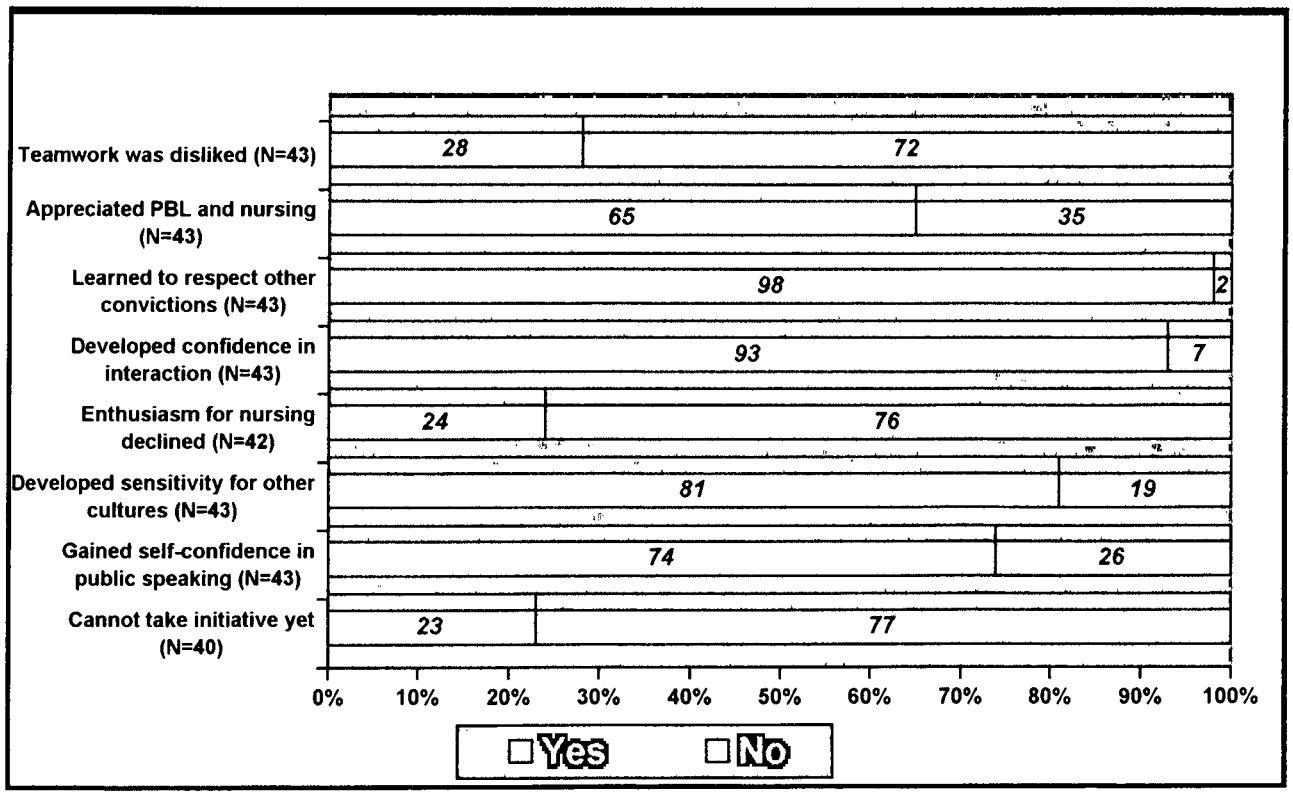


Figure 5.13 Students' perceptions about changes that took place in their attitudes (close-ended responses)

(iii) *Psycho-motor domain: Changes and increase in skills*

Forty percent of students indicated that they were inadequately prepared regarding their nursing skills, while students indicated the following changes as the most positive:

- The ability to gather information from various sources (95% of the students) and the ability to think independently (95% of the students).
- Effective communication (93% of the students) and application of knowledge to practice (88% of the students).
- The ability to function in a health team (86% of the students), the ability to analyse problems and develop objectives (86% of the students) and development of leadership (81%).
- Competency to educate patients (79% of the students), and the ability to solve real problems (79% of the students).

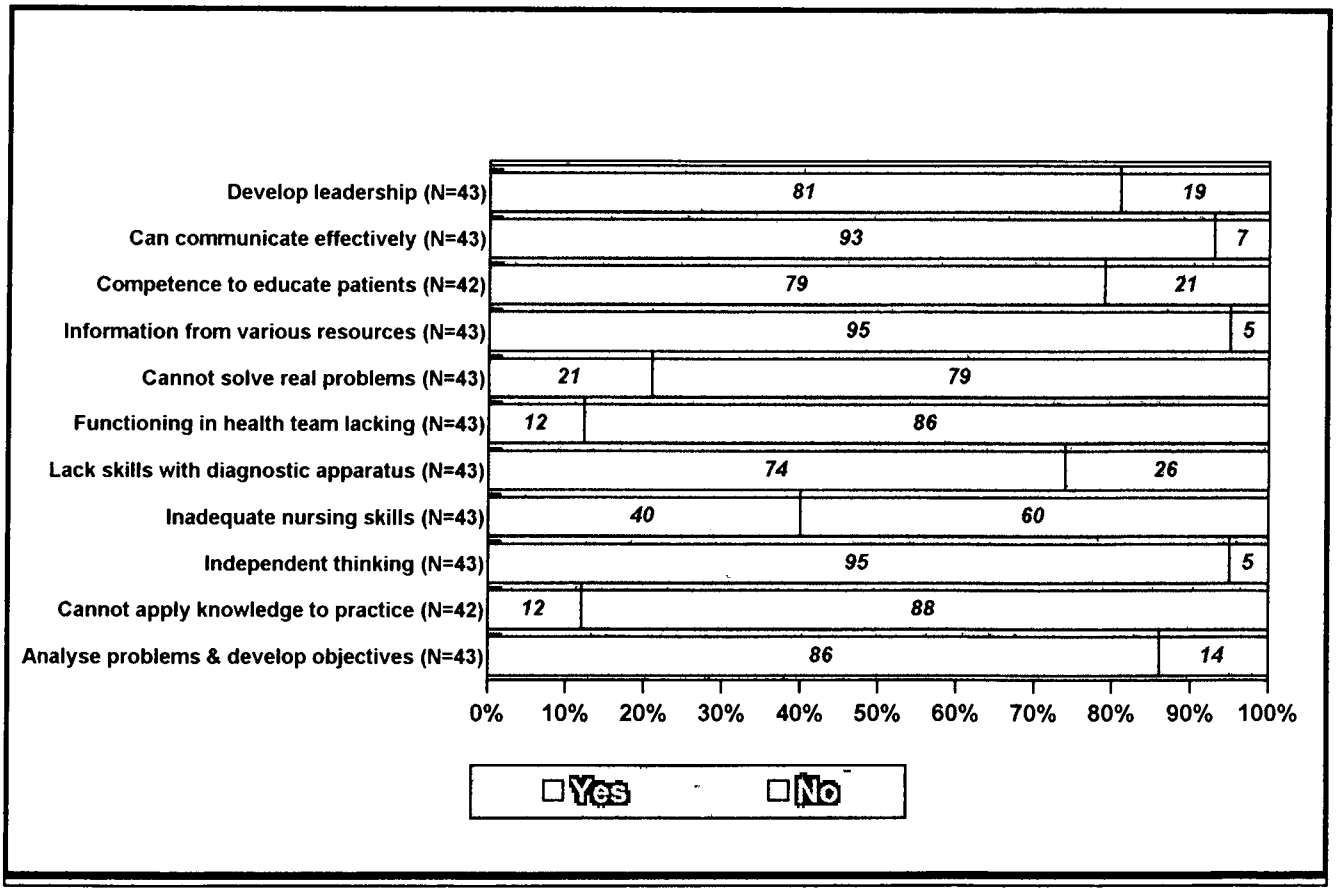


Figure 5.14 Students' perceptions regarding changes and improvement in their skills (close-ended responses)

5.3.6.28 Knowledge, skills and attitudes: open-ended responses

Four students indicated that they needed more time to practise skills needed while working in the hospital, while two students indicated that they lack critical skills when working in the hospital. One student complained about too much material to deal with during theory, which was not applicable in practice, and another student felt that *"by the time I started to work in the hospital, I forgot all the skills I was taught in class"*. Two students indicated that this problem could be overcome if more time was spent in hospital to enforce skills and knowledge learned in the classroom. Two students complained that their practice preparation was not as good as the preparation students received who studied nursing at the local nursing college.

Three students indicated that they felt unprepared when they were confronted with real life problems. One of the three students' responses reads: *"I am still very young and feel devastated for days when a patient dies in my care."*

Three students stated that they learned a lot about other cultures, while one student complained that too much emphasis was placed on cultural differences.

A few students commented on the applicability of skills learned during their first year in the small group situation when going to the practice situation. Three students stated that problem-solving skills increased their self-confidence during practical work. Other students' comments read: *"I had the ability to teach people who had health problems"*; *"My communication improved"*; *"I learned how to handle community confrontation"*; *"My attitude towards the community, colleagues and classroom has improved"*; *"I learned patience"*; *"I learned how to have empathy"*; and *"My sense of responsibility increased"*. Two students felt that their ability to work in a team has improved.

Individual student responses in this section read: *"Too much of the work I did in high school were duplicated during this course, wasting a lot of time for example*

interpersonal and learning skills"; "My learning declined in the second semester because of the smothering effect of PBL"; "I did very well in the traditional lectures, but PBL made me feel like walking down a dark passage just to walk into a wall."

5.3.7 Assessments: close- and open-ended responses

5.3.7.1 There were not enough variations in assessment methods

Table 5.77 *Variations in assessment methods were not adequate*

	Always	Mostly	Sometimes	Never
% N=41	2	17	66	15

The majority of students responded that variation of assessment methods was adequate, while 19% of students felt that assessment methods always or mostly provided inadequate variations.

5.3.7.2 Assessment reflected a balanced distribution of the year's work

Table 5.78 *Assessment methods reflected a balanced distribution of the year's work*

	Always	Mostly	Sometimes	Never
% N=43	14	30	44	12

More than half the students felt that assessments did not always reflect a balanced distribution of the year's work, while 14% felt that assessments always reflected a balanced distribution of the year's work, and 30% felt that assessments mostly reflected a balanced distribution of the year's work.

5.3.7.3 Assessment methods were applicable for PBL

Table 5.79 *Assessment methods were applicable for problem-based learning*

	Always	Mostly	Sometimes	Never
% N=43	14	49	37	0

The majority of students indicated that assessment was applicable for PBL.

5.3.7.4 Partnership grades were realistic

Table 5.80 *Partnership marks allocated were realistic*

	Always	Mostly	Sometimes	Never
% N=43	19	23	37	21

Many students were not happy about the partnership grades, while 42% indicated that partnership grades were always or mostly realistic.

5.3.7.5 Grades obtained were fair

Table 5.81 *The grades I obtained reflected a fair assessment of my performance*

	Always	Mostly	Sometimes	Never
% N=43	19	33	48	0

Some students felt that their grades were not always fair. Students who felt their grades were mostly fair counted 33%, while 19% of the students felt their grades were always fair.

5.3.7.6 Students did not have enough time to prepare for examinations

Table 5.82 *I did not have enough time to prepare for exams*

	Always	Mostly	Sometimes	Never
% N=43	5	21	42	32

Nearly three-quarters of the class indicated that they did not experience problems regarding time to prepare for examinations. Five percent of the students indicated that they always lacked enough time to prepare for examinations, while 21% indicated that they mostly lacked time.

5.3.7.7 Students were well-informed about how assessments would take place

Table 5.83 *We were informed about the way in which assessment would take place*

	Always	Mostly	Sometimes	Never
% N=43	28	21	42	9

Almost half the students indicated that they received adequate information on how assessment would take place, while the other half indicated a lack of information.

5.3.7.8 The standards of evaluation were realistic

Table 5.84 *Evaluation standards were realistic (neither too low nor too high).*

	Always	Mostly	Sometimes	Never
% N=43	21	47	26	6

The majority of students indicated that the evaluation standards were realistic.

5.3.7.9 The language used in papers was not clear

Table 5.85 *The language used in papers was not clear*

	Always	Mostly	Sometimes	Never
% N=43	0	0	42	58

The majority of students did not indicate problems with the language used in papers.

5.3.7.10 Students learned to assess themselves in a realistic way

Table 5.86 *I learned to assess myself in a realistic way*

	Always	Mostly	Sometimes	Never
% N=43	26	51	16	7

The majority of students indicated that they had learned to assess themselves in a realistic way.

5.3.7.11 Peer-group assessments were realistic

Table 5.87 *Peer group assessments were realistic*

	Always	Mostly	Sometimes	Never
% N=43	12	35	39	14

More than half the students indicated that peer group assessments were not always realistic, while 35% felt peer assessments were mostly realistic and 12% felt they were always realistic. Seven students indicated that peer-group assessments were never realistic.

5.3.7.12 Assessment: Summary close-ended responses

Approximately half the students indicated unfair peer-group assessments, assessments in general and partnership marks, while they also indicated that inadequate information was provided before assessments took place and that assessments did not reflect a balanced distribution of the year's work.

Thirty-three percent of the students indicated that evaluation standards were too high and 27% of the students indicated that they lacked time to prepare for assessments.

The majority of students indicated realistic self-assessments, clear use of language in papers, adequate variations in assessment methods and that assessments were applicable for PBL. For a summary of responses see Figure 5.15.

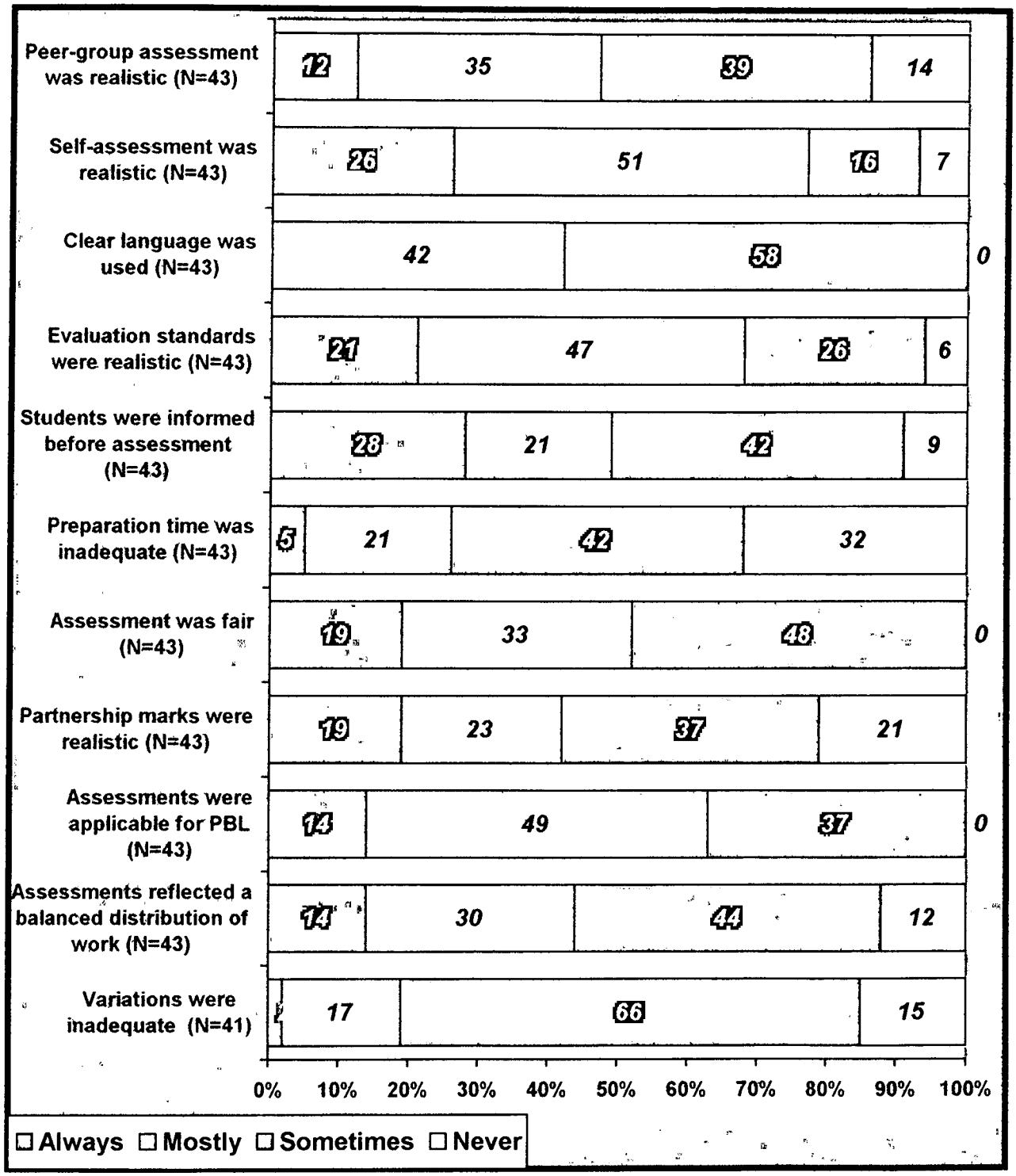


Figure 5.15 Student perceptions of assessments (close-ended responses)

5.3.7.13 Assessment: open-ended responses

Fifteen students complained about a lack of time to prepare for examinations and tests. The main complaint was about objectives that were not clear, and that study material and resources they needed to prepare, were not provided in time and were too much. Four students felt that they did not know what to expect in the exams. The group facilitators handled work in different ways and their expertise differed, therefore not all students had the same study material, which advantaged some groups. Four students complained about this phenomenon. Five students indicated that they would have liked to know examination and test objectives at the beginning of the course, as well as guidelines on how assessment would take place. Five students complained because questions were asked during the tests and examinations that were not handled in scenarios. Four students complained because work, which was not handled in scenarios, was given to them shortly before tests and exams. One student's response reads: *"They ask questions from practice which we did not learn in our books, and we do not have enough experience or knowledge to answer it."*

Three students complained that all the work was in English and that they did not have sufficient time to translate it before tests and examinations. A fourth complaint about the language issue reads: *"I had to work very hard before tests and exams because of the difficulty I experienced to follow the language used during group work."*

Three students complained about the confusing formulation of questions used in tests and examinations and one student remarked that the English and Afrikaans papers were not always the same.

There were some remarks about the way in which OSCEs were done. Four students complained that there was too little time to practise for an OSCE, while four other students complained that there were not enough guidelines and objectives to prepare for OSCEs. Two students asked that variations should be included during OSCEs as some

students told the others what to expect, putting them in an advantaged position. One student's response reads: *"Some students knew the exact questions that were asked during OSCE. It is unfair."* Two students recommended that enough time and help from the facilitators should be allocated to practise for an OSCE, while another student stated that some students received much more preparatory help before OSCEs. One student felt that OSCEs were boring and too easy.

Eight students felt that partnership marks were unfair as some students worked very hard, while other students did little or nothing, but all got average marks.

Individual remarks about the way assessment took place the past year read as follows: *"There was too little correlation between theory and practice"; "Feedback was not given"; "I don't like it to answer questions according to the authors or to quote authors during test or exam papers as too many authors are used"; "Assessment is unfair, because you are judged according to your relationship to staff";* and *"I needed more practice and computer experience."*

5.3.8 Aspects of the first-year course students enjoyed most

Only open-ended responses were required in this section. Many of the issues raised in the previous sections were raised again in this section.

Thirteen students responded that they enjoyed working in the hospital most, while nine students indicated that they enjoyed working in the community most.

Thirteen students indicated that group work was the aspect of the first-year course they enjoyed most, while five students mentioned that they enjoyed the family study most. Five students enjoyed the scenarios most, while four students enjoyed the communication and freedom of speech most.

Two students enjoyed the multi-cultural teamwork most, while two students indicated that they enjoyed the new friendships they formed most. Two students stated that they enjoyed the gathering of information, while two other students found the feeding scheme for school children most satisfactory. Two more students indicated that they liked the practising of OSCEs most.

Individual responses read as follows *"I enjoyed it to make my own decisions"; "The fact that I was allowed to evaluate and learn from other cultures was very enriching"; "I enjoyed the projects most"; "My facilitator was a real role-model and I enjoyed her contributions most"; "I enjoyed the discipline of dermatology most"; "It was something new to co-operate on the same level as facilitators without compromising authority"; "The stimulation of reasoning"; "I enjoyed my salary most, as there were students who suffered a lot because they had to work without remuneration"; "The initiative in the community"; "I could work at my own pace and leave whenever my work was completed"; "I loved PBL most as I think it is the best learning strategy in the world!"; "I liked it that there was no discipline regarding time – you can come late, depart early without going through too much trouble"; "I enjoyed it most to come to know the other group-members"; "The computer work was number one"; "Problem-solving and independent learning"; "Only the fact that I could study";* was most enjoyed, and *"It was really wonderful to be given the time and the freedom to gather information and to do research on my own."*

The most frequently mentioned aspects are illustrated in Figure 5.16. Some students indicated more than one aspect of the course they enjoyed most, therefore these responses do not necessarily portray the feelings of forty students.

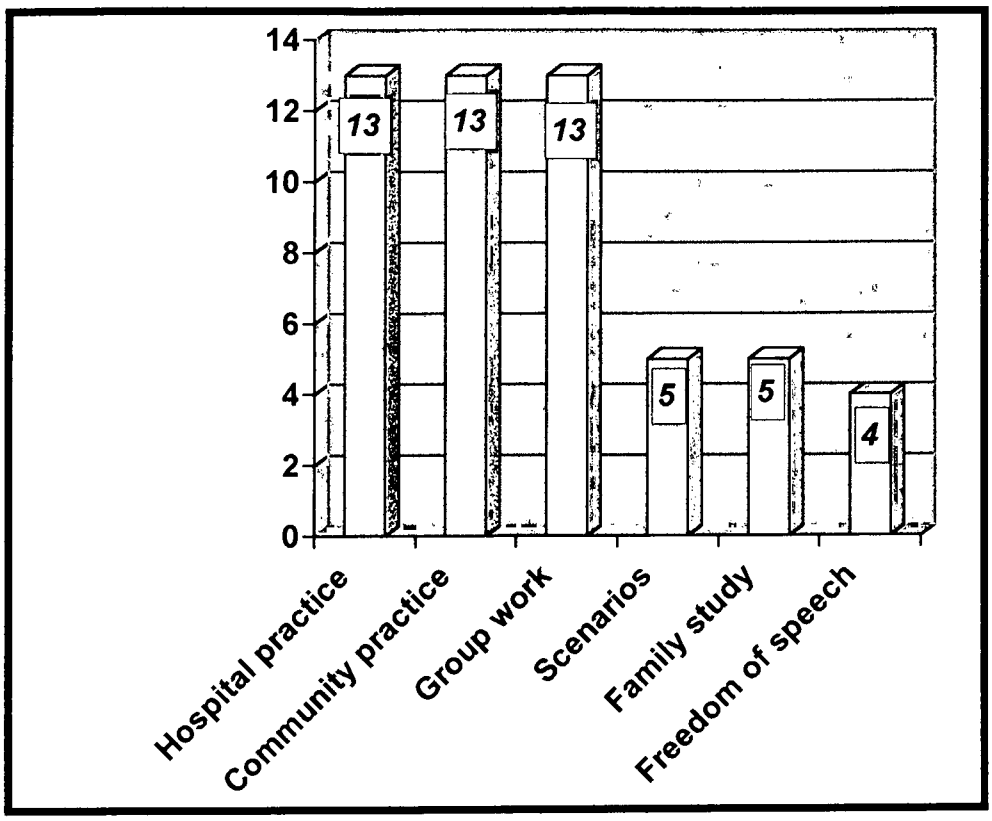


Figure 5.16 Aspects of the course students enjoyed most and indicated most frequently (N=37)

5.3.9 Aspects of the first-year course students enjoyed least

The aspects of the first-year course, which students enjoyed least, and were mentioned most frequently (more than three times) are illustrated in Figure 5.17.

Fifteen students indicated that the language problem was the single aspect of the course they enjoyed least, while eleven students complained about their facilitators coming late.

The OSCE was the third problem, mentioned by six students. Students complained that too little time was spent on practising for OSCEs and that the work rate for anatomy was so fast that learning could not take place.

Five students felt that time was wasted in the communities. One student's response reads: *"We could have accomplished much other work in the time we drove around aimlessly in the communities."* Another response reads: *"We drove around in communities, gathering information and wasting lots of time. We used communities, but I can honestly say we did not help them."* One student said: *"We raised expectations in communities when asking questions about their financial status, food, etc. as they were hoping to receive money from us and we had nothing to offer. If you cannot help them, it is a waste of time."* Two students indicated that the visits in communities were the one aspect of the course they enjoyed least. One response reads: *"I did not like the visits in people's houses in the communities. It made us uncomfortable and the people themselves did not like it."* Another response reads: *"I came to nurse, why is it that I had to do social work in communities?"*

Assessments were another problem that was raised frequently in this section. Five students mentioned the fact that too many resources given to students shortly before a test was the single worst aspect of the first-year course. Five other students complained about group-evaluations as some students did all the work, while the whole group benefited because of it during assessments. One student was very frustrated as she had to translate masses of English notes into Afrikaans shortly before the examination.

Four students complained about work which was not clear enough, while four other students were unhappy because the course did not provide enough structure. Uncertainty about content coverage was raised by three students, while three other students complained that different groups did not handle the same material although they had to write the same examination.

Two students complained that the PBL strategy was the worst part of the first-year nursing course, while two other students indicated the lack of lectures during this course as the worst part.

Aspects centring around the hospital experience were mentioned by a few students and read as follows: *"Too little time was spent in the hospital"; "The fact that I did not work in the hospital enough, I enjoyed least the past year"; "Why could we only work in hospitals during the holidays?"; "I lacked many important skills when I worked in the hospital"; "The worst aspect was staff in the hospital who treated me badly,"*; and *"The worst part - work in the hospital."*

Individual responses read: *"Whenever we complained about something it was twisted to make us look bad. It was not nice to be treated like children when we complained"; "Confusion about classrooms was frustrating"; "I wish more time was available to practise on the computer, but they locked the room shutting us out whenever we had time to practise"*; and *"I hated the classes in the afternoon!!!"*.

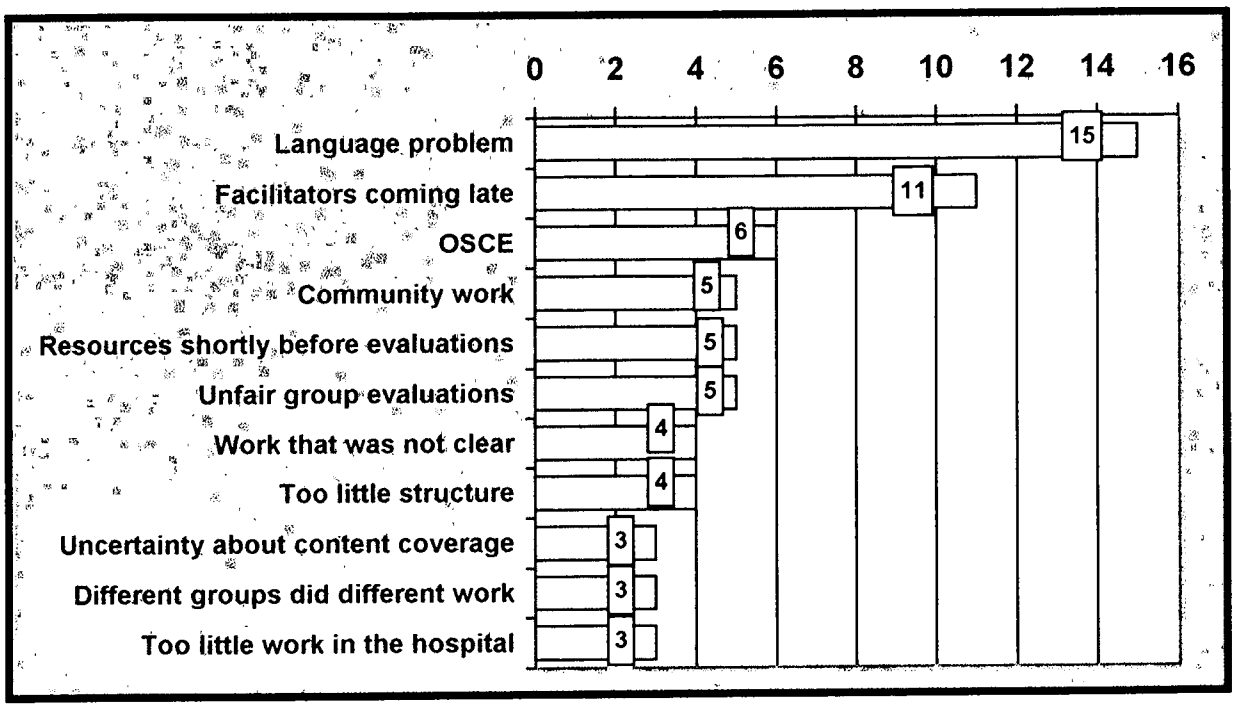


Figure 5.17 Aspects of the course students enjoyed least and indicated most frequently (N=37)

5.3.10 Ways in which the course can be improved

Eleven students asked that clear objectives, guidelines and a list of resources be provided at the beginning of the course and six students requested better organisation or structure of the course.

Ten students asked that language groups be separated, one student asked that groups be divided according to their achievements, one student asked that students should choose their own group, while another student urged for the riddance of racism. Another student's response reads: *"It is a good thing that students are exposed to different cultures and should stay just as it is."*

Five students begged for punctuality of academic staff. One student's response reads: *"Facilitators making a habit of coming late are a bad example for students because as the year progressed the students also started to come late."*

Two students asked for information about the examination at the beginning of the course, while five students asked for more time to prepare for tests and examinations.

Six students recommended more practical experiences and one student said there was a need for more information about safe practice.

Two students recommended that exact information about how, what and when assessment would take place, should be given at the beginning of the course. One of the two responses reads: *"It was a nightmare to receive lists of new resources shortly before a test. It would really help if all the info about tests and examinations be provided at the beginning of the year when time and actions can be systematically planned."* One student urged that all students receive the same work in a uniform way at the same time, while another student asked that feedback on the assessments be given faster.

Two students pertinently asked that the school discard problem-based learning and five students asked that traditional lectures be brought back.

Two students asked that facilitators receive training in PBL for this type of learning to succeed. One student's response reads: *"Facilitators lack skills in true problem-based learning. Some facilitators give all the information, while others distance themselves from students* [and] *they struggle through the work without any guidance. We are only first years and really need some structure and guidance... ".*

Individual responses about how the course could be improved read as follows: *"Consider the feelings of students and treat them as adults"; "Doing research about something is not enough, problems must also be addressed"; "Students should pace their own work,* [and] *"Give study-methods to students that really need it. For most of us it is duplication of previous work. By this time the majority of students' study-methods are already established"; "Please make the work easier"*, and *"Don't shift courses between years."*

Ways in which the course could be improved which were mentioned most frequently (more than five times) are illustrated in Figure 5.18

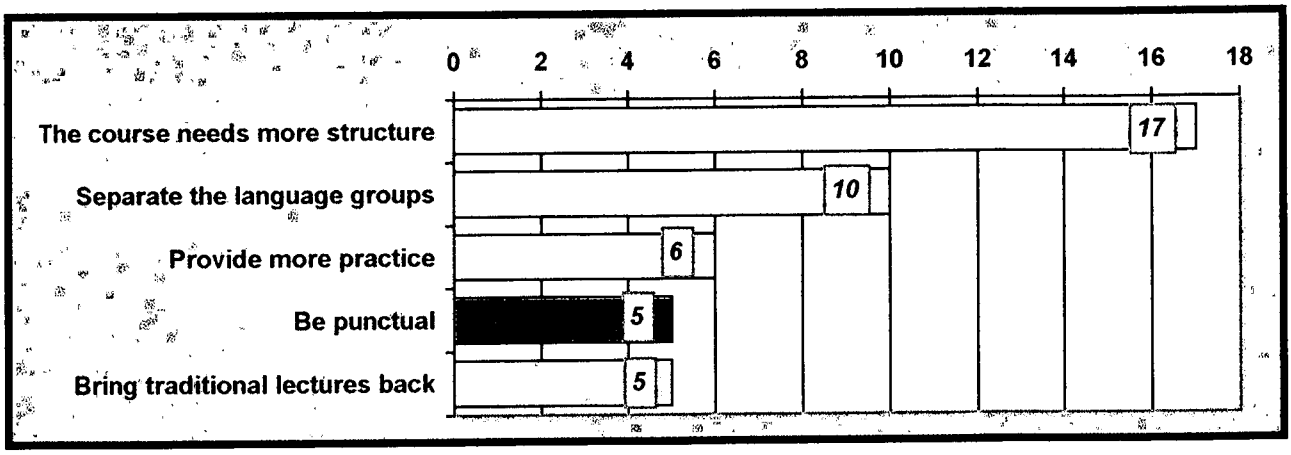


Figure 5.18 Ways in which the course can be improved (N=39)

5.3.11 Advice given to potential nursing students

More than half of the students advised that a newcomer should be prepared to work hard, while fifteen students recommended a lot of patience.

Eight students advised that a new student should prepare him/herself to understand other cultures, while six students urged newcomers to fight for their language rights. One student's response reads: *"Remember to bring a good English/Afrikaans dictionary as nearly all the classes are 100% in English. Be prepared to spend hours on translating notes"*, and another response in this regard reads: *"Different cultures are constantly pushed down each others' throats and there is nothing you can to do about it."*

Four students advised newcomers to prepare for tests and examinations in advance, while two students warned that it was a very difficult course. Two other students warned newcomers to learn fast how to locate resources, two students advised them to be prepared to suffer a lot, two students warned that they would have to be prepared to give and one student's response reads: *"Don't expect spoon feeding*". Four students warned that prospective students should not come for financial reasons and two students warned them to be prepared to suffer a lot.

Three students warned potential newcomers to think before they came, as it was not going to be what they expected it to be. One response reads: *"It is not going to be as it looks from the outside – think before you come."*

Five students warned potential newcomers to carefully think over and decide whether the UOFS is the right institution to study this programme.

Individual responses read as follows: *"It is very bad for four years, but practise in the hospital compensates for it"*; *"Don't give in half-way"*; *"This is not a very organised course"*; *"I really don't know how to advise a potential new-comer"*; *"If you made up*

your mind, go for it. It is worth all the suffering and gets better each day", and *"Please be punctual from the very start..."*

Advice given to a potential newcomer mentioned most frequently (more than three times) is illustrated in Figure 5.19.

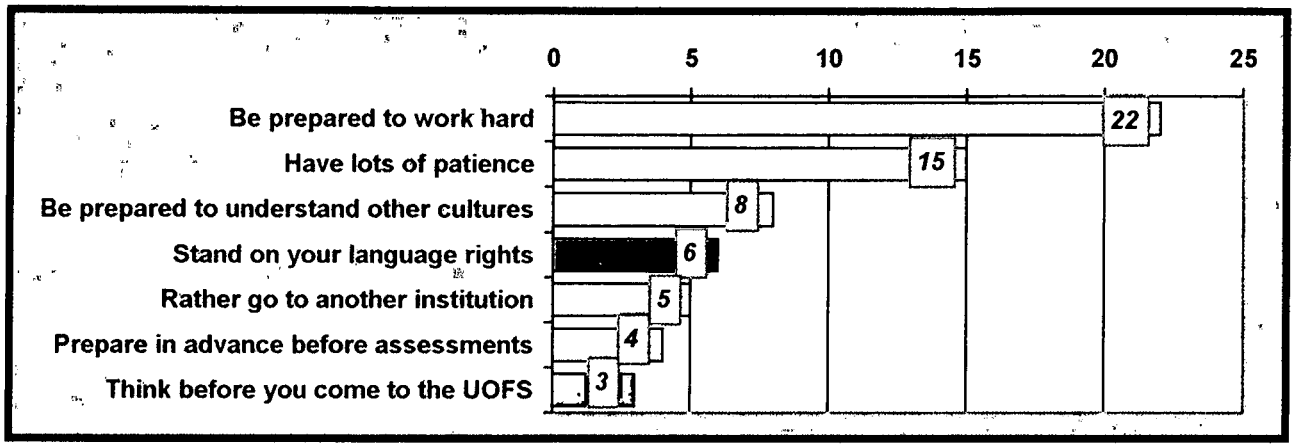


Figure 5.19 Advice given to a potential newcomer which was mentioned most frequently (N=37)

5.3.12 Summary of DQ and SPQ responses

The median age of students was 28 years, while the majority of students fell in the 18-year group. The female gender dominated the group, as only 5% of the students were male. Twenty-three of the students in the study were white, 18 were black, and there was one Asian and one coloured student. The majority of students (95%) were unmarried and without dependants (72%).

Language seemed to be an emotional issue, since it was the one aspect which was most frequently mentioned by students. Fifty-six percent of the students received their

secondary school tuition in Afrikaans and 44% received it in English. English was the second language of choice for 91% of the respondents. More than half of the students were Afrikaans-speaking (54%), while 44% of students had an indigenous black language as vernacular, and preferred tuition in English. One student spoke English as first language and one student had German as her first language.

Students were randomly allocated to groups which contained Afrikaans-speaking students as well as students who preferred English, although it was their second language. This caused a lot of friction, because only 7% of the students indicated that Afrikaans was their second language of choice. Language was a barrier in the communication of concepts for the majority of students (72%), while nearly half (48%) of students had problems in understanding concepts. Students particularly appreciated facilitators, who were fluent in Afrikaans as well as English, as they helped them to overcome language barriers. The fact that students' sensitivity towards other cultures increased by 81%, is very positive, in spite of language problems experienced during group-work. Students mentioned the language problem frequently in the open-ended responses and ten students asked pertinently that language groups be separated in the future. Fifteen students mentioned the language problem as the aspect of the first-year course that they enjoyed least, while six students advised newcomers to stand up for their language rights.

Thirty percent of the students did not earn a salary, while they provided a service in the Department of Health of the Orange Free State and experienced it as stressful and unfair. The majority of students were employees of the Department of Health (58%), 7% of the students were employees of the South African Defence Force and 5% were employees of a private hospital.

The majority of students (98%) had gone to public schools: 63% in urban areas, and 37% in rural areas. Thirty-two percent (32%) entered the course with a C symbol, 21% with a B symbol, 21% with a E symbol, 18% with a D symbol and 8% with a A symbol in their final secondary school year.

Students decided to register for the nursing degree to serve the community (39%) and because of their desire to become a nurse (37%). Only 5% of the students stated they registered to obtain a qualification.

Thirty-eight percent (38%) of students sometimes found the course difficult, while 3% felt that the difficulty level was inappropriate. Five percent stated that objectives were never reached with ease, while 46% indicated that objectives were sometimes reached with ease. In the open-ended responses students indicated a lack of clear objectives and structure and that they were overloaded with work and lacked the experience and maturity needed to succeed. One student stated that *"for the first time I learned to think for myself"*, while another student warned newcomers with the following phrase: *"Don't expect spoon feeding"*. Fifteen students warned newcomers to expect to work very hard.

Students were generally positive about group-work as the majority indicated that group-work stimulated self-study activities, that they learned to function effectively as a group-member, that theory and practice were complementary, and that group work was task-oriented. More than 80% of students indicated that they had learned how to consider various viewpoints as a result of group work. Unfortunately some students indicated that they had problems in obtaining help from other group-members with ease. Cultural differences seemed to play an important role. As can be seen in the final secondary school results, this particular first-year group contained a large group of academically strong students, while some students were definitely in a disadvantaged position.

The majority of students indicated that problem-solving was intellectually satisfying, that PBL brought community problems to the classroom, that they did not find the shift to PBL difficult, that PBL fostered clinical reasoning, self-study activities, the use of various resources, retention of information, motivation for learning and a holistic view. In spite of all the above-mentioned advantages of PBL, many students indicated that they preferred lectures to PBL. Some subjects were instructed by means of PBL, while other subjects were instructed by means of traditional lectures.

Students were generally satisfied with the role that their facilitators played in PBL, although nearly a third of the students had problems in approaching their facilitators with problems they experienced. Some students indicated that they needed more help from their facilitators, while others indicated that their facilitator did not welcome divergent viewpoints. Lack of the skill to organise group-sessions, were mentioned by 32% of students. In the open-ended responses eight students stated that they experienced security, warmth and a sense of belonging with regard to their facilitators.

Students' perceptions of the changes and increase of knowledge, skills and attitudes were very positive for 95% of the students who learned how to identify psycho-social factors, to gather information from various sources and to think independently. Ninety-three percent of the students experienced improvement in their communication skills, while 86% learned the process of problem solving and 86% developed leadership skills and application of knowledge to practice. Seventy-four percent (74%) of students indicated that they lacked skills in the use of diagnostic apparatus. Some students (40%) indicated that they still lacked some nursing skills and 35% of the students indicated a lack of skills in computer technology.

The majority of students indicated as positive aspects the realistic self-assessments, clear use of language in papers, adequate variations in assessment methods and that assessments were applicable for PBL. Many students had problems with peer-group assessments and partnership marks that were unfair. Inadequate information before assessments was indicated as a negative aspect by 51% of the students. This issue was also mentioned in the open-ended responses, as 15 students complained about unclear objectives before examinations. Some students indicated that they wanted to receive objectives at the beginning of the course to prepare ahead of time. Some students complained that work was handled differently by different groups and that the expertise of some facilitators advantaged some groups.

5.4 APPROACHES TO LEARNING ACCORDING TO THE LANCASTER APPROACHES TO STUDYING INVENTORY (LASI)

Students may adopt different strategies to learning, which are linked to their styles of learning often referred to as *"comprehensive learning"* or *"operation learning"* (Entwistle, 1981: 93). Holistic strategies are frequently adopted when a student is a comprehensive learner, while serialist strategies are adopted when a student is an operational learner. A holistic learner tends to build up a picture of a whole task, develops elaborate hypotheses and looks for links with other subjects. The serialist learner has a narrower focus on learning and tends to concentrate on details, while broader pictures and links with other subjects are neglected. Both these learning styles may pose problems when over-emphasised. Over-emphasis on comprehension learning may result in a tendency to over-generalisation without evidence, while over-emphasis on operational learning may lead to failure to build up adequate links between related subjects. The LASI was administered before and after exposure to problem-based learning to determine whether changes in learning styles took place as a result of PBL.

The differences between 1998 and 1999 were calculated by using paired differences to compare each student with him/herself. The median difference and the 95% confidence interval for the median difference are reported for each scale. The Wilcoxon Matched-Pairs signed-Ranks Test was used to compare the pre- and post-test results of the sub-scales to determine the p-values.

5.4.1 Meaning orientation

Table 5.88 Meaning orientation of students in the pre-and post-test according to the LASI sub-scales and changes that took place

Meaning Orientation *Pre-test (March 1998) and Post-test (February 1999)* *N=43*											
Sub-scales	Mean		Standard Deviance		Min.		Max.		Median		P-value
	'98	'99	'98	'99	'98	'99	'98	'99	'98	'99	
Deep approach	12,16	11,26	1,8	2,5	8	5	15	15	12	12	0.13
Use of evidence	11,91	11,86	2,2	2,7	7	4	16	16	12	13	0.22
Relating ideas	11,42	11,74	2,1	2,3	6	6	15	15	12	12	0.95
Intrinsic motivation	10,77	11,42	2,5	2,8	5	5	16	16	10	12	0.07
MEANING ORIENTATION	46.26	48.28	6.28	8.1	26	23	59	59	46	48	

The meaning orientation was 46 in 1998 and 48 in 1999. The median paired difference was –1 and the p-value was 0,92, while the 95% confidence interval was [-3;3], which is not statistical significant. Deterioration was seen in the deep approach and a slight increase in intrinsic motivation and relating ideas.

The p-values for the Wilcoxon Signed-Rank test were also calculated, but this time only for the sub-scales to examine changes that occurred between the pre-test and post-test.. The p-values for sub-scales were as follows:

- *Deep approach*: p-value = 0,01 with a 96,8% confidence interval of [-2;0], which implicates that there was a strong tendency towards a higher score in 1998. The median difference was –1. Although students initially put a lot of effort into understanding and questioning phenomena, deterioration did take place after the first-year course. Fifty-three-comma-five percent (53,5%) of the students had a deterioration of one score or more, 16,3% stayed the same and 30,2% had an increase of scores.
- *Relating ideas*: p-value = 0,95 with a 96,8% confidence interval of [-1;2]. Therefore no change took place. The median difference was 0. Students maintained relating ideas to real life and among disciplines to fit ideas together.

- *Use of evidence*: p = 0,22 with a 96,8% confidence interval of [0;1]. Although the median difference was 0, 27,9% of the respondents showed no change, 41,9% had an improvement of one score or more and 23,3% had an improvement of two scores. Thirty-comma-two percent (30,2%) of students deteriorated. This implicates a slight tendency towards improvement in 1999.
- *Intrinsic motivation:* p= 0,07 with a 96,8% confidence interval [0;3). The median difference was one. Fourteen percent (14%) stayed the same, 55,8 % had an improvement of one score or more and 27,9% had an improvement of three scores. Only 30,2% deteriorated, therefore a tendency towards an increase of intrinsic motivation was detected. This means that students' excitement and interest in the course increased slightly on completion of their first year.

Comparison of first-year nursing students' (N=43) meaning orientation at the UOFS with studies that had been done with Mechanical Engineering and Manufacturing Systems students at Newcastle Polytechnic and studies on engineering students by Ramsden, is illustrated in Table 5.89 Results were also compared to ranges per discipline (see Appendix J).

Table 5.89 Meaning orientation of this study* compared to two other studies

	UOFS [post-test] (43 students)*		Newcastle (103 students)		Ramsden (258 students)	
	Mean	*Std. Dev.*	*Mean*	*Std. Dev.*	*Mean*	*Std. Dev.*
MEANING ORIENTATION	46,28	8,1	36,84		37,2	10,0
Deep approach	11,26	2,5	10,47	3,22	10,4	3,14
Relating ideas	11,74	2,3	9,65	2,94	9,6	3,23
Use of evidence	11,86	2,7	9,88	2,42	9,9	3,04
Intrinsic motivation	11,42	2,8	6,84	3,77	7,3	3,76

Students in this study obtained higher means for meaning orientation, relating ideas, use of evidence and intrinsic motivation than students in the two other studies (see Appendix J for ranges among students by discipline).

5.4.2 Reproducing orientation

Table 5.90 Reproducing orientation of students in the pre- and post-test and changes that took place according to the LASI sub-scales

Reproducing Orientation
Pre-test (March 1998) and Post-test (February 1999)
N=43

Sub-scales	Mean		Standard Deviance		Min.		Max.		Median		P value
	'98	'99	'98	'99	'98	'99	'98	'99	'98	'99	
Surface approach	14,63	15,65	2,9	2,9	8	10	22	22	14	16	0,02
Syllabus-boundness	9,49	9,4	1,6	1,5	6	6	12	12	10	9	0,71
Fear of failure	6,77	7,3	2,4	2,2	3	3	12	11	7	8	0,10
Improvidence	9,65	10,19	2,7	2,5	4	6	15	15	10	10	0,18
REPRODUCING ORIENTATION	40.54	42.53	6,7	6,7	26	29	56	52	41	44	

In 1998 the median for reproducing orientation was 41 and in 1999 the median was 43. The median difference is 2, which means that students' reproducing orientation increased. This increase is statistically significant with a p-value of 0,02 and a 95% confidence interval of [1;4]. Reproducing orientation, surface approach and improvidence showed an increase, which means deterioration, fear of failure stayed the same, while syllabus-boundness decreased, which means improvement.

The p-values for the Wilcoxon Signed-Rank test were calculated on the sub-scales and were as follow:

- *Surface approach*: p= 0,02, with a 96,8% confidence interval of [0;2]. The median difference was 1. Thirty-five comma five percent (35,5%) of the students had an increase of one score and were definitely more inclined to memorise facts without understanding it after the first-year course. Only 30,2% showed an improvement and 46,5% stayed the same.

- *Syllabus-boundness*: p= 0,71, with a 96,8% confidence interval of [-1;0]. The median difference was 0. Thirty-comma-three percent (30,3%) of students' scores increased, which means that they wanted to be told what to do and preferred structured assignments. Thirty-seven-comma two percent (37,2%) had lower scores and 32,6% had the same scores. The 0-hypothesis was not rejected, therefore no change took place between the pre- and post-test.
- *Fear of failure*: p= 0,10, with a 96,8% confidence interval of [0;1]. The median difference was 0. No change was detected in 30,2% of the respondents, 23,3% improved in self-confidence with a score of one or more and 46,6% deteriorated in self confidence. Fear of failure was slightly higher in 1999 than in 1998.
- *Improvidence*: p = 0,18, with a 96,8% confidence interval of [0;2]. The median difference was 0 and 27,9% stayed the same, while 44,2% showed higher scores than in 1998. Only 27,9% had lower scores. This implicates a tendency that students were less inclined to look for relationships than before.

Table 5.91 Reproducing orientation of this study* compared to two other studies

	UOFS [Post-test]* (43 students)		Newcastle (103 students)		Ramsden (258 students)	
	Mean	*Std. Dev.*	*Mean*	*Std. Dev.*	*Mean*	*Std. Dev.*
REPRODUCING ORIENTATION	42,53	6,7	35,65		36,5	9,0
Surface approach	15,65	2,9	13,84	3,84	13,2	4,37
Syllabus-boundness	9,4	1,5	8,97	2,17	9,2	2,20
Fear of failure	7,3	2,2	5,54	3,02	6,2	2,93
Improvidence	10,19	2,5	7,33	2,72	7,8	3,27

Surface approach, fear of failure and improvidence were high in this study when compared to the two other studies, while syllabus-boundness was the same. Compared to ranges by discipline, the scores of this study were also high (see Appendix J for ranges among students by discipline).

5.4.3 Non-academic orientation

Table 5.92 Non-academic orientation of students in the pre- and post-test and changes that took place according to the LASI sub-scales

Non-academic Orientation *Pre-test (March 1998) and Post-test (February 1999)* *N=43*											
Sub-scales	Mean		Standard Deviance		Min.		Max.		Median		P value
	'98	'99	'98	'99	'98	'99	'98	'99	'98	'99	
Disorganised study methods	8,91	9,16	2,9	2,7	4	4	15	14	9	9	0.62
Negative attitudes to studying	8,0	8,26	1,6	1,5	5	4	12	11	8	8	<,01
Globetrotting	8,84	8,44	1,9	2,2	6	4	13	13	8	8	0.41
NON-ACADEMIC ORIENTATION	25.74	25.86	4.7	4.9	19	15	39	34	25	26	

The median difference for non-academic orientation was 0. The median was 25 in 1998 and 26 in 1999, which means that non-academic orientation stayed the same. The 95% confidence interval was [-2;2] and the p-value 0,92. On its own, negative attitudes to studying had a statistically significant decrease.

The p-values for the Wilcoxon Signed-Rank test were calculated on the sub-scales and were as follows:

- *Disorganised study methods*: p= 0,62, with a 96,8% confidence interval of [-1;1]. This means that no change took place between the pre-test and the post-test. The median difference was 0.
- *Negative attitudes to studying*: p = <0,01, with a 96,8% confidence interval of [-11;-8], Change took place between the pre-test and post-test. The median difference was –9. All the students (100%) had higher scores in 1998 than in 1999. This means that negative attitudes such as wondering whether the course is worthwhile decreased after their first year. Students experienced statistically less study difficulties in 1999 than in 1998.

- *Globetrotting*: p = 0,41, with a 96,8% confidence interval of [-2;0]. The median difference was 0 and 18% of the students stayed the same, 48,8% improved and 32,6% deteriorated.

Table 5.93 Non-academic orientation of this study * compared to two other studies

	UOFS [post-test]* (43 students)		Newcastle (103 students)		Ramsden (258 students)	
	Mean	*Std. Dev.*	*Mean*	*Std. Dev.*	*Mean*	*Std. Dev.*
NON-ACADEMIC ORIENTATION	25,86	4,9	23,05		22,6	7,84
Disorganised study methods	9,16	2,7	9,50	4,42	9,8	4,22
Negative attitudes to studying	8,26	1,5	6,20	4,24	5,4	4,01
Globetrotting	8,44	2,2	7,35	2,95	7,5	3,75

In this study the scores for non-academic orientation, negative attitudes to studying and globetrotting were higher when compared to the other studies. Disorganised study methods were the same. When compared to ranges in disciplines all the above-mentioned scores were higher when compared to ranges by discipline with the exception of disorganised study methods, which were comparable (see ranges for other disciplines in Appendix J).

5.4.4 Strategic orientation

Table 5.94 Strategic orientation of students in the pre- and post-test and changes that took place according to the LASI sub-scales

Strategic Orientation *Pre-test (March 1998) and Post-test (February 1999)* *N=43*											
Sub-scales	Mean		Standard Deviance		Min.		Max.		Median		P value
	'98	'99	'98	'99	'98	'99	'98	'99	'98	'99	
Achievement motivation	11,4	11,37	2,3	2,8	6	6	16	16	11	11	0,67
Strategic approach	14,0	12,77	1,6	2,3	11	8	16	16	14	13	<0,01
Extrinsic motivation	10,1	9,65	2,6	2,2	5	5	15	14	10	10	0,28
Strategic Orientation	35,56	33,79	4,1	5,4	27	23	42	46	36	34	.

The median difference was –2, which means that the students' strategic orientation decreased. The median was 36 in 1998 and 34 in 1999. There is a tendency towards deterioration with a p-value of 0,06 and a 95% confidence interval of [-4;0]. Decrease was seen in strategic approach, while the achievement motivation and extrinsic motivation showed a slight tendency towards improvement.

The p-values for the Wilcoxon Signed-Rank test were calculated on the sub-scales and were as follows:

- *Achievement orientation*: p = 0,67, with a 96,8% confidence interval of [-1;0]. The median difference was 0, and 48,5% of the students showed a decrease of one score or more, 23,3% stayed the same and 27,9% showed an increase. This implicates a tendency towards improvement.
- *Strategic approach*: p = <0,01, with a 96,8% confidence interval of [-2;0]. The median difference was –1 and 53,5% showed a decrease of one score or more, 18,6% stayed the same and 27.9% showed an increase. There is a definite tendency for students to be less inclined to work according to the lecturers' wants, to get hints where-ever they could for exams, and to try to get hold of information needed for their studies.

- *Extrinsic motivation*: p = 0,28, with a 96,8% confidence interval of [-2;0]. The median difference was –1 and 60,5% of the students improved with a score of one or more, 11,6% stayed the same and 27,9% show an increase. This means a tendency towards improvement.

Table 5.95 Strategic orientation in this study* compared to two other studies

	UOFS [post-test]* (43 students)		Newcastle (103 students)		Ramsden (258 students)	
	Mean	*Std. Dev.*	*Mean*	*Std. Dev.*	*Mean*	*Std. Dev.*
STRATEGIC ORIENTATION	33,79	5,4	28,25		28,7	6,84
Achievement orientation	11,37	2,8	7,76	2,76	10,7	3,40
Strategic approach	12,77	2,3	11,27	2,46	10,5	3,00
Extrinsic motivation	9,65	2,2	9,20	3,21	8,0	4,03

The scores of this study were higher on achievement orientation, strategic approach and extrinsic motivation when compared to the two other studies. When compared to ranges of other disciplines, scores were still higher for this study, although strategic orientation declined in the post-test (see ranges for other disciplines in Appendix J).

5.4.5 Operation learning

Table 5.96 Operation learning of students in the pre- and post-test and changes that took place according to the LASI sub-scales

Operation learning Pre-test (March 1998) and Post-test (February 1999) N=43											
	Mean		Standard Deviance		Min.		Max.		Median		P – value
	'98	'99	'98	'99	'98	'99	'98	'99	'98	'99	
Operation learning	12,67	12,56	2,4	2,8	7	6	16	16	13	13	0,95
Operation learning	12,67	12,56	2,4	2,8	7	6	16	16	13	13	

The p-value for the Wilcoxon Signed-Rank test was calculated and was as follows:

- *Operation learning*: p = 0,95, with a 96,8% confidence interval of [-1;1]. The median difference was 0 and 14% of the students stayed the same, 39,5% showed a decrease and 46,6% showed an increase of one score or more.

Table 5.97 Operation learning of this study* compared to two other studies

	UOFS [post-test]* (43 students)		Newcastle (103 students)		Ramsden (258 students)	
	Mean	*Std. Dev.*	*Mean*	*Std. Dev.*	*Mean*	*Std. Dev.*
OPERATION LEARNING	12,56	2,8	11,22	2,50	11,1	2,83

Operation learning was slightly higher in this study than in the other two studies. When scores of this study are compared to ranges of other disciplines (see Appendix J), operation learning was definitely higher. This means that students in this study were more inclined to tackle topics one at a time, were more hesitant to try out adventurous approaches and started with details before an overall picture was built up. Students in

this study were also more inclined to look at problems in a rational and logic way without intuitive jumps to conclusions. This remained the same in the pre- and post-test.

5.4.6 Comprehension learning

Table 5.98 Comprehension learning of students in the pre-and post-test and changes that took place according to the LASI sub-scales

Comprehension learning *Pre-test (March 1998) and Post-test (February 1999)* *N=43*											
	Mean		Standard Deviance		Min.		Max.		Median		P value
	'98	'99	'98	'99	'98	'99	'98	'99	'98	'99	
Comprehension learning	10,28	10,47	3	2,6	4	4	16	16	10	11	0,87
Comprehension learning	10.28	10.47	3	2.6	4	4	16	16	10	11	

The p-value for the Wilcoxon Signed-Rank test was calculated and was as follows:

- *Comprehension learning*: p= 0,87, with a 96,8% confidence interval of [-2;1]. The median difference was 0 and 9,3% of students stayed the same, 48,8% showed a decrease of one score or more and 41% showed an increase of one score or more.

Table 5. 99 Comprehension learning in this study* compared to two other studies

	UOFS [Post-test]*: (43 students)		Newcastle (103 students)		Ramsden (258 students)	
	Mean	*Std. Dev.*	*Mean*	*Std. Dev.*	*Mean*	*Std. Dev.*
COMPREHENSION LEARNING	10.47	2.6	8.53	3.61	8.0	3.75

Comprehension learning was higher in this study than in the other two studies. When compared to ranges in other disciplines, the scores are also higher in this study with the

exception of English, where comprehension learning was also higher than in other disciplines (see Appendix J). This means that students think about ideas, try to understand puzzling ideas and that they are not hesitant to use their imaginations. Students feel free to play around with their own ideas and when they read, they are inclined to produce ideas of their own.

5.4.7 Course orientation – student-centredness

Table 5.100 Course orientation - student-centredness of students in the pre- and post-test and changes that took place according to the LASI sub-scales

Course orientation – student-centredness
Pre-test (March 1998) and Post-test (February 1999)
N=43

Sub-scales	Mean		Standard Deviance		Min.		Max.		Median		P-value
	'98	'99	'98	'99	'98	'99	'98	'99	'98	'99	
Good teaching	14.37	12.16	3.3	3.5	6	4	19	18	15	12	<0.01
Freedom in learning	14.3	11.79	2.9	3.3	7	5	20	18	14	12	<0.01
Course orientation – student-centredness	28.67	23.95	5.3	6.2	16	14	36	35	29	24	

Student-centredness in course orientation was 29 in 1998 and came down to 24 in 1999. The median difference was –6, which is significant with a 95% confidence interval of [-7;-4]. The median for good teaching came down from 15 to 12, while freedom in learning came down from 14 to 12.

The p-values for the Wilcoxon Signed-Rank test were calculated on the sub-scales and were as follows:

- *Good teaching*: p = <0,01, with a 96,8% confidence interval of [-4;-1]. The median difference was –3. Only 7% of the students had no change, 20,9% showed an increase of at least one score, while 72,1% showed a decrease of one score or more. Fourteen percent (14%) of the students even showed a decrease of four scores. This

means that students experienced a decline in good teaching that includes preparation of lecturers, level of difficulty, understanding from staff, and advice given.

- *Freedom in learning*: p =<0,01, with a 96,8% confidence interval of [-4;-2]. The median difference was –2. A decline in freedom in learning was experienced after the first-year course. This means that students experienced a decline in choice of what and how they wanted to learn, with 81,4% showing a decrease of one score or more.

Table 5.101 Student-centredness in this study* compared to two other studies

	UOFS [Post-test]* (43 students)		Newcastle (103 students)		Ramsden (258 students)	
	Mean	*Std. Dev.*	*Mean*	*Std. Dev.*	*Mean*	*Std. Dev.*
STUDENT-CENTREDNESS	23,95	6,2	18,9		19,6	6,64
Good teaching	12,16	3,5	11,70	3,26	11,4	4,07
Freedom in learning	11,79	3,3	7,28	3,75	8,1	4,16

Student-centredness was higher in this study when compared to the other two studies. When compared to ranges of other disciplines (see Appendix J), the scores of this study were comparable to the disciplines of English, Economics, History and Psychology. As both the above-mentioned studies included engineering students, course perceptions may differ among disciplines.

5.4.8 Course orientation – control-centredness

Table 5.102 Course orientation – control-centredness of students in the pre- and post-test and changes that took place according to the LASI sub-scales

Course orientation – control-centredness
Pre-test (March 1998) and Post-test (February 1999)
N=43

Sub-scale	Mean		Standard Deviance		Min.		Max.		Median		P-value
	'98	'99	'98	'99	'98	'99	'98	'99	'98	'99	
Workload	10,98	12,12	3,9	3,7	5	5	19	19	10	12	0.08
Freedom in learning	14,3	11,79	2,9	3,3	7	5	20	18	14	12	<0,01
Course orientation – control centredness	6,67	10,33	4,4	3,7	0	3	17	19	6	10	

Control-centredness in course-orientation increased from a median of 6 in 1998 to 10 in 1999. The median difference was 4. This is a significant increase with the 95% confidence interval [2;6] and a p-value of less than 0,01. Fourteen percent (14%) of students stayed the same, 34,9% experienced a decrease in pressure of one score or more and 51,2% experienced more pressure with an increase of one score or more. Students definitely felt more pressurised in 1999 than in 1998.

The p-values for the Wilcoxon Signed-Rank test were calculated on the sub-scales and were as follows:

- *Work load*: p = 0,08, with a 96,8% confidence interval of [-1;2]. The median difference was –1. This means that students indicated after their first-year course that the workload was too heavy, that the syllabus tried to cover too many topics, that too much written work and independent reading were required.
- *Freedom in learning*: p = <0,01, with a 96,8% confidence interval of [-4;-2]. The median difference was –2. While 81,4% experienced a decrease of one score or more, only 14% had an increase and the rest stayed the same. A decline in freedom in

learning was experienced after the first-year course. This means that students experienced a decline in choice of what and how they wanted to learn

Table 5.103 Course control-centredness in this study* compared to two other studies

	UOFS [Post-test]* (43 students)		Newcastle (103 students)		Ramsden (258 students)	
	Mean	*Std. Dev.*	*Mean*	*Std. Dev.*	*Mean*	*Std. Dev.*
COURSE-CONTROL-CENTREDNESS	10,33	3,7	15,74		14,1	6,75
Workload	12,12	3,7	13,2	4,54	12,9	4,62
Freedom in learning	11,79	3,3	7,28	3,75	8,1	4,16

Course control-centredness was lower in this study than in the two other studies, while the workload was the comparable. Freedom in learning was higher in this study. When compared to other disciplines lower control-centredness was also experienced by the following disciplines: English, History, Psychology, Economics, and Physics (see Appendix J). Both the above-mentioned studies were in engineering, where student perceptions and the type of discipline differ.

5.4.9 Other course perception changes that took place

- *Clear goals and standards:* p = <0,01, with a 96,8% confidence interval of [-4;0]. The median difference was –2 and 60,5% showed a decrease of two scores or more, which indicated that the ends of studying seemed to be less clearly defined than before, while 30,2% thought it were better defined than before.
- *Vocational relevance:* p = <0,01, with a 96,8% confidence interval of [-12;-9]. The median difference was –10. Almost all the students (97,7%) indicated that the course were less relevant to their future career than before, while the rest indicated no change. No one felt positive about the future relevance of the course.

- *Openness to students:* p = <0,01, with a 96,8% confidence interval of [-4;-2]. The median difference was –2. While 69,8% of students felt negative about the friendliness of the staff and thought that staff were less prepared for their needs than before, 20,9% felt positive with an increase of two scores or more.
- *Social climate:* p = <0,01, with a 96,8% confidence interval of [-3;0]. The median difference was –2. Only 23,3% showed an increase of one score or more, while 65,1% had a decrease and 11,6% experienced no change.

Table 5.104 Course-perceptions in this study* compared to two other studies

	UOFS [post-test]* (43 students)		Newcastle (103 students)		Ramsden (258 students)	
	Mean	*Std. Dev.*	*Mean*	*Std. Dev.*	*Mean*	*Std. Dev.*
Formal teaching	10,23	2,02	11,90	2,75	12,1	3,56
Clear goals	11,26	3,44	10,70	3,44	12,2	4,06
Social climate	13,77	2,91	11,76	3,20	11,0	4,02
Openness to students	12,33	3,38	7,94	3,93	8,6	4,17
Vocational relevance	14,23	3,08	13,29	3,18	13,4	3,71

Scores of formal teaching were comparable to the above-mentioned studies, but much higher than in the following disciplines: English (with a mean of 3.3), History (with a mean of 2.7), Psychology and Economics (both with a mean of 6.7) (see Appendix J to compare scores).

Clear goals and standards were comparable to the above-mentioned studies and the disciplines of Economics and Physics, but higher than in the following disciplines: English (with a mean of 6.7), History (with a mean of 8.0), and Psychology (with a mean of 8.6) (see Appendix J to compare scores).

Social climate and openness to students were higher than the above-mentioned studies as well as discipline ranges (see Appendix J to compare scores).

Vocational relevance was high in this study and comparable to the engineering disciplines. The following disciplines had very low scores: English (with a mean of 3.9), History (with a mean of 4.8), Psychology (with a mean of 6.5), Economics (with a mean of 8.2) and Physics (with a mean of 8.9) (see Appendix J to compare scores).

5.4.10 Changes in the approaches to learning that took place in the first-year course

Table 5.105 Changes in the approaches to learning that took place

Changes in approaches to learning From March 1998 to February 1999 (N=43) (Results of paired differences where each student was compared with him/herself)						
Learning approach	95% Confidence Interval	Median Difference	N Students stayed the same	N Students were worse	N Students were better	Total
Meaning Orientation	(-3 to 3)	-1	2	22	19	43
Reproducing Orientation	(1 to 4)	2	4	11	28	43
Non-academic orientation	(-1 to 2)	0	6	18	19	43
Strategic orientation	(-4 to 0)	-2	1	27	15	43
Operation learning	(-1 to 1)	0	6	20	17	43
Comprehension learning	(-1 to 1)	0	4	21	18	43
Student-centredness	(-7 to -4)	-6	1	35	7	43
Control- centredness	(2 to 6)	4	1	8	34	43

- *Meaning orientation* almost stayed the same. Scores were worse for 22 students, while meaning orientation improved for 19 students. Two students stayed the same.
- *Reproducing orientation* increased significantly. Four students stayed the same while 28 students' reproducing orientation increased and 11 students' reproducing orientation decreased.
- *Non-academic orientation* stayed the same. Eighteen students' non-academic orientation increased, 19 students' decreased and six students' stayed the same.

- *Strategic orientation* had a tedency to decrease. Twenty-seven students' strategic orientation decreased, while 15 students' strategic orientation improved and one student's stayed the same.
- *Operation learning* stayed the same.
- *Comprehension learning* stayed the same. Four students' stayed the same, while 18 students' comprehension learning increased and 21 students' decreased.
- *Student-centredness* decreased significantly. Thirty-five students showed a decrease, while 7 students showed an increase and one student's stayed the same.
- *Control-centredness* increased significantly. Thirty-four students showed an increase, while 8 students showed a decrease and one student's stayed the same.

5.4.11 Summary of LASI responses

Although students' meaning orientation stayed almost the same, the deep approach to learning decreased. Initially students put a lot of effort into understanding and questioning phenomena, but a slight deterioration took place after the first-year course. As far as intrinsic motivation is concerned, students' excitement and interest in the course indicated a tendency to increase on completion of their first-year course. Students obtained higher or comparable means for meaning orientation, relating ideas, use of evidence and intrinsic motivation than students from other studies and disciplines, which is very positive (see Appendix J for ranges among students by discipline and Table 5.89).

A statistically significant increase in students' reproducing orientation was detected. Reproducing orientation scores show that an increase in surface approach developed, in other words, students were more inclined to memorise facts without understanding them after the first-year course than before. Fear of failure and improvidence slightly decreased, while syllabus-boundness stayed the same. Surface approach, fear of failure and improvidence were high in this study when compared to other studies, while syllabus-boundness was the same. (see Appendix J for ranges among students by discipline and Table 5.91).

Non-academic orientation stayed the same, although negative attitudes towards studies decreased highly significantly as 100% of students had higher scores in 1998 than in 1999. This means that negative attitudes such as wondering whether the course was worthwhile significantly decreased after students were exposed to PBL for a year. Scores for non-academic orientation, negative attitudes to studying and globetrotting were higher when compared to other studies, but disorganised study methods were comparable. (see ranges for other disciplines in Appendix J and Table 5.93).

A tendency towards a decrease in strategic orientation was detected. Strategic approach decreased statistically significantly, while the achievement motivation and extrinsic motivation stayed the same. The decrease in strategic orientation means that students were less inclined to work according to the lecturers' wants, to get hints wherever they could for exams, and to try getting hold of information needed for their studies. The scores of this study were higher on achievement motivation, strategic approach and extrinsic motivation when compared to other studies, although strategic orientation declined in the post-test (see Appendix J for ranges according to discipline and Table 5.95).

No changes in operation learning occurred between 1998 and 1999. Operation learning was slightly higher in this study than other studies. This means that students in this study were more inclined to tackle topics one at a time, were more hesitant to try out adventurous approaches and started with details before an overall picture was built up. Students in this study were also more inclined to look at problems in a rational and logical way without intuitively jumping to conclusions and this inclination remained the same in the pre- and post-test.

Comprehension learning stayed the same. Comprehension learning was higher in this study than in other studies with the exception of English, where comprehension learning was also higher than in other disciplines. High comprehension scores mean that students think about ideas, try to understand puzzling ideas and that they are not hesitant to use

their imaginations. Students feel free to play around with their own ideas and when they read they are inclined to produce ideas of their own.

A significant decrease of student-centredness in course orientation was detected. Decreases were seen both in good teaching and in freedom in learning. Decrease in good teaching means that students experienced a decline in preparation of lecturers, an inappropriate level of difficulty, and less understanding and advice coming from staff members. A decrease in freedom in learning means that students experienced a decline in choice of what and how they wanted to learn. As depicted in Table 5.101, student-centredness in this study was higher when compared to the other two studies. When scores in this study are compared to ranges of other disciplines (see Appendix J), the scores of this study were comparable to the disciplines of English, Economics, History and Psychology. As both the above-mentioned studies included engineering students, course perceptions might have differed among disciplines.

Control-centredness in course-orientation increased from a median of 6 in 1998 to 10 in 1999, which is significant. An increase in workload was detected by 51,2% of the students and this means that students experienced the workload as too heavy. They indicated that the syllabus tried to cover too many topics, and that too much written work and independent reading were required. Students generally experienced more pressure in the post-test than in the pre-test. Course control-centredness was lower in this study than in other studies, while the workload was comparable. Lower control-centredness was also experienced in the following disciplines: English, History, Psychology, Economics, and Physics (see Appendix J and Table 5.103)

Other course perception changes that took place between the pre- and post-test were clear goals and standards; vocational relevance; openness to students and social climate. A decline in clear objectives and standards, vocational relevance, openness to students and social climate were experienced. Almost all the students felt that the course was less relevant for their future careers than before. Formal teaching and clear goals were higher than most disciplines, but comparable to the disciplines of Engineering and Physics,

while social climate and openness were higher than all the disciplines. Vocational relevance was higher than all the studies, and comparable to the Engineering disciplines. This means that education and learning in this study took place in a friendly climate where discussions were welcomed and openness existed among students and staff.

5.5 CALCULATIONS OF ASSESSMENT RESULTS

The computerised class list was used to obtain the results of the first-year course. The results of the following subjects were obtained:

- *Subjects instructed by means of problem-based learning*: Nursing Theory (VRT117), Nursing Practice (VRP110), Nursing Theory (VRT 127), and Nursing Practice (VRP 120) (see an example of first year undergraduate course outcomes in Appendix M).
- *Subjects instructed by means of traditional lectures*: Chemical Science, Physiology, Microbiology 1, Microbiology 11, Psychology, and Sociology.
- *Subject instructed by means of video-assisted instruction*: Anatomy.

Results are summarised in Table 5.105. Students obtained the best average in their PBL-subjects as illustrated in Figure 5.20. For traditional subjects students obtained an average of 61% and for video-assisted instruction 59%. Two students got exemption from Anatomy as they did the subject in previous years. One student's results were not available on the computer print-out as she had registered late.

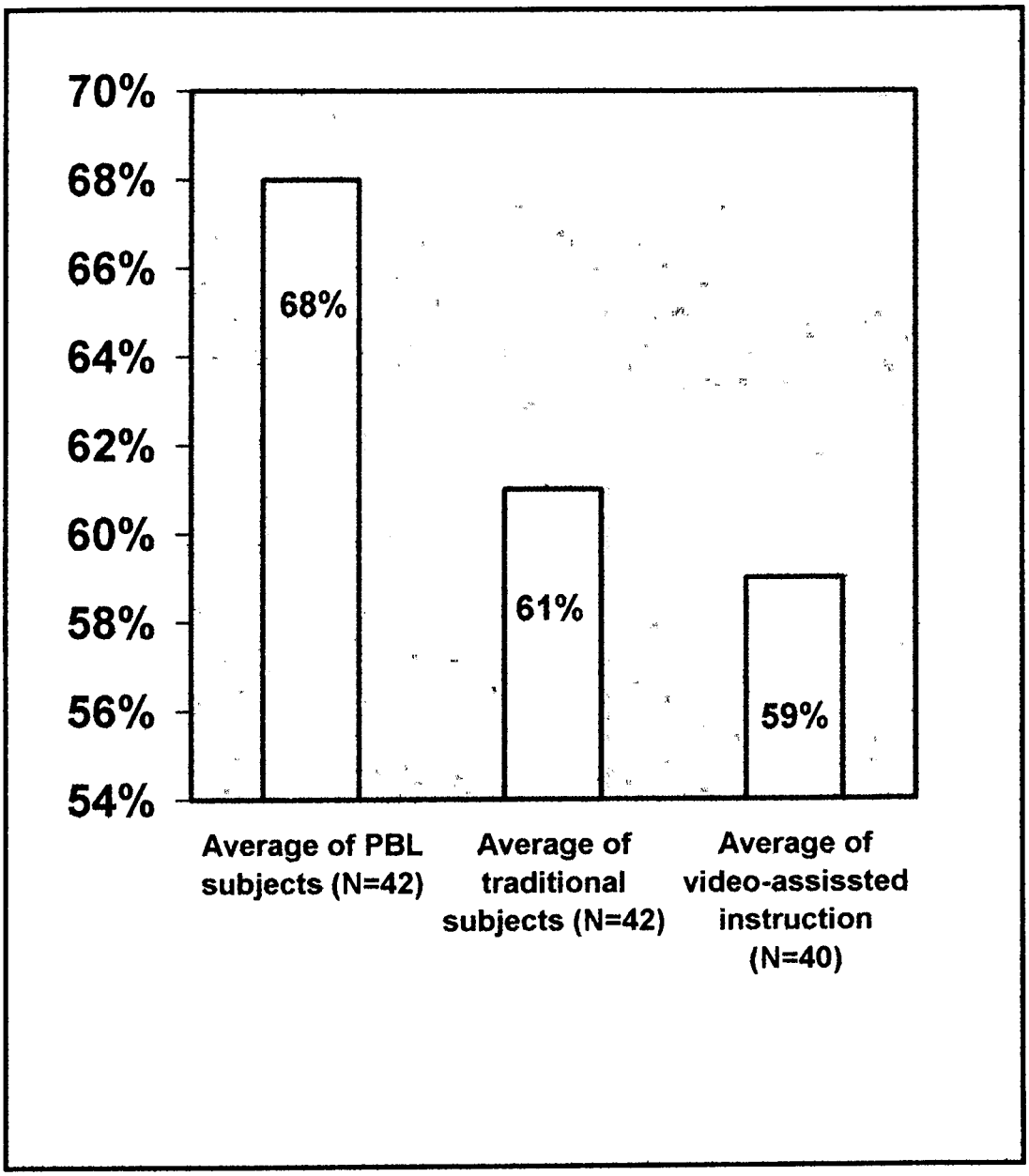


Figure 5.20 Average percentages of three educational strategies used to instruct first-year nursing students in 1998.

Table 5.106 Summary of students' results obtained in grade 12 (final secondary school year), and the first-year nursing courses

GRADE 12	VIDEO-ASSISTED INSTRUCTION	TRADITIONAL SUBJECTS	PBL SUBJECTS	AVERAGE FIRST-YEAR COURSE
Nil response	(56) D	(56) D	(61) C	(58) D
E	(45) E	(50) D	(60) C	(54) D
C	(72) B	(71) B	(76) B	(73) B
B	(54) D	(57) D	(66) C	(60) C
C	(57) D	(56) D	(67) C	(60) C
D	(80) A	(83) A	(72) B	(81) A
B	(72) B	(62) C	(75) B	(67) C
C	(69) C	(66) C	(68) C	(68) C
E	(38) F	(53) D	(61) C	(67) C
D	Exemption	(44) E	(58) D	(51) D
A	(33) F	(64) C	(69) C	(63) C
B	(50) D	(57) D	(66) C	(59) D
A	(78) B	(84) A	(87) A	(85) A
Nil response	(50) D	(54) D	(63) C	(57) D
E	(40) E	(50) D	(60) C	(53) D
B	(83) A	(86) A	(83) A	(84) A
E	(55) D	(58) D	(68) C	(62) C
C	(61) C	(66) C	(74) B	(68) C
E	(62) C	(59) D	(66) C	(62) C
G	(67) C	(63) C	(65) C	(64) C
B	(82) A	(78) B	(75) B	(77) B
E	(50) D	(49) E	(61) C	(54) D
E	Exemption	(44) E	(60) C	(52) D
D	(67) C	(73) B	(71) B	(70) B
D	(55) D	(60) C	(63) C	(61) C
E	(67) C	(64) C	(73) B	(68) C
D	(41) E	(56) D	(62) C	(57) D
C	(59) D	(61) C	(69) C	(64) C
B	(63) C	(60) C	(71) B	(64) C
C	Information not on computer print-out as the student registered late.			
C	(70) B	(61) C	(61) C	(62) C
B	(68) C	(62) C	(68) C	(70) B
D	(62) C	(45) E	(57) D	(53) D
C	(59) D	(54) D	(66) C	(59) D
C	(50) D	(54) D	(64) C	(58) D
Nil response	(47) E	(49) E	(59) D	(53) D
G	(54) D	(61) G	(65) G	(62) G
D	(37) F	(52) D	(63) C	(55) D
G	(53) D	(56) D	(67) C	(60) C
G	(75) B	(74) B	(80) A	(76) B
A	(59) D	(76) B	(77) B	(74) B
B	(64) C	(69) C	(74) B	(70) B
Nil response	(37) F	(45) E	(58) D	(49) E
TOTAL	(2341)	(2542)	(2836)	(2665)
AVERAGE	(59) D	(61) C	(68) C	(42)

When the results of PBL subjects were compared to the shared results of video-assisted and traditional lecture subjects, 86% of students did better in PBL-subjects, 9% did worse and 5% obtained the same results. This is illustrated in Figure 5.21

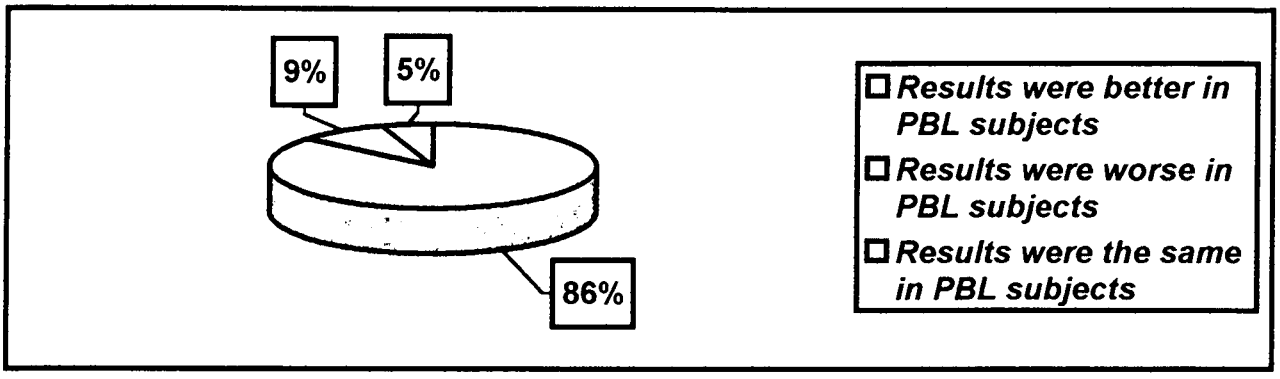


Figure 5.21 Results of PBL subjects compared to the results of traditional and video-assisted subjects

The symbols obtained in the students' grade 12 (final school) examination were obtained in DQ: Question 6 (see 5.2.5 and Figure 5.5) and calculated and compared with their first-year assessment results. Forty-two percent (42%) of the students maintained the same results as grade 12, 37% had better results and 21% had worse results. Four students did not respond to the question in the DQ, therefore their results could not be compared and one student's course results were not available on the computer print-out. See Figure 5.22.

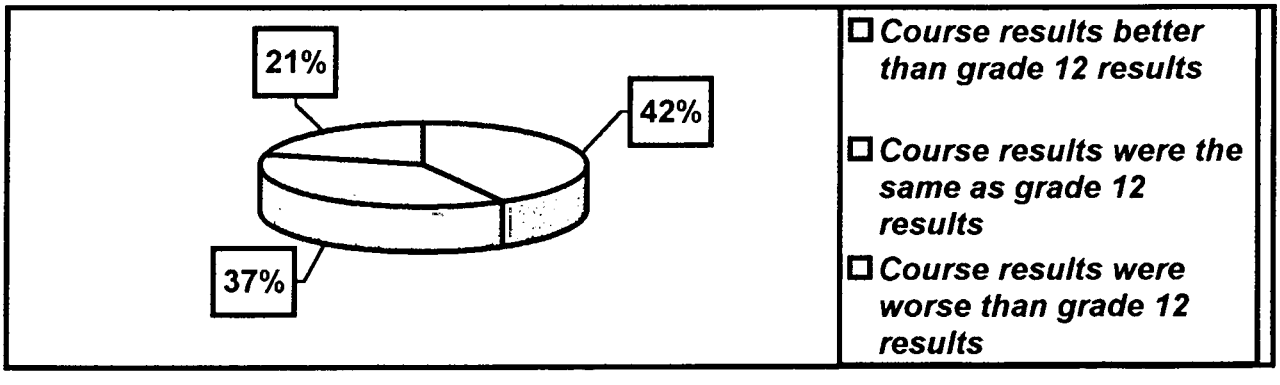


Figure 5.22 Comparison of course results with grade 12 results (N=38)

Symbols obtained in Grade 12 and with three educational strategies are illustrated in Figure 5.23. Students who obtained A symbols stayed the same, while an increase in B and C symbols was seen with PBL. Video-assisted instruction had eight failures (E and F symbols) and traditional lectures had six failures.

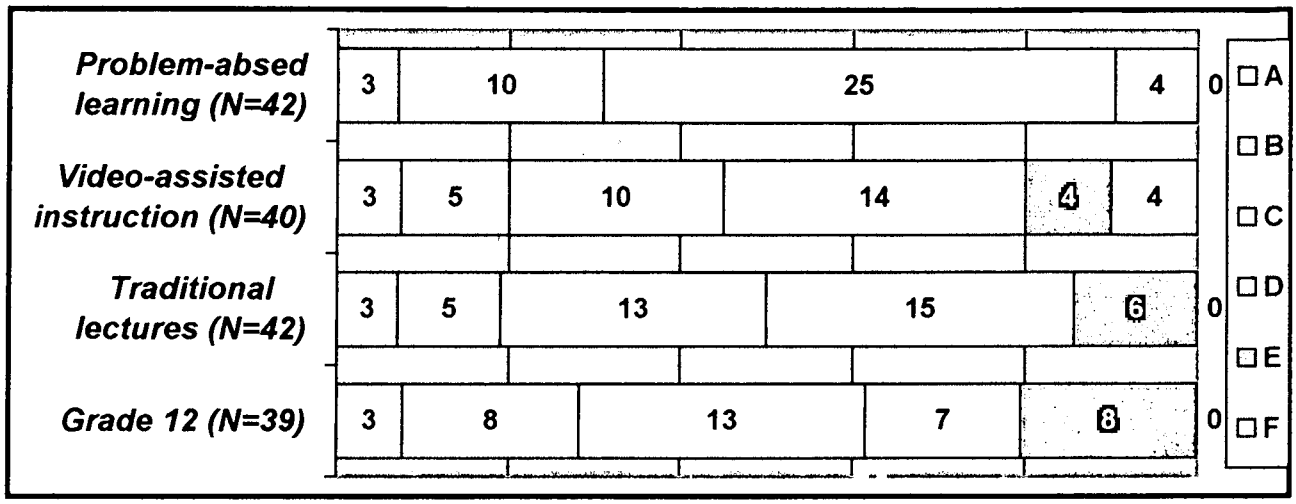


Figure 5.23. Symbols obtained in Grade 12, traditional subjects, subjects instructed by means of video-assisted lectures and PBL subjects.

Calculation of assessment results revealed the following:

- The average class percentages for the three methods of instruction were calculated and compared and PBL obtained the best average (68%), traditional lectures the second best (61%), while video-assisted instruction obtained 59%
- The majority (86%) of students did better in PBL subjects than in traditional subjects (video-assisted subject included)
- The majority (79%) of students maintained or obtained better results in their first year course than in grade 12 (final secondary school)
- Eight students (19%) entered the first-year course with E symbols in grade 12. Five (62%) of the students passed their first-year course with D symbols and 3 (38%) passed with C symbols. Not one of these students who indicated E symbols in grade 12 failed their first year course

The above-mentioned results are very positive for problem-based learning as a learning strategy.

5.6 AUDIT TO EVALUATE THE FIRST-YEAR COURSE

An audit was done to evaluate the first year-nursing course. This audit addressed the process of programme development, the methodology and process of problem-based learning and course outcomes.

5.6.1 Programme development

External factors that were considered were the World Health Organisation, the South African Qualifications Authority, the South African Nursing Council, and the Departments of Health and Education of the country. Internal factors were the University of the Orange Free State, the Faculty of Health Sciences and the School of Nursing. Other factors that played an important role were the curriculum model that was used and the philosophies of stakeholders.

5.6.1.1 The World Health Organisation

The primary health care philosophy was thoroughly incorporated in the first-year course and teamwork in primary health care teams was promoted throughout the course. Community-based nursing was practised and a situation analysis was done in the first months of the course to draw up a community profile. In this way students were taught about real needs, and prevailing and priority health problems in the communities where they practised. First-hand experience in communities guaranteed active learning, acquisition of data, research, problem-solving, comprehensive learning and emphasis on

relevant health issues in the context of the community. For the audit of the aspects considered important by the WHO see Table 5.107.

Table 5.107 Audit to determine whether important expectations of the WHO were considered during programme development

World Health Organisation	Expectations considered during programme development		
	Yes	No	Partly
The primary health care philosophy is incorporated in the programme	✓		
The programme promotes team work in primary health care	✓		
Education is based on prevailing and priority health problems	✓		
The programme includes health education on promotion of proper nutrition	✓		
The programme includes health education on safe water supply and basic sanitation	✓		
Health education is aimed towards healthy life styles	✓		
The programme contains aspects on family planning, maternal and child health care	✓		
Immunisations against major infectious diseases are taught in this programme	✓		
Aspects on prevention and control of local endemic diseases and injuries are included	✓		
Introduction to essential drugs is included in the course	✓		
Emphasis of nursing care is based in the community	✓		
Active learning is promoted	✓		
The curriculum is comprehensive	✓		
The curriculum is community-oriented	✓		
Students are taught how to handle change	✓		
Students are taught to identify and solve problems	✓		
Students are taught to acquire and use data	✓		

5.6.1.2 The South African Qualifications Authority

The objectives of the first-year course comply with those set out by the South African Qualifications Authority (SAQA). Although the School of Nursing does not have formal quality assurance programmes, continual research is done to ensure the highest possible standards of programme development.

Five written scenarios were randomly selected and audited to determine whether essential and specific outcomes were included as required by SAQA. Examples of essential outcomes were development of teamwork abilities, gathering of information, and development of effective communication. All the aspects in the audit were addressed, some only in an introductory way, others thoroughly. Development of entrepreneurial opportunities was only partly addressed.

Students were made aware of career and educational opportunities and the possibility to link credits in a meaningful learning and career pathway. The first-year course was progressive, integrated, and allowed for portability to other courses.

Specific outcomes included contextually demonstrated knowledge, skills and values as required by the qualifications authority.

Table 5.108 Audit to determine whether important requirements of the South African Qualifications Authority were considered during programme development

South African Qualifications Authority	*Aspects considered during programme development*		
	Yes	**No**	**Partly**
The course complies with the objectives of the National Qualifications Framework	✓		

South African Qualifications Authority (continue)	Yes	No	Partly
The following critical (generic) outcomes are included in the course:			✓
♦ *Development of entrepreneurial opportunities*			
♦ *Team work abilities*	✓		
♦ *Gathering of information*	✓		
♦ *Effective communication*	✓		
♦ *Use of science and technology*	✓		
♦ *Effective learning strategies*	✓		
♦ *Cultural and aesthetically sensitivity*	✓		
♦ *Selection of career/educational opportunities*	✓		
The following specific outcomes are included in the course:	✓		
♦ *contextually demonstrated knowledge, skills and values*			
♦ *Applied competencies*	✓		
Formal quality assurance forms part of programme development		✓	
Integrated assessment includes formative and summative evaluations	✓		
The course equips students to become life-long learners	✓		
The course transforms and redresses legacies of inequity	✓		
Credits are linked into a meaningful learning and career pathway	✓		
The firs-year course allows for:	✓		
♦ *Recognition of prior learning*			
♦ *Student guidance*	✓		
♦ *Democratic participation*	✓		
♦ *Equality of opportunity*	✓		
♦ *Articulation*	✓		
♦ *Movement among occupations*	✓		
The firs-year course allows for learning and education that is:	✓		
♦ *Legitimate*			
♦ *Integrated*	✓		
♦ *Relevant*	✓		
♦ *Coherent*	✓		
♦ *Flexible*	✓		
♦ *Of a high standard*	✓		
♦ *Accessible*	✓		
♦ *Progressive*	✓		
♦ *Portable*	✓		

5.6.1.3 The South African Nursing Council

Programme development took place according to the objectives of the statutory body and included the appropriate content for first year nursing students. The school is approved by the South African Nursing Council as a post-secondary educational institution and all first-year students held senior certificates or equivalent certificates. Students were exposed to the philosophy and functions of their statutory body. No negative remarks were made in this section of the audit.

Table 5.109 Audit to determine whether important requirements of the South African Nursing Council were considered during programme development

South African Nursing Council	Requirements considered during programme development		
	Yes	No	Partly
Programme development is in accordance with the objectives of Council	✓		
One academic year comprises at least 44 weeks	✓		
The School of Nursing is approved by Council as a post-secondary educational institution	✓		
All students are holders of a senior certificate or equivalent certificate	✓		
Appropriate content for first-year nursing students is included	✓		
The philosophy of Council is included in the first-year course	✓		

5.6.1.4 The Department of Health

The Department of Health of the country stresses equity in the deliverance of health care and the promotion of primary health care. Community participation in health matters is emphasised throughout the first-year course.

Table 5.110 Audit to determine whether important expectations of the Department of Health were considered during programme development

Department of Health	Expectations considered during programme development		
	Yes	No	Partly
Equity in deliverance of health care is promoted in this course	✓		
The value of every citizens' right to health care is fostered	✓		
This course promotes the primary health care approach	✓		
This course provides for community participation in health matters	✓		
No racial, ethnic, tribal or gender discrimination is exercised in this course	✓		
Co-ordination and decentralisation are promoted	✓		

5.6.1.5 The Department of Education

The first-year course demonstrates the transformation and democratisation of education as required by the Department of Education. Problem-based learning provides for free and open debate, critical questioning, experimentation with new ideas, lifelong development of intellectual abilities and a culture that fosters tolerance and respect among students and academic staff.

Table 5.111 Audit to determine whether important requirements of the Department of Education were considered during programme development

Department of Education	Requirements considered during programme development		
	Yes	No	Partly
The programme supports the societal transformation which is currently taking place in South Africa	✓		
Transformation and democratisation of structures are taking place	✓		
Interaction with other institutions through co-operation and partnerships is taking place	✓		

Department of Education (continue)	Yes	No	Partly
An academic climate is established that provides for the following:	✓		
◆ *Free and open debate*	✓		
◆ *Critical questioning of prevailing orthodoxies*	✓		
Experimentation with new ideas	✓		
This course provides expertise and infrastructure for community service programmes	✓		
An institutional culture is built that fosters tolerance and respect	✓		
This programme provides for competencies and expertise that are required for the labour market	✓		
Students are socialised in the first-year course to become well-informed, responsible and (constructively) critical citizens	✓		
The programme provides for the enhancement, creation, sharing and evaluation of knowledge	✓		
The first-year course provides students with skills to develop their intellectual abilities in a lifelong manner	✓		

5.6.1.6 The University of the Orange Free State

The vision, mission and values of the University of the Orange Free State are reflected throughout the first-year course. Although the philosophy emphasises Christian values, freedom of religion and respect for different views of life are accommodated throughout the programme.

Table 5.112 Audit to determine whether important expectations of the University of the Orange Free State were considered during programme development

University of the Orange Free State	Expectations considered during programme development		
	Yes	No	Partly
The vision of the university is portrayed in the philosophy of the School of Nursing	✓		
◆ *As it is relevant for the new South Africa*			
◆ *It encourages creative, and independent thought*	✓		

University of the Orange Free State (continue)	Yes	No	Partly
♦ *It encourages critical debate*	✓		
♦ *It promotes an atmosphere that will attract academics of international quality*	✓		
♦ *It contributes to the solving of national and international health problems*	✓		
♦ *It considers the whole spectrum of development needs of the region and country*	✓		
♦ *It utilises available talents, technology, expertise and resources through new partnerships to promote education, research and community service*	✓		
♦ *It demonstrates an ethos of quality and supportive services*	✓		
♦ *It pays attention to the inequalities of the past*	✓		
♦ *It accommodates cultural diversity and promotes unity of endeavour*	✓		
♦ *It creates student development environments*	✓		
The mission of the university is portrayed in the philosophy of the nursing school as:	✓		
♦ *An academic culture is fostered in the student community*			
♦ *Critical and scientific thought is developed*	✓		
♦ *It provides relevant scientific education*	✓		
♦ *Knowledge is expanded by pure and applied research*	✓		
♦ *It performs community service in addition to core functions of education and research*	✓		
♦ *It develops students in a holistic manner*	✓		
The following values of the university are portrayed in the philosophy of the nursing school:	✓		
♦ *Excellence*			
♦ *Academic freedom, freedom of speech and the right to differ*	✓		
♦ *Openness and transparency*	✓		
♦ *Tolerance of cultural and other diversity*	✓		
♦ *Respect of all forms of life and the environment*	✓		
♦ *Client orientation, a service disposition and society orientation*	✓		
♦ *Freedom of religion and respect for different views of life*	✓		
The School of Nursing manages diversity by means of	✓		
♦ *Affirmative action*			
♦ *Parallel-medium language policy*	✓		

University of the Orange Free State (continue)	Yes	No	Partly
The School of Nursing provides student support services			✓
Access is facilitated through bridging programmes	✓		
Quality management and quality assurance are maintained	✓		

5.6.1.7 The Faculty of Health Sciences

The philosophy of the Faculty of Health Sciences, as reflected in its mission, vision and value statements is in the process of being compiled, therefore compliance could not be checked in this audit.

5.6.1.8 Curriculum model

Programme development took place by means of action research and a process model based on the problem-based philosophy was used. An integrated curriculum model was used during programme development. Evaluation is on-going and according to the principles of action research.

Table 5.113 Audit to determine whether the development of the programme was according to a curriculum model

Curriculum model	Aspects considered during programme development		
	Yes	No	Partly
The development of the programme is based on a curriculum model	✓		
The curriculum model reflects the changing nature of society	✓		
The curriculum model allows for the following: ♦ *a situation analysis*	✓		

Curriculum model (continue)	Yes	No	Partly
◆ *selection of objectives or outcomes*	✓		
◆ *selection and arrangement of content*	✓		
◆ *selection and arrangement of educational strategies*	✓		
◆ *evaluation*	✓		

5.6.1.9 Philosophy

Table 5.114 Audit to determine whether the development of the programme took place according to a nursing and educational philosophy, which honours all the important stake holders at institutional, national and international level

Philosophy	Aspects considered during programme development		
	Yes	No	Partly
The basic undergraduate programme is based on an educational and nursing philosophy that includes the following concepts:			
◆ *Health*	✓		
◆ *Man*	✓		
◆ *Society*	✓		
◆ *Nursing*	✓		
◆ *Learning*	✓		
◆ *Teaching*	✓		
◆ *Nursing education*	✓		
The philosophy of the School of Nursing honours the philosophies of the	✓		
◆ *World Health Organisation*			
◆ *Statutory body (South African Nursing Council)*	✓		
◆ *Educational institution (UOFS)*	✓		
◆ *Faculty of Health Sciences*	Not applicable		
◆ *Department of Health*	✓		
◆ *Department of Education*	✓		

5.6.2 Problem-based learning

The following aspects about problem-based learning were audited: the methodology of PBL, availability of resources, programmes to develop facilitators, and cost, time and student retention.

5.6.2.1 Methodology of problem-based learning

Groups comprised ten to thirteen members and not the maximum of eight as recommended for problem-based learning. Issues from the applied and allied disciplines are partly addressed as the second, third and fourth years of the programme built on the introduction provided in the first-year course.

Table 5.115 Audit to determine whether important aspects of the process of problem-based learning were included in the first-year course

Problem-based learning process	Aspects implemented during the first-year PBL course		
	Yes	No	Partly
Students are randomly allocated to tutorial groups	✓		
The maximum members per group are eight		✓	
An orientation period helps students to come acquainted to group work	✓		
Group members meet twice a week for up to three hours	✓		
Students encounter problems without prior preparation	✓		
Problems are appropriate as they:			
• *reflect common situations that are frequently encountered*	✓		
• *portray chronic and acute health problems*	✓		
• *relate to practice areas*	✓		
• *include all the relevant roles and functions of nursing*	✓		
• *reflect the health issues of all age groups*	✓		
• *cover health as well as health problems*	✓		
• *involve individuals, groups and communities*	✓		

Problem-based learning process (continue)	Yes	No	Partly
• *apply to institutional and non-institutional contexts*	✓		
• *include theoretical, philosophical and ethical issues*	✓		
• *relate to technical and procedural activities*	✓		
• *reflect issues from the applied and allied disciplines*			✓
• *generate appropriate objectives*	✓		
• *are stated on an appropriate degree of complexity of first-year students*	✓		
• *are based on real events*	✓		
• *are sequenced to build an increasing body of knowledge*	✓		
• *provide inter-disciplinary or inter-subject integration*	✓		
The format of problems is as follows:			
• *guided design format that is very structured*		✓	
• *open-ended, relatively unorganised and unsynthesised*	✓		
• *focal problems that are more structured*		✓	
By reasoning through the problem students:			
• *effectively mobilise prior knowledge*	✓		
• *expand knowledge through group discussions*	✓		
• *generate hypotheses*	✓		
• *successfully explore relevant factors*	✓		
• *encourage equal participation of all group members*	✓		
For the purpose of self-study activities:			
• *learning issues or objectives are divided among group members*			✓
• *learning issues or objectives are shared during self-study*			✓
• *students are led and encouraged to consult different resources*	✓		
Students are guided to apply new knowledge in an efficient way	✓		
Students are guided to summarise and integrate learning	✓		

5.6.2.2 Availability of resources

No problems were experienced regarding the availability of resources or experts who acted as resource people.

Table 5.116 Audit to determine whether resources were available

PBL: availability of resources	Resources were available		
	Yes	No	Partly
Enough resources were available in the library for all the first-year students	✓		
Experts were identified to be available to act as resource people	✓		
Simulation facilities are available to explore skills	✓		
Computer programmes are available on relevant subjects	✓		

5.6.2.3 Availability of programmes to develop facilitators

Facilitators are developed by attending PBL congresses, workshops and partly by means of informal programmes. No formal programmes are provided to develop facilitators.

Table 5.117 The availability of programmes to develop facilitators

PBL: development of facilitators	Training of facilitators		
	Yes	No	Partly
Facilitators are trained to become effective in PBL by means of:	✓		
• *Workshops*			
• *Attendance of PBL congresses*	✓		
• *Formal programmes on PBL*		✓	
• *Informal programmes on PBL*			✓

5.6.2.4 Cost, time and student retention

More time and cost are involved in education and training by means of problem-based learning. Student retention was enhanced since problem-based learning was implemented in 1997.

Table 5.118 Cost, time and student retention since PBL has been implemented

PBL: cost, time and student retention	More time and cost involved in PBL, but better student retention		
	Yes	No	Partly
• *More time is needed to instruct by means of PBL*	✓		
• *More resources are needed to instruct by means of PBL*	✓		
• *Student retention is enhanced by problem-based learning*	✓		

5.6.3 Course outcomes

The first year nursing course were audited for the scientific nursing process and the following outcomes, which are according to the Unified Nursing Education System (see Appendix H & I): The scientific nursing process, management, communication, problem-solving, technology, contextual understanding, interpersonal skills, professional responsibility, professional development, learning and health behaviour. Information was obtained from five scenarios that were randomly selected, the first year undergraduate course outcomes (see Appendix M) and personal conversation with two academic staff members who were involved in the implementation of PBL.

5.6.3.1 The scientific nursing process

The scientific nursing process was followed during the first-year course.

Table 5.119 Audit of the scientific nursing process

The scientific nursing process	Yes	No	Partly
Assessment:			
• *of a community and an environment*	✓		
• *of a family*	✓		
• *of the health of an individual*	✓		
• *of an epidemiological survey*	✓		
Diagnosis			
• *of pathology in a community and an environment*	✓		
• *of health problems/ pathology in a family*	✓		
• *of individual health problems*	✓		
• *deviations from normal health*	✓		
• *pathology in health behaviours*	✓		
• *by interpretation of data or statistics*	✓		
• *by identification of health indicators or risk factors*	✓		
• *of common minor physical ailments and emergencies*	✓		
• *of a service (e.g. under/over-utilisation)*	✓		
Planning			
• *by drawing up nursing care plans for families and individuals*	✓		
• *by managing and referring emergencies*	✓		
• *by drawing up intervention or prevention programme proposals for communities and environments*	✓		
• *by prescriptions for minor illnesses*		✓	
Implementation			
• *of prevention or intervention programmes or plans*	✓		
Evaluation			
• *of the implementation process*	✓		
• *of the outcome of implementation*	✓		

5.6.3.2 Management

Management formed part of the first-year course outcomes.

Table 5.120 Audit of management as an outcome in the first-year course

Management	Yes	No	Partly
of patient care by using the scientific nursing process	✓		
of the health care team by • *Referral*	✓		
• *Follow up*	✓		

5.6.3.3 Communication

Communication formed part of the first-year nursing outcomes.

Table 5.121 Audit of communication as an outcome in the first-year course

Communication	Yes	No	Partly
by using professional nomenclature appropriately in written and verbal communication	✓		
through calculation of medication intake	✓		
through calculation of nutritional intake	✓		
with different cultures in a competent way by • *being aware of different cultures*	✓		
• *demonstrating sensitivity to different cultures*	✓		
• *having knowledge of the different cultures*	✓		
• *using cultural assistance tools*	✓		
by providing health education to groups and individuals	✓		
by using different resources to educate individuals and groups	✓		
by keeping records in a clear, accurate and complete way	✓		
by guiding students to communicate effectively with all age groups, people having mental disabilities, and people having physical disabilities	✓		
by guiding and counselling groups and individuals and by referring and consulting them	✓		

5.6.3.4 Problem-solving

Problem-solving formed part of the first-year nursing outcomes.

Table 5.122 Audit of problem-solving as an outcome in the first-year course

Problem-solving	Yes	No	Partly
by raising and exploring problems through identification of problems	✓		
by demarcation of problems within scope of practice	✓		
by discernment of problems that need referral	✓		
by identifying alternative solutions by means of research	✓		
by selecting the best alternative to solve the problem	✓		
by evaluating the results after an alternative has been implemented	✓		

5.6.3.5 Technology

Technology forms part of the first-year nursing outcomes.

Table 5.123 Audit of technology as an outcome in the first-year course

Technology is incorporated	Yes	No	Partly
in the gathering of information by using a wide range of processes, different techniques, various tools and various materials	✓		
to solve problems by using a wide range of processes, different techniques, various tools and various materials	✓		
in the creation of products by using a wide range of processes, different techniques, various tools and various materials	✓		
in the evaluation of products by using a wide range of processes, different techniques, various tools and various materials	✓		

5.6.3.6 Contextual understanding

Contextual understanding forms part of the first-year nursing outcomes.

Table 5.124 Audit of contextual understanding as an outcome in the first-year course

Contextual understanding	Yes	No	Partly
of health care and health behaviour	✓		
of the professional and legal constraints within which the nurse functions	✓		
of the historical influences on modern nursing and health care	✓		
of power-relationships and their influences within groups and communities through analysis	✓		
of inter-dependence of groups and the environment	✓		

5.6.3.7 Interpersonal skills

Interpersonal skills form part of the first-year nursing outcomes.

Table 5.125 Audit of interpersonal skills as an outcome in the first-year course

Inter-personal skills	Yes	No	Partly
by working effectively in a team	✓		
by resolving conflict constructively	✓		
by creating a supportive environment for colleagues and patients	✓		
in the therapeutic relationship by • *establishing it* • *maintaining it and* • *terminating it*	✓		
by working effectively as a group leader and a participant	✓		

5.6.3.8 Professional responsibility

Professional responsibility forms part of the first-year nursing outcomes.

Table 5.126 Audit of professional responsibility as an outcome in the first-year course

Professional responsibility	Yes	No	Partly
by limiting the scope of practice to the scope of competence	✓		
by demonstrating accountability for own practice	✓		
by demonstrating ethical behaviour in own practice	✓		
by contributing constructively to professional settings	✓		
by contributing constructively to community settings	✓		
by pursuing excellence and originality in own work	✓		
by supporting the qualities of excellence and originality in the work of others	✓		
by identifying the rights and responsibilities of nurses and the nursing profession	✓		
by responding creatively to health care needs of societies	✓		

5.6.3.9 Professional development

Professional development forms part of the first-year nursing outcomes.

Table 5.127 Audit of professional development as an outcome in the first-year course

Professional development	Yes	No	Partly
by demonstrating awareness of personal values, personal strengths, personal abilities and aspirations	✓		
by understanding how personal values, strengths, abilities, and aspirations will influence future choices and opportunities	✓		
by demonstrating awareness of the available range of personal and career opportunities	✓		

Professional development (continue)	Yes	No	Partly
by demonstrating understanding of the relationship between educational achievement and career opportunities	✓		
by demonstrating knowledge of a variety of workplaces and to work there with knowledge of the different roles, the different skills and with different abilities	✓		
by taking responsibility to ensure continuous professional competence	✓		
by engaging constructively in change	✓		

5.6.3.10 Fostering of learning

Fostering of learning forms part of the first-year nursing outcomes.

Table 5.128 Audit of learning as an outcome in the first-year course

Learning is fostered	Yes	No	Partly
by assessing own learning needs through self-reflection and criticism	✓		
by setting appropriate goals for learning	✓		
by making realistic plans for learning	✓		
by evaluating progress	✓		
by identifying a variety of resources to improve on own skills and knowledge	✓		

5.6.3.11 Health behaviour

Health behaviour forms part of the first year-nursing outcomes.

Table 5.129 Audit of health behaviour as an outcome in the first year course

Health behaviour is stimulated	Yes	No	Partly
by using self-knowledge as a basis for decision making	✓		
by demonstrating the ability to reflect on experiences and to learn from it	✓		
by making informed choices that will contribute to			
• *physical well-being*			
• *mental well-being*	✓		
• *emotional well-being*			
• *spiritual well-being*			

5.7 DISCUSSION AND CONCLUSION

Student data of the course reflected responses that varied from disappointment to extreme enthusiasm. It is clear that students experienced the shift from traditional to problem-based learning as stressful. This is demonstrated in the LASI responses, and particularly the open-ended responses in the SPQ. The course was difficult, but learning and growth took place in spite of all the hurdles students experienced. The assessment scores for PBL were superior when compared to the grades obtained in traditional subjects. The exceptional improvement from Grade 12 symbols to the PBL symbols is even more significant as some students passed the final secondary school with E and D symbols and obtained B and C symbols in the PBL subjects.

The LASI revealed superiority in students' meaning orientation, intrinsic motivation, deep approaches and comprehension learning when compared to other studies that were done in first-world countries. This means that students learned to think about ideas, trying to understand puzzling phenomena, while they were not hesitant to use their imaginations to solve problems. The atmosphere for learning was characterised by openness and friendliness in spite of the pressure students experienced.

Students experienced a substantial amount of pressure, which is reflected in the increase in surface orientation, fear of failure, improvidence, achievement motivation and strategic orientation. All these scores read higher than the scores of other studies, which is alarming. Students experienced the workload as very heavy, which could explain the high scores. Some students were also under a lot of pressure to perform well in order to keep their bursaries. A shift to a core curriculum may lessen the burden of workload students experienced in this course.

The audit revealed careful planning and implementation of the PBL course as the majority of internal and external variables discussed in this study were considered during programme development. Criticism is that no formal quality assurance programme exists. The establishment of such a programme would foster the maintenance of the present high standards. Student support services are shared with student counselling services and will become increasingly important, as students with educational backlogs will need even more guidance in the future.

Small-groups used during the PBL sessions consisted of too many members, as a maximum of eight members is recommended to guarantee success of this learning strategy. These groups comprised between ten and thirteen members. Cost-factors may have played a role. An initial guided-design format for tutorials, along with a core curriculum may help to decrease the anxieties students' experience about the workload.

Although the audit did not reveal any problems with the availability of resources, for example from the library, the students' perceptions indicated otherwise. This may need some attention in future.

PBL is more expensive and time-consuming than traditional lectures and formal PBL programmes may assist facilitators to deal with additional burdens of this learning strategy.

Data analysis and conclusions were discussed in this chapter. Chapter 6 will discuss major problems, possible recommendations for solutions and recommendations for further research.

CHAPTER 6

Recommendations

6.1 INTRODUCTION

The students came from traditional, didactic learning backgrounds. Many students experienced the shift to problem-based learning (and community-based nursing) as a culture shock. Learning in the secondary school was directive, individual and competitive in contrast to the co-operative nature of problem-based learning. Nursing could have been visualised as a 'Florence Nightingale adventure', only this time in hi-tech, twentieth century, tertiary institutions. Instead practice took place in the community - sometimes under the most primitive conditions. Disappointment experienced by some students, and anxiety and uncertainty created by this new learning strategy, manifested in anger, discontentment and sometimes in disillusionment. But students came to learn and they did. Major problems revealed by the LASI, SPQ, DQ and Programme Audit will be discussed now and recommendations will be made.

6.2 PROBLEMS AND RECOMMENDATIONS

6.2.1 Extent of student-directiveness

The results of this study are in congruence with various other studies on student perceptions of PBL, where students suggested more direction, structure, feedback and definition of core material. The majority of students experienced self-directed learning as stressful, for some students more so as the year progressed. The pressure students experienced was detected in the SPQ (open- and close-ended) responses, as well as in their scores on the LASI, especially on the following:

- *Student-centredness*: Deterioration was significant and students experienced less understanding and advice from their lecturing staff and that facilitators were ill-prepared for learning material which was too difficult.
- *Control-centredness*: The workload was too heavy and together with other pressures experienced by individual students, for example financial burdens, forced them to take on a surface approach just to survive and pass their examinations. High scores on control-centredness indicate highly restricted choice and heavy demands on students.
- *Surface approach*: Fear of failure, improvidence and achievement motivation were much higher in this group when compared to the results of other studies. Students started to rely on rote learning, lacked self-confidence and were anxiously aware of assessment requirements. Various factors could have caused this phenomenon, such as groups that were too large, language problems, a too heavy workload, too little guidance and support from their facilitators and peers, and lack of maturity and competence.
- *Clear goals and standards*: Students generally felt that they needed more definition and direction, especially about assessments.
- *Openness to students*: Students experienced staff as less prepared to help them at the conclusion of the course than in the beginning.

A more guided design format for tutorials is recommended, as novice students need more structure in the early years of PBL. This particular group of students experienced insecurity with the unstructured nature of PBL. The directiveness of tutorials should be gauged and revised according to the needs of students. The situational leadership model may be used where the amount of guidance and support depends on the maturity of students. As motivation, experience, maturity, competence and willingness to take responsibility increase, facilitators can alter their leadership styles to a less directive style where responsibility can be delegated to the group (Uys & Cassimjee, 1997: 137; O'Hanlon *et al.*, 1995: 198; Mennin *et al.*, 1993:624; Albanese & Mitchell, 1993:73; Walton & Matthews, 1989:543).

6.2.2 Student support services

Many students in the course came from disadvantaged backgrounds and needed remedial learning to bridge problems with learning and gaps in their knowledge. To qualify for continuation of their bursaries and loans, students had to maintain a certain academic standard, which caused tremendous pressure. Black students were not only confronted with foreign languages (Afrikaans and English), but with a Western model of learning and nursing as a sub-culture with alien technical terms and equipment. This was experienced even though the sub-culture of nursing is currently more primary health care centred than ever before.

Many students expected to be introduced to a hospital environment surrounded with hi-tech equipment, while the present emphasis of the learning context is situated in the community. In the open-ended section of the SPQ many students indicated their disappointment about the contextual change that took place as it was not what they expected it to be.

More emphasis on student support services is needed and recommended. Because PBL exposes individual problems students experience in a more visible way than traditional

educational strategies, more learning problems will be detected than before. This will have to be addressed, along with financial burdens many students struggle with.

6.2.3 Language

The problem students indicated most frequently, was the language problem. Afrikaans students wanted tutoring in Afrikaans and black students wanted it in English, with continuous friction as end result. No simple answers exist for this problem. Dividing language groups has serious negative side effects such as:

- It deprives students of an opportunity to learn cultural sensitivity.
- It deprives students of an opportunity to establish and enhance teamwork among various cultural and language groups (as the foundations for good teamwork are laid in the multi-cultural tutorial group).
- It results in inadequate exposure to a second language (especially for the Afrikaans students).
- It may result in academically strong students who are clustered together in groups without sharing their background knowledge and expertise with less privileged students.
- Black students may be driven back into a backlog situation, which may remind them of the years of apartheid.

Research is needed to find answers to these complicated issues. Students should be made more aware of the benefits of collaborative learning where all parties can learn from one another. Facilitators can play an important role in increasing this awareness among students. Language support can be offered to students who experience problems, maybe on a voluntary basis.

6.2.4 Curriculum overload

As discussed in 6.2.1, the workload was experienced as excessive. More emphasis needs to be placed on fundamental elements and interest cores. Traditional subjects such as Anatomy, Microbiology and Chemical Science need to be integrated with nursing subjects by means of problem-solving themes into an meaningful core curriculum. Only then can this programme really be called a truly problem-based programme. Focus on generic outcomes that could be found across the curriculum could form a starting point in this process. In this way disciplinary boundaries will be transcended to a "real-world" approach, and curriculum overload and duplication among disciplines will be avoided (Drake, 1993: 2-3; 33-40).

6.2.5 Size of tutorial groups

When the group-size of a tutorial group exceeds eight members, the PBL benefits will be undermined. The tutorial groups in this study comprised between ten and thirteen members. Cost-containment is a valid argument, but this may backfire, as it may lead to fragmented and superficial discussions where the true benefits of PBL will be lost. Dolman *et al.* (1996: 4) found in their survey that groups size which was larger than six to eight members led to serious problems regarding the essential benefits of PBL. This was clearly demonstrated in this study, as the expectation was that PBL would have led to an increase in a deep approach and a decrease in surface approach, and the opposite took place. The recommendation is that tutorial groups should not exceed eight members.

6.2.6 Resources

Students indicated problems with regard to the availability of resources, although the audit did not indicate any problems. As students in PBL programmes are encouraged to consult different resources, this problem should be anticipated by lecturing staff and addressed in the best possible way.

6.2.7 Facilitators

This study revealed that some facilitators did not always succeed in bringing out the best in their students and some lacked the ability to be good role models. Students complained about facilitators coming late, lack of guidance and poor group organisation. Some students did not feel free to discuss their problems with their facilitators and felt that some students were treated in a more favourable manner than others were. Students are cruel, but honest; therefore facilitators should be selected on the basis of their willingness to participate in small-group teaching and because they are interested in students. Cultural differences could also have played a role here, but this issue was not specifically researched.

It is understandable that facilitators experienced problems, as they were confronted with an innovative educational strategy, while they themselves came from traditional backgrounds. According to many studies that were done in the past, facilitators get frustrated, because they cannot share their expertise in the same way they have done during lectures. Staff in the School of Nursing (to prepare them for this new strategy) attended various workshops and congresses about PBL. Formal PBL courses may equip them even better to deal with the paradigm shift from teacher to facilitator.

Students prefer facilitators who actively guide, probe and assist. They enjoy facilitators that stimulate discussion and share personal experiences from practice. A climate of openness should be created where students will be allowed to say what they believe without fear of censure (Almay *et al.*, 1992:570; White & Even, 1991:25; Des Marchais, 1991:236-237).

Facilitation demands a lot of staff's time and energy and there seems to be a deficiency concerning research about the role facilitators play (Vernon,1995:216).

The variation in the quality of facilitators is the greatest problem experienced by most PBL schools (Walton & Matthews, 1989: 550; 552) and was also mentioned by a few students in this study. The strength or weakness of the PBL chain lies in this link. Only PBL workshops and programmes will rectify any weaknesses in the PBL chain.

6.2.8 Quality assurance

The checklist for audit proved this programme to be one of exceptional quality. Roode (1993:1) defines quality as a *"thing of the heart"* and states that *"whoever has found quality, should attempt to preserve it with infinite care, for few things in life bring such utter joy, thrill and excitement as experiencing quality"*.

Many education institutions have begun to realise that quality assurance should be built into their programmes from the very start by people who are *"obsessed with the urge to do things well"* and in an *"atmosphere of care and respect, of belonging, when they experience the fulfilment of sharing a common destiny; when their own job satisfaction and work pride is matched by the pleasure of knowing"* that it becomes *"we"* as well as *"I"* did a real good job (Roode, 1993:2-3).

Implementation of a formal quality assurance programme is therefore recommended to maintain a high standard.

6.3 RECOMMENDATIONS FOR FURTHER RESEARCH

Further research is needed on the role and function of the facilitator in problem-based learning and Vernon (1995:216) agrees that this is one aspect of problem-based learning research that has been neglected. Multi-cultural education is becoming increasingly important in South Africa and needs research to maintain the high standards of the past.

Specific research on group size may reveal answers about cost-containment and the benefits of PBL. The LASI should be repeated on this group of students to determine whether learning styles alter as students mature and gain competence.

6.4 CONCLUSION

In this chapter the major problems and recommendations of the study were discussed. Chapter 7 will summarise the study.

CHAPTER 7

Summary

The aim of this study was to evaluate problem-based learning in an undergraduate nursing education programme. The School of Nursing at the University of the Orange Free State implemented problem-based learning as a teaching and learning strategy in the undergraduate programme in 1997. The 1998 course was evaluated to determine the success of this innovative method of instruction. It was done by administration of an audit to determine whether the methodology and process of PBL were followed; all the variables (internal and external) were considered during programme development, and whether requirements for outcomes as required by the South African Qualifications Authority were met. Student satisfaction was determined by means of a perception questionnaire and changes that took place in learning styles were determined by means of a learning style inventory that was developed in Lancaster. The grades students obtained in problem-based learning subjects were compared to the grades they obtained in subjects that were instructed by means of traditional lectures, as well as their grade 12 results secondary schooling.

The audit revealed that this course was carefully planned and implemented to be one of exceptional quality. An action research model was used to monitor the integrated curriculum model with an emphasis on the PBL philosophy. This curriculum was found to be successful in portraying the South African health context in a lifelike and comprehensive manner, as the design was community-based. This curriculum addressed the tendency to overload and divided curricula in the disciplines, which bears little resemblance to the reality of the South African health context. A deficiency found is the lack of a formal quality assurance programme, which will enhance the maintenance of the high standard.

Students in the course were under a lot of stress as they had to leave the comfort zones of traditional learning and some reacted with anger and resentment. Learning did take place in spite of all the hurdles students were confronted with. Superiority in meaning orientation, intrinsic motivation, deep approaches and comprehension learning was detected by the LASI when results were compared to the scores of similar studies done in first-world countries (see Appendix J). Unfortunately a decrease in student-centredness took place, which could be ascribed to group sizes that were too large, fear of failure (as bursaries would be forfeited if students did not perform up to certain standards) and a heavy workload.

Assessment results of PBL subjects were very positive in spite of students' indications that they found the course difficult. Assessment scores were much higher for PBL subjects than for traditional lecturing subjects, as well as Anatomy, which was instructed by means of video-assisted instruction. Nearly half the students obtained better assessment results in PBL than in their matriculation examinations.

The most positive aspect of the first-year nursing course was the fact that students became self-directed learners and that a pattern of lifelong learning was created to equip them for the challenges that lie ahead in the 21st century.

Opsomming

Die doel van hierdie studie was om probleemgebasseerde leer in 'n voorgraadse opvoedkundige verpleegprogram te evalueer. Die Skool vir Verpleegkunde aan die Universiteit van die Oranje Vrystaat het probleemgebasseerde leer in 1997 as 'n onderwys- en leerstrategie geïmplementeer in die voorgraadse basiese program. Die 1998 kursus is geëvalueer om vas te stel hoe suksesvol hierdie innoverende strategie vir onderrig was. Evaluering is gedoen deur middel van 'n oudit om te bepaal of die metodologie en proses van probleemgebasseerde leer gevolg is; of al die veranderlikes (intern en ekstern) in aanmerking geneem is tydens programontwikkeling; en om vas te stel of daar voldoen is aan die vereistes vir leeruitkomste soos vereis deur die Nasionale Kwalifikasie Owerheid. Tevredenheid van studente is bepaal deur middel van 'n persepsie vraelys wat ontwikkel is in Lancaster. Punte wat studente behaal het in probleemgebasseerde vakke is vergelyk met punte wat behaal is in vakke wat onderrig is deur middel van tradisionele lesings, asook vergelyk met punte wat in graad 12 (sekondêre skool) behaal is.

Volgens die oudit is hierdie kursus noukeurig beplan en geïmplementeer en is bewys gelewer dat dit oor uitstaande kwaliteit beskik. 'n Model van aksienavorsing is gebruik om implementering van die geïntegreerde kurrikuleringsmodel (met klem op die probleemgebasseerde leerfilosofie) te monitor. Daar is bevind dat die kurrikulum Suid-Afrika se gesondheidskonteks lewensgetrou en omvattend weerspieël omdat die ontwerp gemeenskapsgebaseerd was. Die probleemgebasseerde kurrikulum het die neiging vir oorlaaide en afgebakende dissiplines, wat min ooreenkomste met die werklikheid van die Suid-Afrikaanse gesondheidskonteks het, aangespreek. 'n Tekortkoming wat in hierdie studie bevind is, is die gebrek aan 'n formele kwaliteitsversekeringsprogram wat defnitief sal kan bydra om hierdie hoë standaard te handhaaf.

Omdat studente die gemaksone van tradisionele leer moes verlaat, was hulle onder baie druk en sommige studente het gereageer met woede en gegriefdheid. Ten spyte van al die struikelblokke waarmee studente gekonfronteer is, het leer wel plaasgevind. Die LASI bevindings het aangedui dat hierdie groep studente se benaderings tot leer (as dit vergelyk word met soortgelyke studies wat in eerstewêreld lande gedoen is) ander studies oortref het op die volgende gebiede: betekenis-oriëntasie, intrinsieke motivering, diep benadering tot leer, en omvattende leer (Sien Aanhangsel J). Ongelukkig was daar 'n afname in studentgesentreerde leer en dit kan toegeskryf word aan die groepgroottes wat te groot was, vrees vir mislukking (omdat beurse verbeur sou word as studente nie 'n sekere standaard sou handhaaf nie), en swaar werkladings.

Ten spyte daarvan dat studente aangedui het dat die kurses moeilik was, was eksamenuitslae van die probleemgebasseerde vakke baie positief. Uitslae was heelwat beter in die probleemgebasseerde vakke as in die tradisionele vakke wat d.m.v. lesings aangebied is, en Anatomie wat deur middel van video-ondersteunende onderrig aangebied is. Ongeveer die helfde van die studente het beter uitslae in die probleemgebaseerde vakke gehad as wat behaal is aan die einde van matriek.

Die mees positiewe aspek van die eerstejaarskursus is dat studente selfgerigte leerders geword het en dat 'n patroon van lewenslange leer gevestig is wat hulle sal toerus om die uitdagings van die 21ste eeu die hoof te bied.

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APPENDIX A

LANCASTER APPROACHES TO STUDYING INVENTORY (LASI)

LANCASTER QUESTIONNAIRE
Approaches to studying

Section B

In this section we would like you to show whether you agree or disagree with each of the statements listed below. We are concerned here with your approaches to studying in general. If your answer would be different for different subjects, however, you should reply in relation to you main course or subject.

Please circle the number beside each statement which best conforms with your view.

4	(✓✓)	means Definitely agree
3	(✓)	means Agree with reservations
1	(✗)	means Disagree with reservations
0	(✗✗)	means Definitely disagree
2	(?)	is only to be used if the item doesn't apply to you or if you find it impossible to give a definite answer.

1. I find it difficult to organise my study time effectively
2. I try to relate ideas in one subject to those in others, whenever possible.
3. Although I have a fairly good general idea of many things, my knowledge of details is rather weak.
4. I enjoy competition: I find it stimulating.
5. I usually set out to understand thoroughly the meaning of what I am asked to read.
6. Ideas in books often set me off on long chains of thought of my own, only tenuously related to what I was reading.
7. I chose my present courses mainly to give me a chance of a really good job afterwards.
8. Continuing my education was something which happened to me, rather than something I really wanted for myself.
9. I like to be told precisely what to do in essays or other assignments.
10. I often find myself questioning things that I hear in lectures or read in books.
11. I generally prefer to tackle each part of a topic or problem in order, working out one at a time.
12. The continual pressure of work-assignments, deadlines and competition- often makes me tense and depressed.
13. I find it difficult to "switch tracks" when working on a problem: I prefer to follow each line of thought as far as it will go.
14. My habit of putting off work leaves me with far too much to do at the end of the term.
15. It's important to me to do really well in the courses here.
16. Lecturers seem to delight in making the simple truth unnecessarily complicated.
17. Distractions make it difficult for me to do much effective work in the evenings.
18. When I'm doing a piece of work, I try to bear in mind exactly what that particular lecturer seems to want.
19. I usually don't have time to think about the implications of what I have read.
20. Lecturers sometimes give indications of what is likely to come up in the exams, so I look out for what may be hints.
21. In trying to understand a puzzling idea, I let my imagination wander freely to begin with, even if I don't seem to be much nearer a solution.
22. My main reason for being here is that it will help me to get a better job.
23. Often I find myself wondering whether the work I am doing here is really worthwhile.
24. I generally put a lot of effort into trying to understand things which initially seem difficult.
25. I prefer courses to be clearly structured and highly organised.
26. A poor first answer in an exam makes me panic.
27. I prefer to follow well-tried approaches to problems rather than anything too adventurous.
28. I'm rather slow at starting work in the evenings.
29. In trying to understand new ideas, I often try to relate them to real life situations to which they might apply.
30. When I'm reading I try to memorise important facts which may come in useful later.
31. I like to play around with ideas of my own even if they don't get me very far.
32. I generally choose courses more from the way they fit in with career plans than from my own interests.
33. I am usually cautious in drawing conclusions unless they are well supported by evidence.
34. When I'm tackling a new topic, I often ask myself questions about it which the new information should answer.
35. I suppose I am more interested in the qualifications I'll get than in the courses I'm taking.
36. Often I find I have to read things without have a chance to really understand them.

37. If conditions aren't right for me to study, I generally manage to do something to change them.
38. In reporting practical work, I like to try to work out several alternative ways of interpreting the findings.
39. My main reason for being here is so that I can learn more about the subjects which really interest me.
40. In trying to understand new topics, I often explain them to myself in ways that other people don't seem to follow.
41. I find I have to concentrate on memorising a good deal of what we have to learn.
42. It is important to me to do things better than my friends, if I possibly can.
43. I find it better to start straight away with the details of a new topic and build up an overall picture in that way.
44. Often when I'm reading books, the ideas produce vivid images which sometimes take on a life of their own.
45. One way or another I manage to get hold of the books I need for studying.
46. I often get criticised for introducing irrelevant material into my essays or tutorials.
47. I find that studying academic topics can often be really exciting and gripping.
48. The best way for me to understand what technical terms mean is to remember the textbook definitions.
49. I certainly want to pass the next set of exams, but it doesn't really matter if I only just scrape through.
50. I need to read around a subject pretty widely before I'm ready to put my ideas down on paper.
51. Although I generally remember facts and details, I find it difficult to fit them together into an overall picture.
52. I tend to read very little beyond what's required for completing assignments.
53. Having to speak in tutorials is quite an ordeal for me.
54. Puzzles or problems fascinate me, particularly where you have to work through the material to reach a logical conclusion.
55. I spend a good deal of my spare time in finding out more about interesting topics which have been discussed in classes.
56. I find it helpful to 'map out' a new topic for myself by seeing how the ideas fit together.
57. I seem to be a bit too ready to jump to conclusions without waiting for all the evidence.
58. I hate admitting defeat, even in trivial matters.
59. I think it is important to look at problems rationally and logically without making intuitive jumps.
60. I find I tend to remember things best if I concentrate on the order in which the lecturer presented them.
61. When I'm reading an article or research report, I generally examine the evidence carefully to decide whether the conclusion is justified.
62. Tutors seem to want me to be more adventurous in making use of my own ideas.
63. When I look back, I sometimes wonder why I ever decided to come here.
64. I find academic topics so interesting, I should like to continue with them after I finish the course.

Section C

In Section B, we asked you to state which one subject or main course you were spending most time on this year. In this section we should like you to relate your answers specifically to the department running the course.

1. A great deal of my time is taken up by timetabled classes (lectures, practical, tutorials, etc.)
2. There is no real opportunity in this department for students to choose the particular areas they want to study.
3. Lecturers here frequently give the impression that they haven't anything to learn from students.
4. You usually have a clear idea of where you're going and what's expected of you in this department.
5. A lot of the students in this department are friends of mine.
6. The workload here is too heavy.
7. Most of the staff here are receptive to suggestions from students of changes to their teaching methods.
8. The courses in this department are geared to students' future employment.

9. You can learn nearly everything you need to know from the classes and lectures; it isn't necessary to do much further reading.
10. The department really seems to encourage us to develop our own academic interests as far as possible.
11. Most of the staff here seem to prepare their teaching very thoroughly.
12. It's always easy here to know the standard of work expected of you.
13. Students from this department often get together socially.
14. It sometimes seems to me that the syllabus tries to cover too many topics.
15. Staff here generally consult students before making decisions about how the courses are organised.
16. Lecturers in this department are keen to point out that they are giving us a professional training.
17. In this department you're expected to spend a lot of time studying on your own.
18. We seem to be given a lot of choice here in the work we have to do.
19. Lecturers in the department seem to be good at pitching their teaching at the right level for us.
20. It's hard to know how well you're doing in the courses here.
21. This department seems to foster a friendly climate which helps studetns to get to know each other.
22. There is so much written work to be done that it is very difficult to get down to independent reading.
23. Most of the lecturers here really try hard to get to know students.
24. The courses here seem to be pretty well determined by vocational requirements.
25. Lectures in this department are basically a guide to reading.
26. This department gives you a chance to use methods of study which suit your own way of learning.
27. Staff here make a real effort to understand difficulties students may be having with their work.
28. Lecturers here usually tell students exactly what they are supposed to be learning.
29. This department organises meetings and talks which are usually well attended.
30. There seems to be too much work to get through in the course here.
31. Lecturers in this department seem to go out of their way to be friendly towards students.
32. The work I do here will definitely improve my future employment prospects.
33. Lecturers seem to be more important than tutorials or discussion groups in this department.
34. Students have a great deal of choice over how they are going to learn in this department.
35. The lecturers in this department always seem ready to give help and advice on approaches to studying.
36. There's a lot of pressure on you as a student here.
37. Students in this department frequently discuss their work with each other.
38. Lecturers here generally make it clear right from the start what will be required of students.
39. There seems to be considerable emphasis here on inculcating the 'right' professional attitudes.
40. Lecturers in this department generally take students' ideas and interests seriously.

APPENDIX B

DIE LANCASTER LEERBENADERINGS- EN KURSUSWAARNEMINGSVRAELYS

DIE LANCASTER LEERBENADERING- EN KURSUSWAARNEMINGSVRAELYS

Hierdie vraelys word in twee afdelings verdeel, nl. B. en C. Alle antwoorde word op die wit antwoordvel wat aan u gegee word ingevul. Onder geen omstandighede moet u enige merkie op die vraelys self maak nie.

AFDELING B

In hierdie afdeling verlang ons van u om aan te toon met watter van die onderstaande stelling u saamstem of nie saamstem nie. Ons is geïnteresseerd in u houding teenoor u studies in die algemeen. As u antwoord nou verskil vir verskillende vakke, moet u die vraag asof vir u hoofvak/ke beantwoord.

Omkring asseblief vir elke stelling die toepaslike syfer wat u antwoord die beste weerspieël op die wit antwoordblad wat voorsien word.

4 stem beslis saam
3 stem saam, met enkele voorbehoude
1 stem nie saam nie, met enkele voorbehoude
0 stem beslis nie saam nie
2 slegs as die stelling nie u van toepassing is nie, of as u nie 'n defnitiewe antwoord kan verstrek nie

1. Dit is vir my moeilik om my studietyd doeltreffend te organiseer.
2. Ek probeer altyd om 'n verwantskap tussen die inhoude van verskillende vakke te soek.
3. Alhoewel ek 'n redelike goeie algemene kennis van die meeste dinge het, is my kennis t.o.v. die fyner besonderhede (detail) maar beperk.
4. Ek geniet kompetisie: Ek vind dit stimulerend.
5. Ek probeer altyd my bes en doen besondere moeite om die inhoud van leesopdragte ten volle te begryp.
6. Idees in boeke laat my altyd verbeeldingvlugte onderneem, wat slegs in geringe mate verband hou met dit wat ek gelees het.
7. Ek het my hoofvakke gekies, hoofsaaklik met die oog daarop om eendag 'n goeie betrekking te bekom.
8. Die voortsetting van my studies was "iets wat met my gebeur" het, eerder as "iets wat ek vir myself wou gehad het".
9. Ek hou daarvan om presies vertel te word wat ek in werkstukke en ander opdragte moet doen.
10. Ek betrap myself dikwels dat ek dinge wat ek gehoor of gelees het bevraagteken.
11. Ek verkies eerder om probleme of vrae een-een en sistematies te takel en op te los, as die hele boel tegelyk.
12. Die voortdurende werksdruk – werkstukke wat ingehandig moet word, kompetisie ens. – laat my dikwels gespanne en depressief voel.
13. Dit is vir my moeilik om van denkrigting te verander wanneer ek aan 'n probleem werk, trouens ek verkies om elke gedagtegang so ver as wat dit kan gaan te volg.
14. My gewoonte om werk gedurig uit te stel, veroorsaak dat ek nie alles aan die einde van 'n semester kan baasraak nie.
15. Dit is vir my belangrik om in my vakke te presteer.
16. Al waarin lesings slaag, is om die eenvoudige werklikheid onnodig gekompliseerd te maak.
17. My gedagtes dwaal saans maklik, sodat dit dan haas onmoontlik is om effektiewe werkverrigting te lewer.
18. Wanneer ek met 'n opdrag besig is, probeer ek altyd in gedagte hou wat presies die dosent van so 'n opdrag sou verwag.
19. Ek het gewoonlik nooit tyd om aan die waarhede en toepaslikhede van dit wat ek gelees het te dink nie.
20. Tydens lesings word dikwels 'n aanduiding gegee van wat in die eksamen gevra gaan word, daarom is ek altyd op die uitkyk na moontlike wenke.
21. Wanneer ek 'n tergende raaisel probeer oplos, gee ek my verbeelding gewoonlik vrye teuels, selfs al lyk dit nie of dit my nader aan 'n op;lossing bring nie.
22. Die belangrikste rede waarom ek hier is, is om 'n beter werk te bekom.
23. Ek betrap myself dikwels dat ek wonder of die werk wat ek hier doen die moeite werd is.
24. Ek doen gewoonlik baie moeite om dinge wat vir my aanvanklik onverstaanbaar lyk, te probeer begryp.
25. Ek verkies dat kursusse deeglik uiteengesit en georganiseerd moet wees.
26. Ek raak maklik beangs wanneer dit vir my voel of my eerste antwoord in 'n eksamen ontoereikend is.
27. Ek verkies eerder om probleme op bestaande metodes "wat werk" op te los as om enigiets meer riskant te probeer.

28. Dit vat lank voor ek saans werklik aan die werk kan kom.
29. Wanneer ek nuwe begrippe onder die knie moet kry, probeer ek dit altyd toepas op situasies in die werklike lewe, waarmee dit verband hou.
30. Wanneer ek lees probeer ek altyd belanrike feite, wat ek later nodig mag kry, memoriseer.
31. Ek hou daarvan om my eie idees op die proef te stel, selfs al bring dit my nie baie ver nie.
32. Ek verkies om die kursusse te neem wat by my loopbaanplanne inskakel, selfs al sou dit beteken dat ek kursusse moet volg waarin ek nie belangstel nie.
33. Ek is gewoonlik versigtig om gevolgtrekkings te maak; tensy ek absoluut seker is van die geldigheid daarvan.
34. Wanneer ek 'n nuwe onderwerp takel, vra ek myself gewoonlik vrae daaroor af, wat die nuwe informasie behoort te beantwoord.
35. Ek dink ek is meer geïnterreseerd in die kwalifikasies wat ek gaan verwerf, as in die kursus wat ek volg.
36. Ek vind dikwels dat ek stof wat ek moet lees nie begryp nie, omdat dit ver bo my vuurmaakplek is.
37. As my omstandighede nie gunstig is om te studeer nie, doen ek gewoonlik iets daaraan om dit te verander.
38. Wanneer ek verslag moet lewer van praktiese werk probeer ek om die bevindinge op 'n verskeidenheid maniere te interpreteer.
39. Die vernaamste rede waarom ek hier is, is om meer te leer van die onderwerpe waarin ek werklik belangstel.
40. Wanneer ek nuwe onderwerpe onder die knie moet kry, maak ek dit aan myself duikelik op wyses wat geen ander mens blykbaar volg nie.
41. Ek vind dat ek baie van die werk wat ons bestudeer moet memoriseer.
42. Dit is vir my belangrik om, as dit enigsins kan, beter as my vriende te presteer.
43. Dit is vir my beter om met die detail van 'n nuwe onderwerp te begin, en op die manier 'n geheelbeeld op te bou.
44. Wanneer ek lees, vind ek dikwels dat die idees so 'n werklikheid word dat dit soms 'n eie nuwe leefwêreld vorm.
45. Ek slaag altyd daarin om op die een of ander manier die boeke wat ek vir my studies nodig het , in die hande te kry.
46. Ek word dikwels gekritiseer omdat my werkstukke en opdragte ontoepaslike inligting bevat.
47. Om akademiese onderwerpe tebestudeer kan werklik opwindend en boeiend wees.
48. Dit is vir my die maklikste om tegniese terme aan die hand van teksboekdefinisies te onthou.
49. Ek sal graag die komende eksamen wil slaag, maar dit sal ook nie regtig saak maak as ek deurskraap nie.
50. Ek vind dat ek redelik wyd moet lees oor 'n onderwerp, alvorens ek my eie idees op papier kan vaspen.
51. Alhoewel ek feite en detail in die algemeen maklik onthou, is dit vir my moeilik om 'n geheelbeeld te vorm.
52. Ek lees nie veel meer as net dit wat nodig is om 'n opdrg te voltooi nie.
53. Dit is vir my 'n ware beproewing om tydens gespreksessies my mening te moet lug.
54. Raaisels en probleme fassineer my, veral wanneer dit nodig is om die stof aandagtig te bestudeer om 'n logiese afleiding te maak.
55. Ek gebruik baie van my vrye tyd om meer te wete tekom van onderwerpe wat in die klas behandel is.
56. Ek vind dit van groot waarde wanneer ek vreemde onderwerpe so uiteensit dat die afsonderlike idees uiteindelik 'n geheel vorm.
57. Ek is geneig om te vinnig gevolgtrekkings te maak, sonder dat ek die nodige bewyse het.
58. Ek haat dit, selfs in die geval van onbenullige sake, om te erken dat ek die stryd gewonne moes gee.
59. Ek dink dit is belangrik om eerder rasioneel en logies oor probleme na te dink as om instinktiewe besluite te neem.
60. Ek vind dat ek dinge beter memoriseer as ek konsentreer op die volgorde waarin die dosent dit aangebied het.
61. Wanneer ek 'n artikel of navorsingsverslag lees, bestudeer ek die verklarings wat gegee word aandagtig ten einde te kan besluit of gevolgtrekkings wat gemaak word geregverdig is.

62. Dosente verwag blykbaar van my om meer ondernemend te wees in die aanwending van my eie idees.
63. As ek so terugdink wonder ek waarom ek ooit besluit het om hierheen te kom.
64. Ek vind akademiese onderwerpe so interessant, dat ek daarvan sal hou om verdere aandag daaraan te wy wanneer ek hierdie kursus voltooi het.

Afdeling C

Hierdie afdeling handel oor die departement wat die vak of kursus aanbied waarvan jy die meeste tyd spandeer, tensy die toetsafnemer ander instruksies gee.

1. Die meeste van my tyd word deur geskeduleerde klasse (lesings, praktika, groepsbesprekings, ens.) in beslag geneem.
2. Hierdie departement bied werklik aan elke student die geleentheid om die spesifieke terrein(e) waarin hy/sy belangstel te bestudeer.
3. Dosente van hierdie departement, skep dikwels die indruk dat hulle niks van studente te leer het nie.
4. In hierdie departement het studente beslis 'n duidelike beeld van wat van hulle verwag word en waarheen hulle op pad is.
5. Baie van die studente in hierdie departement is my vriende.
6. Die werkslas hier is te druk.
7. Die meeste van die dosente in hierdie departement is ontvanklik vir voorstelle van studente om hul onderrigmetodes te verbeter.
8. Die kursusse in hierdie departement is gerig op sudente se toekomstige loopbane.
9. Die inligting wat tydens lesings aan die studente gegee word, is so volledig dat dit nie nodig is om enige addisionele leeswerk te doen nie.
10. Die departement moedig studente werklik aan om hul persoonlike akademiese belangstellings so ver as moontlik te ontwikkel.
11. Dit lyk of meeste dosente hier hul werk baie deeglik voorberei.
12. Dit is hier altyd maklik om te weet watter werkstandaard van studente verwag word.
13. Studente in hierdie departement verkeer dikwels sosiaal saam.
14. Dit lyk vir my dikwels of die sillabus 'n te wye verskeidenheid onderwerpe wil dek.
15. Alvorens besluite i.v.m. kursusorganisasie geneem word, word die menings van studente eers ingewin.
16. Dosente van hierdie departement wys studente graag daarop dat hulle 'n professionele opleiding ontvang.
17. In hierdie departement word van die studente verwag om baie selfstudie te doen.
18. Studente het hier 'n vryheid van keuse in die werk wat hulle wil doen.
19. Dosente van hierdie departement slaag uitstekend daarin om lesings so aan te bied dat dit presies op die vlak van die studente is.
20. Dit is in hierdie departement vir studente moeilik om vas te stel hoe hulle in hul kursusse vaar.
21. In hierdie departement heers 'n aangename atmosfeer, wat meebring dat studente mekaar maklik leer ken.
22. Studente in hierdie departement het soveel skriftelike werk wat hulle moet afhandel, dat daar nie veel tyd is vir individuele leeswerk nie.
23. Meeste van die dosente in die departement doen moeite om hul studente te leer ken.
24. Die kursusse hier word in oorleg met beroepsvereistes aangebied.
25. Lesings in hierdie departement is basies 'n gids tot verdere leeswerk.
26. Hierdie departement bied aan studente die geleentheid om studiemetodes te gebruik volgens hul eie behoeftes.
27. Die personeel hier doen werklik moeite om probleme wat studente mag hê te verstaan.
28. Die dosente in die departement gee gewoonlik 'n presiese aanduiding van wat studente moet leer.
29. Die departement reël byeenkomste en praatjies wat gewoonlik goed bygewoon word.
30. Die kursusse is so omvattend dat dit nie moontlik is om al die werk baas te raak nie.
31. Dosente in die departement gaan uit hul pad om vriendelik met die studente te wees.
32. Die werk wat ek hier doen sal beslis my toekomstige beroepsverwagting verbeter.
33. In hierdie departement is lesings blykbaar belangriker as groepsessies en besprekingsgeleenthede.

34. Studente in die departement het 'n vryheid van keuse oor die wyse waarop hulle hul studies wil aanpak.
35. Dosente van hierdie departement is altyd behulpsaam en bereid om studente van raad te voorsien oor hoe hulle hul studies moet aanpak.
36. Daar word baie druk op studente in hierdie departement geplaas.
37. Studente in hierdie departement bespreek hul werk geredelik met ander studente.
38. Die dosente maak dit van die begin af duidelik wat hulle van die studente verwag.
39. Heelwat klem word hier geplaas op die kweek van die "regte" professionele houdings.
40. Dosente van hierdie departement gee werklik aandag aan studente se idees en belangstellings.

APPENDIX C

DEMOGRAPHIC QUESTIONNAIRE (DQ)

DEMOGRAPHIC QUESTIONNAIRE (DQ): FIRST YEAR NURSING STUDENTS

Answer the following questions as accurately and completely as possible. Place a √ in the corresponding block or write an answer where applicable. All information will be handled as confidential.

PERSONAL INFORMATION

OFFICE USE

1-2

1. Name .....

3-9

2. Student number

10-11

3. What is your first language?

Afrikaans	
English	
Asiatic	
Ndebele	
Sotho	
Swazi	
Tsonga	
Tswana	
Venda	
Xhosa	
Zulu	
Other	

Please specify "Other"

12

4. In what language did you receive your secondary schooling?

Afrikaans	
English	
Other	

Please specify "Other"

13

5. What is your second language of choice?

Afrikaans	
English	
Other	

Please specify "Other"

OFFICE USE

6. What average grade did you obtain in your final matric examination

Please specify "Other"

A	
B	
C	
D	
E	

14

7. What is your gender?

Male	
Female	

15

8. State your age (in years) .....

16-17

9. Which of the following best describes your secondary school institution

Please specify "Other"

Public school in township	
Public school in predominantly white area	
Private school	
Other	

18

10. In what type of community did you spend most of your life before you started this course?

Please specify "other"?

Rural	
Urban	
Other	

19

11. Are you married?

Yes	
No	

20

12. Do you have dependants?

Yes	
No	

21

13 Does the Free State Province pay you a salary while you study?

Yes	
No	

22

14. Do you make use of the following?

(only answer this question if your previous answer was "yes")

	Yes	No
Pension fund		
Sick fund		
House subsidy		

23-25

APPENDIX D

DEMOGRAFIESE VRAELYS

DEMOGRAFIESE VRAELYS (DQ): EERSTEJAAR VERPLEEGKUNDE STUDENTE

Beantwoord die volgende vraelys asseblief so akkuraat en volledig as moontlik. Plaas 'n √ in die toepaslike blokkie of skryf u antwoord neer waar toepaslik. Alle inligting sal as streng vertroulik hanteer word.

PERSOONLIKE INLIGTING

KANTOOR GEBRUIK

1-2

2. Naam .....

3-9

2. Studente nommer

10-11

3. Wat is u moedertaal?

Afrikaans	
Engels	
Asiaties	
Ndebele	
Sotho	
Swazi	
Tsonga	
Tswana	
Venda	
Xhosa	
Zoele	
Ander	
Dui asb. "Ander" aan	

12

4. In watter taal het u u sekondêre skoolonderrig ontvang?

Afrikaans	
Engels	
Ander	
Dui asb. "Ander" aan	

13

5. Wat is u tweede taalvoorkeur?

Afrikaans	
Engels	
Ander	
Dui asb. "Ander" aan	

6. Wat was u gemiddelde simbool in die matriek eindeksamen?

Dui asb. "Ander" aan

A	
B	
C	
D	
E	

14

7. Wat is u geslag?

Manlik	
Vroulik	

15

8. Dui asb. u ouderdom (jare) aan? .....

16-17

9. Watter van die volgende beskryf u sekondêre skool-instansie die beste?

Dui asb. "Ander" aan

Openbare skool in 'n "township"	
Openbare skool in oorwegend wit area	
Privaatskool	
Ander	

18

10. In watter tipe gemeenskap het u die grootste deel van u lewe deurgebring voordat u ingeskryf het vir hierdie kursus?

Platteland	
Stedelik	
Ander	

19

11. Is u getroud?

Ja	
Nee	

20

12. Het u afhanklikes?

Ja	
Nee	

21

13 Verdien u 'n salaris by die Vrystaatse Provinsie terwyl u studeer?

Ja	
Nee	

22

14. Maak u gebruik of dra u by tot die volgende?

(Beantwoord die vraag slegs as u "ja" geantwoord het op die vorige vraag).

	Ja	Nee
Pensioenfonds		
Siekefonds		
Huisubsidie		

23-25

APPENDIX E

STUDENT PERCEPTION QUESTIONNAIRE (SPQ)

STUDENT PERCEPTION QUESTIONNAIRE (SPQ)

SECTION A - PERSONAL INFORMATION

Answer the following questions as accurately and completely as possible. Place a X in the corresponding block or write an answer where applicable. You do not need to mention your name, but the student number is essential to encode the information. All information will be handled confidentially.

OFFICE USE

1-2

1.Name .....

2 Student number

3-9

3 Do you earn a salary while studying?

Yes		1
No		2

10

4. At what type of institution are you an employee?

Free State Province		1
Private		2
Military		3
Other		4

Please specify "other"

11
12
13
14

5. How do you finance your studies?

Loan		1
Bursary		2
Employer		3
Self		4
Parents		5
Other		6

Please specify "other"

OFFICE USE

15
16
17
18
19
20

SECTION B - ACADEMIC INFORMATION

1. What was your most important reason to register for a degree in nursing? *(GIVE ONLY ONE ANSWER)*

1 Financial reasons	
2 No specific reasons	
3 To render a service to the community	
4 For personal growth and development	
5 The desire to become a nurse	
6 To obtain a qualification	
7 To form a basis for future education	
8 Other	

Please specify "other"

1

OFFICE USE

2. The purpose of the following statements is to determine what your opinion is regarding the **course** you followed the past year. *(ONLY YOUR OPINION REGARDING THE NURSING SUBJECTS IS REQUIRED)*

	Always	*Mostly*	*Sometimes*	*Never*	
	1	*2*	*3*	*4*	
1. During this course learning did not centre around the community enough					2
2. The course had relevance for the present day S.A.					3
3. An appropriate variety of activities was included in the classroom situation					4
4. Scenarios did not portray the reality					5
5. The workload in the work situation was too heavy					6
6. The level of difficulty was applicable throughout the course					7
7. Subjects were continuously related to each other					8
8. Activities included during practice was not enough					9
9. Course objectives were not clear					10
10. The language of tutoring was understandable					11
11. Theoretical sources were readily available					12
12. Course objectives could be reached with ease					13

Do you have any comments that you would like to add regarding the **course** in general?

14-15

16-17

OFFICE USE

3 The aim of the following statements is to determine your opinion regarding **group work** that has been done the past year.

	Always	*Mostly*	*Sometimes*	*Never*	
	1	*2*	*3*	*4*	
1. I learned to function effectively as a group member					18
2. Language posed no barrier to my understanding of concepts					19
3. Language posed a barrier to my communication of concepts					20
4. Theory and practice were complementary					21
5. Group work stimulated self-study activities					22
6. I increased my ability to consider problems from various viewpoints					23
7. Group work was not adequately task-oriented					24
8. Group work helped me to remember information for longer					25
9. I got help from other group members with ease					26
10. I prefer traditional lectures to group work					27

Do you have any comments that you would like to add regarding **group work** in general?

28-29

30-31

OFFICE USE

4. The purpose of the following statements is to determine the value you placed on **Problem-based learning** (PBL) as a teaching strategy.

	Always	*Mostly*	*Sometimes*	*Never*	
	1	*2*	*3*	*4*	
1. PBL helps me to look at the whole situation					32
2. I found the shift to PBL difficult					33
3. I found problem-solving intellectually unsatisfying					34
4. PBL decreased my motivation for learning					35
5. PBL helped me to retain information for longer periods					36
6. PBL helped me to obtain information from various sources					37
7. I prefer PBL to traditional lectures					38
8. PBL brings problems from out of the community into the classroom					39
9. PBL does not integrate subjects in a meaningful way					40
10. PBL taught me to study on my own also					41
11. PBL taught me clinical reasoning					42

Is there something you would like to add regarding **problem-based learning** as a teaching strategy?

43-44

45-46

OFFICE USE

5. The purpose of the following statements is to determine the value you put on your **facilitator's** contributions the past year.

	Always	*Mostly*	*Sometimes*	*Never*	
	1	*2*	*3*	*4*	
1. She followed the problem-solving process					47
2. She was successful in organising group activities					48
3. She was able to lead us to discover gaps in our knowledge by ourselves					49
4. She did not recognise when students were not following					50
5. She gave too little information					51
6. She welcomed divergent viewpoints					52
7. She did not help the group to handle conflict					53
8. She did not see to it that all team members' contributions were acknowledged					54
9. She controlled disruptive speakers					55
10. She was inclined to dominate group sessions					56
11. I could discuss any problem with her					57
12. She gave meaningful feedback on evaluations					58

Is there something you would like to add concerning the role your **facilitator** played during the past year?

59-60

6. The purpose of the following statements is to determine the increase and changes in your **knowledge, skills and attitudes** that took place over the past year

	Yes	No	OFFICE USE	
	1	*2*		
1. It was difficult to use previous knowledge in a meaningful way			63	
2. I learned to analyse problems and to develop learning objectives			64	
3. I learned to identify psycho-social factors which could influence a patient's recovery			65	
4. I cannot apply my knowledge and skills in all situations			66	
5. I am not yet able to take initiative in a creative way			67	
6. I cannot apply my knowledge to practice			68	
7. I learned to think independently			69	
8. I cannot synthesise information into a comfortable framework yet			70	
9. I am well prepared regarding nursing judgement			71	
10.I am not well prepared regarding nursing skills			72	
11.I still lack competence in the use of diagnostic apparatus			73	
12.I developed competence to document patients' information correctly			74	
13.I have self-confidence to speak in public			75	
14.I cannot function effectively as a member of the health team yet			76	
15.I cannot solve real problems			77	
16.I can gather information from various resources			78	
17.I am competent in educating patients as well as their families about health issues			79	
18.I developed the ability to communicate effectively			80	
19.I have not yet learnt how to use computer technology to my own advantage			81	
20.I developed leadership qualities			82	
21.I learned to be sensitive towards other cultures			83	
22.My enthusiasm for nursing as a calling has declined			84	

	Yes	No		
23.I have more confidence in my interaction with the people to whom I am rendering a service, as well as my co-team members			85	
24.I learned to respect the convictions of other people			86	
25.I developed a greater appreciation for problem-based learning and nursing			87	
26.I did not enjoy working in a team			88	

Is there anything you would like to add regarding the increase and changes in your **knowledge, skills and attitudes** in general?

		89-90
		91-92
		93-94

OFFICE USE

7. The purpose of the following statements is to determine your opinion about assessments (**Evaluations/examinations/ OSCEs and tests**) the past year.

	Always	*Mostly*	*Sometimes*	*Never*	
	1	*2*	*3*	*4*	
1. Variations in assessment methods were not adequate					95
2. Assessment methods reflected a balanced distribution of the year's work					96
3. Assessment methods were applicable for problem-based learning					97
4. Partnership marks allocated were realistic					98
5. The grades I obtained reflected a fair assessment of my performance					99
6. I did not have enough time to prepare for exams					100
7. We were informed about the way in which assessment would take place					101
8. Evaluation standards were realistic (neither too low nor too high)					102
9. The language used in papers was not clear					103
10.I learned to asses myself in a realistic way					104
11.Peer group assessments were realistic					105

Are there any other comments that you would like to add about assessments (**evaluations/exams/OSCEs and tests**)?

106-107

(CONTINUE ON PAGE 10)

108-109

8. Which two aspects of the first year course and way of instruction did you enjoy most?

8.1

110-111

8.2

112-113

OFFICE USE

9. Which two aspects of the first year course and way of instruction did you enjoy least?

9.1

114-115

116-117

9.2

10. How do you think this course can be improved?

118-119

(CONTINUE ON PAGE 12)

OFFICE USE

120-121

11 What advice would you give to someone who plans to register for the same course you did the past year?

122-123

124-125

(CONTINUE ON PAGE 13)

Thank you very much for your contribution in this project. Be assured that all information will be handled as strictly confidential. Your identity will in no way be made public. Enjoy a cool drink before you depart to enjoy the rest of your day.

APPENDIX F

PERSEPSIE VRAELYS VIR STUDENTE

PERSEPSIE VRAELYS VIR STUDENTE (SPQ)

AFDELING A - PERSOONLIKE INLIGTING

Beantwoord die volgende vrae asseblief so akkuraat en volledig as moontlik. Plaas 'n X in die toepaslike blokkie of skryf u antwoord neer waar toepaslik. Dit is nie nodig om u naam aan te dui nie, maar dit is noodsaaklik dat u studentenommer aangedui word met die oog op die verwerking van inligting. Alle inligting sal as streng vertroulik gehanteer word.

KANTOOR - GEBRUIK

1-2

1. Naam .....

3-9

2 Studente nommer

10

3 Verdien u 'n salaris terwyl u studeer?

Ja		1
Nee		2

4. Van watter tipe instansie is u 'n werknemer?

Vrystaat Provinsie		1
Privaat		2
Militêr		3
Ander		4

Omskryf asb. "Ander".

11 12 13 14

5. Hoe word u studies gefinansier?

Lening		1
Beurs		2
Werkgewer		3
Self		4
Ouers		5
Ander		6

Omskryf asb. "Ander".

KANTOOR GEBRUIK

15 16 17 18 19 20

AFDELING B - AKADEMIESE INLIGTING

1. Wat was die belangrikste rede waarom u geregistreer het vir 'n graad in verpleeg-kunde?

(GEE SLEGS EEN ANTWOORD)

1 Finansiële redes	
2 Geen spesifieke rede nie	
3 Om diens te lewer aan die gemeenskap	
4 Vir persoonlike groei en ontwikkeling	
5 Die begeerte om 'n verpleegkundige te word	
6 Om 'n kwalifikasie te bekom	
7 Om 'n basis te vorm vir toekomstige studies	
8 Ander	

Spesifiseer asb. "Ander"

1

KANTOOR GEBRUIK

2. Die doel van die volgende stellings is om vas te stel wat u opinie is omtrentdie**kursus** wat u die afgelope jaar gevolg het. ***(SLEGS U OPINIE RAKENDE DIE AANBIEDING VAN VERPLEEGKUNDE VAKKE WORD VERLANG)***

	Altyd	*Meestal*	*Soms*	*Nooit*	
	1	*2*	*3*	*4*	
1. Gedurende hierdie kursus het leer in die klaskamer nie genoegsaam rondom die gemeenskap gesentreer nie					2
2. Die kursus was relevant vir die hedendaagse S.A.					3
3. 'n Toepaslike verskeidenheid aktiwiteite was ingesluit in die klaskamersituasie					4
4. Scenario's het nie die werklikheid weerspieël nie					5
5. Die werklading in die werksituasie was onhanteerbaar					6
6. Die moeilikheidsgraad van die kursus was toepaslik					7
7. Vakke is voortdurend met mekaar in verband gebring					8
8. Daar was nie genoeg aktiwiteite tydens praktyk ingesluit nie					9
9. Kursusdoelwitte was onduidelik					10
10. Die taal van onderrig was deurlopend verstaanbaar					11
11. Teoretiese bronne was geredelik beskikbaar					12
12. Kursusdoelwitte kon met gemak bereik word					13

Het u enige kommentaar wat u wil byvoeg omtrent die **kursus** in die algemeen?

14-15

16-17

KANTOOR GEBRUIK

3. Die doel van die volgende stellings is om vas te stel wat u opinie is omtrent **groepswerk** wat die afgelope jaar gedoen is.

	Altyd	*Meestal*	*Soms*	*Nooit*	
	1	*2*	*3*	*4*	
1. Ek het geleer om effektief as groeplid te funksioneer					18
2. Taal was nie'n struikelblok in my begrip van konsepte nie					19
3. Taal was 'n struikelblok as ek konsepte wou oordra					20
4. Teorie en praktyk het mekaar aangevul					21
5. Groepswerk het selfstudie-aktiwiteite gestimuleer					22
6. Ek het die vermoë om verskillende standpunte te oorweeg, verbeter					23
7. Groepswerk was nie taakgeoriënteerd genoeg nie					24
8. Groepswerk het my gehelp om inligting langer te onthou					25
9. Ek kon met gemak hulp van ander groeplede kry					26
10. Ek verkies tradisionele lesings bo groepswerk					27

Het u enige kommentaar wat u wil byvoeg omtrent **groepswerk** in die algemeen?

28-29

30-31

KANTOOR -GEBRUIK

4. Die doel van die volgende stellings is om die waarde wat u geheg het aan **probleemgebaseerde leer** (PBL) as onderwysstrategie te bepaal.

	Altyd	*Meestal*	*Soms*	*Nooit*	
	1	*2*	*3*	*4*	
1. PBL dra daartoe by dat ek na 'n situasie in geheel kyk					32
2. Omskakeling na PBL was vir my moeilik					33
3. Probleemoplossing is vir my intellektueel onbevredigend					34
4. PBL het my motivering vir leer verlaag					35
5. PBL het my gehelp om inligting beter te onthou					36
6. PBL het my geleer om inligting uit verskeie bronne te kry					37
7. Ek verkies PBL bo tradisionele lesings					38
8. PBL bring probleme vanuit die gemeenskap na die klaskamer					39
9. PBL integreer vakke nie sinvol saam nie					40
10. PBL het my geleer om ook op my eie te leer					41
11. PBL het my geleer om klinies te redeneer					42

Is daar enigiets wat u wil byvoeg omtrent **probleemgebaseerde leer** as 'n onderwysstrategie?

	43-44
	45-46

KANTOOR -GEBRUIK

5. Die doel van die volgende stellings is om die waarde van u **fasiliteerder** se bydraes van die afgelope jaar te bepaal.

	Altyd	*Mee4stal*	*Soms*	*Nooit*	
1. Sy het die proses van probleemoplossing gevolg					47
2. Sy kon groepsaktiwiteite suksesvol organiseer					48
3. Sy kon ons lei om leemtes in ons kennisveld self te ontdek					49
4. Sy het nie agtergekom as studente nie gevolg het nie					50
5. Sy het te min inligting gegee					51
6. Sy het uiteenlopende standpunte verwelkom					52
7. Sy het nie die groep gehelp om konflik te hanteer nie					53
8. Sy het nie gesorg dat alle lede se bydraes erken word nie					54
9. Sy kon ontwrigtende studente beheer					55
10. Sy het geneig om groepe te oorheers					56
11. Ek kon enige probleme met haar bespreek					57
12. Sy het betekenisvolle terugvoering gegee oor evaluerings					58

Is daar iets wat u wil byvoeg omtrent die rol wat u **fasiliteerder** die afgelope jaar gespeel het?

	59-60
	61-62

6. Die doel van die volgende stellings is om die toename of veranderings in u **kennis, vaardighede en houdings** die afgelope jaar te bepaal.

	Ja	*Nee*	KANTOOR GEBRUIK
	1	*2*	
1. Dit was moeilik om vorige kennis sinvol te gebruik			63
2. Ek het geleer om probleme te ontleed en leerdoelwitte te ontwikkel			64
3. Ek het geleer om psigo-sosiale faktore wat 'n pasiënt se herstel kan beïnvloed, te herken			65
4. Ek kan my kennis/vaardighede nie in alle situasies toepas nie			66
5. Ek kan nog nie op 'n kreatiewe wyse inisiatief neem nie			67
6. Ek kan my kennis nie in die praktyk toepas nie			68
7. Ek het geleer om onafhanklik te dink			69
8. Ek kan inligting nog nie in 'n gemaklike raamwerk saamvoeg nie			70
9. Ek is goed voorberei ten opsigte van oordeel in verpleging			71
10. Ek is nie voldoende voorberei ten opsigte van verpleegvaardighede nie			72
11. Ek kort nog vaardighede in die gebruik van diagnostiese apparate			73
12. Ek het die vermoë ontwikkel om pasiënte se data korrek aan te teken			74
13. Ek het selfvertroue om in die openbaar te praat			75
14. Ek kan nog nie effektief as 'n lid van die gesondheidspan funksioneer nie			76
15. Ek kan nog nie werklike probleme oplos nie			77
16. Ek kan inligting vanuit verskeie bronne versamel			78
17. Ek kan pasiënte sowel as hulle naasbestaandes effektief onderrig rakende gesondheidskwessies			79
18. Ek het die vermoë ontwikkel om effektief te kommunikeer			80
19. Ek het nog nie geleer hoe om rekenaartegnologie tot my voordeel te benut nie			81

	Ja	*Nee*	
	1	*2*	
20. Ek het leierskapsvaardighede aangeleer			82
21. Ek het geleer om sensitief vir ander kulture te wees			83
22. My entoesiasme vir verpleging as 'n roeping het afgeneem			84
23. Ek het meer selfvertroue gekry in my omgang met mense aan wie diens gelewer word, sowel as mede-spanlede			85
24. Ek het geleer om ander mense se oortuigings te respekteer			86
25. Ek het groter waardering vir probleemgebaseerde leer en verpleging ontwikkel			87
26. Ek het spanwerk nie geniet nie			88

Is daar iets wat u wil byvoeg omtrent u **toename in kennis, vaardighede en veranderings in houdings** in die algemeen?

	89-90
	91-92
	93-94

KANTOOR-GEBRUIK

7. Die doel van die volgende stellings is om u opinie te bepaal omtrent beoordelings (**Evaluasies/ eksamens/ OSKE en toetse)** die afgelope jaar

	Altyd	*Meestal*	*Soms*	*Nooit*	
	1	*2*	*3*	*4*	
1. Daar was nie genoeg variasie in beoordelingsmetodes nie					95
2. Beoordelingsmetodes het 'n ewewigtige verspreiding van die jaar se werk weerspieël					96
3. Beoordelingsmetodes was toepaslik vir die probleemgebaseerde leerstrategie wat ons die jaar gevolg het					97
4. Vennootskapspunte wat toegeken is vir groepswerk, was realisties					98
5. Punte wat ek verwerf het, was 'n regverdige weerspieëling van my prestasies					99
6. Ek het nie genoeg tyd gehad om vir eksamens voor te berei nie					100
7. Ons is ingelig oor die manier waarop beoordelings sou plaasvind					101
8. Beoordelingstandaarde was realisties (nie te hoog of te laag nie)					102
9. Die taal wat in vraestelle gebruik is, was nie duidelik nie					103
10. Ek het geleer om myself realisties te beoordeel					104
11. Portuurgroepbeoordeling was realisties					105

Is daar enige ander kommentaar wat u wil byvoeg omtrent beoordelings (**evaluasies/eksamens/OSKE en toetse**)?

106-107

(VERVOLG OP BLADSY 10)

108-109

8. Watter twee aspekte van u eerstejaarkursus en die onderwysmetode het u die meeste geniet?

8.1

110-111

8.2

112-113

KANTOOR GEBRUIK

9. Van watter twee aspekte van u eerstejaarkursus en die onderwysmetode het u die minste gehou?

9.1

114-115

116-117

9.2

10. Hoe dink u kan hierdie kursus verbeter word?

118-119

(VERVOLG OP BLADSY 12)

KANTOOR-GEBRUIK

120-121

11 Watter raad sou u gee aan iemand wat beplan om in te skryf vir dieselfde kursus wat u die afgelope jaar gedoen het?

122-123

124-125

(VERVOLG OP BLADSY 13)

Baie dankie vir u aandeel in hierdie projek. Wees verseker dat alle inligting as streng vertroulik gehanteer sal word. U identiteit sal op geen wyse openbaar gemaak word nie. Geniet 'n koeldrank voordat u vir die res van die dag gaan uitspan.

APPENDIX G

CHECKLIST FOR AUDIT

CHECKLIST FOR AUDIT

1. PROGRAMME DEVELOPMENT

1.1 World Health Organisation	Yes	No	Partly
The primary health care philosophy is incorporated in the programme			
This programme promotes team work in primary health care teams			
Education is based on prevailing and priority health problems			
The programme includes health education on promotion of proper nutrition			
The programme includes health education on safe water supply and basic sanitation			
Health education is aimed towards healthy life-styles			
The programme contains aspects on family planning, maternal and child health care			
Immunisations against major infectious diseases are taught in this programme			
Aspects on prevention and control of local endemic diseases and injuries are included			
Introduction to essential drugs is included in the course			
Emphasis of nursing care is based in the community			
Active learning is promoted			
The curriculum is comprehensive			
The curriculum is community-oriented			
Students are taught how to handle change			
Students are taught to identify and solve problems			
Students are taught to acquire and use data			

1.2 South African Qualification Authority	Yes	No	Partly
This course complies with the objectives of the National Qualification Framework			
The following generic outcomes are included in the coarse:			
• Development of entrepreneurial opportunities			
• Team work abilities			
• Gathering of information			
• Effective communication			
• Use of science and technology			
• Effective learning strategies			
• Cultural and aesthetically sensitivity			
• Selection of effective career/ educational opportunities			
The following specific outcomes are included in the course:			
• Contextually demonstrated knowledge, skills and values			
• Applied competencies			
Formal quality assurance forms part of programme development			
Integrated assessment, which includes formative and summative evaluations			

South African Qualification Authority (Continue)	Yes	No	Partly
The programme equips students to become life-long learners			
The course transforms and redresses legacies of inequity			
Credits are linked into a meaningful learning and career pathway			
The first-year course allows for:			
• Recognition of prior learning			
• Student guidance			
• Democratic participation			
• Equality of opportunity			
• Articulation			
• Movement among occupations			
This first-year course allows for learning and education that is:			
• Legitimate			
• Integrated			
• Relevant			
• Coherent			
• Flexible			
• Of a high standard			
• Accessible			
• Progressive			
• Portable			

1.3 South African Nursing Council	Yes	No	Partly
Programme development is according to the objectives with the objectives of Council			
One academic year comprises at least 44 weeks			
The School of Nursing is approved by the Council as a post-secondary educational institution			
All students are holders of a senior certificate or equivalent certificate			
Appropriate content for first-year nursing students is included:			
The philosophy of Council is included in the first-year course			

1.4 Department of Health	Yes	No	Partly
Equity in deliverance of health care is promoted in this course			
The value of every citizens' right to health care is fostered			
The course promotes the primary health care approach			
This course provides for community participation in health matters			
No racial, ethnic, tribal or gender discrimination is exercised in this course			
Co-ordination and decentralisation are promoted			

1.5 Department of Education	Yes	No	Partly
This programme supports the societal transformation currently taking place in South Africa			
Transformation and democratisation of structures are taking place			
Interaction with other institutions through co-operation and partnerships is taking place			
An academic climate is established that provides for the following:			
• Free and open debate			

Department of Education (Continue)	Yes	No	Partly
• Critical questioning of prevailing orthodoxies			
• Experimentation with new ideas			
This course provides expertise and infrastructure for community service programmes			
An institutional culture is built that fosters tolerance and respect			
This programme provides for competencies and expertise that are required for the labour market			
Students are socialised in this first year course to become well-informed, responsible and (constructively) critical citizens.			
This programme provides for the enhancement, creation, sharing and evaluation of knowledge			
The first-year course provides students with skills to develop their intellectual abilities in a lifelong manner			
1.6 University of the Orange Free State	**Yes**	**No**	**Partly**
The vision of the university is portrayed in the philosophy of the nursing school:			
• As it is relevant for the new South Africa			
• It encourages creative and independent thought			
• It encourage critical debate			
• It promotes an atmosphere that will attract academics of international quality			
• It contributes to the solving of national and international health problems			
• It considers the whole spectrum of development needs of the region and country			
• It utilises available talents, technology, expertise and resources through new partnerships to promote education, research and community service			
• It demonstrates an ethos of quality and supportive services			
• It pays attention to the inequalities of the past			
• It accommodates cultural diversity and promotes unity of endeavour			
• It creates student development environments			
The mission of the university is portrayed in the philosophy of the nursing school as:			
• An academic culture is fostered in the student community			
• Critical and scientific thought is developed			
• It provides relevant scientific education			
• Knowledge is expanded by pure and applied research			
• It performs community service in addition to core functions of education and research			
• It develops students in a holistic manner			
The following values of the university are portrayed in the philosophy of the nursing school:			
• Excellence			

University of the Orange Free State (Continue)	Yes	No	Partly
• Academic freedom, freedom of speech and the right to differ			
• Tolerance cultural and other diversity			
• Openness and transparency			
• Respect of all forms of life and the environment			
• Client orientation, a service disposition and society orientation			
Freedom of religion and respect for different views of life			
The nursing school manages diversity by means of			
• Affirmative action			
• Parallel-medium language policy			
The nursing school provides student support services			
Access is facilitated through bridging programmes			
Quality management and quality assurance are maintained			
1.7 Curricular model	**Yes**	**No**	**Partly**
The development of the programme is based on a curricular model			
The curricular model reflects the changing nature of society			
The curricular model allows for the following:			
• a situation analysis			
• selection of objectives or outcomes			
• selection and arrangement of content			
• selection and arrangement of educational strategies			
• evaluation			
1.8 Philosophy	**Yes**	**No**	**Partly**
The basic undergraduate programme is based on an educational and nursing philosophy, which includes the following concepts:			
• health			
• man			
• society			
• nursing			
• learning			
• teaching			
• nursing education			
The philosophy of the school honours the philosophies of the:			
• World Health Organisation			
• Statutory Body (South African Nursing Council)			
• Educational institution (UOFS)			
• Faculty of Health Sciences			
• Department of Health			
• Department of Education			

2. PROBLEM-BASED LEARNING

2.1 Methodology of PBL	Yes	No	Partly
Students are randomly allocated to tutorial groups			
The maximum members per group are eight			
An orientation period helps students to come acquainted to group work			
Group members meet twice a week for up to three hours			
Students encounter problems without prior preparation			

Methodology of PBL (Continue)	Yes	No	Partly
Problems are appropriate as they:			
• reflect common situations that are frequently encountered			
• portray chronic and acute health problems			
• relate to practice areas			
• include all the relevant roles and functions of nursing			
• reflect the health issues of all age groups			
• cover health as well as health problems			
• involve individuals, groups and communities			
• apply to institutional and non-institutional contexts			
• include theoretical, philosophical and ethical issues			
• relate to technical and procedural activities			
• reflect issues from the applied and allied disciplines			
• generate the appropriate objectives			
• are stated on the degree of complexity of first-year students			
• are based on real events			
• are sequenced to build an increasing body of knowledge			
• provide inter-disciplinary or inter-subject integration			
The format of problems is as follows:			
• guided design format that is very structured			
• open-ended, relatively unorganised and unsynthesised			
• focal problems that are more structured			
By reasoning through the problem students:			
• effectively mobilise prior knowledge			
• expand knowledge through group discussions			
• generate hypotheses			
• successfully explore relevant factors			
• encourage equal participation of all group members			
For the purpose of self-study activities:			
• learning issues or objectives are divided among group members			
• learning issues or objectives are shared during			
• students are taught and encouraged to consult different resources			
Students are guided to apply new knowledge in an efficient way			
Students are guided to summarise and integrate learning			
2.2 Availability of resources	**Yes**	**No**	**Partly**
An adequate amount of resources are available in the library for all the first-year students			
Experts were identified to be available to act as resource people			
Simulation facilities are available to explore skills			
Computer programmes are available on relevant subjects			
2.3 Programmes to develop facilitators	**Yes**	**No**	**Partly**
Facilitators are trained to become effective in PBL by means of:			
• Workshops			
• Attendance of PBL congresses			

Programmes to develop facilitators (Continue)	Yes	No	Partly
• Formal programmes on PBL			
• Informal programmes on PBL			
2.4 Cost & time	**Yes**	**No**	**Partly**
More time is needed to instruct by means of PBL			
More resources are needed to instruct by means of PBL			
Student retention is enhanced by PBL			
3. PROGRAMME OUTCOMES			
3.1 The following are included in this course as part of the scientific nursing process			
3.1.1 Assessment	**Yes**	**No**	**Partly**
of a community and an environment			
of a family			
of the health of an individual			
of an epidemiological survey			
3.1.2 Diagnosis	**Yes**	**No**	**Partly**
of pathology in a community and an environment			
of health problems/ pathology in a family			
of individual health problems			
deviations from normal health			
pathology in health behaviours			
by interpretation of data or statistics			
by identification of health indicators or risk factors			
of common minor physical ailments and emergencies			
of a service (e.g. under/over-utilisation)			
3.1.3 Planning	**Yes**	**No**	**Partly**
by drawing up nursing care plans for families and individuals			
by managing and referring emergencies			
by drawing up intervention or prevention programme proposals for communities and environments			
by prescriptions for minor illnesses			
3.1.4 Implementation	**Yes**	**No**	**Partly**
of prevention or intervention programmes or plans			
3.1.5 Evaluation	**Yes**	**No**	**Partly**
of the process of implementation			
of the outcome of implementation			
3.2 Management is taught in this course	**Yes**	**No**	**Partly**
of patient care by using the scientific nursing process			
of the health care team by			
• Referral			
• Follow up			

3.3 Communication is taught	Yes	No	Partly
by using professional nomenclature appropriately in written and verbal communication			
through calculation of medication intake			
through calculation of nutritional intake			
with different cultures in a competent way by • being aware of different cultures			
• demonstrating sensitivity to different cultures			
• having knowledge of the different cultures			
• using cultural assistance tools			
by providing health education to groups and individuals			
by using different resources to educate individuals and groups			
by keeping records in a clear, accurate and complete way			
by guiding students to communicate effectively with all age groups, people having mental disabilities, and people having physical disabilities			
by guiding counselling of groups and individuals			
by referring and consulting			

3.4 Problem-solving is taught in the following way	Yes	No	Partly
by raising and exploring problems through identification of problems			
by demarcation of problems within scope of practice			
by discernment of problems that need referral			
by identifying alternative solutions by means of research			
by selecting the best alternative to solve the problem			
by evaluating the results after an alternative has been implemented			

3.5 Technology is incorporated in this course in the following way	Yes	No	Partly
in the gathering of information by using a wide range of processes, different techniques, various tools and various materials			
to solve problems by using a wide range of processes, different techniques, various tools and various materials			
in the creation of products by using a wide range of processes, different techniques, various tools and various materials			
• in the evaluation of products by using a wide range of processes, different techniques, various tools and various materials			

3.6 Contextual understanding is fostered	Yes	No	Partly
of health care and health behaviour			
of the professional and legal constraints within which the nurse functions			
of the historical influences on modern nursing and health care			
of power-relationships and their influences within groups and communities through analysis			
of inter-dependence of groups and the environment			

3.7 Inter-personal skills are taught in the first year course	Yes	No	Partly
by working effectively in a team			
by resolving conflict constructively			
by creating a supportive environment for colleagues and patients			

Inter-personal skills are taught in the first year course (Continue)	Yes	No	Partly
In the therapeutic relationship by • establishing it • maintaining it and • terminating it			
by working effectively as a group leader and a participant			

3.8 Professional responsibility is fostered	Yes	No	Partly
by limiting the scope of practice to the scope of competence			
by demonstrating accountability for own practice			
by demonstrating ethical behaviour in own practice			
by contributing constructively to professional settings			
by contributing constructively to community settings			
by pursuing excellence and originality in own work			
by supporting the qualities of excellence and originality in the work of others			
by identifying the rights and responsibilities of nurses and the nursing profession			
by responding creatively to health care needs of societies			

3.9 Professional development is enhanced	Yes	No	Partly
by demonstrating awareness of personal values, personal strengths, personal abilities and aspirations			
by understanding how personal values, strengths, abilities, and aspirations will influence future choices and opportunities			
by demonstrating awareness of the available range of personal and career opportunities			
by demonstrating understanding of the relationship between educational achievement and career opportunities			
by demonstrating knowledge of a variety of workplaces and to work there with knowledge of the different roles, the different skills and with different abilities			
by taking responsibility to ensure continuous professional competence			
by engaging constructively in change			

3.10 Learning is fostered	Yes	No	Partly
by assessing own learning needs through self-reflection and criticism			
by setting appropriate goals for learning			
by making realistic plans for learning			
by evaluation of progress			
by identifying a variety of resources to improve own skills and knowledge			

3.11 Health behaviour is stimulated	Yes	No	Partly
by using self-knowledge as a basis for decision-making			
by demonstrating the ability to reflect on experiences and to learn from it			
by making informed choices that will contribute to physical, mental, emotional, and spiritual well-being			

APPENDIX H

UNIFIED NURSING EDUCATION SYSTEM: PROGRAMME OBJECTIVES

UNIFIED NURSING EDUCATION SYSTEM: PROGRAMME OBJECTIVES

-A- ASSESSMENT

GENERIC NURSE	COMPREHENSIVE NURSE
- Comprehensive community and environmental assessment - Comprehensive family assessment (throughout lifespan - Individual health assessment (throughout lifespan) - Epidemiological survey	* Comprehensive community and environmental assessment * Comprehensive family assessment * Individual health assessment (throughout lifespan) * Epidemiological survey - Psychiatric assessment - Functional status assessment - Ante-natal assessment - Progress of labour assessment - Assessment of new-born - Post-natal assessment - Service assessment

-B- DIAGNOSIS

GENERIC NURSE	COMPREHENSIVE NURSE
- Community and environmental diagnosis - Family assessment diagnosis - Individual health diagnosis - Deviations from normal - Health behaviours (those promoting health and illness) - Interpretation of data/statistics - Identification of health indicators/risk factors - Diagnose common minor physical ailments and emergencies	* Community and environmental diagnosis * Family assessment diagnosis * Individual health diagnosis - Deviations from normal - Health behaviours (those promoting health and illness) - Interpretation of data/statistics - Identification of health indicators/risk factors - Diagnose common minor physical ailments and emergencies - Psychiatric diagnosis of most common psychiatric illnesses - Rehabilitation diagnoses - Diagnose common physicai illnesses (acute and chronic) - Midwifery/Neo-natal diagnoses - Service diagnosis (e.g.: under/over utilisation of facilities, accessibility and affordability)

* Essential skills which are also relevant to the comprehensive nurse.

-C- PLANNING

GENERIC NURSE	COMPREHENSIVE NURSE
- Draw up nursing care plans for: - Family - Individual (health or minor illness) - Manage and/or refer emergencies appropriately Draw up intervention/prevention programme proposal for community and environment Prescribe for minor illnesses	* Draw up nursing care plans for: * Family * Individual (health or minor illness) - Person with mental illness - Person with disability - Midwifery patient (including neo-natal) * Manage and/or refer emergencies appropriately * Draw up intervention/prevention programme proposal for community and environment - Draw up programme proposals for a service - Prescribe for minor illnesses as well as for common illness (physical and mental)

-D- IMPLEMENTATION

GENERIC NURSE	COMPREHENSIVE NURSE
- Implement prevention/intervention plans/ programmes	* Implement prevention/intervention plans/ programmes

-E- EVALUATION

GENERIC NURSE	COMPREHENSIVE NURSE
- Evaluation of process of implementation and outcome of implementation	* Evaluation of process of implementation and outcome of implementation

APPENDIX I

UNIFIED NURSING EDUCATION SYSTEM: ESSENTIAL AND SPECIFIC SKILLS

UNIFIED NURSING EDUCATION SYSTEM: ESSENTIAL AND SPECIFIC SKILLS

GENERIC NURSE	COMPREHENSIVE NURSE
1. MANAGEMENT	
- Manage patient care	* Manage patient care - Unit management
2. COMMUNICATION	
- Use professional nomenclature appropriately in written and verbal communication - Calculation of medication and nutritional intake - Communicate with different cultures competently (awareness, sensitivity, knowledge, use cultural assistance tools) - Health education to groups and individuals including the use of resources - Keep clear, accurate and complete records - Communicate effectively with all age groups and with people having mental or physical disabilities - Counsel individuals/ groups (therapeutic communication) - Refer ad consult effectively	* Use professional nomenclature appropriately in written and verbal communication * Calculation of medication and nutritional intake * Communicate with different cultures competently (awareness, sensitivity, knowledge, use cultural assistance tools) * Health education to groups and individuals including the use of resources * Keep clear, accurate and complete records * Communicate effectively with all age groups and with people having mental or physical disabilities * Counsel individuals/ groups (therapeutic communication) * Refer ad consult effectively - Communication skills applied to the following: - Psychiatric patients - Physically ill patients - midwifery patients - service problems
3. PROBLEM-SOVING	
- Raise and explore questions - Identify problems - Distinguish between problems within scope of practice and those in need of referral - Research identified alternative solutions - Select best alternative - Evaluation of results of alternative implemented	* Raise and explore questions - Identify problems - Distinguish between problems within scope of practice and those in need of referral * Research identified alternative solutions * Select best alternative * Evaluation of results of alternative implemented - Problem-solving skills applied to the following: - Psychiatric patients - Physically ill patients - Midwifery patients - Service problems

* Essential skills which are also relevant to the comprehensive nurse.

4. TECHNOLOGY	
- Use a wide range of processes, techniques, tools and materials to gather information, solve problems, create and evaluate products and communicate results - Use equipment and technology in health settings safely, appropriately and ethically - Creatively improvise when technology is lacking	* Use a wide range of processes, techniques, tools and materials to gather information, solve problems, create and evaluate products and communicate results * Use equipment and technology in health settings safely, appropriately and ethically * Creatively improvise when technology is lacking - Technology skills applied to the following: - Psychiatric patients - Physically ill patients - Midwifery patients - Service problems
5. CONTEXTUAL UNDERSTANDING	
- Demonstrate understanding of the context of health care/behaviour - Demonstrate understanding of the professional and legal constraints within which the nurse functions - Demonstrate understanding of historical influences within groups and communities - Demonstrate understanding of inter-dependence of groups and the environment - Analyse power-relationships and their influences within groups and communities - Demonstrate understanding of inter-dependence of groups and the environment	* Demonstrate understanding of the context of health care/behaviour * Demonstrate understanding of the professional and legal constraints within which the nurse functions * Demonstrate understanding of historical influences within groups and communities * Demonstrate understanding of inter-dependence of groups and the environment * Analyse power-relationships and their influences within groups and communities * Demonstrate understanding of inter-dependence of groups and the environment - Contextual understanding skills applied to the following: - Psychiatric patients - Physically ill patients - Midwifery patients - Service problems
6. INTER-PERSONAL SKILLS	
- Work effectively in a team - Resolve conflict constructively - Create a supportive environment for colleagues and patients - Establish, maintain and terminate therapeutic or effective relationships - Work effectively as group leader and/or participant	* Work effectively in a team * Resolve conflict constructively * Create a supportive environment for colleagues and patients * Establish, maintain and terminate therapeutic or effective relationships * Work effectively as group leader and/or participant - Inter-personal skills applied to the following:

	- Psychiatric patients - Physically ill patients - Midwifery patients - Service problems
7. PROFESSIONAL RESPONSIBILITY	
- Limit scope of practice to scope of competence - Demonstrate accountability for own practice - Demonstrate ethical behaviour in own practice - Contribute constructively to professional, work and community settings - Pursue excellence and originality in own work and support these qualities in the work of others - Identify the rights and responsibilities of nurses and the nursing profession - Respond creatively to health care needs of societies	* Limit scope of practice to scope of competence * Demonstrate accountability for own practice * Demonstrate ethical behaviour in own practice * Contribute constructively to professional, work and community settings * Pursue excellence and originality in own work and support these qualities in the work of others * Identify the rights and responsibilities of nurses and the nursing profession * Respond creatively to health care needs of societies - Responsibility skills applied to the following: - Psychiatric patients - Physically ill patients - Midwifery patients - Service problems
8. PROFESSIONAL DEVELOPMENT	
- Demonstrate awareness of personal values, strengths, abilities and aspirations and an understanding of how these will influence future choices and opportunities - Demonstrate awareness of the available range of personal and career opportunities - Demonstrate understanding of the relationship between educational achievement and career opportunities - Demonstrate knowledge of a variety of workplaces and the roles, skills and abilities of people who work in them - Take responsibility to ensure continuous professional competence - Engage constructively in change	* Demonstrate awareness of personal values, strengths, abilities and aspirations and an understanding of how these will influence future choices and opportunities * Demonstrate awareness of the available range of personal and career opportunities * Demonstrate understanding of the relationship between educational achievement and career opportunities * Demonstrate knowledge of a variety of workplaces and the roles, skills and abilities of people who work in them * Take responsibility to ensure continuous professional competence * Engage constructively in change - Professional development skills applied to the following: - Psychiatric patients - Physically ill patients - Midwifery patients - Service problems
9. LEARNING	
- Assess own learning needs through self-reflection and criticism - Set appropriate goals for learning, make realistic plans and keep track of and evaluate progress - Identify variety of resources to improve own skills/knowledge	* Assess own learning needs through self-reflection and criticism * Set appropriate goals for learning, make realistic plans and keep track of and evaluate progress * Identify variety of resources to improve own skills/knowledge - Learning skills applied to the following: - Psychiatric patients - Physically ill patients - Midwifery patients - Service problems
10. HEALTH BEHAVIOUR	
- Use self-knowledge as a basis for decision making - Demonstrate ability to reflect on experiences and learn from it - Make informed choices that will contribute to physical, mental, emotional and spiritual well-being	- Use self-knowledge as a basis for decision making - Demonstrate ability to reflect on experiences and learn from it - Make informed choices that will contribute to physical, mental, emotional and spiritual well-being - Health behaviour skills applied to the following: - Psychiatric patients - Physically ill patients - Midwifery patients - Service problems

APPENDIX J

LASI SCORES BY DISCIPLINE

LASI SCORES BY DISCIPLINE

Means of sub scales and ranges of departmental mean scores by Discipline

(continue)

Subscales and	Economics		Physics		Engineering	
Scales	Mean	Range	Mean	Range	Mean	Range
APPROACHES TO STUDYING						
Deep approach	10.2	8.5-12.1	10.1	8.5-11.9	10.4	8.4-12.0
Inter-relating ideas	10.1	8.9-11.8	9.3	8.2-10.9	9.6	8.2-11.8
Use of evidence	9.4	8.7-10.4	9.8	8.6-10.3	9.9	9.0-11.0
Intrinsic motivation	7.0	4.9-9.6	8.8	7.9-9.9	7.3	5.3-10.1
Surface approach	13.8	12.8-15.0	13.2	10.9-14.7	13.2	10.8-16.1
Syllabus-boundness	8.8	7.5-9.5	8.6	7.6-9.9	9.2	8.5-10.1
Fear of failure	6.0	4.6-7.5	5.5	4.9-6.2	6.2	5.0-7.4
Extrinsic motivation	7.9	5.1-9.4	5.7	4.0-8.6	8.0	6.5-10.0
Strategic approach	10.3	9.5-10.8	10.6	9.2-11.5	10.5	8.5-11.5
Disorganised study methods	9.4	8.1-11.0	9.6	8.1-10.9	9.8	8.0-11.7
Negative attitudes towards studying	5.6	4.3-6.7	5.8	4.6-6.9	5.4	4.5-6.9
Achievement motivation	10.0	9.2-11.0	9.8	8.5-11.5	10.7	9.4-11.4
Comprehension learning	7.7	6.2-9.2	8.2	6.3-9.9	8.0	6.4-10.3
Globetrotting	7.8	6.9-8.5	7.4	6.3-8.2	7.5	6.6-8.6
Operation learning	10.8	10.1-12.0	10.1	9.2-11.8	11.1	9.7-12.8
Improvidence	8.4	7.6-9.0	7.4	4.9-8.4	7.8	6.7-9.3
MEANING ORIENTATION	36.7	31.1-43.7	38.0	35.9-42.4	37.2	31.0-42.6
REPRODUCING ORIENTATION	37.0	34.5-39.4	34.6	27.4-36.4	36.5	32.1-40.0
NON-ACADEMIC ORIENTATION	22.9	21.0-25.3	22.8	19.1-24.1	22.6	19.7-25.0
STRATEGIC ORIENTATION	28.2	24.4-29.8	25.5	21.6-30.8	28.7	25.7-32.7
PERCEPTIONS OF COURSES						
Formal teaching methods	6.7	5.5-7.8	12.0	9.6-13.5	12.1	10.0-16.2
Clear goals and standards	11.0	8.4-12.7	11.4	10.0-13.3	12.2	11.5-13.8
Workload	9.0	5.6-13.5	9.9	8.4-12.1	12.9	5.5-14.3
Vocational relevance	8.2	6.2-9.0	8.9	5.3-12.6	13.4	9.0-15.1
Good teaching	11.8	8.0-14.1	11.8	10.7-12.8	11.4	9.1-13.2
Freedom in learning	10.4	7.4-12.6	8.2	6.3-11.3	8.1	5.8-11.7
Openness to students	8.7	6.2-11.8	9.2	6.4-12.1	8.6	6.7-11.1
Good social climate	9.9	7.8-12.0	11.2	9.0-12.7	11.0	8.3-13.9
STUDENT-CENTRED	22.2	18.6-25.6	20.1	18.0-22.4	19.6	16.9-23.7
CONTROL-CENTRED	8.4	4.2-14.9	11.6	7.3-14.8	14.1	3.8-18.5

LASI SCORES BY DISCIPLINE

Means of sub scales and ranges of departmental mean scores by Discipline

Subscales and	English		History		Psychology	
scales	Mean	Range	Mean	Range	Mean	Range
APPROACHES TO STUDYING						
Deep approach	11.2	10.2-12.7	11.3	10.4-12.0	10.8	9.9-12.4
Inter-relating ideas	10.5	8.6-11.5	10.1	9.6-11.2	10.9	10.1-12.0
Use of evidence	9.4	9.1-9.6	9.5	8.9-10.6	9.6	8.5-11.0
Intrinsic motivation	9.5	8.1-10.3	8.5	7.3-9.6	9.3	7.3-10.5
Surface approach	12.9	11.0-14.7	12.4	11.2-14.0	12.8	11.7-14.1
Syllabus-boundness	7.0	5.4-8.1	7.6	6.4-8.7	7.7	6.4-8.6
Fear of failure	5.8	4.5-6.9	5.7	5.0-6.4	5.9	4.8-7.0
Extrinsic motivation	2.8	1.5-5.1	3.3	2.0-4.4	4.5	2.8-5.6
Strategic approach	9.8	8.3-10.6	9.8	8.8-11.2	10.2	8.9-11.1
Disorganised study methods	9.2	7.8-11.4	8.2	7.1-10.6	9.9	8.7-13.0
Negative attitudes towards studying	4.5	4.4-6.3	5.9	5.0-6.4	5.3	4.2-8.6
Achievement motivation	9.0	8.0-10.0	9.0	8.0-10.0	8.8	7.3-9.9
Comprehension learning	11.0	10.0-11.7	8.7	7.8-10.0	9.0	7.9-10.1
Globetrotting	7.8	6.8-8.9	7.2	6.3-8.5	8.2	7.4-9.3
Operation learning	8.6	7.5-9.4	9.8	8.5-10.7	9.2	8.2-10.2
Improvidence	6.8	4.4-8.4	7.1	6.3-8.0	7.4	6.2-8.7
MEANING ORIENTATION	40.6	37.5-43.7	39.4	37.2-42.8	40.7	36.0-44.4
REPRODUCING ORIENTATION	32.5	27.3-36.6	32.7	29.3-35.7	33.7	31.0-37.3
NON-ACADEMIC ORIENTATION	22.7	20.1-25.8	21.3	19.1-23.2	23.5	20.7-30.9
STRATEGIC ORIENTATION	21.4	18.0-24.0	22.2	19.2-24.7	23.6	21.5-26.0
PERCEPTIONS OF COURSES						
Formal teaching methods	3.3	2.5-5.3	2.7	2.1-3.6	6.7	3.8-9.1
Clear goals and standards	6.7	3.6-9.5	8.0	6.2-10.6	8.6	5.6-11.9
Workload	10.0	5.6-12.3	11.2	7.5-14.8	9.0	5.3-12.6
Vocational relevance	3.9	3.1-4.7	4.8	3.5-5.6	6.5	4.7-8.4
Good teaching	11.4	8.1-13.8	11.8	9.8-14.0	11.8	9.2-14.0
Freedom in learning	11.7	7.4-15.8	11.2	5.0-13.2	9.7	7.9-12.6
Openness to students	8.5	5.9-13.5	7.7	4.2-9.8	9.9	7.4-12.8
Good social climate	9.0	6.9-13.6	9.2	6.9-10.3	11.5	10.2-13.5
STUDENT-CENTRED	23.1	15.6-26.4	23.3	14.8-26.0	21.7	17.6-26.0
CONTROL-CENTRED	8.1	2.5-14.9	10.3	4.5-19.8	8.9	2.4-14.3

APPENDIX K

LETTER OF PERMISSION TO INCLUDE FIRST-YEAR NURSING STUDENTS IN THE TARGET POPULATION

Tel. no. 4053654
Seminaarkamer 3
Frik Scott biblioteek
Interne Bus G1
28 Mei 1998

Prof. SF Coetzee
Rektor
UOVS
BLOEMFONTEIN

Geagte professor Coetzee

TOESTEMMING VAN DIE REKTORAAT I/S NAVORSING OP STUDENTE AS TEIKENPOPULASIE

Hiermee vra ek toestemming om 'n groep studente in hulle eerste jaar aan die UOVS in te sluit by my navorsingsprojek vir die verwerwing van my graad M.Soc.Sc. (Verpleegkunde) aan die UOVS.

Die titel van my navorsingsprojek is: *"Evaluation of problem-based learning at a particular stage of an undergraduate nursing education programme"*.

Ek beplan om twee vraelyste aan die eerstejaarstudente in verpleegkunde (B.Soc.Sc.) te gee vir voltooiing. Die doel van die eerste vraelys is om te bepaal hoe probleemgebasseerde leer as 'n onderrigstrategie die groep se leerstyle beïnvloed het en dit word bepaal d.m.v. 'n gestandardiseerde vraelys nl. die Lancaster vraelys. Die doel van die tweede vraelys is om studente se tevredenheid met die onderrigstrategie te bepaal en items in die vraelys word dedukties afgelei uit die literatuuroorsig. Verder word daar beplan om 'n oudit op die kursusinhoud te doen om te bepaal of dit voldoen aan die vereistes soos gestel deur die Nasionale Kwalifikasie Raamwerk en die plaaslike kursusdoelstellings. Toets- en eksamenpunte gaan ook ontleed word om die sukses van die onderrigstrategie te bepaal. Al bg. data word met vertroulikheid hanteer en studente het 'n keuse m.b.t. anonimiteit.

Die Etiekkommitee van die Fakulteit Gesondheidswetenskappe vergader op die 9de Junie om my protokol te evalueer vir goedkeuring en het toestemming van die Rektoraat as 'n voorvereiste gestel voordat goedkeuring verleen kan word.

Baie dankie vir u vriendelike oorweging.

By voorbaat dank.

Die uwe

J Becker.

Susan Becker
St. no. 7508638

Mev Becker
Interne Bus G1
UOVS

In aanleiding van u versoek aan prof Coetzee het die **Rektorsdagbestuur** op 19[illegible]06-05 soos volg besluit:

4.3 TOESTEMMING VAN RDB VIR NAVORSING OP STUDENTE AS TEIKENPOPULASIE: M Soc Sc: SUSAN BECKER

Goedgekeur mits die Dekaan van Gesondheidswetenskappe akkoord gaan

Groete

Edma Pelzer
Bestuurder: Kantoor van die Rektor
1998-06-08

Goedgekeur.

APPENDIX L

LETTERS OF PERMISSION TO USE THE LASI

THE UNIVERSITY OF MELBOURNE
INSTITUTE OF EDUCATION
CENTRE FOR THE STUDY OF HIGHER EDUCATION

27 June 1989

The Director
Student Counselling and Health Bureau (BVG)
University of the Orange Free State
P.O. Box 339
BLOEMFONTEIN, 9300
REPUBLIC OF SOUTH AFRICA

Dear Dr Ventner,

Thank you for your letter of 16 June. I am happy to give my permission for you to translate the Lancaster questionnaires and to use them for research and developmental counselling purposes. I look forward to seeing the translations and hearing about the results.

Yours sincerely,

Paul Ramsden

Paul Ramsden

Parkville, Victoria 3052, Australia.
Telephone: 03 +61 3 344 6313 Fax.: 344 5104 UNIMEL

UNIVERSITY OF EDINBURGH
Department of Education
10, BUCCLEUCH PLACE, EDINBURGH, EH8 9JT 031-667 1011

Professor N.J. Entwistle, B.Sc., Ph.D.

Dr J.A. Venter
Student Counselling Service
The University of the Orange Free State
P.O. Box 339
9300 Bloemfontein
Republic of South Africa

14th July 1989

Dear Dr Venter

Thank you for your letter about the use of the Lancaster "Approaches to Studying and Course Perceptions" questionnaire. I am not sure whether I mentioned previously the work that Professor Erik Meyer is doing in Cape Town. If you are not aware of it I think you should contact him as he has been using the inventory extensively in his work. His address is as follows: Professor J.H.F. Meyer, Teaching Methods Unit, University of Cape Town, University Private Bag, Rondebosch 7700, South Africa.

Yours sincerely

Professor N.J. Entwistle

APPENDIX M

FIRST-YEAR UNDERGRADUATE COURSE OUTCOMES

First-year undergraduate course outcomes UOFS: Faculty of Health Sciences: School of Nursing Prof Y Botma

AIM OF THE COURSES

To provide a comprehensive health service with respect to the care of the community, community planning and diagnosis as well as development and involvement. Community pathology and the influence thereof on health care as well as the role of health education result from this.

Deliver quality, comprehensive nursing care to individuals, groups and/or communities as they apply in hospital and community settings as part of the health care team, by the use of relevant information, scientific findings and the technology.

CRITICAL OUTCOMES

The student will master the following outcomes:

1. Identify and resolve nursing problems by the use of a variety critical thinking and problem-solving skills.
2. Apply management principles and demonstrate leadership skills.
3. Effectively co-operate with role players, organised groupings organisations or communities and negotiate as a member of the health care team.
4. Participate in partnership negotiations.
5. Interpret and implement research findings and other innovative suggestions.
6. Respect the dignity and uniqueness of people in their socio-cultural and religious contexts.
7. Promote community involvement.
8. Analyse and operationalize the underlying theories that endorse the role of the clinical nurse.
9. Demonstrate insight in the scope of professional nursing practice.
10. Maintain a high standard of ethical norms and professional behaviour.

11. Act successfully as a leader, scribe and timekeeper and member of the small student group and as role model in the health care team.

VRT117 AND VRP110

- One semester course with one three hour paper
- One semester course with a OSCE (practicals)

Theme 1: Group dynamics

Theoretical	Practical
➢ Types of groups ➢ Strong and healthy groups ➢ Problem makers ➢ Evaluation ➢ Communication ➢ Partnerships ➢ Leadership	➢ Meeting procedure ➢ Public speaking ➢ Leadership ➢ Communication skills

Theme 2: Care to the community

Theoretical	Practical
A ➢ Primary health care and health systems ➢ Sickness and health continuum ➢ Scope of practice ➢ Role of the nurse ➢ Ethics (profession and human rights) ➢ Nursing process ➢ Community assessment (profile) **B** ➢ Environmental hygiene ➢ Birth and death rates	➢ Hygiene ➢ Fluid balance ➢ Body mechanics ➢ Vital signs ➢ Wound care

Theme 3: Community development

Theoretical	Practical
➢ Basic principles of community development ➢ Choice of a specific project ➢ Role of the community development worker (CDW) ➢ Skills of the CDW ➢ Communication ➢ Motivation	➢ Entering the community ➢ Community assessment and profile ➢ Negotiation ➢ Conflict management ➢ Record keeping ➢ Client education

Theme 4: Hospital orientation

Theoretical	Practical
➢ Professional responsibility ➢ Professional development	➢ Admission and discharge ➢ Beds and positions in bed ➢ IV and catheter care ➢ Urine testing ➢ Injections ➢ Pre- and post operative care ➢ Oxygen therapy ➢ Interpersonal relationship ➢ Self protection

SPECIFIC OUTCOMES

Students will be able to:

- ❒ Management
  - ➢ Apply management principles
  - ➢ Implement principles of partnership
  - ➢ Demonstrate leadership skills
  - ➢ Promote community involvement
  - ➢ Implement decision-making principles

- ❒ Communication
  - ➢ Communicate multi-culturally
  - ➢ Collect information
  - ➢ Convey information
  - ➢ Apply meeting procedures
  - ➢ Document accurately
  - ➢ Use subject terminology
  - ➢ Demonstrate negotiating skills
  - ➢ Motivate a community
  - ➢ Demonstrate counselling
  - ➢ Act as a patient advocate
  - ➢ Utilize contracting
  - ➢ Learning partnership
  - ➢ Be a partner conflict management
  - ➢ Supporting a partnership
  - ➢ Acting as group leader
  - ➢ Giving patient instruction

- ❒ Problem-solving
  - ➢ Collect data
  - ➢ Identify the problem
  - ➢ Analyse the problem
  - ➢ Set hypotheses/alternatives
  - ➢ Make a choice in terms of decision-making principles
  - ➢ Implement a plan
  - ➢ Reflect about the process of problem-solving

- ❒ Professional development
  - ➢ Apply the health persuasion model throughout
  - ➢ Identify various occupational opportunities in practice
  - ➢ Identify the relevant nursing roles played during the course

- ❒ Technology
  - ➢ Use electronic communication
  - ➢ Use data collection instruments
  - ➢ Utilize resources

- ❒ Professional responsibilities
  - ➢ Take responsibility for own studies
  - ➢ Accept responsibility for own studies
  - ➢ Accept responsibility for the project
  - ➢ Act within the scope of practice
  - ➢ Demonstrate ethical behaviour
  - ➢ Demonstrate awareness of the rights and responsibilities of others
  - ➢ Act within relevant laws of the country
  - ➢ Act within the scope of nursing practice

- ❒ Health behaviour
  - ➢ Identify factors that influence health behaviour
  - ➢ Evaluate own health behaviour
  - ➢ Motivate a patient to change health behaviour

THEME OUTCOMES

Theme	Outcomes
1. Group dynamics	➢ Define group dynamics ➢ Differentiate between two types of small groups (Swanepoel and de Beer) ➢ Discuss group well-being ➢ Discuss evaluation as a self-strengthening exercise ➢ Give guidelines for strong and healthy groups ➢ Name how a group leader can facilitate strong and healthy groups ➢ Discuss and compare different problem makers in groups regarding definition and how they should be treated ➢ Distinguish between process and product evaluation

	➢ Discuss the role players in a meeting as well as the responsibility of each. ➢ List common problems encounter in all meetings ➢ Name the basic criteria for a good meeting ➢ Discuss or make a checklist for the preparation and delivery of a public speech ➢ Name three ways of keeping record ➢ Discuss the importance of communication in leadership ➢ Define partnership
2. Care to the community	➢ Define PHC ➢ Name the principles of PHC ➢ Discuss the aims of PHC ➢ Discuss the illness-health continuum ➢ Distinguish between the role of a nurse and the scope of practice ➢ Define the nursing process ➢ Master all objectives in Mulder's practical guide part 1 regarding: ◊ Hygiene ◊ Fluid balance ◊ Body mechanics and ◊ Vital signs
3. Community development	➢ Discuss the basic principles of community development ➢ Discuss the development environment ➢ Discuss the role of the community development worker ➢ List the contents of your private strategy during community development ➢ Name discuss the three main goals of contact-making ➢ List the do's and don'ts on contact-making ➢ Discuss the do's and don'ts of needs identification ➢ Name, explain and give e.g. different barriers to communication ➢ Know the do's and don'ts regarding communication ➢ Define the three fold character of motivation ➢ Name what you can do to motivate people as well as how to keep the motivation going ➢ Discuss how you can prepare for negotiation ➢ List characteristics of a good negotiator ➢ Name three main causes of conflict
4. Hospital orientation	➢ Master all applicable objectives in Mulder's practical guide part 1

EVALUATION AND REQUIREMENTS TO PASS

VRT117

1. The final passmark for VRT117 is 50%.

2. A semester mark is earned by means of formative and summative evaluation and comprises 50% of the final passmark.

3. Formative and summative evaluation entail the writing of weekly class tests, two predicate tests as well as marks achieved in group evaluation sessions. The two predicate tests comprises 70%, the class tests 20% and group evaluation 10% of the semestermark.

VRT110

1. The final passmark for VRP110 is 65%.

2. A semester mark is earned by means of formative and summative evaluating and comprises 40% of the final passmark.

3. Formative and summative evaluation entail Tripple jump exercise; computer skills, community profile and client education speech.

4. An OSCE comprises 60% of the final passmark.

RESOURCES

BALDWIN, S. 1998. *Needs assessment and community care: Clinical practice and policy making.*

CALSON, N., GOLDSTEIN, S. & NTULI, A. 1998. *Promoting health in South Africa: An action manual.*

DE BEER, F. & SWANEPOEL, H. 1996. *Training for development: A manual for student trainers.*

MASLIN-PROTHERO, S. 1997. *Baillière's study skills for nurses.*

MULDER, M. 1998. *Practical guide for general nursing science. Part 1.*

STEWART, T.H. 1985. *An introduction to public health.*

SWANEPOEL, H. & DE BEER, F. 1996. *Community capacity building: A guide for fieldworkers and community leaders.*

SWANEPOEL, H. & DE BEER, F. 1996. *Communication for development: A guide for fieldworkers.*

THEME OUTCOMES

Theme	Outcomes
4. Environmental health - Water	• Discuss water -related diseases • Discuss impurities present in water • Name the processess that can be used to purify water. • Compare four processess to purify water on a small scale. • Explain when the water supply of a town can be considered adequate.
- Ventilation	• Describe the natural forces which bring about ventilation. • Describe the consequences of inadequate ventilation. • Name the main sources of atmospheric pollution. • Discribe diseases which may result from atmospheric polution. • Describe preventive measures for the above.
- Housing	• List the common results of inadequate housing and overcrouding. • Name the requierments of good housing. • Describe the housing and slums acts
-Refuse and Sawage	• Name the types of refuse for disposal in human communities. • Name and compare conservancy methods of diposal with the sewage or water carriage system. • In a diagram summerize the treatment of sewage at a sewage treatment plant. • Describe the information you will give to an informal community on the construction of pit tiolets as an solution to environmental pollution from human excreta.
5. Epidemiology	• Name the aims of epidemiology. • Define three most commonly used statistics inepidemiology. • Explain how you would compute the crude birth and death rate of a population. • List the uses of health statistics. • Describe two methods basically used by epidemiology.