

**Effectiveness and Cost-Effectiveness of
Pre-registration Nursing and Physiotherapy
Education in an Education Consortium in England**

**VOLUME 1
(of 2)
TEXT**

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Abstract

Aim

To identify the most cost effective university providers of newly qualified nurses and physiotherapists in an anonymized education consortium in England from the employers' perspective.

Design and Methods

Four paradigms of effectiveness - fitness for purpose, professional standing, practice and award were examined. Fitness for purpose was selected as the most appropriate for an employer. In the absence of established scales for fitness for purpose, two were developed from outcomes & related competencies. Service representatives confirmed appropriateness of these competencies.

Factor analysis identified dimensions of fitness for purpose of newly qualified adult branch nurses and physiotherapists in order of importance. Mean percentages of fitness per dimension were calculated for each professional group. Rank orders of outcome importance were identified. Overall fitness for purpose per profession, university, category of assessor and dimension, were calculated from the product of mean fitness for purpose and importance.

A costing algorithm was developed. Costs per indexed, in-training, qualified and fit for purpose nurse, and physiotherapist, were generated. Combining student numbers and costing data permitted cost-effective ratios to be generated and sensitivity analyses to be undertaken.

Setting

The first major contract review of nursing and midwifery undertaken by the specific education consortium.

Survey Methods

Clinical and managerial staff completed postal questionnaires at the close of newly qualified nursing and physiotherapy staff preceptorships. University management accountants completed the activity based costing algorithm.

Main outcome measure

Cost per newly qualified fit for purpose nurse or physiotherapist.

Results

Effectiveness: All categories of assessor of newly qualified adult branch nurses and physiotherapists rated the average student fit for purpose that is above an agreed mark threshold of 50%. Directors of Nursing rated the average newly qualified as not fit on 8 out of 25 dimensions. A small number of newly qualified adult branch nurses and physiotherapists were rated as fit for academic award, practice, and professional standing but not fit for purpose. Cost: Cost per student increases through attrition. Cost-effectiveness: Cost per fit for purpose employee was consistently lower, at a different university, for each profession.

Conclusions

Differences in student attrition, rather than differences in fitness for purpose, were the main determinant of cost-effectiveness in pre-registration nurse education within the study consortium. In pre-registration physiotherapy education variation in cost per indexed student was the main determinant.

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Preface, Acknowledgements and Author's Declaration

Preface.

Reported concerns in the literature about the perceived lack of fitness for purpose of newly qualified nurses in combination with high attrition rates were the stimulus for a cost-effectiveness study of providers in an education consortium in England. Integration of Colleges of Health with their local university in April 1996 provided the author, a former senior manager of one of the colleges, with an opportunity to address this area of interest as part of a project funded from integration staff development monies. Support was forthcoming from the study consortium.

The author had a previous knowledge and interest in economic issues as a consequence of the nature of the former post, and a personal desire to study at higher degree level with a major taught research component. The author successfully registered and commenced study at the Department of Health Sciences and Clinical Evaluation, University of York, in October 1996.

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The author wishes to acknowledge the contribution made to this study at three levels: national, regional and local.

National.

- United Kingdom Central Council for Nursing, Midwifery, and Health Visiting: Mrs Angie Roques, Director of Policy Development, Commission for Education.
- English National Board: Mrs J Marr, Director, Northern Regional Office.
- Chartered Society of Physiotherapy: Ms Jennie Carey, Education Officer.
- NHS Executive, Mr Hedley Hilton, Human Resources Directorate, Non-Medical Health Care Education and Training.

Regional.

- The study education consortium: Vice Chairman, Business Managers, Finance and Performance Manager, Contracts and Marketing Officer, and Administrative Secretary.
- Nursing & Physiotherapy Advisory Groups: Two advisory groups were established, each in nursing and physiotherapy. Each comprised of seven senior managers.

Local - Research Advisory Group, University of York.

External Members: Vice Chairman of Education Consortium, a local senior nurse manager, one local senior physiotherapy manager, a Senior Lecturer, School of Nursing and Midwifery, University of Sheffield (Mr M. Day) and an education consultant (Dr A. Powell).

Internal Members (Department of Health Sciences and Clinical Evaluation): Professor I Russell, (Chair), Ms K. Bloor, Dr A. Garratt and Dr D. Russell.

University Liaison.

The researcher is profoundly grateful to senior nurse and physiotherapy academics and managers within contributing universities with whom he liaised. In order not to identify these universities, they are anonymised through the use of randomly selected letters.

Author's Declaration.

The author takes full responsibility for the content of this thesis, in particular the Yorkshire Competency Outcomes for Nurses (YCON), the Yorkshire Competency Outcomes for Physiotherapists (YCOP), and the Costing Algorithm for NMET, especially their development, testing, validation, implementation, analysis, synthesis and reporting. Whatever national, regional and local advisers

acknowledged above made original contributions as well as giving advice on the author's proposals, their contributions are explicitly acknowledged.

Chapter 1 Background

1.0 Philosophy.

This background chapter has three components. First, an explanation of the research thesis and evaluative paradigm underpinning this research into the effectiveness and cost effectiveness of pre-registration nursing and physiotherapy education in an anonymous education consortium in England (Table 1). It includes an outline of the purpose and content of the six incremental parts of the paradigm; benefit identification, benefit estimation, cost identification, cost estimation, comparison of benefits and costs and a sensitivity analysis including reporting results in context. The second component is a detailed examination of the six parts. Finally, key research questions are reaffirmed.

This chapter follows three main themes: effectiveness, cost and cost effectiveness. This pattern is followed through out the thesis. The overall thesis plan is contained in Table 2.

	Effectiveness	Cost	Cost Effectiveness
Background	Research Thesis and Evaluative Paradigm. 1 Benefit Identification. 2 Benefit Estimation.	3 Cost Identification. 4 Cost Estimation.	5 Benefit and Cost Comparison. 6 Sensitivity Analysis and Results in Context

Table 1 Thesis plan for analysis of effectiveness: cost & cost effectiveness, chapter 1 background, evaluative paradigm.

Research thesis and evaluative paradigm.

Research Thesis.

From the NHS perspective, the purpose of NMET is to produce an adequate supply of appropriately trained and fit for purpose newly qualified practitioners to meet the needs of the NHS and other key employers. Some NHS managers and employers have suggested that newly qualified nurses and physiotherapists are not fit for purpose at the point of registration. To date the NHS cannot

demonstrate that universities fulfill their requirement to produce fit for purpose newly qualified practitioners and identify which, at the Confederation level, is most cost effective. Consequently, it cannot target informed policy in this regard. The reason for this is three fold. First, philosophically the concept of fitness for purpose when critiqued by nurse academics was rejected as a model of professional education because, as a purchaser model for commissioning education, its association was with the narrowly perceived employers' requirements. Instead, researchers preferred a practice-provider role where nurses, amongst other expressions, are seen as 'fit for the future' and capable of practicing anywhere in the world. Other beneficial contributions were not considered.

	Effectiveness	Cost	Cost Effectiveness
Background	Research Thesis and Evaluative Paradigm. 1 Benefit Identification. 2 Benefit Estimation.	3 Cost Identification. 4 Cost Estimation.	5 Benefit and Cost Comparison. 6 Sensitivity Analysis and Results in Context
Methods	1 Developing Outcome Measures: Competence and Performance. 2 Calculation of Student Attrition, Commissioning Ranges and Categories of NMET Students.	3 Application of HEFCE's Five-Step Costing Process to NMET Contracts. 4 Calculating Cost per Contracted Student Category and Newly Qualified Employees.	5 Cost-effectiveness: Ratios of Pre-registration Nursing and Physiotherapy Education.
Results	1 Dimensions of Fitness for Purpose. 2 Mean Fitness for Purpose Per Dimension. 3 Overall Weighted Mean Fitness for Purpose. 4 Estimates of Relative Importance of Learning and Performance Outcomes.	5 Financial Returns	6 Cost Per Category of Qualified Nursing Student and Fit for Purpose Employee
Discussion	1 Effectiveness and Fitness for Purpose: Main Findings and Implications, Sensitivity Analysis, Potential Limitations and Policy Implications.	2 Costing and Pricing of NMET Contracts: Main Findings and Implications, Potential Limitations and Policy Implications.	3 Cost-effectiveness of Pre-Registration Nursing & Physiotherapy Education: Main Findings and Implications, Potential Limitations and Policy Implications.
	4 Summary of Main Findings and Implications and Future Research.		

Table 2. Thesis plan for analysis of effectiveness, cost and cost-effectiveness by background, methods, results and discussion of results.

Second, in the absence of an appropriate outcome measure of fitness for purpose (FfPu) the NHS has interpreted this as an expression of this concept being either difficult or impossible to measure. Third, this perception has been generally accepted and consequently, other measures like fitness for award, practice and professional standing are used as a proxy measure for FfPu. These reasons have understandably but unfairly cast doubt over the role and value of FfPu in professional health care education. Consequently it has not been possible for the NHS or others to: measure FfPu, cost a fit for purpose nurse and physiotherapist, produce cost effectiveness ratios for university providers, and make policy for FfPu.

This thesis argues that FfPu is the legitimate perspective for the NHS, acting through employers and that current limitations described above can be overcome. To do this FfPu first needs to be tested as the most appropriate benefit and perspective for the NHS as an employer. Once confirmed it should be described in terms of FfPu outcomes and competencies that newly qualified nurses and physiotherapists should possess at qualification. Second, clinicians and managers should then assess the FfPu of the newly qualified based on their performance in the work place and these measures then valued. Third, university expenditure, should be compared with overall outcome measures of FfPu pertaining to newly qualified nurses and physiotherapists educated at universities. From these the cost per fit for purpose student and the identification of the most cost effective university provider can be identified. Finally, NMET policy can be generated by key stakeholders if newly qualified nurses and physiotherapists are found to be not fit for purpose at the point of registration as is claimed by some NHS managers and employers.

Research questions addressed by this thesis fall into two categories: theoretical and methodological, and practical and span benefits/effectiveness, cost and cost effectiveness.

Theoretical and methodological research questions.

Benefits/Effectiveness.

RQ 1 Which is the most appropriate fitness benefit, from the economic perspective of employers, for use in the CEA?

RQ 2 What are the main causes of the theory-practice gap that can negatively affect acquisition and maintenance of competence, performance and effectiveness?

RQ 3 Are there any appropriate, valid and reliable psychometric measurement scales of FfPu for NQABNs & NQPs?

RQ 4 What methodologies produce profiles of FfPu so that the resultant scores can be used to calculate CER's?

Costs.

RQ 5 How is NMET funded, contracted and publicly accountable?

RQ 6 Is there an economic framework for the production of NMET?

RQ 7 What costing methodologies does HE use in England in general and in nursing and physiotherapy in particular?

RQ8 What are the characteristics of pre-registration nursing & physiotherapy student attrition?

Cost-effectiveness.

RQ9. Which is the most appropriate full economic analysis for this research?

Practical research questions.

Benefits/Effectiveness.

RQ10 How, in practice, is FfPu to be measured?

Costs.

RQ11 How, in practice, are costs to be measured?

Cost Effectiveness.

RQ12 Which of the competing universities is the most cost effective at producing fit for purpose NQABNs & NQPs?

RQ13 What are the policy implications arising from the hierarchy of cost effectiveness ratios in respect of NMET objectives, prices, inputs, technology and outputs?

Evaluative paradigm.

Economic evaluation is a technique used to assist the decision making process when choices have to be made between several courses of action. It involves drawing up a balance sheet of advantages (benefits) and disadvantages (costs) associated with each option so that choices can be made. Resources, people, time, facilities, equipment and knowledge are scarce (Drummond et al., 1993). The opportunity use of a resource is the value of the next best alternative use of that resource. Use of scarce resources implies some opportunity costing. The resources required to produce pre-registration nursing and physiotherapy education could be used for something else e.g. patient services.

Those who plan, provide, receive or pay for pre-registration nursing and physiotherapy education should ideally be influenced by the balance sheet of identified benefits, costs and associated opportunity costs. Decisions to purchase more of, or disinvest from, a given benefit e.g. pre-registration nurse or physiotherapy education or to invest in something new e.g. the new nursing curriculum 'Making a Difference' (DoH 1999), requires organized consideration of key benefits, costs and opportunity costs. Only then, should decisions be taken and implemented.

Benefit identification.

Four major benefits pertaining to pre-registration education were identified:

- Fitness for award (FfA)
- Fitness for practice – (education), (FfPr)

- Fitness for professional standing (FfPS)
- Fitness for purpose (FfPu).

These benefits required defining, evaluating and a choice made as to which was the most appropriate benefit for use as the effectiveness component of this study in the context of a comparative analysis of two polarized forces: FfPu; a purchaser model, and FfPr; a provider role, and the move to a more liberal interpretation of outcome based competencies. Each benefit relates to a different and valuable economic perspective and each is discussed. The perspective of this study was that of the study education Consortium/Confederation or purchaser on behalf of NHS and other employers of newly qualified nurses and physiotherapists who seek FfPu. Other approaches favour other benefits: award favours academic judgements about students, courses and awards, practice–(education) favours preparation for registration, and standing favours patients’ rights, professionalism and society.

Benefit estimation.

Measurement is an essential component of scientific research in the natural, social, or health sciences (Streiner & Norman 1989). Health science researchers are often tasked with measuring some thing not measured before like FfPu. Protocols must be followed which usually commences with a systematic analysis of the literature.

Such an analysis was undertaken based upon the NHS CRD (1996) guidelines and modified by Russell et al., (1996) in order to locate existing scales for the measurement of the benefit of FfPu in newly qualified nurses and physiotherapists. Selection of an FfPu scale was based on the appropriateness of scale items and evidential support for the instrument, e.g. face and content validity, reliability etc. If no appropriate ‘gold standard’ FfPu scales were identified, then two psychometric scales, one each for newly qualified nurses and physiotherapists, would be developed. Each in accordance with the recognized

protocol: item devising, scaling responses, item selection, progression of items to scales and checks of reliability and validity.

The FfPu benefit associated with the stakeholder perspective of education Consortia/Confederations was the effectiveness of newly qualified nurses and physiotherapists in the workplace i.e. their competence, performance and effectiveness. Competence acquisition and maintenance are affected by a variety of key issues: the nature of the concept of professional competence, different models and types of competence, the concept of total professional competence, progression from novice to expert practitioner and the primacy of caring, the relationship between the theory and practice of professional education and the successes and challenges of professional education. Each had an important contribution to make to the structure and items comprising each psychometric scale.

Analysis of data arising from the implementation of the two scales was by the statistical approach of factor analysis. This enabled identification of a mainly small number of dimensions of FfPu from among a larger number of competence variables constituting each scale. These dimensions described FfPu from a variety of perspectives: self perception by the newly qualified, perception of the newly qualified by their Supervisors or Preceptors, Sisters/Charge Nurses or Superintendents and Directors of nursing and Heads of physiotherapy services. It could not be assumed that all groups of staff from both professions perceived FfPu in the newly qualified in an identical way.

Cost identification.

Throughout England, pre-registration nurse education (rather than midwifery and health visiting) recruits the largest number of students. The Adult Branch is the largest and consumes the most resources. The same is true of pre-registration Physiotherapy when compared with other allied health professions (AHPs). For these reasons they were selected.

NMET and MPET funding related to NHS reforms and levy, and contracting of nursing and physiotherapy education in England i.e. models and value for money (VFM) were discussed. The production of NMET was considered from the perspective of Tsang's (1988) economic framework for the analysis of inputs and outputs from the view point of NMET efficiency.

Cost estimation.

Cost, opportunity cost and price are not the same. Cost can be variously classified: fixed-costs that do not vary, variable-costs that vary directly with level of production, average costs-total costs divided by the total level of output etc. Opportunity cost is a measure of the economic cost of using scarce resources to produce one particular good or service in terms of the alternatives forgone (Pass et al., 1993). The opportunity cost of a resource is the value of the next best alternative. Price is the money value of a good, service, asset or factor input. Cost estimation, in this study, involved the examination of three major components: costing higher education (HE) in England using HEFCE's staged process, costing nursing and physiotherapy education and costing the related issue of student nurse and physiotherapy attrition. Integration of the three into a single costing algorithm enabled the average cost per key benefit i.e. fit for purpose newly qualified Adult branch nurse (NQABN) and physiotherapist (NQP) to be identified.

Comparison of benefits and costs.

There are four types of full economic evaluation: cost minimization analyses (CMA); cost effectiveness analyses (CEA); cost utility analysis (CUA) and cost benefit analysis (CBA). All are full evaluations, as opposed to partial, because they include both costs (inputs) and consequences (outputs) of two or more considered alternatives (Drummond et al., 1993). In CMA, the outcome is the same but the costs differ. In CUA the value or worth is a specified level of health status e.g. quality adjusted life years (QALY). In CBA, benefits are valued in money terms. In CEA, outcomes are measured in natural units e.g. in health, life year gained.

A CEA was undertaken in this study using the natural unit of overall weighted mean percentage of fitness for purpose (OWM%FFP) as the measure of effectiveness or FfPu of the NQABNs & NQPs. All the study universities provided this output. University providers were compared on the basis of cost and effectiveness (OWM%FFP). From this the most cost effective university provider was identified for nursing and physiotherapy. The most cost effective provider of the other benefits was also established and compared.

Sensitivity analysis and results in context.

Every economic evaluation contains some degree of uncertainty, imprecision or methodological controversy (Drummond et al., 1993). This study was no exception. To minimize imprecision and controversy sensitivity analyses were performed in respect of effectiveness and costs. In effectiveness Nursing and Physiotherapy Advisory Groups confirmed the appropriateness of a 50% threshold of FfPu. Implications of adopting the 40% academic threshold for FfPu were considered. Prices per pre-registration nursing and physiotherapy students in England were identified in the literature. Cost per student and cost effectiveness ratios from this research were compared with price per student in the literature and differences reported. Further, a sensitivity analysis was performed when the cost effectiveness ratios were recalculated based on adherence to contract values rather than actual expenditure.

Finally, the opportunity offered by a sensitivity analysis was exploited in order to identify which existing predominantly qualitative approaches assisted in the identification of other benefits or costs of pre-registration nursing and physiotherapy education that the health sciences evaluation approach might have missed.

1.1 Benefit Identification

1.1.0 Introduction.

The purpose of this research is to identify, from the employer's viewpoint, the most effective and cost effective university provider of newly qualified pre-registration nurses and physiotherapists in an anonymous education Consortium/Confederation in England. In order to identify, from the employer's perspective, the most appropriate benefit to measure effectiveness of NQABNs & NQPs in the workplace a sequential analysis of FfA, FfPr (education), FfPS & FfPu was undertaken (Table 3). This analysis was considered in the context of a comparative analysis of two polarized forces: FfPu; a purchaser model, and FfPr; a provider role, and the move to a more liberal interpretation of outcome based competencies. Fitness for purpose was the selected as the outcome benefit from the employer's viewpoint.

	Effectiveness	Cost	Cost Effectiveness
Background	Research Thesis and Evaluative Paradigm. 1 Benefit Identification. 2 Benefit Estimation.	3 Cost Identification. 4 Cost Estimation.	5 Benefit and Cost Comparison. 6 Sensitivity Analysis and Results in Context

Table 3 Thesis plan for analysis of effectiveness, cost & cost effectiveness: chapter 1 background, 1 benefit identification.

1.1.1 Benefit identification: fitness for award, practice–(education), professional standing and purpose.

Stakeholders in nursing and physiotherapy education each expect pre-registration programmes to produce students who are FfA, FfPr (education), FfPS and FfPu (UKCC 1999, UKCC 2000). Each benefit is associated with a primary stakeholder perspective:

- FfA (Quality Assurance Agency (QAA) & individual HEIs),
- FfPr (education) (Professional and Statutory Bodies (PSB's), European Union (EU) and Privy Council (PC)),

- FfPS (Professional and Statutory Bodies (PSBs), European Union (EU) and Privy Council (PC)),
- FfPu (education commissioners/consortium/workforce development confederations on behalf of employers of newly qualified practitioners).

All stakeholders have a secondary interest in the other three fitness benefits. Student nurses and physiotherapists experience each benefit in parallel and not in series. A few characteristics of each benefit are common to both groups.

Fitness for award.

Universities are primarily concerned with FfA, i.e. quality assured academic judgments about the scope, level, pace, breadth and attainment applicable to learning programmes and those undertaking them (HEQC 1996; JM Consulting 1998; Runciman et al., 1998; NHS E 1999; UKCC 1999, NAO 2001). FfA, is also about being qualified, competent and worthy. It spans learning and programmes of study, the currency of academic awards, learning and professional competence, and kite marks of achievement for employers. The HEQC, QAAHE and PSBs are the key literary sources of characteristics.

Applicants applying to undertake pre-registration nursing and physiotherapy courses must possess the abilities, education background and entry requirements: age, qualifications etc., necessary for training i.e. equivalent to university level education (SLCP 1996; EC EX/E/8481/4/97-EN 1998). Minimum statutory educational requirements are contained in course information booklets published by individual universities.

Course content, organization of teaching & learning; including practice centred learning and assessment, student progression and achievement, student support and guidance, adequacy of learning resources, quality management and enhancement (QAAHE 1997), are all quality assured. Emphasis is on peer review, which contributes to high standards of nursing and physiotherapy education (Callery 2000).

FfA is also about the facilitation of the achievement of relevant theoretical knowledge, skills acquisition and understanding by students (UKCC 2000). Facilitation precedes their integration, which itself can lead to development of critical thinking, problem-solving and reflective capacities essential to complex professional practice (CSP 1996a; UKCC 2000). Progressively, students should be capable of applying these critical capacities to their practice and, consequently, respond to change in their own and other professions work environments (HEQC 1994b).

Successful course completion having met designated academic and professional standards an appropriate academic award must be made (HEQC 1995, NAO 2002). It must be comparable with those awards offered in other institutions and supported by the relevant professional and statutory bodies (HEQC 1995; CPSM 1997). This is vitally important because academic awards are 'kite marks' of achievement for employers of newly qualified practitioners from a variety of university providers (HEQC 1996; Williams & Berry 1997; UKCC 1999). Academic awards signify to employers that holders have achieved the educational standard appropriate to the bestowed award (HEQC 1995).

Fitness for practice (education).

In April 2002 The Nursing & Midwifery Council (NMC) & The Health Professions Council (HPC) replaced the UKCC & the CPSM respectively as the UK-wide PSBs for promotion and safeguarding the health & well of patients & clients (e.g. conduct, competence & performance) (CSP 2002; NMC 2002). Fitness for practice-(education) pertains to issues associated with educational preparation for registration (UKCC 1999). PSBs, consultants and nurse researchers are the key literary sources of characteristics.

Nursing and physiotherapy students should have access, at the beginning of their course, to the competencies they must possess on completion in order to meet the public's health requirement (EC EX/E/8481/4/97-EN 1998; CSP 1996a; Registrars Letter SN/PW/JK; UKCC 2000). In nursing, at the time of undertaking this research, FfPr (education) was achieved when students achieve

the 13 competencies comprising Rule 18a. Collectively, this means assuming the responsibilities and accountability that registration confers, applying knowledge and skills to meet the nursing needs of individuals and of groups in health and in sickness in their area of practice and achievement of specified outcomes (HMSO 1989).

The UKCC Commission for Nursing & Midwifery Education (UKCC 1998a) recommended that standards for registration should be constructed in the form of transparent outcome competencies. Common foundation and branch programme outcomes were subsequently produced (UKCC 2000). These replaced Rule 18a but still addressed the responsibilities and accountability that registration confers along with related knowledge and skills issues.

Dearing's (1997) proposal to develop subject based benchmarked standards to ensure public and employer confidence in HE was accepted (QAAHE 2000). The standards for nurses and physiotherapists were developed by academics with PSBs playing a major role (QAAHE 2001). They cover the nurse and physiotherapist as a registered health care practitioner, and identify the expectations held by the profession, employers and the public at both threshold (Dip HE) and degree levels.

The benchmarking standards explain the expectations and requirements for fitness for award, fitness for practice and fitness for first post (purpose) and continuing professional development (QAAHE 2001). They can be mapped onto nursing (UKCC 2000) and physiotherapy outcome competencies (CSP 1996a) and are the most recent expressions of professional practice.

Fitness for practice in physiotherapy, is achieved when the outcomes, themes and core knowledge contained within the Curriculum Framework Document is achieved by students (CSP & CPSM, 1996a). The process is underpinned by validation guidance (CSP & CPSM, 1996b) including oversight of proper use of degree awarding powers and final approval of courses, examinations and qualifications for state registration (CPSM 1997).

Nurse (and physiotherapy) education programmes must cover the essential knowledge, abilities, skills, attitudes and understanding required for professional practice (Storey et al., 1995a; EC EX/E/8481/4/97-EN 1998; UKCC 1999) and prepare students to be able, on registration, to apply them whilst performing to the standards required in employment (UKCC 2000). Further, they should be critical and reflective practitioners (Wiles et al., 1999), capable of evaluating, developing and adapting practice through an ability to read and understand relevant research (HEQC et al., 1994a).

Fitness for practice renders the individual able to practice safely in normal clinical situations and remain registered (JM Consulting 1998). New staff nurses and physiotherapists who have met the regulatory body's requirements and achieved UKCC or CPSM registration, are adjudged competent and 'fit to practice' (Runciman et al., 1998, CSP 1996a) and can be accepted onto the Register as a qualified health professional/practitioner (NAO 2001).

Fitness for professional standing.

Fitness for practice is both preparatory to, and irrevocably linked with, FfPS, which is a focused part of those elements of practice not associated with educational preparation for registration (UKCC 1999). FfPS focuses on the health care of individuals, families and communities and the rights implicit in the social contract between the profession and society to participate in their health care (UKCC 2000). Obligations include the responsibility to provide competent, safe and effective care & for the highest standards of professional conduct and ethical practice (UKCC 2000). PSBs, the former HEQC, now QAA and EU bodies are the main sources of characteristics in the literature.

Newly qualified nurses and physiotherapists have to be responsible and personally accountable for their actions and omissions. The process for achieving professional standing commences in training. Accountability spans: practicing within the scope of personal professional competence and extending this scope as appropriate, delegating aspects of care to others and accepting responsibility and accountability for such delegation, working harmoniously and effectively with

colleagues, patients and clients and their carers, families and friends, and taking personal professional development decisions (CSP 1996; UKCC 2000).

Decision making associated with high quality professional standing requires possession of essential knowledge, skills, understanding, attitudes and standards necessary for professional practice in employment (Storey et al., 1995a; EC EX/E/8481/4/97-EN 1998; UKCC 2000). Students, as practitioners must be critical and reflective having been adequately prepared for practice in a variety of clinical settings (HEQC et al., 1994a; HEQC 1995).

A key construct of FfPS is respect for the well-being of patients and clients (UKCC 2000). Acceptance and operationalisation of the code of professional conduct, that all registrants must uphold, is essential (CSP 1996; UKCC 2000). This spans ethical, moral, legal, & professional considerations & frameworks within which physiotherapists & nurses act (CSP 1996; UKCC 2000). They are aimed at protecting the public from unprofessional and unethical behaviour (CPSM Undated, UKCC 2000). FfPS is achieved by students and staff practicing within their professions code and associated scope of practice (CSP 1996; UKCC 1999).

In practice-centred learning, the primary aim is to assure public protection through adequate student preparation so that they can practice safely and effectively (CSP 1996a; EC EX/E/8481/4/97-EN 1998; UKCC 2000). Recognition is through the granting of a licence to practice. Its conferment represents an endorsement of the individual's fitness for practice with the proviso that professional updating is on-going (HEQC 1995; UKCC 1999).

Finally, students and practitioners must have inviolable respect for people and communities, without prejudice, and regardless of orientation and personal, group, political, cultural, ethnic or religious characteristics. These must be demonstrated without prejudice and in an anti-discriminatory fashion. Neither may offer allegiance to any individual nor group affiliations, which oppose or threaten the human rights, safety or dignity of individuals or communities (UKCC 2000).

Fitness for purpose.

Fitness for purpose is associated with preparation, and subsequent effectiveness and efficiency, of newly qualified staff in the workplace. Effectiveness is more important than efficiency because the newly qualified could be highly efficient at the wrong activities resulting in ineffectiveness. Characteristics, comprising the FfPu paradigm, originate from three literary sources the first being employer related: 1) NHS E, DoH, and education consortia, 2) UKCC and 3) NMET university academics.

Effectiveness and efficiency in work is the most commonly reported characteristic of the FfPu employee (HEQC 1994b; NWRHA 1994; Luker et al., 1996; HEQC 1996; EC EX/E/8481/4/97-EN 1998; Runciman et al., 1998; NHS E 1999; Cross 1999; NHS E 1999; UKCC 2000; NAO 2002). Its dominance is understandable because employers require staff, including the newly qualified, to be effective and efficient in their work

If a practitioner is to comply then an essential underpinning must be their levels of 'knowledge, skills, attitudes (KSA) and understanding (Yorkshire Health 1993; DoH 1994; Luker et al., 1996; WYE&TC 1997; Rushforth & Ireland 1997; NHS E 1999; DoH 1999, NAO 2002). For Wile et al., (1999) abilities are also important if newly qualified graduates are to be employable in the market place. Possession of KSA and abilities alone were considered necessary but not sufficient. Understanding is required if practice is to be effective and efficient.

Quality, excellence and clinical governance in organising, planning, implementing, and evaluating care and treatment, to the highest standards, in the workplace is crucial (HEQC et al., 1994a; NWRHA 1994; Williams 1995; Williams and Berry 1997; DoH 1999; UKCC 2000). Industry and commerce believe quality and excellence are synonymous with FfPu. For them it is compliance with the requirement to produce a product or service, that is right first time (Taylor & Pearson (1994). Consequently, possession of practice centred competencies (KSA) etc., are necessary to be clinically effective and efficient and achieve high quality health care. Assuring the quality of nursing

care and physiotherapy is one of the fundamental underpinnings of clinical governance (UKCC 2000).

Responding to current and future needs of health services and patients is what fit for purpose nurses and physiotherapists are expected to do, especially by employers. Specifically, they must initiate and respond to changes in both strategic and operational objectives of the organisations in which they work and in the communities they serve (HEQC et al., 1995, UKCC 2000).

Because of organisational and societal changes FfPu cannot be achieved, or maintained, without 'continuing professional development' (CPD) and 'lifelong learning' in the newly qualified (DoH 1994; EC EX/E/8481/4/97-EN 1998; UKCC 2000). CPD is essential in any dynamic working environment and its origin must lay in pre-registration education so that all professionals are continually developing their roles, responsibilities and practices. Greater demands for technical competence and scientific rationality (UKCC 1999) in the workplace are key areas of change and where CPD is essential.

Newly qualified practitioners are expected to be clinically competent. This means in possession of the right KSA and understanding to carry out their duties safely, effectively and efficiently i.e. competently in clinical practice (WYE&TC 1997; UKCC 1999; NHS E 1999, NAO 2002). This characteristic has similarities with 'effectiveness and efficiency in work' and 'KSA and understanding'. Its removal could, however, impoverish the FfPu paradigm because it was thought sufficiently important by the Service in particular, to have identified it separately from other FfPu characteristics.

A further FfPu characteristic is empowering patients, clients and carers (Yorkshire Health 1993; UKCC 2000). Newly qualified practitioners are expected to assess patients' and clients' needs and capabilities in context. Having done so then empower them in order to obtain maximum involvement in their care.

For some employers professional boundaries are seen as artificial. FfPu is perceived by these employers to be a paradigm for eroding these boundaries for the benefit of patients. Erosion would enable professionals to respond to the rapidly changing nature of health care through adaptation to organizational as well as patients' and clients' needs (EC EX/E/8481/4/97-EN 1998; UKCC 2000). Erosion is predicated on the view that either professionals do not work across boundaries at all or do so to a limited extent. This view is, however, an over simplification. The positive side of erosion, which FfPu seeks to encourage, is multi disciplinary working. This is an understanding of the various team roles underpinning healthcare (Yorkshire Health 1993) and the collaborative working of multi-disciplinary team members (UKCC, 2000).

Management of care (UKCC 2000) is both a capacity to provide care and to accept responsibility for its effective and efficient management within a safe environment. Invariably, it involves delegation, supervising and facilitating the work of carers, effective working, and accepting leadership roles within profession specific and multi-disciplinary teams (DoH 1999; UKCC 2000).

Finally, in FfPu a health for all orientation (promotion and education) (UKCC 2000) is to be promoted with practitioners providing this orientation irrespective of patient class, creed, age, gender, sexual orientation, culture or ethnic background.

1.1.2 Contextual forces underpinning the provision of nurse and physiotherapy education, professional competence and assessment in the UK.

Some NHS managers and employers have suggested that newly qualified nurses are not fit for purpose at the point of registration. (Storey et al., 1995; University of Manchester 1996; O'Hanlon & Andrews 1997; NHS E 1998; Runciman et.al., 1998; NHS E 1999). The same has been said about physiotherapists (Horton 1993; Martell and Harris 1996; Lumley 1998; Wiles et al., 1999).

In the consumer-orientated world of competitive markets, the fitness of a product is more than its technical performance. It is about its ability to perform in the context it will function (Stanwick 1994). Using the analogy of a car and a Land Rover, Stanwick indicates that both vehicles have much in common, but when travelling over rough terrain, the later is the one more fit for that purpose. Relating this analogy to NMET, she suggests that the terrain of practice in which practitioners find themselves, must be anticipated and planned for within education provision. Preparation for face-to-face contact is acknowledged to be important, but practitioners must be prepared for roles over and above this. Without this, the “ ‘product of education’, i.e. the practitioner, will never be completely fit for purpose” (Stanwick 1994).

NHS Trusts’ ‘terrains’ are characterized by a fast turnover of patients, short hospital stays and high dependency patients. Whether current pre-registration courses prepare students for this environment by providing them with an adequate foundation is debatable (Stanwick 1994). Failure to prepare students, for such an environment costs considerable time and money through post qualification education. For purchasers of NMET, deficits in FfPu are unmet needs.

In a critical review of the contextual forces underpinning the provision of nurse education in the UK, Rushforth and Ireland (1997), in the context of modern day health service delivery, identified two polarized forces: fitness for purpose; a purchaser model, and practice; a provider role. This conceptual framework is transferable to physiotherapy.

The FfPu purchaser model is characterized by: financial expediency, short term goal orientation and utility values; what a nurse (or physiotherapist) can actually do at the point of registration, locally driven course development, Trust driven manpower planning decisions (taken annually, as close to the point of delivery as possible and sensitive to local changing needs), employers’ requirements, ‘End’ product orientation and associated educational commissioning (Rushforth & Ireland 1997). This model is intimately associated with the key relationship between health strategy, strategic shifts in service delivery and the ability of

service providers to deliver patient centred services through access to an appropriately sized, fit for purpose workforce (Stanwick 1994).

By comparison the practice role focuses on: long term goals, on a comprehensive foundation for practice in changing environments, practitioners who are 'fit for the future' and capable of practising anywhere in the world, educational process and curriculum design and associated manpower planning undertaken nationally in the context of a long term planning needs of the nation.

Rushforth & Ireland (1997) favour the 'practice' role over the 'purpose' model. They see the FfPu approach to professional education and the adoption of behavioural competencies associated with FfPu as bureaucratic, restrictive and reductionist. They argue, such competencies are incompatible with FfA i.e. the notion of capability and academic excellence and the development of higher order intellectual skills such as analysis, synthesis, ingenuity and creativity (Girof 1993; Le Var 1996; Rolls 1977).

The FfPu paradigm can be seen in a more favourable light when effectiveness and efficiency, expressed as competencies, are seen in the context of a new broad or liberal interpretation. Outcome based competencies are not seen as restrictive in the development of understanding, freedom of thought or originality (UKCC 1999) and are not in conflict with achievement of academic excellence (Wolff 1996). They are associated with higher-level occupational standards (DoE 1995) and NVQs levels 4 & 5 in professional education (Bartram 1996; Health and Care Professions Education Forum 1997; Weinstein, J. 1998), which interface with academic awards, and are appropriate for NMET. They offer: clarity regarding the skills and knowledge of practitioners matched against expected performance in the workplace (NHS E 1998c), hence reducing the theory-practice gap (Storey et al., 1995); support to flexible working in health and social care (DoH 2002), guidance for providers of education, students and placement supervisors, thus rectifying the deficit of professional education in employment based standards (DoH 1995b); extra value to learning outcomes identified by statutory bodies (Storey et al., 1995) and a more specific measurement of a person's competence (Day & Basford 1995).

1.1.3 Viewpoint of the analysis.

The viewpoint or perspective taken in any analysis determines the costs included and the outcome measure. Five possible perspectives were considered and one selected.

1) Providers of NMET i.e. universities, their perspective is ensuring that quality assured academic judgments are made about the scope, level, pace, breadth and attainment applicable to learning programmes and those undertaking them i.e. fitness for award. If this viewpoint had been taken in this study the costs included would have been direct costs e.g. university staff salaries and non-salary costs, and support costs e.g. computer centres, library, student services etc. The primary outcome measure would have been the maximum number of HE nursing diplomas and physiotherapy degrees awarded i.e. fitness for award.

2) Professional and statutory bodies i.e. nursing and midwifery (ENB, UKCC, now NMC) physiotherapy (CSP, CPSM, now HPC) whose perspective is ensure the promotion and safeguarding of: 1) the health & well being of patients & clients i.e. fitness for practice (education) and 2) patients and clients rights implicit in the social contract between professions and society i.e. fitness for professional standing. If this viewpoint had been taken costs included would have been salaries, non-salary and support costs incurred by the PSBs in running these organisations. The primary outcome measure would have been patient protection.

3) Purchasers of NMET (Consortium/Confederations) whose perspective is to purchase, on behalf of the NHS and other employers, the maximum number of effective newly qualified practitioners who are i.e. fit for purpose and to respond to deficits in fitness in terms of numbers of such staff and skill shortages. If this viewpoint had been taken the cost to the NHS was the total contract value paid to each university to cover their direct, non-salary and support costs. The primary outcome measure would have been the maximum number fit for purpose newly qualified employees produced.

4) Students perspective is to ensure that they receive quality assured education, so that at the end of their course they are: fit for academic award, consequentially fit to practice their chosen profession within the contract between the profession and society and are fit for purpose in the workplace. If this perspective had been adopted their costs would have included books, stationery, IT equipment, travel costs to university, accommodation charges, food, clothing and the opportunity cost of loss of income because they are not in employment. Benefits include future income, future quality of life and future sense of contributing to society.

5) Society includes all perspectives. As the NHS is funded through taxation society's perspective is one in which they would want to know if the correct number of nurses and physiotherapists have been produced to meet current needs or are planned for to meet future requirements. Society is also interested in any spillover costs and savings to other public sector agencies (Drummond et al., 1993).

The chosen perspective for this study is the NHS. The reason for this is that this organisation purchases, on behalf of itself and other employers, the maximum number of effective newly qualified practitioners who are fit for purpose. The cost to the NHS is the total contract value paid to each university to cover their direct, non-salary and support costs in delivering the contract. The primary outcome measure is the maximum number of fit for purpose newly qualified employees produced.

Having defined and evaluated each of the four benefits, considered in context Rushforth and Ireland's two polarized forces: fitness for purpose; a purchaser model, and practice; a provider role, and the emerged more broad and liberal interpretation of effectiveness, and considered the viewpoint of each perspective, FfA was rejected as the outcome measure because it focuses on academic judgements about students and courses and not on workplace effectiveness. FfPr, focuses on issues associated with the educational preparation for registration and not on work place effectiveness and was rejected for the same reason. FfPS was similarly rejected because it focuses on the rights implicit in the social contract between each profession and society. FfPu was selected because the

characteristics of this outcome benefit are associated with the effectiveness and efficiency of NQABNs & NQPs in the work place and is the employer's economic perspective of this study.

1.1.3 Conclusion.

The purpose of this research is to identify the most effective and cost effective provider of pre-registration nurses and physiotherapists in an education consortium in England. Following evaluation of each benefit in the context of a purchaser model and a provider role, the more liberal interpretation of effectiveness FfA, FfPr and FfPs were all rejected because they respectively focused on academic judgements, issues associated with the educational preparation for registration, and on the rights implicit in the social contract between each profession and society. FfPu was selected because the characteristics of this benefit are associated with the effectiveness and efficiency of NQABNs & NQPs in the work place and is consistent with the employer's economic perspective of this study. Consequently, FfPu was the selected outcome benefit.

1.2 Benefit Estimation

1.2.0 Introduction.

The benefit of FfPu was selected over the other three because it is a measure of the effectiveness of NQNs and NQPs in the workplace. It is also consistent with the economic perspective of this study, which is that of the NHS via Consortium/Confederations on behalf of employers of newly qualified practitioners. To estimate this benefit (Table 4) a literature review was undertaken to identify the existence of FfPu measurement scales for nurses and physiotherapists. In the absence of such scales, the stages and key criteria involved in the generation scales were identified for future adherence in the development of FfPu scales.

	Effectiveness	Cost	Cost Effectiveness
Background	Research Thesis and Evaluative Paradigm. 1 Benefit Identification. 2 Benefit Estimation.	3 Cost Identification. 4 Cost Estimation.	5 Benefit and Cost Comparison. 6 Sensitivity Analysis and Results in Context

Table 4 Thesis plan for analysis of effectiveness, cost & cost effectiveness: chapter 1 background, 2 benefit estimation.

1.2.1 Measurement scaling-theory.

A survey is a form of structured enquiry. It collects similar information on each member of a sample population from existing documents, self-completed questionnaires, (including measurement scales) interviews or observations with a view to drawing scientific conclusions about a social issue (Russell 1996). It offers the best of both qualitative, which offers richness & insight e.g. thematic analysis, and quantitative approaches, which emphasises reliability and repeatability. This latter quality is important if a measurement scale is to have longevity and comparability with other scales, results and interpretations in the field.

Psychometric tests/scales/tools are designed to gain insight into human psychology which is either apparent immediately or normally hidden (Hayes 1997; Hayes 2000). They also generate information about which the person may not be aware. There are two types; idiographic and nomothetic. The former is concerned with insight into an individual's ideas or problems. Nomothetic is concerned with: a) measuring each person on a common scale e.g. FfPu, b) describing relationships about human functioning e.g. in FfPu, and c) deriving principles e.g. pertaining to effectiveness/FfPu of NQABNs and NQPs in the workplace. A further benefit of this approach is that it is open to new ideas or possible explanations (Hayes 2000) e.g. what constitutes FfPu according to different categories of assessor e.g. newly qualified and senior nurse managers.

The nomothetic questionnaire adheres to the three principles of test construction: 1) test item reliability coefficient (Cronbach's scale alpha), 2) construct validity (mean percentage of FfPu), and 3) responsiveness; procedures and instructions, population norm and test standardisations (Streiner & Norman 1989).

FfPu 'Gold Standard' measurement scales.

Having confirmed FfPu as the preferred benefit two FfPu scales were required to measure this benefit in NQABNs and NQPs in the work place. A systematic review of the literature was undertaken to identify two 'gold standard' FfPu measurement scales; one each for nurses and physiotherapists. No scales, for either profession, could be identified. If such scales existed then they would have been used because their reliability and validity would have been previously established.

In the absence of 'gold standard' FfPu scales, two were developed based upon a clear understanding of measurement scales development and the scale focus e.g. effectiveness (FfPu) of NQABNs & NQPs in the workplace and related issues that would affect item selection e.g. professional competence: models of competence, competence, performance and effectiveness, and education for competence.

Development of measurement scales.

In the absence of 'gold standard' FfPu scales, item identification was required. Items come from different sources: clinical observation, theory, research and expert opinion (Streiner & Norman 1989). Clinical observations, expressed as items, can be systematically gathered into scales. Consistency in observation and ensuring all subjects are responding to the same items is important. Problems with this model include: using this approach as the sole method, observers making wrong observations, using too small a sample population and too narrow a perspective.

A theory/model can enable the identification of items. In this study, the identified benefit of effectiveness is FfPu. According to Rushforth & Ireland, (1997) it constitutes a theory/model of the production of nurse (and physiotherapy) education. The characteristics that collectively describe the theory/benefit, identified from the literature, can be used as a checklist of the validity of items considered for inclusion in the scale to ensure comprehensiveness.

Research findings are a fruitful source of items. A systematic analysis of the literature, based upon the NHS CRD (1996) guidelines and modified by Russell et al. (1998) would reveal possible items for inclusion. It would also reveal other scales, questions and approaches that could be used in developing each FfPu scale. The systematic review, which is applicable for both the effectiveness and cost sides of this research involves: 0) identifying the need, 1) background research and specifying objectives, 2) developing the protocol 3) searching the literature, 4 & 5) selecting relevant and valid studies, 6) extracting the data, 7) synthesizing extracted data, 8) report writing, 9) reviewing report for scientific quality, content and relevance, and 10) disseminating and implementing report.

Literature must be searched in a comprehensive way. First, electronic databases like CINAL, MEDLINE, INDEX MEDICUS, AMED etc. Second, hand searching key journals in the field including the grey literature e.g. NHS Executive Letters and Circulars, booklets, annual reports etc. Third, scanning

reference lists of identified papers and reports. Finally, consulting with leading researchers in the field e.g. professional competence - Geoffrey Cheetham.

Identified scales and items can also be shown to experts. Through them item, face, and content validity can be confirmed. Important missed and additional items for inclusion can be identified. In this study, experts equate to a number of highly experienced nurses and physiotherapists who have many years of experience in observing FfPu in nursing & physiotherapy workforces. Items can also be culled from existing scales for inclusion in scales under construction e.g. FfPu.

Each scale must have enough discriminating items to ensure content validity. One, or more items should address each characteristic pertaining to the purpose of the scale e.g. FfPu. The inclusion of unrelated items introduces error. Helpfully, many of the items comprising each scale reviewed for this research were expressed as competencies relating to different types of professional activities. In nursing, communication and clinical skills. In physiotherapy, communication and assessment skills. Some competencies, like communication, were shared.

Scales and items.

Had the benchmarking standards for the fit for first post purpose (QAAHE 2001) existed in 1997 then these standards would have formed the basis for the development of the FfPu scale items. In their absence a framework for analysing possible items for inclusion in an FfPu scale for nursing had to be based on the most appropriate authoritative document available at the time, Rule 18a (1989 HMSO) associated with the educational preparation for registration.

Items for inclusion were from two key literary sources, general health care competencies and that which focused on specific nursing and physiotherapy performance.

In respect of the latter a systematic review of the literature (1974-1997) and meta analysis revealed twenty major studies investigating nurse performance: USA ten, UK eight, South Africa and Australia, one each (Appendix 1). In physiotherapy thirteen major studies were identified: Canada and the UK four each, Australia two, and one each USA, New Zealand and Hong Kong (Appendix 1).

Common reported reasons for research into nurse performance in the USA were: student differences in relation to the level of the course undertaken, interest in differences between educational backgrounds and job effectiveness and concern over “work entry” problems of newly graduated nurses. In the UK, reasons included: differences between Traditional RGN, Project 2000 nurses and degree courses, as well as in the continuous assessment of nursing practice. In physiotherapy reasons included: the need to confirm ‘readiness’ for employment at the point of entry into the profession, determining the extent to which physiotherapy students perform clinical competencies in clinical situations, identification of the optimum amount of physiotherapy clinical education time in a physiotherapy curriculum, and establishment of the adequacy of undergraduate education.

In identified studies, competences were the scale items. A significant majority related to higher order activities and not tasks. Analyses, in both professions, revealed some shared competencies/scale items. These are underlined. Nursing competencies (alphabetically) were; communication, clinical skills, evaluation, health promotion, inter-personal relationships, leadership, management skills, physical care, planning, professional development, research, teaching, team working, and technical skills. Physiotherapy competencies (alphabetically) were; administrative skills, assessment, communication, evaluation, inter-personal relationships, knowledge, management skills, planning, professional growth, professional ethics/behaviour, research, team working and treatment (Appendix 2).

The implication of these findings was that they comprise unique and shared competency items associated with the performance of nurses and

physiotherapists and should be included in any measurement scale. The more and diverse the competencies/characteristics associated with the FfPu benefit the greater the likelihood of ensuring sufficient discriminating items (content validity).

Thematic analysis is a technique for sorting information, in this case about professional practice, into themes (Hayes 2000). Traditionally, at the beginning of the process, the themes are not known, and have to be identified by inductive thematic analysis. Their naming and defining occurs at the end of a multi stage process commencing with information preparation. In this study, however, Rule 18a competencies, constituted a framework of themes for analysis of FfPu data/scale items via theory-led thematic analysis.

In physiotherapy, like nursing, there was no definitive statement about the FfPu of newly qualified physiotherapists. The Curriculum Framework Document (CFD) (CSP 1996a) did, however, contain the outcomes, themes and core knowledge of the physiotherapy curriculum. It was the nearest equivalent to Rule 18a (HMSO 1989). Each outcome constitutes a theme. For identical reasons as in nursing, a theory-led thematic analysis was undertaken on the meta-analysis of academic papers addressing physiotherapy competence/performance (1983-1999).

Scaling responses.

Three options exist whereby respondents can record responses: direct estimation techniques; where subjects indicate their response by a mark or check in a box, comparative methods; subjects choose among a series of alternatives and econometric methods; subjects describe their preference. Of the three, direct estimation has the benefit of comprising a scale with adjectival descriptions and continuous responses (Streiner & Norman 1989). This method is particularly suitable in this study because FfPu was perceived as an unbroken continuum from low to high fitness. Further, it was relatively easy to design, required little pre testing and was easily understood by subjects. As to the optimum number of

categories in the continuous scale, 10 are usually sufficient to achieve a reliability coefficient of 0.80 (Streiner & Norman 1989).

Selecting items.

In selecting the items for inclusion in any scale including FfPu, established criteria must be used pertaining to item interpretability & face value. Selected items must be: unambiguous and comprehensible, address one question at a time, ideally contain no or at best minimum jargon words, value laden free, easy to read, and have face and construct validity (Streiner & Norman 1989). If all scale items comply with these criteria, the less likely was a poor response.

The items contained within all scales and therefore, the proposed FfPu scales, should be homogenous i.e. all of the items should be tapping different aspects of a fit for purpose NQABN or NQP. Items should be moderately correlated with each other and each should correlate with the total scale score. This is the basis of the homogeneity or 'internal consistency' of the scale. One technique for confirming this was item-total correlation. This is the correlation of the individual item with the scale total omitting that item. If the item were not removed, it would inflate the correlation. This reliability coefficient is also known as Cronbachs alpha. In this study it was established for each of the items comprising the small number of dimensions of FfPu from among the larger number of competence variables/items comprising each of the FfPu psychometric scales.

The review also identified that the most popular method for measurement scale implementation, in nursing and physiotherapy, was as a postal questionnaire. Identification of key factors/dimensions of FfPu was by application of principal components (factor analysis), varimax rotation, an eigenvalue greater than 1 and a factor loading of 0.4. Internal consistency of the data generated was examined using Cronbach's coefficient alpha technique with Nunally's (1978) criteria of 0.80.

1.2.2 Measurement scaling–application to professional competence.

The second task of the systematic literature review was to: find items that measure professional competence by examining the continuum of competency to effectiveness, and exploring models of competence. This should ensure that devised measurement scales are comprehensive, valid, reliable and responsive, and examine education for competence.

Professional competence in nursing and physiotherapy.

Nursing is a complex mix of a wide range of skills: practical/technical, communication, interpersonal and organizational, safe practice, underpinned by an up-to-date knowledge base, critical thinking and reflection, team membership, professional attitudes, motivation, enthusiasm and confidence (Phillips et al., 1994).

Competence is variously described: “choosing the best course of action for each particular situation” (Black and Wolfe 1990); the ability and skills to practice safely and effectively without the need for direct supervision (UKCC 1999); and unobservable attributes, capacities, dispositions, attitudes and values that the professionals should possess (Ellis 1988).

For McManus (1995) competence is a cyclical process of continuing development and mastery of skill, in a specific domain, recognised both formally and informally by self and others. For O’Connor et al., (1999) competence in clinical situations concerns the application of theory and skills. For him, for practitioners to be clinically effective they must possess the necessary knowledge, plus mastery, in affective, cognitive and psychomotor skills. For Boss (1995) competence involves more than knowledge and skill. It is values, critical thinking, clinical judgement, formulation of attitudes and integration of theory from humanities and sciences into nursing that are important, along with underpinning cognitive skill. Competence recognition is difficult, but is observable through individuals’ competent performance (Runicman 1990).

Although NQNs are able to take on various types of work they may not be considered fully competent in that role until they have had sufficient time to consolidate their knowledge with clinically-based practice (Phillips et al., 1994). This means the coherently linking of practice, clients, and context. It is inappropriate to consider competency development as a linear, orderly, spaced progression moving in one direction only and from one level to another higher level. Movement to a lower level is possible (Benner 1984). Competence should be thought of in terms of “individual readiness for transition to competent practitioner status.” It is not a “ steady state it is a fragile achievement and never a total accomplishment” (Phillips et al., 1994). Qualified practitioner competence is such that the component competencies are indistinguishable, having become features of performance in general (Phillips et al., 1994; Cheetham & Chivers 1998).

Analysis of the definitions of competence in physiotherapy has revealed commonalities such as knowledge, skills, and attitudes linked to the performance of tasks or skills (Appendix 3). Definitions offered by the CPSM (1979), Ashton-McCrimmon and Hamel (1983) and Ford (1985) share in common their emphasis on performance. Physiotherapists perform well in the short and long term in respect to patients, and in the long term in regard to professional responsibility for total performance, were the emphases of the CPSM definition.

Where the Ashton-McCrimmon and Hamel and the ACPRA (1994) definitions differed from those of the CPSM (1979) and Caney (1983), was with respect to longer, broader and more sophisticated lists of qualities associated with professional competence; (abilities, capabilities, adaptability, judgements, values, understanding, interpretation and problem-solving skills, communication skills, professional behaviour and ethics). Comparing Galley & Foster’s (1978) definition with the previous five, problem solving abilities, technical skills and quality performance in their demonstration and the importance of communication, are all shared. Therefore, these competency items must be considered for inclusion in the physiotherapy scale.

From competency to effectiveness.

Medley (1984) has made a useful distinction between competency (a single knowledge, skill, or professional value), competence (a repertoire of competencies), performance (a stringent reference to observable behaviour) and effectiveness (the effect of the professionals performance on recipients). In the context of this study, effectiveness equates with the number of newly qualified, FfPr nurses and physiotherapists (output) who are also FfPu (outcome).

Ideally, FfPu should be measured by identifying the effects newly qualified practitioners have on their patients/clients. It is effectiveness that the public experience and appreciate (Ellis 1988). This, however, is so difficult that it could form the focus of future research. As an alternative, and in the absence of 'gold standard' two separate FfPu scales measured the performance of NQABNs and NQPs in the work place. To do this nursing and physiotherapy competence was 'unpacked' into competencies, which can be observed by others in the performances of NQABN and NQPs in the workplace.

Nursing competence and performance are linked (Fitzpatrick et al., 1994). However, differences are important and need to be reflected in the two FfPu scales. For Holloway and Penson (1987) nurse education emphasizes 'competence' and the acquisition of knowledge and skills rather than 'performance'. Professional competence is associated with the FfPr provider role (Rushforth & Ireland 1997) focusing on the issues associated with the educational preparation for registration.

Nurse role performance is about the delivery of high quality nursing care, which is more than mere task performance (Fitzpatrick et al., 1992). For Adderley and Brock (1997), there is little consensus beyond good basic nursing skills as to what constitutes good performance. Six other authors are clear. Performance is: 'actual situated behaviour', i.e. what is actually done in the real life context (Messick 1984); what one actually does (Rethans et al., 1990), the demonstration of skills, the use of intelligence and is an expression of creativity (Mackety 1989); the use of knowledge and skills in practice (Holloway & Penson (1987);

planning, reflection, the use of research, skilled communication and organisation of self and others (While et al., 1994). Finally, performance in the real-life situation is the outcome effectiveness of education experience (Beare 1975). Performance is associated with the FfPu or purchaser model (Rushforth & Ireland 1997), which is based on the occupational work role i.e. the effectiveness of NQABNs & NQPs in the work place.

High quality nursing care comprises of: ability, performance, clinical competence, behaviour, clinical judgement, decision making and the combination of knowledge, skills and attitudes (Rethans et al., 1990), psychomotor, and cognitive and affective skills (Fitzpatrick et al., 1992). Other important factors are: knowledge and judgement, conscientiousness, skill in human relationships, organisational ability, objectivity and observational ability (Smith & Kendal 1967) and knowledge utilization in selection of alternatives constitutes high quality performance (Mansfield 1990). Benner (1984) called this “tacit knowledge” and Meerabeau (1992) intuition, which is exhibited by experts and is difficult to measure.

The focus of concern prior to nurse registration should be their performance in real-life situations. Registered and, therefore, competent nurses are not always performing at an adequate level (While 1994). Hand washing is often not carried out even though failure to do so is dangerous for patients & clients (Gould & Ream 1993). The consequence of this is that competent nurses, (and physiotherapists) implied by their registered status, need to be differentiated from those who perform adequately in real life contexts. Such a system would require a performance system that was “rigorous” and required assessors to fail students who did not meet the required standard (Lankshear 1990). If nurse and physiotherapy education is concerned to produce effective practitioners then it is vital that performance in practice is given greater attention (While 1994). This research attempts to do so.

Day’s (1994) model of total nursing competence approximates professional competence and the occupational work role. This useful description ignores some important variables associated with competence. Consequently, a revised

definition is postulated that addresses the omissions of meta-competencies e.g. reflection and capability. It could be used in any assessment of total competence of NQNs & NQPs.

Total competence is the successful integration of the necessary skills, knowledge, attitudes, values, understanding and experience with the processes of critical, creative and reflective thinking, decision-making and problem solving. These are required by the practitioner in order to perform professional and occupational roles over an agreed range of contexts and situations, confidently, competently and with sensitivity, to a satisfactory standard in the workplace.

Models of competence.

In order to ensure comprehensiveness in each FfPu scale both must include all appropriate competencies associated with NQABNs and physiotherapists in the work place. No individual model offers a holistic explanation of professional competence. Rather, each has a contribution to make:

- occupational standards / functional approaches; competence is assessed on performance within the job role or workplace (Fennell 1987),
- job competence; competence based on tasks, task management and management of the job environment (Mansfield Matthews & 1985),
- behavioural / personal competence; competencies associated with doing well at work both social & vocational (Boyatzis 1982),
- the reflective practitioner approach; competence and artistry embedded in skilful practice, reflection-in-action and about action (Schon 1983; 1987),
- meta-competencies; skills used in acquiring other skills (Hall 1986) e.g. problem solving skills,
- core skills: e.g. communication, numeracy, information technology; personal skills; working with others and improving own learning and performance (Cheetham & Chivers 1998),
- ethics and values: legal, organisational & personal (Eraut et al., 1994) (Appendix 4).

Based on an analysis of professional competence in 20 professions including nursing and physiotherapy (Cheetham 1999) an amalgamation of individual models into a revised comprehensive model of professional competence was produced by Cheetham & Chivers. It comprises four core competence components; knowledge/cognitive, functional, personal/behavioural and values/ethics. All are over-arched by meta-competencies and contribute to the development and maintenance of professional competence (Diagram 1) (Appendix 4).

Communication is a meta-competence or over-arching competence. Possession enables other competencies e.g. functional competencies in clinical (occupational specific) and assessment skills (process organization and management) in nursing and physiotherapy to be acquired.

This revised model was important for two reasons. It acted as a comprehensive framework to ensure that all aspects of competence are included in each developed FfPu scale. Second, that the style of expressing the selected competencies was consistent with the liberal view of outcome competencies associated with higher order occupational standards (DoE 1995; Bartram 1996; H&CPEF 1997;UKCC 1999).

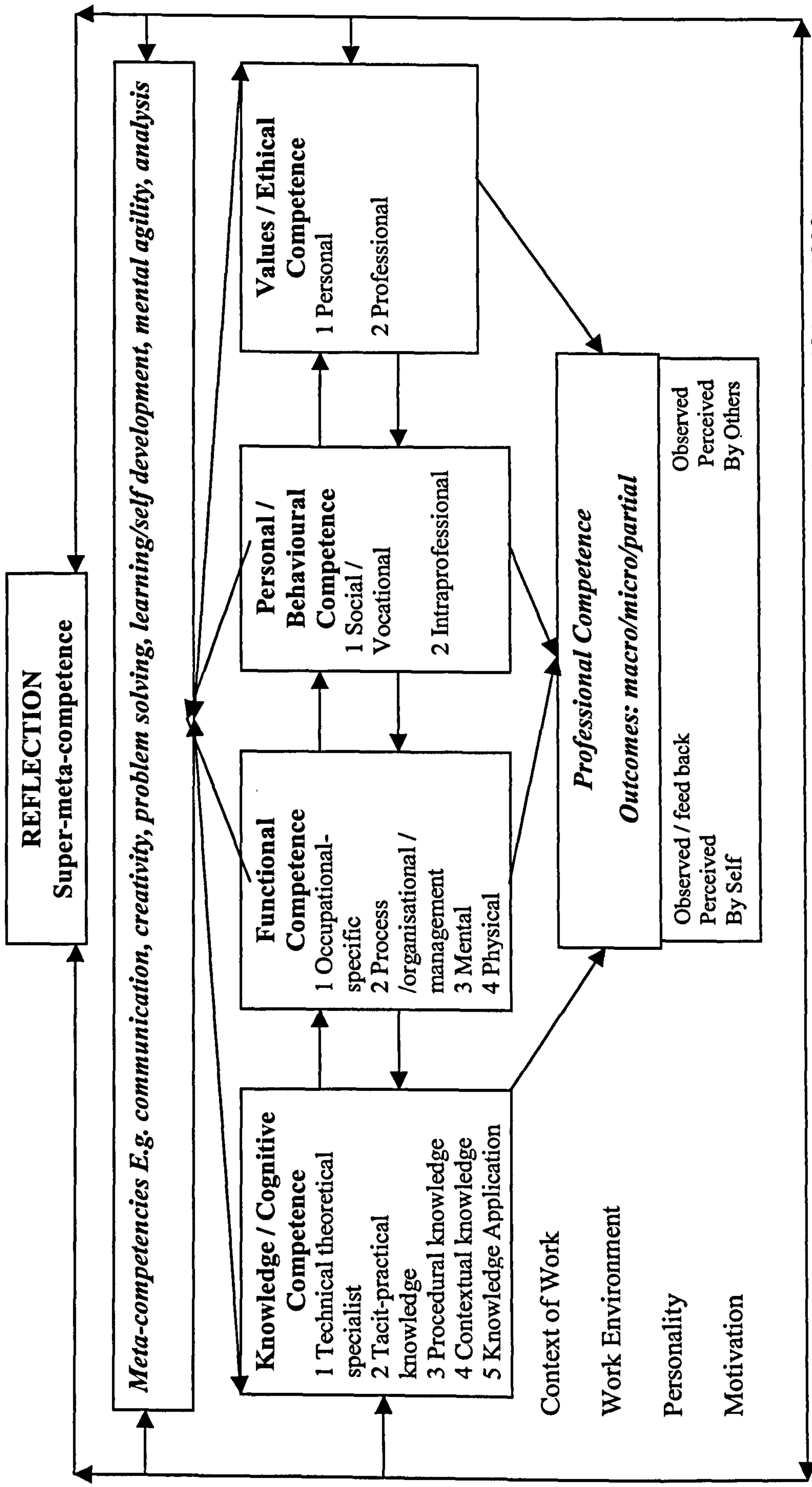


Diagram 1 Revised model of professional competence (Adapted from Cheetham and Chivers 1998).

Competence: from novice to expert and the primacy of caring.

Benner (1984), & Benner & Wrubel (1989), American nurse researchers and educators were writing at a time of nursing shortages attributed to the societal devaluation of nursing, in the context of a technical society, individualism and competitiveness. Their thesis was that caring is central to human experience, curing and healing. Its genesis, in *'From Novice to Expert'* (Benner 1984), profoundly affected the practice and preparation of nurses was extensively developed in *'The Primacy of Caring'* (Benner & Wrubel 1989), which continued its focus on clinical nursing practice.

Benner's (1984) model of competence in clinical nursing practice is based on the Dreyfus situational model of skill acquisition. It comprised of five incremental levels of proficiency: novice, advanced beginner, competent, proficient and expert. The learner passes through each. Changes in three general aspects of skilled performance occur across the hierarchy of levels. First, the learner moves from dependence on principles of an abstract nature to models of real experience. Second, there is a change in the perception of the learner to his situation in that the situation is perceived to be less of a collection of equally relevant components and more an integrated whole in which only selective parts are apposite. Finally, the learner moves from "detached observer" to "involved performer" (Benner 1984).

Benner has applied the Dreyfus model to nursing.

- Novice; having no experience of any situations upon which to draw and therefore their performance is guided by strict adherence to rules. Benner sees the novice status as equivalent to the first-year nurse but also to any nurse, even experts, when asked to nurse in a different situation,
- Advanced beginners; demonstrating marginally acceptable performance because they have experience of real situations upon which to draw,

- **Competent;** the nurse who has been qualified for two to three years and has spent that time in the same clinical situation. A competent nurse performance is typified by planning based on “considerable conscious, abstract, analytic contemplation of the problem” (Benner 1984), and is demonstrated by increased level of efficiency,
- **Proficient;** nurse performer sees situations as complete entities or in terms of the “overall picture” and their performance is directed by cryptic descriptions, or skilled performance, or maxims and who recognises their implication for practice,
- **Experts;** have an “intuitive grasp of each situation and zero in on the accurate region of the problem without wasteful consideration of a large range of unfruitful, alternative diagnoses and solutions” (Benner 1984).

Benner & Wrubel (1989) examined the relationships between caring, stress and coping, health and claim the primacy of caring. They see caring as a way of being in the world i.e. caring or not caring. It also establishes what counts as stressful and available coping options. These authors reported that nurses provide care for people in illness and health regardless of age. Clinical nursing offers a distinctive perspective on stress and coping in illness and health, which is rooted in expert practice. This practice is based on the good inherent, and the knowledge embedded in, that expert practice. Put another way these approaches to health promotion, restoration, and curing, are based on the primacy of care.

Caring means “that persons, events, projects and things matter to people” (Benner & Wrubel (1989). They offer three reasons for the primacy of caring in nursing practice. First, caring identifies what matters to a person as well as what causes them stress, and offers options available for intervention. Second, it is the link between connection and concern. Caring is essential to effective nursing practice. Caring makes the nurse notice, which interventions work, and this concern guides subsequent care giving. Finally, care giving is primary because it sets up the possibility of giving and receiving help. If a caring relationship exists the one receiving, care will feel cared for. Given the primacy of caring in practice this concept must be manifest in the FfPu nursing scale.

Benner's competence model suggests that the competent state occurs two to three years after registration. In terms of UK educated nurses registered nurse status would appear to equate with stage two advanced beginner. In the UK for professional and statutory reasons, competence occurs at the point of registration. Consequently, any assessment of competence must be set at this level.

Rule 18a indicates that the use of communication skills will enable the development caring relationships with patients, client's families and friends. For Benner & Wrubel (1989) primacy in caring is an important nurse competence. Consequently, it must be present in any definitive list of competencies constituting an FfPu nurse. The Revised Caring Behaviours Inventory Items (Wolf 1981; Wolf et al., 1996) was specifically, examined for this purpose.

Education for competence.

Four benefits associated with pre re-registration nurse and physiotherapy education: FfA; FfPr; FfPS & FfPu were identified. Attainment of these benefits by students is achieved through an integrated whole of educational experience over a three year period at HE diploma or degree level. This whole has two parts; theory and practice. Although capable of division, it is the wholeness of the professional educational experience, where each part is in balance and facilitates the achievement of its self and the other, which is of paramount importance. When it occurs students are more likely to achieve the four benefits and, in doing so, not contribute to attrition statistics that increase costs, and lower effectiveness and cost effectiveness. For these reasons theory and practice are important underpinning issues in this research.

Students must acquire a range of professional competencies spanning knowledge/cognitive, functional, personal/behavioural, value/ethical competence and meta-competences like communication and reflection (Cheetham & Chivers 1998). Acquisition is more likely to be achieved if theory and practice are an integrated whole. FfA, FfPr, FfP are linked with competence and theory. FfPu, is linked with performance and practice. The closer the two groupings are the less present is the theory practice gap.

The 'gap' is a series of complex, multidimensional and interrelated issues and not a single distinguishable problem, meaning, definition or interpretation (NHS E 1998). Polarised, theory is often associated with academia, education, teaching, learning, research and its settings. Practice is concerned with clinical practice including skills (Roskell et al., 1998). The gap has been extensively explored and debated in nursing but not so in physiotherapy for it is not seen as problematic (Roskell et al, 1998).

However, key areas where there is the potential for a 'gap' to develop are: the utility of advocated theories for practice, transferability of learning between settings, reflection on practice, conflicting perceptions of practitioners' and educators' roles, the balance between academic and practice values, demands placed on educators and practitioners; teacher specialisation and lack of resources.

Utility of advocated theories for practice.

The development of professional competence and performance FfPu can be affected by the relevance and emphasis of theory (models, concepts learnt in lectures) to nursing practice. For some theory provides an absolute prescription for practice. For others it is a tentative guide to be tested and refined (NHS: E 1998).

Excessive emphasis on theory can lead to concentration on the abstract rather than on nursing role models (Holloway and Penson 1987; Cook 1991). Responsibility for this disparity is often attributed to theorists and teachers who are perceived, by some practitioners, as having dated knowledge of current practice and care. Two suggested reasons are given for this. First, that theories taught at university, at least initially, may bear little resemblance to practice. Over time the resemblance increases. Second, theory practice links can be such that theory does not assist in making sense of practice (Hallett 1997). Either can negatively affect competence acquisition and performance.

Theories are generated from research findings and taught as part of pre-registration courses. Research, for some, is associated with elite activity, intellectualism and universities. Comparatively, practice is seen as seeking the best and clearest answer to practical based problems in service environments. This dichotomy can result in research-based theories, taught by nurse educators, being considered abstract, irrelevant or idealistic (Mulhall (1997). This possibility is reduced, however, if teachers are able to demonstrate that what they teach is not only highly relevant but also achievable within normal circumstances.

Part of the confusion for students is that nursing research contains the clinical (relating directly to practice) and theoretical (relating directly to generation and testing of the theories and models which underpin practice) elements (Rolfe 1998). For some, nursing theories cannot encapsulate the uniqueness of the patient and consequently students learn about nursing based on ideal contexts and conditions, model patients and sufficient resource (Holloway and Penson 1987). These authors suggest that practitioners and nurse educators turn to clinical nursing research in an attempt to answer practical based problems.

Transferability of learning between settings.

Students need to practice in clinical environments that afford them opportunities to integrate learnt theory with practice (McCaughy 1991). Nursing takes place in complex environments where there are rarely textbook answers to problems. Bridging the 'gap' involves students moving from the generalities of lectures to the specifics of care (McCaugherty 1992). Heavy reliance by their teachers on textbook cases, with their emphasis on the general or average can widen the 'gap' (Hislop et al., 1996). Logical structuring of curriculum subjects and dialogues between students and teachers is crucial to successful transference of theory to practice and reverse (Manninen 1998).

Learning opportunities in clinical areas are reported to be extensive, but are not necessarily identified by practitioners and students (Rafferty 1992). Those who recognize opportunities are also likely to 'reflect-in-action' and make

connections for themselves, which equates with the 'deep approach to learning' (Entwistle and Entwistle 1991; Entwistle 1992). The need to guide all students, but especially the latter group, is acknowledged (Rafferty 1992a). Even when opportunities exist, practitioners and students do not always respond positively, even when the theory is practical and beneficial. Some ignore the opportunities, or are resistant to them, due to the rigidity of work-based practices (Allan & Cornes 1998). The collective danger is the emergence of learning based on the unreflective day-to-day enactment of the work role (Askworth & Longmate 1993), which is inconsistent with notions of effectiveness and efficiency i.e. FfPu.

Reflection; super meta-competency.

Hughes (1985) has observed that in the "provision of nursing care, the doing, is given greater significance than consideration of what is being done.... The pressure to action tends to result in the perpetuation of traditional ways of giving nursing care, and because of this pressure there is little opportunity for nurses of any grade to reflect on what they are doing". What is required is the development of professional competence through reflection (Schon 1983, 1998).

Boyd and Fales (1983) are in no doubt about the value of reflective learning. For them it is "the bringing to consciousness of what is done naturally – once aware of their own process, people spontaneously gain greater conscious control over it and seek guidance for even more effective use of it". Professionals' reflection occurs at two points; during (reflection-in) and after intervention (reflection-on-action) (Schon 1983). Learning by experience and reflection-in-or-on-action is the process by which nurse practitioners and students modify and develop ideas and includes their effectiveness and efficiency in the work place. It is an important part, not only of the integration of theory and practice, but also of the development of students' skills and confidence (Mackenzie 1992; Hallett 1997). The critical reflective learner portrays the vision of the 'knowledgeable doer' (Marsick 1987).

Conflicting perceptions of practitioners' and nurse educators' roles.

The achievement of professional competence by students can be undermined by conflicting perceptions between nurse practitioners and educationalists. Some educationalists believe that practitioners lack a real understanding about the nature of higher education and have unrealistic expectations about what can be achieved in practice. Practitioners perceive teachers to be far removed and potentially remote from clinical practice (UKCC 1999). Consequently, practitioners can see nursing as what nurses 'do', whereas educators see it as what nurses 'ought to do' (NHS E 1998). Each has their own and potentially conflicting sets of competencies. Tensions and confusion could affect student's achievement of FfPr and FfPu.

Demands placed on nurse and physiotherapy practitioners.

The shift of responsibility for practical learning to clinical staff took place for sound reasons but increased demands upon nurses in practice (Myles 1995). They had difficulty meeting the requirements of education strategies, due to the competing demands of care delivery i.e. increasing numbers of day cases, early discharge policies, ever-busier clinical environments and changing staffing populations. This has led to extraordinary workloads in trying to reconcile competing demands (Barrett & Myrick 1998). Consequently, there is limited time and opportunity for clinical staff to teach and supervise, a necessity for proficiency in procedures (Ferguson & Jinks 1994; Hilton 1996).

Balance between academic and practice values.

The knowledge base in nursing has moved towards the social sciences (Quinn, 1998). This is potentially problematic and could affect competence development because it has the effect of presenting students with material, which is sometimes difficult to apply directly to their work (Hirst 1993; Roskell et al., 1998). Psychology, sociology, philosophy and health policy have experienced a dramatic increase whilst biosciences, nursing theories, models and reflective frameworks have experienced a decline (Jordan 1994). For Bjork (1995), there

has been a parallel devaluing of practical skills, with relabelling them as psychomotor skills. Less time is also being spent on their classroom acquisition (Neary 1994; Hilton 1996). Students are expected to gain competencies on placements by undertaking essential nursing skills like hand washing, bed bathing, temperature pulse and blood pressure monitoring (Stevenson 1996). However, increasing student numbers, finite placement opportunities and busy staff make competency acquisition and performance i.e. FfPu potentially difficult.

It has been suggested by Burke (1993) that few academic institutions acknowledge the importance of practical experience in professional competence and can sometimes hinder rather than help to link theory to practice. So important is the sequencing and balancing between university and practice-based study, pertaining to the promotion and integration of knowledge, attitudes and skills, that it is both a dedicated recommendation of the Peach Report (UKCC 1999), a philosophical objective of the NHS (NHS E 1998) and a fundamental part of the 'Making a Difference' (DoH 1999) curriculum.

Demands placed on educators.

With the integration of nurse education into HE, it was predicted that pressure on nurse tutors to undertake postgraduate courses, research and publish would increase at the expense of clinical practice (Fraser 1989; Clifford 1995). Without ongoing clinical practice, there is a danger that academic outcomes become the priority and theory is applied to practice only, through the use of literature and research (Richardson 1998). This issue is only important if nurse teachers regard clinical credibility as important (McElroy 1997; Osborne 1991). Slevin and Buchenham (1992) & the UKCC (1999) argue that clinical competence is essential especially if academics are developing, monitoring and evaluating competency acquisition in students. Keeping in touch with clinical practice, maintaining skills and improving relationships with trained staff are seen as benefits of participation. A lack of time (Mallik 1993; Clifford 1995) and a negative college culture towards the value of nurse teachers practicing has resulted in this being a low priority in some HEIs (Baillie 1994).

Lack of resources.

Assessment of practical skills, clinical supervision of students, and continuous assessments of practice, have resulted in a level of inadequacy which is at odds with the necessity for all pre-registration students to demonstrate theoretical and practical competence (Dyson 1992). Validity and reliability of assessment tools can be put at risk when practicality associated with implementation, due to a lack of resources, is such that those using the tool tend to “measure what one feels one can measure rather than what it is that one should be measuring” (Harden and Cairncross 1980).

The delegation of basic nursing care to junior staff or unregistered staff takes place. It is often from these staff that student nurses learn the practice of nursing (Melia 1983). In order to have sufficient assessors, relatively inexperienced staff nurses, some with only six months full time clinical experience, the UKCC minimum time recommended for post qualification support, are themselves becoming assessors of students after only a short preparation course (Dyson 1992). The effects of this include the potential for inadequate performance of the assessor, anxiety about the formal recording of results and a question over the validity of such an assessment of performance i.e. FfPu in the attainment of competence (Dyson 1992).

Against this background, however, published and excellent Quality Assurance Agency aspects of provision scores for nursing and other subjects allied to medicine for universities in the study Consortium/Confederation, which includes physiotherapy, suggest that the effect of theory practice ‘gap’ may be minimal (Table 5).

Project 2000 courses and students: successes and challenges.

The objective of Project 2000 was to produce practitioners, ‘knowledgeable doers’, able to contribute to planning, assessing and developing services, particularly in primary care settings, with a readiness to face change (UKCC 1999). Newly qualified nurses possess many qualities their apprenticeship trained

predecessors, at qualification, did not: a good theoretical and knowledge base, developed critical reasoning skills, research awareness linked to evidence based practice, adaptation and communication skills and insights into personal limitations (Maggs & Rapport 1996; Runciman et al., 1998; UKCC 1999; DoH 1999).

Project 2000 students, in a two-centre study, indicated that the course had prepared them well. Interpersonal skills, life sciences and the theoretical aspects of the course, especially research, were acknowledged as strengths (Macleod Clark et al., 1997). Lack of practical skills, attributing to imbalance between theory and practice, was remedied within the first few months following registration (Macleod Clark et al., 1996; Kelly 1996; UKCC 1999).

However, the nursing literature reported a consistent theme of concern from some practitioners, managers and students, that newly qualified nurses do not possess the practice skills expected of them by employers. One reason for concerns may be 'reality shock'. This is the specific shock-like reaction, anxiety loss of confidence etc., of new workers e.g. nurses and physiotherapists in the work situation for which they have spent several years preparing, thought they were going to be prepared for, and found they were not (Kramer 1974; Van Gennep 1990; Benner et al., 1996).

Aspects of Provision	Nursing				Other Subject Allied to Medicine				
	University R	University T	University V	University H	University J	University L	University H	University J	University L
Curriculum design, content and organization	4	4	4	4	4	4	4	4	4
Teaching, learning and assessment	3	3	3	4	4	4	4	4	4
Student progression and achievement	4	3	3	4	4	4	4	4	4
Student support and guidance	4	4	3	4	4	4	4	4	4
Learning resources	4	4	4	4	4	4	4	4	4
Quality, management and enhancement	4	4	3	3	2	3	2	3	3
Total	23/24	22/24	20/24	23/24	22/24	23/24	22/24	23/24	23/24

Table 5 Quality Assurance Agency aspects of provision scores for nursing and other subjects allied to medicine for Universities R, T, V, H, J, and L.

Reality shock is applicable to students who migrate to registered nurse status with responsibility for their own practice (Radwin 1998) and has been attributed to feelings of inadequate preparation for practice (Fairbrother and Ford 1998). A lack of clarity as to the developmental needs of NQNs by experienced nurses required who support them, the need to clarify what nursing is, as well as the knowledge and skills required to practice (NHS E 1998), are contributing factors.

Another reason for concern is public perceptions about the levels of preparedness for practice was sometimes negative. Specifically, pre-registration nurses exit education programmes without being in possession of a full range of essential clinical skills (Glen & Clark 1999; DoH 1999) to be able to function effectively in practice settings (NAO 2001). This is in contravention of UKCC guidelines that indicate “the structure and content of pre-registration (nursing) programmes must facilitate the achievement of clinical skills and competencies” (UKCC 1999).

This recent and unequivocal statement was made partly in response to one of the original objectives of Project 2000; a ‘knowledgeable doer’ who is intended to be part of the solution to the problems of the traditionally trained nurse who was perceived to be ‘doing’ without ‘knowing’. In contrast, with Project 2000, it is ‘knowing’ without ‘doing’ (NHS E 1998). Evidence for this resides in observations that education programmes are considered more effective in developing cognitive and academic abilities and much less effective at developing the clinical skills base (Newman 1994). Analysis of the literature reveals a wide range of concerns (Appendix 5).

The shared goals expressed in ‘Making a Difference’ (DoH 1999), ‘Fitness for Practice’ (UKCC 1999) and encapsulated in ‘Education in Focus’ (ENB 2000c) established an agenda for change in nurse & midwifery education in England. Increasing the level of practical skills within pre-registration programmes and delivering an education system that is more responsive to the needs of the NHS, where two of many themes. New nurse education curricula in England have been validated based on UKCC & ENB guidelines. It is too early to say whether new nursing curricula are successfully meeting established criteria.

In physiotherapy some employers and supervisors are unsure whether newly qualified physiotherapists possess all the necessary therapy/treatment skills and there was no consensus about which skills they were lacking but there was consensus that the common deficiency was in up-to-date practical skills (Wiles et.al., 1999).

1.2.3 Conclusion.

No gold standard FfPu scales were identified in the literature. Consequently, two FfPu measurement scales, NQABN & NQP, required development. Following a systematic meta analysis of the nursing and physiotherapy literature, and in the absence of statutory and professional approved FfPu competencies, a theory led thematic analysis would need to be conducted and scale items selected on the basis of compliance with competencies comprising Rule 18a for nursing and the CFD for physiotherapy.

A postal questionnaire and subsequent data analysis using factor analysis on SPSS software was selected. The technique of direct estimation by respondent marking an FfPu scale with adjectival descriptions and continuous responses i.e: 10 point low to high FfPu scale was identified. Items must be unambiguous, comprehensible and homogenous as reflected by a high reliability coefficient score.

Medleys' (1984) essential distinction between competency, competence, performance and effectiveness resulted in performance i.e. qualified staff observing NQABNs & NQPs in the workplace being selected in favour of effectiveness i.e. the effect of the NQABNs & NQPs performance on patients, which is beyond the scope of this research. A link between nurse role performance high quality nursing care and total nursing competence was made.

Cheetham & Chivers revised model of professional competence is proposed as a comprehensive framework to ensure that all aspects of professional competence are addressed in each FfPu questionnaire. Further, the style of expressing scale

items is consistent with the liberal view of outcome competencies associated with higher order occupational standards.

Benner (1984) & Benner & Wrubels' (1989) work on professional competence and the primacy of caring in nursing are important. The former because it confirms the status of the competent practitioner with two or three years experience where as in the UK competent is associated with the point of qualification and registration. The primacy of caring is central to human experience, curing and healing and must be present in any model of professional competence and associated FfPu scale.

Finally, Project 2000 students have: a good theoretical and knowledge base, developed critical reasoning skills, research awareness linked to evidence based practice, adaptation and communication skills and insights into personal limitations. However, some practitioners, managers and students are concerned that pre-registration nurses exiting current education programmes do not possess essential clinical skills required for competent practice in the work place. This thesis measures the extent of the problem in the study Consortium/Confederation. The new 'Making a Difference' nursing curriculum is an attempt to both exploit and extend the benefits of Project 2000 whilst at the same time providing more flexible career pathways into and within nursing and increasing the level of practical skills within training programmes. The nursing measurement scale developed in this research could be reapplied when newly qualified nurses, from the same study universities, who complete 'Making a Difference' courses, enter employment. Comparative analysis could reveal the extent of the success of the new curriculum.

1.3 Cost Identification

1.3.0 Introduction.

Benefit identification and benefit measurement addressed effectiveness in this cost effectiveness economic evaluation. This section addresses cost identification (Table 6) by briefly reporting NMET, including nursing and physiotherapy, funding and contracting in England. Specific issues include: NHS reforms, NMET levy, colleges of health, models of NMET contract and value for money. The ‘production of NMET’, an economic framework for the analysis of inputs and outputs from the viewpoint of efficiency, is examined.

	Effectiveness	Cost	Cost Effectiveness
Background	Research Thesis and Evaluative Paradigm. 1 Benefit Identification. 2 Benefit Estimation.	3 Cost Identification. 4 Cost Estimation.	5 Benefit and Cost Comparison. 6 Sensitivity Analysis and Results in Context

Table 6 Thesis plan for analysis of effectiveness, cost & cost effectiveness: chapter 1 background, 3 cost identification.

1.3.1 Funding and contracting in NMET.

NHS reforms: education and training funding in England.

Working for Patients (DoH 1989) introduced the concept of the internal market to health care services and NMET. Inherent was the ‘purchaser/provider split’ i.e. the separation of purchasing and providing roles. At its centre was ‘marketisation’ to improve competition between education providers, increase efficiency, and reduce costs (Ramsammy & Humphreys 1994; Callery 2000). Highlighting the ‘true’ costs of NMET remains a key issue (JM Consulting 2001).

Working Paper 10, ‘Education and Training’, (DoH 1989a) realised a competitive training environment. Commissioners purchased from colleges and faculties of health care studies, or NHS Trusts. Contracting initiated a business culture (Moule 1999). Provider organisations were required to bid for contracts

rather than automatically receive them. Failure of a course to meet expectations could result in contract loss. Emergence of the client-centred approach to education provision over the teacher-led curriculum resulted (Quinn 1994). Sensitivity to purchaser needs through quality assurance and performance review ensued.

The 'Functions and Manpower Review' (NHS E 1994; DoH 1995) abolished RHA's. Education consortia of health care purchasers and employers were established. The NHS policy aim was securing a sufficient supply of fit for the purpose health care professionals, educated and trained to high standards who would provide high quality service to patients (NHS E 1998a). This is the declared purpose of funding and contracting of NMET (NAO 2001)

Consortia submitted to their Regional Educational Development Groups (REDG) collated workforce planning data per individual staff group (NHS E 1995). Each REDG fulfilled a region-wide consolidation and over-view role. The outcome was a financial and workforce return. It formed the basis for the following years NMET levy (Easmon 1999). Consortia negotiated commission levels with HEIs subject to REDG agreement. REDGs also monitored existing education contracts against NHS criteria (Diagram 2). Ultimately devolved consortia would have responsibility for budget holding, negotiating contracts, workforce planning and related commissioning. In essence, to translate workforce plans into student numbers to be trained.

In April 2001, 46 Education Consortia responsibilities transferred to 27 Workforce Development Confederations (WDCs). They have a central role through planning and development of the healthcare workforce, in the context of the NHS Plan (DoH 2002) and local priorities, and along with Postgraduate Deaneries to commission education and training and manage the Department of Health annual investment of £3 billion. Specifically, they must ensure the delivery of adequate numbers of properly trained staff through commissioning and managing quality assured education and training for all staff sponsored through the Multi-Professional Education & Training (MPET) budget. Development and dissemination of best practice in respect of recruitment, retention and attrition and value for money are seen as expressions of core

functions. WDCs bring together local NHS and non-NHS employers to plan and develop the whole healthcare workforce. This mechanism recognises that the NHS, along with local authorities, private and voluntary sector and others, employs healthcare staff and that collaborative working is essential if integrative workforce planning and development is to be effective and local population healthcare needs met (DoH 2002). Local and national organisational relationships are outlined in diagram 3.

Non-medical education and training (NMET) levy.

National funding for NMET was compulsorily levied on Health Authorities (HA) allocations since April 1996 (Easmon 1997). Levies are applied once administrative costs of purchasing services for their resident population have been removed. Levies are collated centrally and reallocated according to educational activity. Contribution and distribution patterns are not the same. HAs were required to effectively manage the levy, ensure financial systems were established and financial integrity and value for money (VFM) were achieved (NHS E 1997; Easmon 1997).

Under devolution of responsibilities education consortia were not legal entities and needed to operate through a 'lead' body (NHS E 1997). In this study the lead body was a HA and an NHS Trust. The Trust was accountable to Consortium members for operational effectiveness (NHS E 1998a) including: release of funds to contracted universities; annual reporting of NMET income and expenditure (NHS E 1998e) and overall consortium performance (NHS E 1997). In 1998/99 the NMET levy accounted for approximately £800m of hospital and community health services resources. Of that, £787m was expended on education contracts with universities (NHS E 1998a). For 1999-2000 the levy was £907m (NHS E 2000) of which £705m was expended on pre-registration nurse and physiotherapy education including bursaries (NAO 2001). In 2000/01 the levy was £1 billion. This is a third of the £3 billion the NHS will spend centrally on all education and training in the NHS in England in 2002/2003 (DoH & UUK 2002).

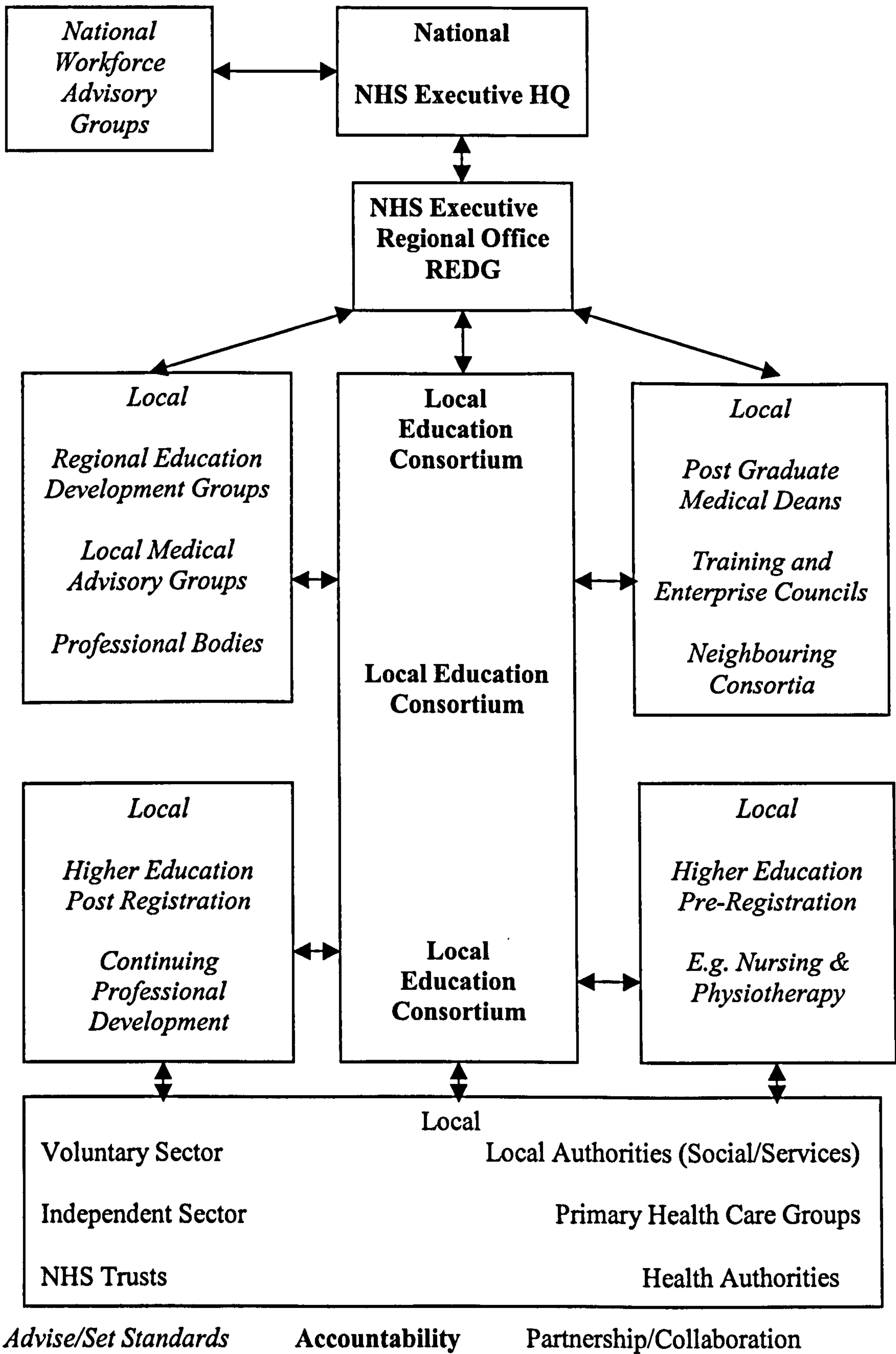


Diagram 2 NMET workforce planning relationships.
 Based on *Current Workforce Planning for Other Clinical Staff* (NHS E 2000).

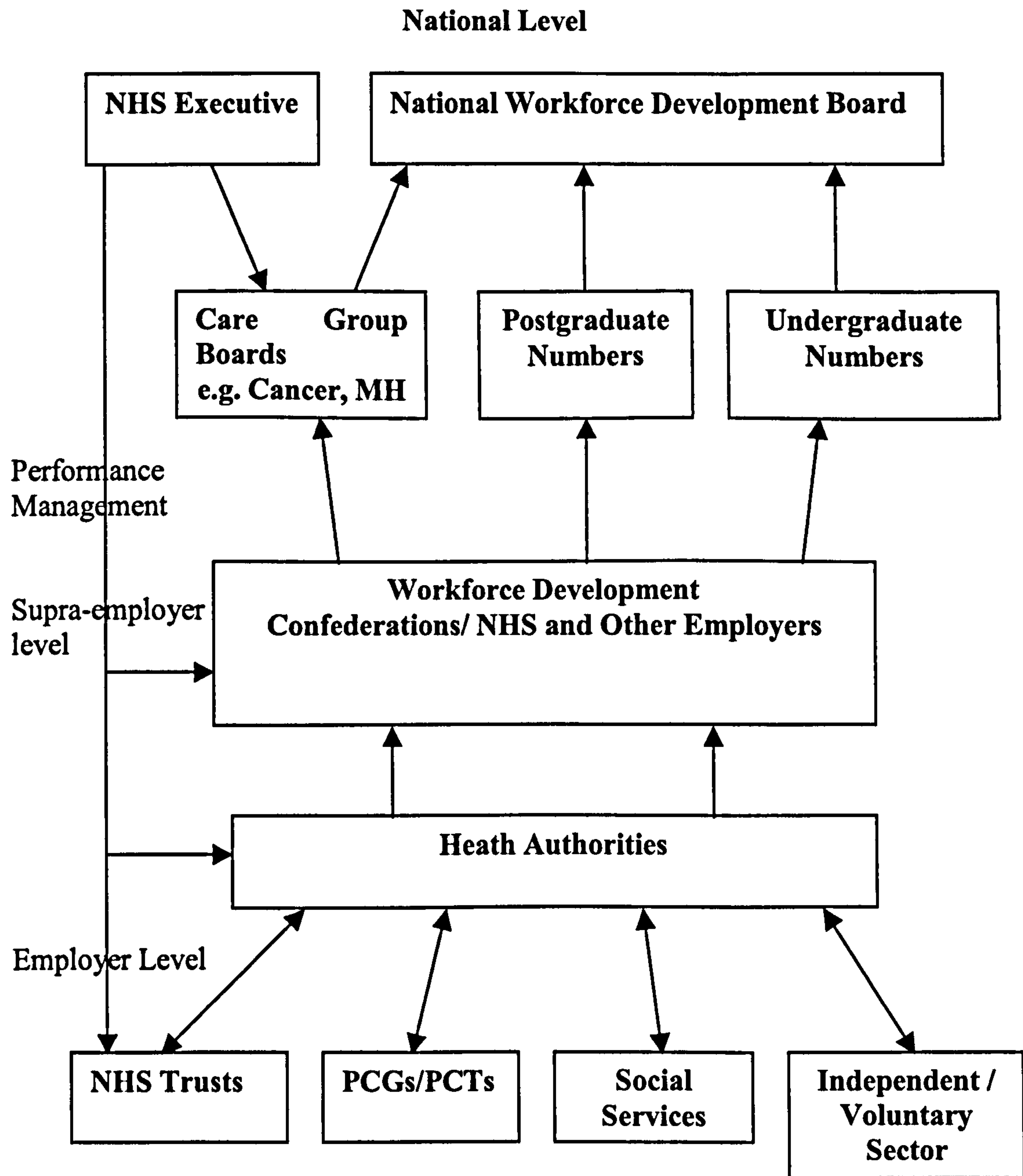


Diagram 3 Workforce planning arrangements (NHS E 2000).

National Level

National workforce issues. undergraduate/postgraduate numbers. Integrated service / workforce planning taking account R&D, skill-mix and other issues.

Supra-employer level

Aggregate workforce plans to ensure consistency. Supra-employer HR action. Commission education and training. Inform decisions on undergraduate / postgraduate requirements.

Employer Level

- 1) Health Authorities: Strategic workforce planned to support HImP. HImP guidance to support local plans
- 2) NHS Trusts, PCGs/PCTs, Social Services, Independent/Voluntary sector. Prepare local workforce plans, including skill mix, recruitment /retention.

Depending on sources between 70%-80% of NMET funds are expended on pre-registration education and the remaining on development funding linked to NHS objectives i.e. New NHS white paper. The levy also supports student bursaries, consortia management costs and education, personal and organisational development expenditure (Easmon 1999).

The NMET levy (NHS 1997a) was divided between four staff groups: nursing and midwifery (NHS E 1998f); AHPs; scientists and technicians and education and training development. Funding levels vary for each group over time in the light of requirements. From April 1998 the NMET levy funded two elements; core and developmental. The former covered pre-qualifying education leading to entry to a healthcare profession. The later funded the education, training and development of the NHS healthcare workforce (NHS E 1998e).

The NHS E, up until 1998, produced NMET levy accountability reports which retrospectively reported how the levy, (which varies in total from year to year and between recipient groups), for the preceding year was divided e.g. Nursing and Midwifery £505.8 m or 68% of the total of NHS regional allocations (NHS E 1998d).

The medical and dental education levy (MADEL), and the service increment for teaching (SIFT) along with NMET were combined to form the Multi-Professional Education & Training (MPET) budget (NHS E 2000). This is allocated from the DoH and will flow through Strategic Health Authorities to WDCs. MPET will continue to fund nursing and physiotherapy pre-registration education in the short term.

Colleges of health integration with HE: NMET funding.

Funding of the three former local Colleges of Health that became Schools of Health within with their local university in April 1996 was an integral part of the negotiations. The portfolio of transferring courses and associated funding were agreed. Most of the provision took the form of 'block contracts'. Finance to cover premises and integration set-up costs were identified. The later facilitated

the cultural transition of staff to HE. Student bursaries were the focus of other discussions.

Presentation of study Consortium annual financial accounts took the form of 'block contracts'. It was not possible to accurately disaggregate information to individual courses. Consequently, information on how much of the contract was devolved to individual departments within each school of health or was used to fund overhead levels was unknown. Comparability of distribution and utilization patterns with consortium expectation remained unanswered. University internal management accounts (UIMA) contain this information. Published university annual financial statements are of limited help in this regard.

The study Consortium's inability to confirm resource utilisation meant it could not accurately and independently calculate costs per student based on contract values. Without costing information from UIMA it was not possible to compare costs at departmental, school, and institution levels by course and student. Adherence to government policy on competition, public accountability, and ensuring VFM based on sound costing and pricing remains important but difficult to achieve.

The sector's ranges of prices per pre-registration nursing and physiotherapy student have been reported (NHS E 1998; NAO 2001). In the case of the former, these anonymised prices were calculated annual by the NHS and reported to REDGs who then released them to education consortia. The methodology used was not specifically reported.

Models of NMET education contract; pre and post registration.

The Department of Health, on behalf of the whole health economy, and through the NHS, commission education and training with HEIs (NAO 2001). For many HEIs with NHS contracts, the NHS is the second largest source of funding after HEFCE (NAO 2001). Pre-registration education is commissioned on the basis of FfPr and not FfPu. Three main models of pre-registration education contract, prior to 2001, were recognised by the NHS and the study Consortium: block, fee

per student, and “core/cost and volume” (sic). In a block contract pay and non-pay elements incurred at departmental, school/faculty and institutional level were met through the payment of a block sum of money to an education provider. Usually a ‘ceiling’ and a ‘floor’, in terms of maximum and minimum student numbers was specified. The contract was not usually linked to a specific number of students in training (NHS E 1999).

A fee for student contract was one in which an agreed fee per student was multiplied by the number of students to yield the total contract price. Variations depended on the basis of the interpretation of the number of students i.e. indexed numbers of new students commencing the course (input), number ‘in-training’, and the number completing the course (output).

Finally, the “core/cost and volume” contract was one in which, regardless of the level of student numbers, funding did not reduce below a certain agreed level. Increases in student numbers above that level were funded on a fee per student basis at an agreed marginal cost (NHS E 1999). Within the study Consortium most contracts were “block” with one or two being fee per student.

In 1996 Post Registration Block Contracts were primarily funding long courses. By 1999/2000 an infrastructure to develop credit-based commissioning was established and new contracts for credit implemented in April 2000. This allowed HEIs more freedom to develop stand-alone, multi-professional and needs-led specific provision to meet NHS requirements i.e. FfPu. There is much more of a partnership approach now between the NHS & HEIs in shaping portfolios (Appendix 6).

The Benchmarking and Attrition Review Group (BARG) have recently considered how the NHS should use its £3 billion annual funding for learning and personal development to support the development of staff, and deliver necessary skills to support patient centred services and public health strategies. They propose that funding be reorganised on an interdisciplinary basis, (Health Workforce Learning and Development Budget), thereby reflecting its inclusive nature and ending present rigid demarcations in support to different professions

and occupational groups (i.e. between the former NMET, MADEL and SIFT budgets). They also propose seven underpinning key values: transparency, equity, comprehensiveness, responsiveness, integration, partnership working and flexibility.

Three of these key values have guided this study throughout:

- Transparency - education commissioners should be able to account fully for their use of funding.
- Equity - the main driver should be the need to deliver particular health care skills to patients rather than the delivery of particular types of professional.
- Partnership – the health and education sectors should work together to deliver training (DoH and UUK 2002).

BARG has also recommended standardised prices per student for all NHS funded contracts for learning and development (DoH & UUK 2002). This was in response to recommendations that, to increase value for money (VFM), there should be a generic pricing approach for core elements and a standard pricing formula for NHS programmes (NAO 2001).

Under current arrangements contract reviews occur annually and quinquennially. The latter is the nearest to a full economic evaluation of contract choices and benefits. The outcome is either contract renewal, with or without changes to contract content, or loss. Underpinning issues include: contract terms, quality specifications, clinical placements, quality and volume issues, curriculum content and VFM (NHS E 1999).

Value for money (VFM) in NMET contracts.

Confederations, like Consortia before them, are expected to work in partnership with HEIs to ensure that education meets the needs of patients and that all contracts are VFM (DoH 2002). “VFM is about cost & quality of the training and

the extent to which the student is fit for purpose...based on a clear definition of what employers expect in terms of outcomes and competencies” (NAO 2001). VFM in NMET contracts is contentious. NMET contracts are often subject to commercial confidentiality. Partnership working and assurance of VFM in the use of public funds is difficult (DoH & UUK 2000a). Competition between HE providers is meant to achieve VFM. Key principles (CVCP & NHS E 1995) confirmed the NHS commitment to securing best VFM by taking account of quality, price and market considerations, and achieved through collaboration between the NHS and HE (NHS E 1999). In a study of physiotherapy education course contracts quality and VFM were identified as a key criteria (Lumley 1998). However, variations in price per student for NHS funded education for the same profession have been observed but cost sharing between competitor HEIs was absent due to commercial sensitivities (NAO 2001).

The NHS E has indicated that achieving VFM is essential at a time when additional HE institutions are entering the education market, when new approaches to the delivery of education and training are taking place and original and alternative practices are being introduced (NHS E 1999). It is inappropriate, however, for the NHS to make judgements about VFM based on price alone as they may not be comparing ‘like with like’. Open and transparent benchmark pricing and longer term contracts are two suggested strategies for increasing VFM (NAO 2001).

Some HEI providers have indicated they are expensive because they provide quality education and that an apparently expensive contract is VFM (NHS E 1999). The NHS has responded by indicating that such claims require justification against explicit measures of additional quality. The Service will then decide if it wishes to purchase (NHS E 1999).

The NHS recognises that all contracts contain details of the price paid for goods or services received. It perceives a difference in education and training contracts in that historically they specify input and process as opposed to the quantity and quality of end product (NHS E 1999) i.e. the supply of ‘fit for purpose’ staff. The reason for this is that, to date, NMET contracts fail to clearly define what

employers expect in terms of outcomes and competencies (NAO 2001). There is no agreed description of a fit for purpose practitioner. In the absence of an outcome measure, volume and performance measures are used in contract assessment. These measures are the closest proxy to the real output of staff produced (NHS E 1999).

From the NHS perspective cost and quality in NHS education contracts is synonymous with the FfPu of those completing the course and with VFM. FfPu is difficult to measure and, for some, is unlikely to become apparent until several years after contract placement (NHS E 1999). Ideally, FfPu should be established at qualification to avoid measuring post qualification acquired knowledge & experience.

Public accountability of funding is a contemporary issue exemplified by the Transparency Review of costing in HE. The review aim is to ensure that universities meet government requirements to “demonstrate the full costs of research and other publicly-funded activities in order to improve public accountability” (JM Consulting 1999). Five figures must be reported: teaching & research (publicly & non publicly funded) and other (JM Consulting 1999). Funding provided by the NHS for nurse and physiotherapy education (JM Consulting 1999a) is teaching (publicly funded) and of particular interest to the study Confederation.

3.2 Production of education.

Funding and contractual arrangements are the means by which resources are made available for NMET. How universities use these scarce resources to deliver pre registration nursing and physiotherapy education is vitally important. The study of resource allocation and use is complex. An economic framework that enables the positioning and analysis of constituent parts of the production of NMET is essential. Tsang (1998) has produced a generic framework applicable for NMET.

The language of economic production ‘costs’, ‘efficiency’, ‘production’, ‘input’ & ‘output’ (Verry & Davies 1976), ‘cost-effectiveness’ and ‘VFM’ (Thomas 1990), can be considered by some to be offensive when applied to NMET. These are, however, appropriate terms for academic managers. By using these terms no devaluation of NMET or association with assembly line production is intended.

Many professionals believe that education is more than a matter of costs, returns and efficiency (Schultz 1963). Because quality of education is difficult to measure educationalists are afraid that measurement of productivity will involve emphasizing quantity at the expense of quality. Woodhall & Blaug (1968) argue educational activity can be satisfactorily measured using economic techniques.

An economic framework.

In economic production “given production objectives, prices, technology, inputs are transformed into outputs” (Tsang 1988). This production function, which transforms inputs to outputs, is an internal process, and tends to produce the maximum output from given inputs (Tsang 1988).

If NMET is considered similar to conventional economic production then given production objectives, (4 fitness benefits) prices (pay & non pay), and technology (curricula), inputs (student & staff time, skills etc.) are transformed into outputs (4 fitness benefits for students & teaching, research & enterprise outputs for academics) (Diagram 4). This production function, which transforms inputs into outputs, is an internal process, and tends to produce the maximum output (i.e. 4 fitness benefits) from given inputs.

The relationship between inputs and outputs is represented by the education production function (EPF) (Tsang 1988). This function is also believed to be appropriate for NMET. It comprises of four concepts of efficiency: internal (compares costs of NMET to output of FfA students); external (compares cost of NMET to output of FfPu employees); technical (produces the maximum output of the 4 benefits) and economic (selecting the right combination of resources) (Diagram 5). NMET can be technically inefficient when inputs are under-utilized

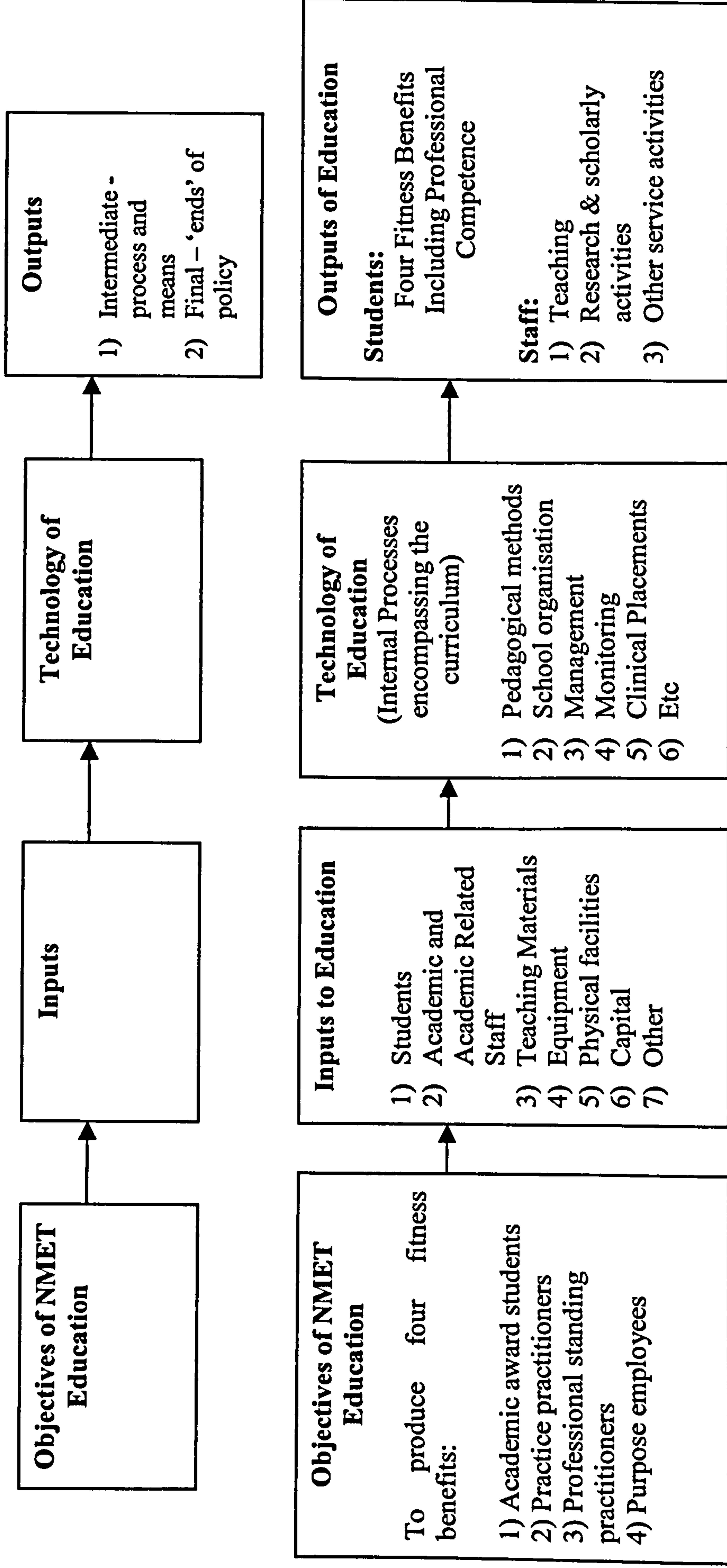


Diagram 4 An economic framework for analysing NMET educational costs and efficiency
 (Based on Verry and Davies 1976, Knapp 1984, Tsang 1988 and Cheetham and Chivers 1998).

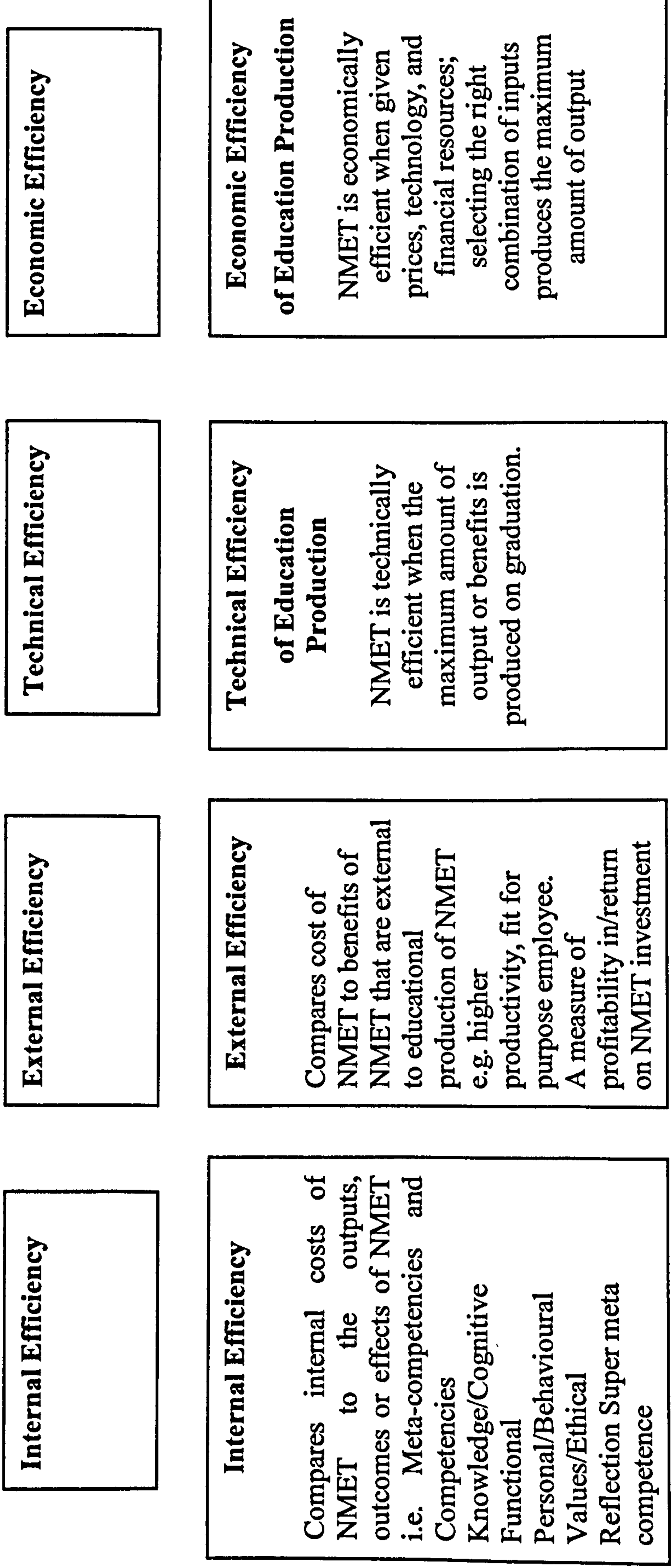


Diagram 5 Efficiency in the production of NMET (Based on Tsang 1988).

e.g. teacher time. Consequently outcome(s) can be increased without additional cost by utilizing teacher time more fully. An outcome e.g. number of students qualifying can be raised without additional cost by altering input combination e.g. academic and related staff profiles, etc resulting in greater economic efficiency. NMET efficiency can be promoted by 'technical' and/or 'economic' means.

1.3.3 Conclusion.

The internal market in the NHS resulted in the purchaser divider split and a competitive training environment. Local education consortia purchased education from university providers mostly on behalf of NHS employers. In April 2001 Consortia were replaced by Workforce Development Confederations.

National funding for NMET was compulsorily levied on HAs now SHAs. Contribution and distribution patterns are not the same. The levy funds four staff groups including nursing and physiotherapy. It is now part of MPET budget and the soon to be Health Workforce Learning and Development Budget.

The study Consortium's inability to confirm resource utilisation meant it could not accurately and independently calculate costs per student based on contract values. Adherence to government policy on competition, public accountability, and ensuring VFM based on sound costing and pricing remains important but difficult to achieve.

The sector's ranges of prices per pre-registration nursing and physiotherapy student have been reported. Block contracts were confirmed as the most common for pre-registration education at the time of this research. The proposed national move to benchmarked standardised prices per student for NHS funded contracts necessitates a standard benchmarking pricing formula for core and non core elements. Their establishment may increase VFM.

Tsang's economic framework is applicable to NMET. Application enables university NMET efficiency to be examined and policy recommendations made.

1.4 Cost Estimation

1.4.0 Introduction.

Cost estimation, involves the examination of three major components: costing HE in England using HEFCE's staged process of cost classification and analysis, costing nursing and physiotherapy education and the related issue of student nurse and physiotherapy attrition (Table 7). Integration of the three enabled key components of a standardised costing algorithm to be identified. From this the output cost of a fit for purpose NQABN & NQP employee was calculated. Comparison of university providers, where the newly qualified were educated, was then possible.

	Effectiveness	Cost	Cost Effectiveness
Background	Research Thesis and Evaluative Paradigm. 1 Benefit Identification. 2 Benefit Estimation.	3 Cost Identification. 4 Cost Estimation.	5 Benefit and Cost Comparison. 6 Sensitivity Analysis and Results in Context

Table 7 Thesis plan for analysis of effectiveness, cost & cost effectiveness: chapter 1 background, 4 cost estimation.

1.4.1 Costing higher education in England.

Since 1996, most NMET education is delivered in HE. One challenge facing universities is costing and pricing its activities including NMET. Without a sound and standardised costing method subsequent comparison of both NMET costs and cost-effectiveness results, may not be meaningful. Different costing methods exist: total, marginal, unit and activity-based (ABC) (HEFCE 1999). ABC is HEFCE's recommended method.

A new approach to reliable costing and pricing, to underpin decision making in HE, based on robust costing systems and including all activities, was published by HEFCE et al., in 1997. Direction and content are consistent with the Transparent Review Approach to Costing (TRAC); a Government based

approach to costing teaching, research and other activities in HE (JM Consulting 1999, 1999a & 2000).

Implementation of HEFCE guidelines generates improved costing information enabling senior academic and managerial staff to make better decisions on a wide range of activities including:

- Measuring the viability of courses, research and other activities,
- Allocating resources and workloads,
- Providing efficiency gains and cost savings,
- Preparing and monitoring budgets,
- Assessing value for money,
- Benchmarking against other institutions and external providers,
- Improving business processes and measuring productivity (HEFCE et al., 1997),
- Raising awareness of the financial implications of decision-making,
- Informed basis for making pricing decisions,
- A strategic approach to financial planning,
- A credible basis for negotiating external funding,
- A sound basis for performance review (HEFCE 1999),
- Provide diagnosis of past cost patterns, (such as the determinants of courses and sources of variations in costs),
- Prognosis of future cost requirements,
- Assess the cost implications and cost-efficiency of alternative educational policies or interventions (Tsang 1998).

The five-step costing process.

This process is based on resources used, activities performed and outputs achieved and can be confidently followed by non-accountants (HEFCE et al., 1997) (Diagram 6).

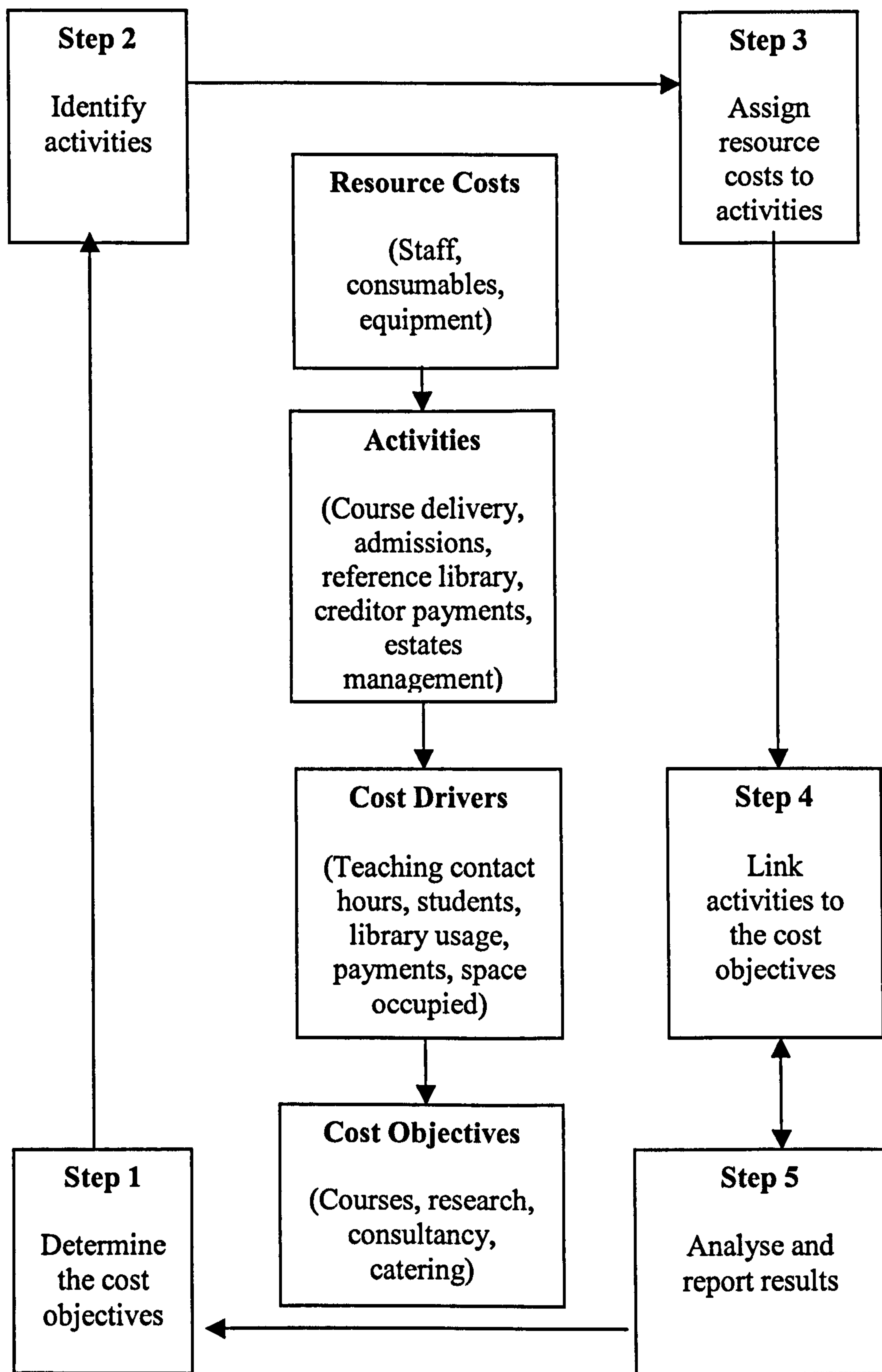


Diagram 6 Cost relationships and the costing process

Management information for decision-making: Costing guidelines for higher education institutions (HEFCE et al., 1997).

Step 1 Determine the cost objectives.

Cost objectives relate to a number of purposes, courses, activities and departments (HEFCE 1999). At the departmental level, they focus on taught undergraduate or sub-graduate courses, general research projects or other activities that staff undertake. At institutional level, they are about attributing to all organisational units (faculties and non-academic departments), which provide principal activities, central administrative and support service costs (HEFCE et al., 1997)

Step 2 Identify activities, which contribute to the cost objectives.

Activities include tasks and processes, which comprise final output. Activities are grouped into cost pools (e.g. photocopying and postage etc. into an administrative service cost pool). Using cost objective(s) helps to ensure that the correct level of detail and pooling takes place (HEFCE et al., 1997).

Step 3 Assign resource costs to activities.

There are many types of inputs measured by costs. Direct attribution, estimation or general apportionments are ways in which the cost of resources can be related to activities (HEFCE et al., 1997). Direct attribution is the most accurate method. It captures volume and associated costs of resources. Less costly is estimation based on managers' estimates of the percentage of time (or effort) spent by employees on activities, or ad hoc surveys, interviews (HEFCE et al., 1997). General apportionment, is where staff time is apportioned to designated activities using the departmental standard i.e. the number of hours to undertake x or y. The time taken is then converted to a unit cost by multiplication of the two.

Step 4 Link activities to the cost objectives.

This involves linking the activity costs to the outputs using direct attribution, estimation or general apportionment (HEFCE et al., 1997).

Step 5 Analyse and report results.

The final step involves analysing and reporting results of the costing exercise. Financial management focuses on academic departments, schools, library, computing, premises, support services and administration (HEFCE 1999). Given a uniform system of costing, different university expenditure statements can be compared. Inter-university cost-effectiveness comparisons are then possible. In NMET, this means comparisons of input i.e. 'indexed', process i.e. 'in-training', categories of students and outputs i.e. fit for practice practitioners and fit for purpose employees.

Cost analysis and classification.

Universities must comply with the Funding Council's requirements for cost classification and reporting (pay and non-pay) (Diagram 7). Universities have differing organisational structures, budgeting and financial information systems (HEFCE 1999). No two universities would necessarily present similar management accounting information identically. Differences can lead to cost omissions, inappropriate attribution or double counting. Resultant cost comparisons would be undermined. Prevention is by a common management accounting-costing framework is essential at departmental, school/faculty and institutional levels. A key part of this research was to produce such a framework, an associated cost collecting manual and costing algorithm. Identified differences were then likely to be real and not the result of different recording methods.

Splitting costs between academic faculties or schools, or between courses and research projects is complicated (Cropper 1996). Data is often difficult to locate and differentiation is not always clear. Students and staff both use common central university resources like computing and library facilities. Teaching staff and accommodation, which are the most expensive inputs, are also shared and are difficult to apportion to courses, on a fair basis. The running costs of buildings vary greatly. Separating teaching and research incurred costs is difficult. Consequently, costing appears to be easier than it actually is and it is often poorly done (Cropper 1996).

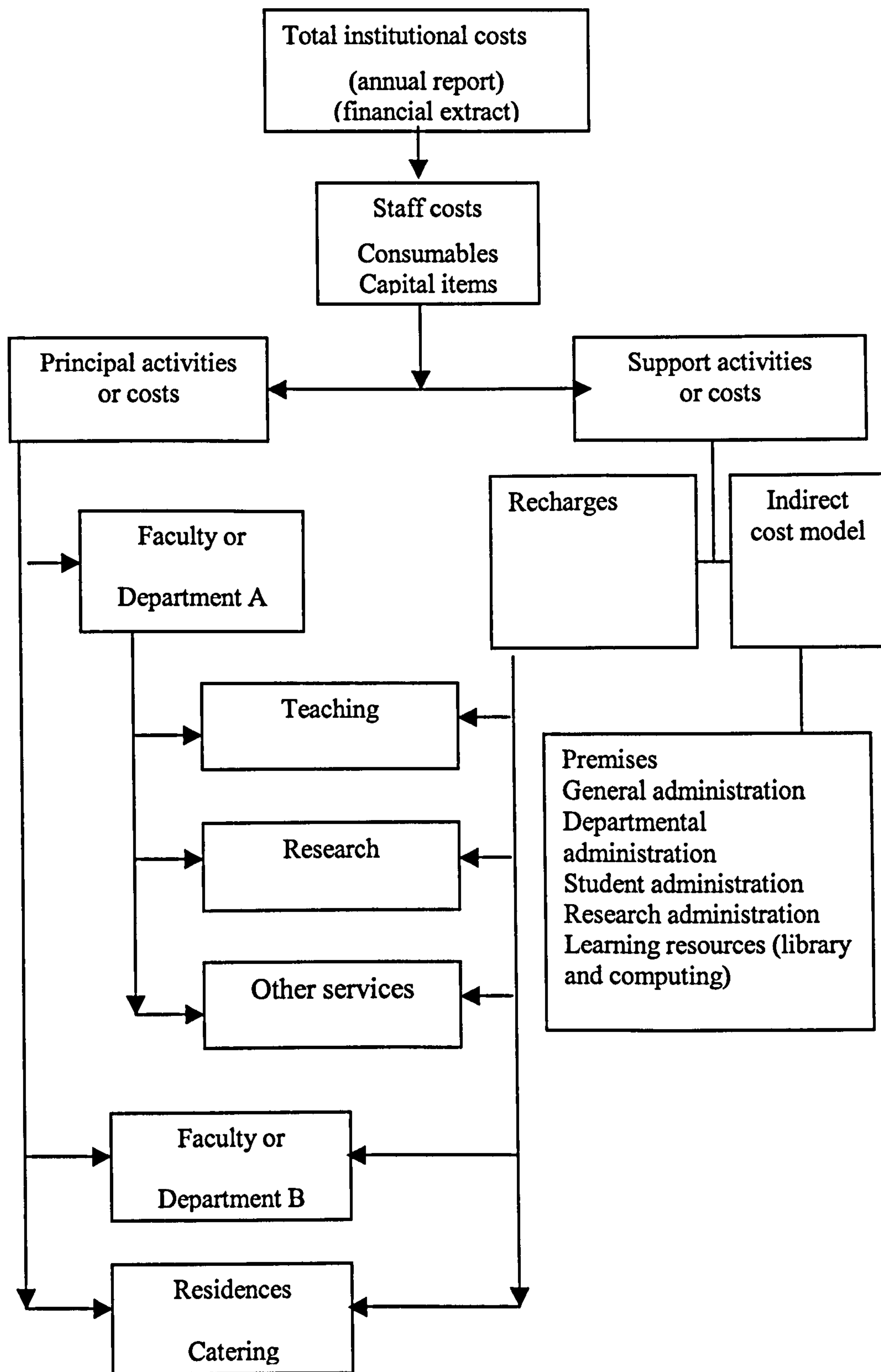


Diagram 7 Activity and cost structure of a typical HEI.
 Management Information for Decision Making: Costing Guidelines for Higher
 Education Institutions (HEFCE et al., 1997).

Three different types of cost are acknowledged: direct fixed, indirect fixed and variable. In direct fixed costs remain the same over a set time period and are not related to activity levels, but have a “direct relationship to the product or service” (Cropper 1996) e.g. the salary cost of a member of staff dedicated to a single course irrespective of the number of students. Direct fixed costs, at the institution level, are senior university managers’ salaries. These same salaries are also an overhead on all the universities’ activities. High overhead costs are a characteristic of universities and the allocation of these costs tends to be done on an inconsistent basis, including using student numbers, lecturing hours and teaching space (Cropper 1996).

Indirect fixed costs are those which have to be met regardless of activity levels but are recognised as being difficult to apportion to services or products (Cropper 1996). Cleaning, heating, lighting, repairs and maintenance, which are accommodation costs, are of this type as are central services: central administration, estates, finance, personnel and registry. Variable costs vary with activity either increasing or decreasing proportionately to student numbers (Cropper 1996).

Once identified, indirect costs need to be consistently apportioned to direct costs using an appropriate basis. There is no single ‘correct’ basis. Whatever basis selected must be consistently applied. In HE there is a long tradition of allocating central costs to academic departments on the basis of the number of full time equivalent students (FTEs) (Howson and Mitchell 1995). Allocation of costs that reflect the real impact on overheads, as in ABC, are of interest to HE as they help to identify the ‘true’ long-term costs of educating students on different types of course (Howson and Mitchell 1995) e.g. pre-registration nursing and physiotherapy.

Of the four common approaches to costing, ABC is the method used for jointly costing activities and controlling overheads. It focuses on the importance of ‘cost drivers’, which ‘drive’ overhead expenditure (Scapens et al., 1994). ABC groups’ overheads into a number of ‘cost pools’ and uses ‘cost drivers’ to allocate overheads to activities (Cooper and Kaplan 1988; HEFCE 1999).

Recently, in HE there have been technological advancements associated with computers and IT networks with a corresponding growth in indirect costs (HEFCE 1999). These costs have accounted for an ever-increasing percentage of total cost. In ABC, there is in-depth analysis of indirect costs (e.g. printing), academic services, administration and central services, and premises. Explicit linking of indirect cost with direct activities like academic departments, courses or student numbers that drove the need for such overheads, follows. ABC is complex and increases the “cost of costing” (HEFCE 1999).

1.4.2 Costing nursing and physiotherapy education.

Introduction.

For Storey et al., (1995) it is essential that the product of Colleges of nursing/nursing faculties in HE is viewed as ‘fit for purpose’, and value for money (VFM). The importance of this dual perception has not diminished. Therefore, understanding costing methods in nursing and physiotherapy education is crucial.

Sources and types of costing data.

Financial information on course or student costs is scarce. With the exception of Coopers & Lybrand (1995) and Lumley (1998), in which tuition costs were attributed to identified institutions, others contain only general non-attributed financial information for reasons of commercial sensitivity.

The NHS E up until 1998 produced an annual NMET Contract Data Base Communication for Regional Offices and education consortia. The anonymised data contained information pertaining to the least, most and average cost per student, and price to the NHS, in respect of pre-registration nursing and AHPs contracts. The costing method used is not reported. An overall sector view is possible but this only permits the most general of questions to be answered, e.g. overall expenditure in England for a particular group, e.g. pre registration nurses.

Specific questions that would enable direct comparisons between identified HEIs on cost per student, and price to the NHS, to remain unanswered.

The DoH commissions research into NMET. For example, Luker et al., (1996) published 'Project 2000: Fitness for Purpose, a review into the benefits and costs of traditional versus Project 2000 newly qualified practitioners'. Most recently, the NAO has undertaken a review of education and training of the future health professional workforce for England (NAO 2001). It contains both nursing and physiotherapy contract prices per student paid by the DoH 1998/99. In most cases, financial information is only given to those undertaking research or audit like the NAO and on the basis that when reported in the public arena, it will be anonymised.

Costing pre-registration nursing and physiotherapy education.

In response to the most frequently requested questions about costing nurse education in America, Knopf (1982) produced two manuals. One comprised method, directions and examples (Knopf 1982a). The other contained data-gathering instruments (1982b). Both were compatible with HEFCE's (1997) costing methodology. Collectively, Knopf's' and HEFCE's costing frameworks are a suitable basis for the development of a NMET costing method.

In the Coopers and Lybrand (1995) study the key issues were: contract cost variation across providers, tolerances within contract clauses to accommodate for variation during contract life and especially changes in student commissions, and factors affecting volume, standard and method of delivery of training including wastage rates. The result was the establishment of the inter-relationship between tuition cost per student, student numbers and rank order of cost per student per university. (Appendix 7).

In the context of the need to produce more graduates at less cost in Malawi, Namate (1995) analysed costs and influencing factors based on Tsang's economic framework. Namate's observation that costs increased by low student enrolment levels, attrition, number of repeaters, inflation and the number of

contact hours and that policy is affected by factors that drive up cost per student, workforce planning and contracting issues, organisation of curricula, and efficiency of education programmes, was noted and reinforced Coopers & Lybrand's (1995) linked criteria. Tsang's economic framework was confirmed as an appropriate model in which NMET efficiency could be explored.

In a study to establish if Project 2000 nurses were more valued than traditionally trained nurses (Luker et al., 1996) the value of an educational investment in both course types was estimated by examining the wage changes of those who experienced that investment. Estimates of 1994/95 costs of nurse education in respect of both groups, service benefit during the course of education and excluding training allowances and bursaries, the net difference of cost of Project 2000 Adult branch nurse was £1,500 more than traditional RGN. The use of revealed preference, (comparisons between the two or more groups of nurses in the work environment of the ward to observe differences in productivity) in this study, was rejected due to time constraints, which would make it impossible to observe a sufficiently large sample for the method to be reliable. The use of postal questionnaires was accepted as an appropriate alternative.

Cost implications of pre-registration clinical placements to the School of Nursing and Midwifery, University of Sheffield, was approximately £890 per student per annum (Lloyd Jones and Akehurst 1999). The implication is that any calculated cost per pre-registration nursing student includes a substantial financial contribution to service. The methodology for this calculation is complex and beyond the scope and resources of this research. Clarity requires a statement as to whether reported costs include a contribution to service.

Tensions have been reported between the cost and physiotherapy effectiveness and the provision of clinical supervision by the service for students and newly qualified staff (Maxwell 1996). In a study by the Trent Regional Health Authority (undated) into clinical placements, identified benefits were long term and focused on quality, whereas costs were short term and were associated with provision resource pressures.

1.4.3 Attrition in pre-registration nursing and physiotherapy education.

Introduction.

Although 84% of newly qualified nurses and physiotherapists take up employment in the NHS (NAO 2001) attrition prior to qualification is an ongoing problem. Nurse and physiotherapy students' attrition and the four benefits FfA, FfPr, FfPS & FfPu are intimately linked because high levels of attrition mean lower levels of benefit achievement. Higher unit cost per student of those who remain and poor VFM to the NHS is the resultant. Attrition levels, their causes and effects are intimately related and a key issue in this research.

Reasons for attrition/discontinuation.

Student attrition is not a new phenomenon. It has been the focus of attention in nursing for governments since the 1930's (Coakley 1997) (Appendix 8). In the 1980's reasons for Project 2000 student discontinuation included: low morale and decreased job satisfaction amongst students due to being new course 'guinea-pigs' (Orr 1990), a lack of counselling services for students, hierarchical structure of management as a source of stress (Lindop 1991), and overly rigorous student assessment (Jowett et al., 1994). By the mid nineties, disappointment at the lack of time spent with patients, inability to reach the required academic standard and personal reasons predominated (Coakley 1997). This time framework coincided with entry into HE and the adjustment of the professional diploma to the Diploma in HE and moves towards graduate status. By the late nineties reason for attrition included; academic difficulties, academic failure, and trainees' request personal/domestic reasons, illness, pregnancy, emotional difficulties and family commitments (NAO 2001) (Table 8).

Research findings by nurse academics at University of Hertfordshire (UoH) (NAO 2001) typify the late 1990s. Based on examination of 345 files of students who interrupted or were discontinued from training, an overall attrition rate of 26% was reported, or 22% if those who undertook a short interruption to their training were re-included.

Three key exit points were identified in the pre-registration diploma nursing programme. At 4 months, which was the time of submission of their first assignment and which followed their first clinical placement. After 12 months which tended to follow a holiday period. Finally, after 21 months, when the results of the common foundation programme (CFP) were published. These points and associated reasons may be applicable to the study universities in this research.

Over 70% of those leaving the course (UoH) or interrupting their education did so during the 18 months of the CFP or after publication of results. Older students (those over 22) stayed for a shorter time (12 months average) than the younger students (those 21 or younger, with 13.7 months being the average). Reasons for attrition included trainees' request (37%), personal/domestic reasons (13.9%), academic failure (29.3%), illness (10.4%) and pregnancy (4.4%). Collectively, 40% of discontinuations were due to emotional difficulties, family commitments and other personal difficulties.

Reasons for student attrition (discontinuation)	Pre-registration Nursing Numbers	Pre-registration Physiotherapy Numbers
Academic failure (either or both academic or clinical components)	353	35
Personal circumstances (including financial pressures)	374	18
Took up employment/other career choice	111	2
Illness	56	6
Transfer to other NMET course	118	2
Transfer to other non-NMET course	14	4
Dissatisfaction with the quality of the programme including cost and quality accommodation/practice/placement timetable	39	0
Reasons not specified in the survey	143	4
Not known	178	4
Total Number of students discontinuing in 1998-99 re survey	1386	75

Table 8 Pre-registration nursing and physiotherapy: Main reasons for student attrition or discontinuation from programmes in academic year 1998-1999 (NAO 2001).

Comparison of research results from the UoH with those for England (NAO 2001) revealed that out of the reasons for discontinuation, academic failure is the area where there is some degree of similarity in percentage terms. The UoH reported an academic failure rate of 29.3%, compared with 25.5% nationally, a difference of 3.8%. Other similar reasons for discontinuation but with wider percentage differences were:

- trainees' request* (UoH) 37%, nationally 8.5%, difference 28.5%.
- personal/domestic~ (UoH) 13.9%, nationally 26.98%, difference 13.08%.
- Illness (UoH) 10.4%, nationally 4%, difference 6.4%.

The category of 'trainee request*', may be more commonly used in some institutions, where little detailed information is available. Personal/domestic~ may be used in similar circumstances elsewhere.

The total survey population and the method of calculation of pre-registration nurses and physiotherapists, of which the attrition figures were a part, were not reported by the NAO (2001). Consequently, it was not possible to express the total number of nursing discontinuation, 1386 student nurses, as a percentage of the total survey population. We do not know, therefore, if the figure is high or low. In addition it is not possible to use the English National Board attrition/discontinuation survey population for 1998-99 (Appendix 8), because the differences in figures may be due to the different number of institutions who returned NAO and ENB survey questionnaires.

In physiotherapy an attrition rate of 9% for the 1986/87 qualifiers was reported (Hutt 1989). For 1990-1996 attrition was estimated by the CSP as being 3%. For 1997/98 the total number of withdrawals was 155, spanning 28 institutions across England, Wales, Scotland and Northern Ireland (CSP personal communication 1998). The total survey population was not stated and as a consequence it is not possible to know what percentage of the total that 155 student discontinuations constitutes. The 155 return comprised of: academic failure 56, or 36.1%; deferred 25, or 16.1%; financial reasons 2, or 1.2%; health 6, or 3.8%; personal 14, or

9.0%; transferred 11, or 7.1%; other 24, or 15.5%, and wrong career choice 18 or 11.6%. The predicted national percentage range of discontinuations for the period 2000/2001 is 6.1% and for 2001/02, 4.8% (CSP 1998).

National training commissions, attrition and attrition targets.

Increasing the number of students in training, by an additional 22,000 nurses and 6,500 therapists (5,500 nurses and midwives, and 4,450 therapists by 2004 to both address staff shortages and raise the quality of NHS Services (NAO 2001)), must be linked to a significant reduction in the levels of discontinuation. Failure to do so would lessen planned benefits. National attrition for nursing was identified at 20% for 1995/6 entrants (NAO 2001). The NAO cited the ENB attrition figure for nurses at 17%. Other health care professionals' attrition rates were in the range of 7-18%. This compares with the average attrition rate of 18% for other non-NHS programmes (HEFCE 1999). Pre-registration nursing and midwifery attrition range was 5-30% (UKCC 1999), and 20% (RCN 2001; NAO 2001).

Attrition rates in the case study area are reported to be falling. Average attrition rates for Adult branch nursing cohorts are reported at 12-15% and for the Child branch 9%. Attrition rates for AHPs are reported to be in single figures consistent with the NAO findings. Calculation methodologies were not reported. For the first time national attrition, targets of 13% for nurses and midwives and 10% for AHPs have been set by the DoH for intakes commencing September 2000 (DoH 2000a).

1.4.4 Conclusion.

A new approach to costing has been introduced by HEFCE to underpin decision making in HE, based on a five step process. This development is consistent with TRAC principles of costing. Knopf's nurse costing methodology is similarly consistent. All allow cost analysis and classification spanning direct & indirect fixed and variable costs. ABC is HEFCEs preferred costing method as it

explicitly links increasing indirect costs with the activities that drove the need for such overheads.

Financial information on courses or student costs and price to the NHS are scarce. In the UK NMET is usually unattributed for reasons of commercial sensitivity. Reporting of calculation methodologies is rare.

An inter-relationship between tuition cost per student, student numbers and rank order of cost per student per university has been confirmed. Cost per student increases due to low enrolment levels, high attrition, etc', but fall if a service contribution made by students is considered.

High levels of early occurring course attrition mean lower levels of qualifying students who are FfA, FfPr, FfPS & FfPu. Higher unit cost per student of those who remain and overall poor VFM, for the NHS, are the resultant. Student attrition in nursing and physiotherapy is not new. Attrition levels in the mid-late 1990's appear to be high in nursing 5-30% but declining in the study Consortium area: Adult branch nursing cohorts 12-15%, & Child branch 9%. In physiotherapy at the national level, and along with other health care professionals' reported attrition rates were 7-18%. Attrition rates for AHPs, in the study Consortium, are reported to be in single figures. Reasons for attrition vary: academic, financial & personal reasons but are common to both professions. National attrition targets of 13% for nurses and midwives and 10% for health care professionals have been set for September 2000 and successive intakes.

1.5 Benefit and Cost Comparison

1.5.0 Introduction.

This section addresses the issue of benefit and cost comparison (Table 9). There are four types of full economic evaluation: cost minimization analyses (CMA); cost utility analysis (CUA); cost benefit analysis (CBA) & cost effectiveness analyses (CEA). Justification for selecting a full economic evaluation and a CEA in particular are addressed. The criteria for selection of the unit of effectiveness are reported.

	Effectiveness	Cost	Cost Effectiveness
Background	Research Thesis and Evaluative Paradigm. 1 Benefit Identification. 2 Benefit Estimation.	3 Cost Identification. 4 Cost Estimation.	5 Benefit and Cost Comparison. 6 Sensitivity Analysis and Results in Context

Table 9 Thesis plan for analysis of effectiveness, cost & cost effectiveness: chapter 1 background, 5 benefit and cost comparison.

1.5.1 Economic evaluation.

Equipment, facilities, knowledge, people and time are scarce resources (Drummond et al., 1993). Consequently when decisions are made about how these resources are to be used it needs to be done following “organised consideration” rather than reliance on “what was done last time”, “gut feelings” and “educated guesses” (Drummond et al., 1993). Three reasons for this are: 1) without systematic analysis it is difficult to identify clearly the relevant alternatives; 2) the viewpoint assumed in an analysis is important and 3) without some attempt at measurement, the uncertainty surrounding orders of magnitude can be critical (Drummond et al., 1993).

It is essential to identify and subsequently measure inputs and outputs. Without doing so there is little on which to base an assessment of VFM (Drummond et al., 1993). The real cost of any programme is the foregone or ‘opportunity cost’ of other outputs that cannot be purchased. In this study, it is the opportunity costs of other NMET education, or, in a wider sense, patient care.

There are two major characteristics of an economic evaluation: the link between inputs (costs) and outputs (consequences). Second, choices have to be made between competing alternatives. It is not possible for all desired outputs to be met. Economic evaluation “seeks to identify and to make explicit one set of criteria which may be useful in deciding” and is “the comparative analysis of alternative courses of action in terms of costs and consequences” (Drummond et al., 1993). A full economic evaluation, like the one planned for pre-registration nursing and physiotherapy includes a sequenced approach: identification, measuring, valuing and comparison of the costs (£ per student) and consequences (FfPu) of considered alternatives.

CMA, CUA, CBA & CEA are considered full evaluations. In CMA, the outcome is the same, but the costs differ. In CUA the value or worth is a specified level of health status i.e., QALY. In CBA, benefits are valued in money terms. In CEA, outcomes are measures in natural units e.g. life year gained.

Cost effectiveness analyses.

CEA is the term reserved for costs relating to a single common effect and which may differ in magnitude between alternative programmes (Drummond et al., 1993). The outcome is common to both programmes or activities under consideration but each may achieve different levels of success. Costs may also be different. In this situation the most effective, with the least cost, would be the option chosen and arrived at by calculating, and then comparing, the “cost per unit of effect” (Drummond et al., 1993).

A CEA was undertaken in this study using the natural unit of overall weighted mean percentage of fitness for purpose (OWM%FfP). This is a measure of FfPu of the NQABNs & NQPs. All the study universities provide this output. University providers were compared on the basis of cost & effectiveness (OWM%FfP). From this the most cost effective university provider of fit for purpose NAQBNs & NQPs was identified. The most cost effective provider of the other benefits was also established and compared.

In any economic analysis, it is necessary to specify the viewpoint taken. A cost from one stakeholder's viewpoint is not a cost from another (Drummond et al., 1993). Purchasing student places is a direct Consortium/Confederation cost. Purchasing stationery for student's personal use is not. The economic viewpoint of this study, as argued in 1.1.3 viewpoint of the analysis, is that of the NHS education Consortia/Confederation representing the interests of NHS employers and others and not that on any other stakeholder.

CEA was confirmed by the research sponsors, as the appropriate methodology by reference to the national policy aim "to enable the NHS to secure a sufficient supply of health care professionals who are educated and trained to high standards and who are fit for the purpose of providing a high quality service to patients" (NHS E 1998a). FfPu was confirmed as the appropriate effectiveness outcome measure because it complied with the established selection criteria "single, unambiguous, objective" and was, therefore, a clear dimension along which the effectiveness could be measured (Drummond et al., 1993).

1.5.2 Conclusion.

A full economic evaluation was selected because it enables the identification, measurement, valuing and comparison of costs and consequences (FfPu) of competing university providers in respect of the fitness for purpose of NQABNS and NQPs. The most effective university provider will be the one with the least cost per student and the highest amount of unit of effectiveness i.e. (OWM%FfPu). The stakeholder economic perspective of this study is exclusively that of the study Consortium/Confederation.

1.6 Sensitivity Analysis and Results in Context

1.6.0 Introduction.

Every economic evaluation contains some degree of uncertainty, imprecision or methodological controversy (Drummond et al., 1993). This study is no exception. To minimize imprecision, or controversy, sensitivity analyses were performed (Table 10). Sources of price per pre-registration nursing and physiotherapy students, in England, were identified in the literature. Cost per pre-registration nursing and physiotherapy students were generated and compared within discipline over the period consistent with this research. The sensitivity of the threshold of fitness for purpose was examined. Comparative analysis of cost and price per indexed nursing students was undertaken. A cost effectiveness sensitivity analysis was also performed on both actual nurse and physiotherapy course expenditure and contract values. Results of all these analyses, and their interpretation, are contained in the effectiveness, cost and cost effectiveness sections of the discussion chapter of this thesis.

Finally, the opportunity offered by a sensitivity analysis was exploited in order to identify which existing predominantly qualitative approaches assisted in the identification of other benefits or costs of pre-registration nursing and physiotherapy education that the health sciences evaluation approach might have missed.

	Effectiveness	Cost	Cost Effectiveness
Background	Research Thesis and Evaluative Paradigm. 1 Benefit Identification. 2 Benefit Estimation.	3 Cost Identification. 4 Cost Estimation.	5 Benefit and Cost Comparison. 6 Sensitivity Analysis and Results in Context

Table 10 Thesis plan for analysis of effectiveness, cost & cost effectiveness: chapter 1 background, 6 sensitivity analysis.

1.6.1 Sources of price per student.

There are three major sources of price per student: a) independently commissioned research e.g. physiotherapy (Lumley 1998; Lumley 1998a), b) national bodies' reports e.g. (NAO 2001) and c) NHS E national database communication reports.

Commissioned researchers e.g. Lumley (1998; 1998a) published price per indexed physiotherapy student for 1997/98. The National Audit Office (2001) published price per indexed student for all NMET professions for 1998/99. The NHS E up until 1998 published anonymised price per student per HE provider for nursing and midwifery as well as allied health professionals.

1.6.2 Qualitative research contribution to benefits and costs.

Qualitative approaches such as inductive thematic analysis (ITA), grounded theory and narrative approaches have much to offer this predominately quantitative approach to cost effectiveness. Practitioners and others could have used ITA as an alternative approach to competency identification, prior to inclusion as scale items in each FfPu measurement scale. The benefit of this approach is that it would have been contemporaneous with the current understandings of FfPu in the Service.

Application of grounded theory could help identify and explain the reasons why each of the respondent groups, newly qualified, ward managers etc., chose the dimensions of FfPu (each dimension being a unique grouping of correlating competencies) that they did.

Identification of competencies for inclusion in each FfPu measurement scale could have been achieved via a narrative approach of diary use as opposed to ITA. Clinical Preceptors and Supervisors of NQABNs and NQPs respectively, and or other groups of professionals, could have been asked to record occasions when, NQABNs & NQPs, demonstrated knowledge, skills, attitudes and understandings, consistent with an agreed definition of a newly qualified fit for

purpose adult branch nurse and physiotherapist employee, and spanning the four core competence components: knowledge/cognitive, functional, personal/behavioural and values/ethics in observed performance. Trending would reflect the most important competencies in each. A revealed hierarchy of FfPu activities/competencies for NQABNs and NQPs could constitute an FfPu measurement scale. Again, the benefit of this approach is that it would have been contemporaneous with the current understandings of FfPu in the Service.

Diaries been recently used recently in one of the study university's as part of the implementation of the TR of HE. An 'In Year Diary Exercise' to identify what activities were undertaken by nurse and physiotherapy academics (qualitative) and how much time as a percentage of the total they are spending on these activities (quantitative) was recorded. The data was subsequently used in the calculation of expenditure for publicly funded teaching, including NMET, and cost per student.

1.6.3 Conclusion.

Every economic evaluation contains some degree of uncertainty, imprecision or methodological controversy. This study is no different. Three sources of price per student were identified: independently commissioned research, national bodies' reports and national database communications.

Inductive thematic analysis, grounded theory and narrative approaches have much to offer a predominately quantitative approach to cost effectiveness. In respect of effectiveness, ITA could confirm the appropriateness of competency items identified in this research or identified competencies for inclusion in FfPu measurement scales. Grounded theory could have identified why certain psychological constructs of FfPu were chosen by different groups of assessors. Finally, in the case of diaries, different or additional FfPu competencies could have been identified for inclusion in FfPu measurement scales. Staff activities and related time expenditure recorded by IYDE or equivalent has been used in calculations of teaching and cost per student.

Research Questions

Based on the critical literature review a number of research questions have been identified. They fall into two categories: theoretical and methodological, and practical and span benefits/effectiveness, cost and cost effectiveness.

Theoretical and methodological research questions.

Benefits / Effectiveness:

RQ1. Which was the most appropriate fitness benefit, from the economic perspective of employers, for use in the CEA? The identified benefit was FfPu (See Benefit Identification).

RQ2. What were the main causes of the theory-practice gap that can negatively affect acquisition and maintenance of competence, performance and effectiveness? The main causes are: utility of advocated theories for practice; transferability of learning between settings; lack of reflection; conflicting perceptions of practitioners' and nurse educators' roles; loss of balance between academic and practice values; excessive demands placed on educators and lack of resources. High aspects of provision scores for nursing and other subjects allied to medicine might suggest that the effect of the gap, in the study consortium universities, may be minimal (See Benefit Estimation).

RQ3. Were there any appropriate, valid and reliable psychometric measurement scales of FfPu for NQABNs & NQPs? No gold standard FfPu scales could be identified from the literature (Benefit Estimation).

RQ4. What methodologies produce profiles of FfPu so that the resultant scores can be used to calculate CER's? The methods are psychometric testing, survey methods, and factor analysis (Benefit Estimation).

Cost:

RQ5. How was NMET funded, contracted and publicly accountable? NMET was funded via NMET (later MPET) levy on Health Authorities. Education consortia have 'block contracts' with HE providers on behalf of the NHS. Public accountability is provided via the rigour of the contracting process (Cost Identification).

RQ6. Was there an economic framework for the production of NMET? Tsang's economic framework accommodates the NMET production function i.e. objectives, prices, inputs, technology and outputs of NMET (Cost Identification).

RQ7. What costing methodologies does HE use in England in general and in nursing and physiotherapy in particular? HEFCE uses a 5-step activity based costing model, which accommodates nursing and physiotherapy costing models (Cost Estimation).

RQ8. What are the characteristics of pre-registration nursing & physiotherapy student attrition? The main reasons are: academic failure, personal circumstances (including financial pressures), alternative employment/career choices, illness, transfer to other NMET or non NMET courses, and dissatisfaction with the quality of the programme including cost and quality accommodation/practice/placement timetable (Cost Estimation).

Cost-effectiveness:

RQ9. Which was the most appropriate full economic analysis for this research? A cost effectiveness analysis was the most appropriate because, for both nursing and physiotherapy, there were two or more competing university providers. For each a measure of their cost per student and student effectiveness (FfPu) can be generated, and expressed as a CER. These can be compared, within profession, in order to identify the most cost effective university provider (Benefit and cost comparison).

Practical research questions.

The key research questions, which remain unanswered, are addressed in the remainder of this thesis. These questions are:

RQ 10. How, in practice, is FfPu to be measured?

RQ 11. How, in practice, are costs to be measured?

RQ 12. Which of the competing universities is the most cost effective at producing fit for purpose NQABNs & NQPs?

RQ 13. What are the policy implications arising from the hierarchy of CERs in respect of NMET objectives, prices, inputs, technology and outputs?

In order to be able to answer these sequenced questions a number actions are required. In the absence of 'gold standard' FfPu questionnaires for nursing and physiotherapy, one per profession, was developed, piloted and implemented. A NMET costing algorithm, rooted in HEFCEs 5 stage ABC process was similarly developed and implemented. Once both had been implemented and results brought together, a series of CER's generated including the most cost effective university provider of NQABNs & NQPs in the study Consortium/Confederation, were produced. Finally, policy implications spanning, effectiveness, cost and cost effectiveness were identified and examined.

Chapter 2 contains the methods followed in order to be able to answer the outstanding research questions.

CHAPTER 2 METHODS

2.1 Developing Outcome Measures: Competence and Performance.

2.1.0 Introduction.

The aim of this chapter is to report the method basis and the procedures followed to identify, measure and value: effectiveness (FfPu), cost (per fit for purpose NQABN & NQP) and cost-effectiveness (university providers in the study Consortium) (Table 11). Part 1 addresses the development of: the psychometric FfPu survey instrument, factor analysis applied to survey data for the identification of dimensions of FfPu, and the rationale and component parts in the calculation of the overall weighted mean percentage of FfPu, for subsequent use in the calculation of cost-effectiveness. Part 2 relates to student attrition and categories of students. Parts 3 and 4 cover costing categories of students' education. The cost-effectiveness of nursing and physiotherapy education is addressed in part 5.

	Effectiveness	Cost	Cost- Effectiveness
Methods	1 Developing Outcome Measures: Competence and Performance. 2 Calculation of Student Attrition, Commissioning Ranges and Categories of NMET Students.	3 Application of HEFCE's Five-Step Costing Process to NMET Contracts. 4 Calculating Cost per Contracted Student Category and Newly Qualified Employees.	5 Cost-effectiveness: Ratios of Pre-registration Nursing and Physiotherapy Education.

Table 11 Thesis plan for analysis of effectiveness, cost and cost-effectiveness: chapter 2 methods, 1 developing outcome measures: competence and performance.

2.1.1. Survey method: nursing and physiotherapy.

The aim of each FfPu questionnaire was to elicit from selective Trust board level, senior and clinical staff and the newly qualified themselves, individual views of

the FfPu of NQABNs & NQPs educated at universities in the study area and measured by their performance in the work place. Because the two professions are understandably different, even though they share some common competencies, two separate psychometric questionnaires were generated. The design format was similar but not identical. Their development was a ten-stage process:

- 1) Development of survey protocol,
- 2) Identification of key publications: a) professional and statutory bodies, b) codes of professional conduct, c) competency documents, d) professional documents, and undertake themed analysis,
- 3) Assurance of content validity by reference to a panel of experts (item reduction, addition, clarity etc) who are a representative sample of the NHS,
- 4) Ethical approval,
- 5) Pre-piloting,
- 6) Piloting,
- 7) Main study sampling frame,
- 8) Questionnaire design and data collection,
- 9) Data analysis, including conclusions and recommendations,
- 10) Resource implications.

Stage 1 Development of survey protocol

Survey aim and objectives

To identify and subsequently measure the FfPu of NQABNs & NQPs educated at universities in the study Consortium area. Objectives:

To establish, for all NQABNs & NQPs (1997 and 1998 cohorts combined), overall FfPu profiles, per university provider. These profiles were based upon ratings of performance by NHS Trust board level staff i.e., Directors of nursing and Heads of physiotherapy, middle managers i.e. ward managers and physiotherapy managers, and by clinical nursing and physiotherapy grades.

For NQABNs & NQPs educated at universities in the study area to:

- establish a scientifically rigorous methodology for collecting and analysing data,
- compare overall FfPu results,
- draw scientific inferences.

The ten stage process, aim and objectives were approved by the Nursing and Physiotherapy Advisory Groups (NAG, PAG). The Research Advisory Group, approved the overall methodology for both professions.

Stage 2 Identification of key publications / studies.

In developing appropriate items for inclusion in an FfPu questionnaire for NQABNs, a number of authors indicated that they used various key publications. Given this authoritative lead it was decided to adopt the same procedure.

The 14 publications (excluding meta-analysis of academic papers) covering 13 categories were:

- 1) National Occupational Standards for Care (CSC 1992; 1998),
- 2) Occupational Standards. A framework for Clinical Effectiveness (O'Hanlon & Andrews 1996),
- 3) The Curriculum Framework Document (CSP 1996a),
- 4) Mapping the Nursing Competencies (ENB 1996),
- 5) Management Charter Standards (MCI 1997),
- 6) Framework for Spirituality, Faith and Related Pastoral Care (NHS E IoN 1995a).
- 7) Assessment Handbook, University of Sheffield, Pre-registration Advanced Diploma in Nursing Studies (SNTCNS 1994),
- 8) Conduct: UKCC Code of Professional Conduct (UKCC 1992),
- 9) Revised Caring Behaviours Inventory Items (Wolf 1981; Wolf et al., 1996),
- 10) The Nursing Constant (DoH 1993),

- 11) ENB, 10 Key Characteristics (ENB 1994),
- 12) Meta-analysis of academic papers addressing nursing competence/performance (1974-1997).
- 13) Commission for Education, Recurrent Themes (UKCC 1998a).

Fitness for Practice (UKCC 1999) was used as a post-competency checklist. Documents 2, 4, 7, 8, 9, 10, 11, 12 & 13 had a nursing focus. Documents 1, 2 and 5 were occupational standard documents for care, nursing and management respectively. Document 3 was the Curriculum Framework Document (CFD) for chartered physiotherapists written in the style of occupational standards. Document 6 addressed the issue of spirituality, faith and related pastoral care needs, an aspect not touched upon by other documents. In physiotherapy, the CFD was used. Its content was compared with competencies identified in the meta-analysis of the literature. This was undertaken because of an absence of statutory competencies for physiotherapists, in an agreed format for specific use by employers, for inclusion in educational programmes (Wile et al., 1999). Little research has been undertaken in this area in order to produce work-based competencies for newly qualified physiotherapists working in a modern health service.

Stage 3 Content validity: a) panel of representative experts.

Previous studies reported using experts to validate content. Experts included: Directors of nursing, Heads of nursing institutions, senior nurses and qualified practising nurses drawn from clinical, educational and research settings. Four key activities undertaken included: 1) reviewing and approving competencies including clinically specific competencies, 2) identifying essential nursing characteristics and abilities, 3) critiquing overall scales, domains and individual scale items for clarity and comprehensiveness, and 4) identification of additional items for inclusion, or items to be excluded. Experts assisted in the production of the two FfPu questionnaires.

It was decided that a Nursing Advisory Group (NAG) of senior nurse managers from NHS Trusts, a nurse advisor to a health authority and the business manager

of the study Consortium representing the interests of NHS, and public and private employers, should be established. As a panel of experts they would undertake the four key activities associated with their role and identified above. Nurse educationalists were intentionally excluded because the NAG wanted an exclusive Service perspective on the outcomes, statements and descriptors to be included in the FfPu questionnaire. The group's membership addressed the challenge that the Service were critical of the newly qualified, but had never identified exactly what they wanted from pre-registration nurse education in terms of the competencies they expected of the newly qualified. A Physiotherapy Advisory Group (PAG) comprising of senior managers, superintendent and clinical staff, was established for identical reasons.

Stage 3 Content validity: b) process.

Fitness for practice is a pre-requisite, for employment in the NHS, as a staff nurse or physiotherapist. In the absence of a FfPu set of work-based occupational standards approved by the UKCC it was decided to use Rule 18a (HMSO 1989) as the theory framework for the theory led thematic analysis. In total 161 competencies mapped against outcome a), of Rule 18a. The exercise was repeated for the 12 other outcomes comprising the rule. An additional, competency, continuing professional development (CPD), was included, with approval of the NAG, because it had appeared in 'Standards for approval of HEI's and programmes' (ENB 1997) as a characteristic of a fit for purpose nurse.

It will be recalled that Rule 18a comprises of 13 competencies a-m. Outcome a) is "The identification of the social and health implications of pregnancy and child bearing, physical and mental handicap, disease, disability, or ageing for the individual, her or his friends, family or community" (HMSO 1989). Documents were identified (as above) which contained competencies that related to outcome a). Table 12 contains documents 1-9. Table 13 covers documents 11-13. The competency content in each of the publications was cross-referenced to the content of outcome a). Where there was a match this was recorded by using the reference code number contained in the document e.g. W1 & W2 were two National Occupational Standards for Care Units (1992). The same approach was

adopted for the remaining 12 Rule 18a competencies. This diligent approach produced 18 FfPu outcomes, 225 statements and 867 descriptors.

Although comprehensive it required diligent, systematic and significant reduction to a manageable size for use as a psychometric test without loss of breadth and subtlety of emphasis, whilst simultaneously encouraging high participant response rate. In order to achieve this each member of the NAG was sent three items: a covering letter explaining the purpose of the proposed item reduction exercise, a copy of the comprehensive competency review and a copy of Rule 18a. From a range of four defined responses of 'cruciality' (ENB 1996) each senior nurse was requested to decide whether each FfPu outcome, statement and descriptor was:

- **Core** - central or most important. It would not be possible to label an individual as a fit for purpose nurse if they did not possess that particular competency.
- **Desirable** - worth having but whose possession was not essential.
- **Peripheral** - on the edge of desirability,
- **Not Relevant**.

In physiotherapy each member of the group was sent a copy of the mapping exercise and asked to make two judgements. First, on a four-point scale, to identify how important each statement was to a fit for purpose newly qualified physiotherapist. Second, to identify the three most important statements that best described it from a provided list. In this way two processes were linked which removed the necessity to consult the group twice. In physiotherapy following the theory led thematic analysis 8 FfPu outcomes, 47 statements and 148 descriptors were confirmed.

Rule 18 A Outcomes	1 National Occupational Standards for Care Units (1992 & 1998)	2 Occupational Standards for Clinical Effectiveness (1996)	3 Chartered Society of Physiotherapy Outcomes (1996)	4 ENB Mapping Nursing Competencies (1996)	5 Management Charter Standards (1997)	6 Framework for Spirituality Faith, and Related Pastoral Care (1995)	7 University of Sheffield Pre-registration Advanced Nursing Studies (1996)	8 UKCC Code of Professional Conduct (1992)	9 Revised Caring Behaviours Inventory Items (1981)
a) The identification of the social and health implications of pregnancy and child bearing, physical and mental handicap, disease, disability, or ageing for the individual, her or his friends, family or community	3 = W1, W2, W3, W4, W5, W6, W7 W8 (1992) SC14, 6 = Z1, Z2, Z3, Z5, Z6, Z7, Z8, Z9, Z11, Z12, Z13, Z14, Z15, Z16, Z20, Z17, Z18, Z19 (1992) NC11, NC12 NC13, NCI, NC3 (1998)	6 = NA 32, NA 42, NA 43, NA 46, 11 = ND 11, ND 12, ND 13, ND 20,		6 = 5.3 11 = 12.1, 12.9, 12.13, 12.5, 12.2,	11 = A1, A2, A3, A4, B1, B2, B3, C1,		6 = CFP 2, 3, 5, 9, 10, 11, 12, 13, 14 & AB 2, 5 10 11 = CFP 8 & AB 8, 18, 19, 20.		

Table 12 Mapping of documents 1-9 containing competencies with Rule 18a.

Rule 18 A Outcomes	1 National Occupational Standards for Care Units (1992 & 1998)	2 Occupational Standards for Clinical Effectiveness (1996)	3 Chartered Society of Physiotherapy Outcomes (1996)	4 ENB Mapping Nursing Competencies (1996)	5 Management Charter Standards (1997)	6 Framework for Spirituality, Faith, and Related Pastoral Care (1995)	7 University of Sheffield Pre-registration Advanced Nursing Studies (1996)	8 UKCC Code of Professional Conduct (1992)	9 Revised Caring Behaviours Inventory Items (1981)
a) Continued	CU10, CU5 (1998) 13 = CU 1, CU 2, CU3 (1998) O1, O2, O3 (1998)	ND 23, NB 11, NB 16, ND 22, ND 24, ND 32, ND 33, ND 34, NC 11, NC 12, ND 31, NC 14, 13 = NA 54, NA 53,		6.1, 6.3, 12.7, 13.5, 6.2, 6.5, 6.6, 6.7, 7.10, 12.9, 4.4,	C2, C3, C4, C5, C6, C7, C8, C9, C10, C12, C13, C14, C15, D1, D2, D4, E3, E5, E6, E8, F1, F4, F5, F6 F7.				
CPD	CU7	NB 13, NB 14, NB 15	CSP 8	9.1, 9.2, 10.6, 10.7			AB 16		

CPD = Continuing professional development.

Table 12 Mapping of documents 1-9 containing competencies with Rule 18a (Continued).

Rule 18 A Outcomes	10 Nursing Constant 6 Characteristics (1993)	11 ENB 10 Key Characteristics of Clinical Excellence: Performance Outcomes (1994)	12 Assessment Tools	13 UKCC Commission for Education Recurrent Themes: skills and values (1998a)
a) Continued	3 = 1,2,3,4,5,6 6 = 1,2,3,4,5,6 11= 1,2,3,4,5,6 13 = 1,2,3,4,5,6 17 = 1,2,3,4,5,6	11=9	3 = AT 6 6 = AT 3, AT 4, AT 5, AT 10, AT 12 11 = AT 7, AT 8, AT 10	3 = S1, S3, S6, V1 6 = S1, S2, S3, S4, S6, S15, V3 11=S1, S2, S3, S4, S8, S11, S12
CPD	1,2,3,4,5,6	3, 7, 8	AT 2, AT 8, AT 9, AT 12	S8, S10,V6

CPD = Continuing professional development.

Table 13 Mapping of documents 10-13 containing competencies with Rule 18a .

Demands of the Exercise.

Given the task size and busy professional lives of senior nurses a period of one month was allocated for completion. Two members of the panel declined involvement; one, due to workload pressures; the other, (case study Consortium manager), due to possible conflicts of interest. Consequently, four senior Trust nurses and a Health Authority nurse advisor undertook the exercise in isolation. In physiotherapy, the task was much smaller and was managed by post and a single meeting.

Derivation of Nursing Outcomes, Statements and Descriptors.

The group met and, on an outcome-by-outcome basis, shared their ratings on outcomes and associated statements and descriptors. A high degree of agreement existed between each rater especially in respect of 'core' and 'not relevant'. Most discussion took place around 'desirable' and 'peripheral' categories. Following discussion a substantial number of statements and descriptors were deleted. The resultant document was still too large to be used as a psychometric questionnaire. Consequently, the NAG met for a second time and agreed that only the 'core' content would be selected. Further, only the 'best' two or three descriptors would be used to illustrate the retained statements, subject to exceptional circumstances. Consequently, some of the statements and descriptors were merged or amended. The resultant list comprised: 15 outcomes, 56 competencies and 154 descriptors. In addition to this exercise the panel advised on the organisational and biographical data sections of the FfPu questionnaire.

In order to explain the process of item reduction a worked example for nursing and physiotherapy are provided below.

Nursing Step i.

In nursing, all the sources of outcomes, statements and descriptors were identified and brought together under 'working' outcome titles. For example, and prior to the reduction exercise, outcome three was labeled 'Support the

Maintenance and Development of Client Identity and Relationships'. The code numbers pertaining to the sources of the outcome title, statements and descriptors were the 'tracing' mechanism to source documents (Figure 1).

Nursing Step ii.

Following the reduction exercises the revised outcome 3; statements and descriptors are presented in figure 2.

Of particular note is that competencies in figure 2 not only describe the occupational and professional competence of NQABNs, but also are written in such a way so that the individual practitioner is described in terms of, and can be assessed against, how effective they are in meeting the needs of patients and clients in a variety of clinical settings. This is believed to be a major factor in the possible longevity of the outcomes, statements and competencies/descriptors. Further, they predominantly focus on technical ability or functional competencies and not on personal characteristics of the newly qualified i.e. convincing manner, confidence etc., which competent staff may not possess but which staff, who may not be competent, may project.

**Outcome 3
Support the Maintenance and Development of Client Identity and Relationships**

(Care NVQ 4; National Occupational Standards for Care W1-3; ENB Characteristic 10, UKCC Recurrent Themes: S3 & S6, Assessment Tool Themes AT6)

Statement 3.1 (Care NVQ 4 & AT 6) Adult branch staff nurses should, at the end of their pre-registration course, establish, sustain and disengage from relationships with clients. This means, for example, that they:

Descriptors
a) establish working relationships with clients
b) sustain and develop working relationships with clients
c) disengage from relationships with clients

Statement 3.1 (NOSC W1 & AT 6) Adult branch staff nurses should, at the end of their pre-registration course, support individuals in developing and maintaining their identity and personal relationships. This means, for example, that they:

Descriptors
a) support individuals in developing and maintaining social contacts
b) support individuals in being a member of a social group
c) enable individuals to develop a positive self image
d) support clients' expression of sexuality and sexual activity

Statement 3.2 (NOSC W2) Adult branch staff nurses should, at the end of their pre-registration course, contribute to the ongoing support of clients and others significant to them. This means, for example, that they:

Descriptors
a) enable clients to maintain their interests, identity and emotional well-being whilst receiving a care service
b) enable clients to maintain contact with those who are significant to them
c) support those who are significant to the client during visits
d) enable carers to support clients

Statement 3.3 (NOSC W3 & ENB Characteristic 10, UKCC 1998a S3, S6) Adult branch staff nurses should, at the end of their pre-registration course, support individuals experiencing a change in their care requirements and provision. This means, for example, that they:

Descriptors
a) enable individuals to prepare for, and transfer to, different care requirements
b) enable individuals to become familiar with new care requirements

Figure 1 Nursing: Content of outcome 3 prior to thematic analysis by the Nursing Advisory Group.

<p>Outcome 3</p> <p>Maintain and Develop Patient Identity and Relationships</p>

Statement 3.1 Does the newly qualified adult branch nurse, of whom you are the clinical preceptor, develop professional working relationships with patients? This means, for example, that she:

Descriptors
a) Establishes, develops and sustains professional working relationships with patients at the appropriate time.
b) Recognizes the appropriate time to terminate professional working relationships with patients and actions accordingly.

Statement 3.2 Does the newly qualified adult branch nurse, of whom you are the clinical preceptor, support patients and significant others? This means, for example, that she:

Descriptors
a) Enables patients to maintain their interests, identity and emotional well being whilst receiving care.
b) Enables patients and significant others to feel supported whilst receiving a care service.
c) Enables patients to prepare for, and transfer to, different care requirements.

Figure 2 Nursing: Content of outcome 3 following thematic analysis by the Nursing Advisory Group.

Derivation of Physiotherapy Outcomes, Statements and Descriptors.

Steps *i* & *ii* undertaken in nursing were also undertaken in physiotherapy. The PAG were requested to identify the three most important descriptor statements from the list provided. Figure 3 contained the original pertaining to Outcome A, before the reduction exercise. Figure 4 was the outcome of the exercise. Overall, no outcomes or statements were lost, but the number of descriptors was reduced to 105 through deletion or merger.

<p>Outcome A</p> <p>Enable Individuals and Groups to Optimize their Health and Social Well Being</p>
--

Statement 1.1 Newly qualified physiotherapists should promote good health and the use of preventative approaches, using interventions that are within the scope of professional practice. This means, for example, that they:

Descriptors
<ul style="list-style-type: none"> • 1.1 a) The Development of Physiotherapy Skills - Operational Skills (Treatment Planning) will effectively apply their process skills / operational skills and bring about the desired outcome
<ul style="list-style-type: none"> • 1.1 b) Physiotherapy Skills in Practice - Human Ability and Potential take account of the biological, pathological, social and psychological dimensions as they may all affect the health status of the individual
<ul style="list-style-type: none"> • 1.1 c) The Context of Physiotherapy Practice - Health Promotion realize that the promotion of good health and the use of preventative approaches are key aspects of the physiotherapists' practice
<ul style="list-style-type: none"> • 1.1 d) Core Knowledge Behavioural Sciences realize that psychological and social factors can influence an individual's ability to manage both health and illness
<ul style="list-style-type: none"> • 1.1 e) Core Knowledge Biological Sciences possess knowledge of the normal anatomy and physiology of the living body for those systems that are commonly encountered in physiotherapy practice

Circle One

Importance			
Not		Very	
1	2	3	4

Rank Order

1
2
3

Figure 3 Physiotherapy: Content of outcome A prior to item reduction by the Physiotherapy Advisory Group.

Outcome A
Enable Individuals and Groups to Optimize their Health and Social Well Being

Statement 1.1 Do you promote good health and the use of preventative approaches, using interventions that are within the scope of professional practice? This means, for example, that you:

- | |
|---|
| <ul style="list-style-type: none">• Biological Sciences
possess knowledge of the normal anatomy and physiology of the living body for those systems that are commonly encountered in physiotherapy practice |
| <ul style="list-style-type: none">• Health Promotion
realize that the promotion of good health and the use of preventative approaches are key aspects of your practice |
| <ul style="list-style-type: none">• Human Ability and Potential
take account of the biological, pathological, social and psychological dimensions as they may all affect the health status of the individual |

Figure 4 Physiotherapy: Outcome of item reduction exercise.

Stage 4 Ethical approval.

The research did not require Research Ethics Committee approval, MREC or LREC as it did not involve patients, but was registered on each NHS Trust research database where Trust staff constituted the survey population.

Stage 5 Pre-piloting a) sampling methodology.

The NAG requested that the nursing service in the study area be consulted as to the content validity of selected draft outcomes, statements and descriptors. In order to ensure appropriate representation of clinical nursing grades that manage and work with newly-qualified nurses, and using a major acute hospital (NHS Trust) in the study area, the following sampling ratios for three categories were identified.

Top (Senior Nurse Managers), 1 Senior nurse manager in every 6 senior nurse managers employed i.e. 1 out of 6.

Middle (Middle Nurse Managers), 1 Middle nurse manager in every 13 middle nurse managers employed i.e. 3 out of 40.

Bottom (Clinical Nursing Grades), 1 first level clinical nurse, i.e. a registered general nurse, in every 125 first level clinical nurse employed i.e. 16 out of 2,000.

The total number of staff from each Trust, that would constitute the sample survey population, was 20. No such process was deemed necessary in physiotherapy given the statutory status of the CFD document from which it was predominately drawn.

Stage 5 Pre-piloting b) staff selection.

To ensure a balanced and unbiased sample, the membership of the NAG was excluded. Sixteen clinical nurses were selected using each Trusts salaries and wages department print out. All non-general and non Adult Branch nurses were excluded. The resultant list was totalled and divided by sixteen. Consequently every third, fourth or fifth nurse was selected depending on the eligible total. Directors of nursing provided lists of middle managers from which the selection was made.

Stage 5 Pre-piloting c) questionnaire.

Each Trust's 20 clinicians received: a covering letter and a copy of the questionnaire comprising, 1) a brief definition of FfPu, 2) a brief summary questionnaire structure, 3) five tasks to be undertake, 4) a comments sheet for identification of omitted competencies and 5) an opportunity to identify any confusion, shortcomings or inappropriate wording. Two hundred questionnaires were despatched and, following reminder post-cards and follow up questionnaires, one hundred and three were returned (51.5%). Figure 5 is an example, based on outcome 3, of what each participant received. No statements were deleted based on cumulative low scores of importance. Clinicians did not identify any competency omissions. Helpful re-wording suggestions (not outcome 3) were made and incorporated. Appendix 9 contains a breakdown of questionnaire return rates by NHS Trust, clinical speciality and category of respondent. One Trust failed to reply.

Pre-piloting was not undertaken in physiotherapy. There was no concern amongst the membership of the PAG over the appropriateness of the content due to the surety offered by the CFD (CSP 1996a).

<p>Outcome 3</p> <p>Maintain and Develop Patient Identity and Relationships</p>

Statement 3.1 Does the newly qualified adult branch nurse, of whom you are the clinical preceptor; develop professional working relationships with patients? This means, for example, that she:

Descriptors
a) Establishes, develops and sustains professional working relationships with patients at the appropriate time
b) Recognizes the appropriate time to terminate professional working relationships with patients and actions accordingly

Circle One

Importance			
Not		Very	
1	2	3	4

Statement 3.2 Does the newly qualified adult branch nurse, of whom you are the clinical preceptor, support patients and significant others? This means, for example, that she:

Descriptors
a) Enables patients to maintain their interests, identity and emotional well being whilst receiving care.
b) Enables patients and significant others to feel supported whilst receiving a care service.
c) Enables patients to prepare for, and transfer to, different care requirements.

Circle One

Importance			
Not		Very	
1	2	3	4

Figure 5 Nursing: Content of outcome 3 rated by the service to express importance in measuring fitness for purpose.

Girots request for a response to poor performance by students, by working collaboratively with practitioner colleagues in order to identify the attributes of good performance has been met, in part, by this research methodology (Girots 2000). Also met was Ellis and Whittington's (1988) aspiration that practitioners' views on practice should be reflected in agreed competencies.

Approval of the draft questionnaire by the Service in Yorkshire resulted in the measurement scale being called the 'Yorkshire Competency Outcomes for Nurses' (YCON). In physiotherapy it was called the 'Yorkshire Competency Outcomes for Physiotherapists' (YCOP).

Stage 6 Piloting a) rationale.

The pilot study built upon the successes and limitations of the pre-pilot. It "is the dress rehearsal or a small scale replica of the main survey" (Moser and Kalton 1996) in which identified inadequacies can be amended thereby preventing or reducing error and wasting of scarce resources. Pre-piloting of the FfPu questionnaire resulted in a more valid and reliable assessment tool.

Validity is "the success of the scale in measuring what it sets out to measure, so that differences between individuals' scores can be taken as representing true differences in the characteristic under study" (Moser and Kalton 1996). Competencies are at different degrees of difficulty. Consequently a FfPu scale with adjectival descriptions and continuous responses (Streiner & Norman 1989) ranging from 0, (very low fitness) to 10, (very high fitness) was devised. The mid point did not necessarily equate with 50% FfPu with associated notions of adequacy as competency difficulty differs. Reliability is "the extent that repeat measurements made by it (scale) under constant conditions will give the same result (assuming no change in the basic characteristic e.g. attitude-being measured)" (Moser and Kalton 1996). Due to there being no 'gold standard' of FfPu, which could be concurrently administered at the same time as the new scale(s) its validity was established by actual performance in the field.

Stage 6 Piloting b) data collection.

In nursing the draft YCON was piloted in the South West of England. Three NHS Trust were selected; X, Y and Z, and of a similar organisational types to those in the Consortium study area. A large sample size selected via a simple random sample numbers table was envisaged so ensure equity of opportunity and a representative sample; ideally 10% of the intended total survey population.

Due to insufficient numbers of NQABNs opportunity sampling occurred. Each Trust DoN, identified directorate senior nurses who between them identified 20 NQABNs, their designated clinical preceptor and ward Sister. Contact addresses were provided. FfPu questionnaires and a covering explanatory letter were despatched to the sixty nurses. A copy was also sent to each of the three DoN.

The NQABNs self-assessed their FfPu. Each Preceptor assessed the FfPu of the NQABN for whom they were the designated Preceptor, the ward Sister similarly. The three DoN assessed all their Trust NQABNs. No NQABNs had been educated at universities in the case study Consortium. Of the 63 questionnaires despatched, 41 (including 3 DoN), or 65% were returned completed. Table 14 contains an analysis of respondents by NHS Trust and clinical speciality. The draft questionnaire was modified in the light of the piloting exercise by the inclusion of burns and plastic surgery and respiratory medicine.

In physiotherapy the draft questionnaire was also piloted in three NHS Trusts in the South West of England; 'Y', 'M' & 'N'. 'Y' was a shared site with nursing. Opportunity sampling was used. Of the 23 questionnaires despatched 17 or 74% were returned completed. No suggestions for amendments were made. Table 15 contains a breakdown of clinical physiotherapy specialities covered by NHS Trust and professional group. Appendices 10 & 11 contain background, instructions and biographical sections of the questionnaire for nurses and physiotherapists respectively.

Completion of the pilot resulted in each FfPu measurement scale tool being comprehensive. This means:

- Applicable in acute, community and other settings,
- A generic content so that only one version of the scale per profession would be required for all clinical situations,
- Is patient and client –centred,
- Contains a definitive list of outcomes, competencies and descriptors of FfPu confirmed as appropriate by a diagonal slice of Service personnel,

- Scale language; outcomes, competencies and descriptors, are intelligible to all readers regardless of clinical experience and ideally expressed in plain English,
- Is brief, in order to increase uptake and user friendliness.

Clinical Speciality Where Newly Qualified Respondents Were Based	NHS Trust								
	X			Y			Z		
	NQ	C P	S/C N	NQ	C P	S/C N	NQ	C P	S/C N
Burns and Plastic Surgery	1	1	1						
Coronary Care	1	1	1						
Endoscopy				1					
Day Surgery Unit					1	1		1	
ENT							1		1
General Surgical							1	1	1
Gastro-Intestinal Surgery								1	1
Gynaecology								1	1
Neurosurgery	2		1		1				
Neurology	1						1		
Out Patients Paediatrics									
Orthopaedics	1	1	2	1		1		1	1
Post Anaesthetic Recovery			1						
Renal Medicine / General Medical				1		1			
Respiratory Medicine /General Medical	1	1							
Theatres					1	1			
Total 38	7	4	6	3	3	4	3	4	4

NQ Newly Qualified,
C P Clinical Preceptors,
S/CN Sisters / Charge Nurses

Table 14 Clinical nurse specialities covered by the pilot study in 3 NHS Trusts.

Clinical Speciality Where Newly Qualified Respondents Were Based	NHS Trust								
	M			Y			N		
	CS	PSM	HT WPS	CS	PSM	HT WPS	CS	PSM	HT WPS
Elderly People	1						1		
People with Musculo-Skeletal Outpatients and Inpatients Orthopaedics	2		1	2		1	2	3	
People with Cardio- respiratory and Vascular Conditions	1				1			3	
People with neurological conditions and physical disabilities In patients and Out Patients	1				1			3	
Total 22*	5	0	1	2	1	1	3	9	0

CS Clinical Supervisor, PSM Physiotherapy Services Managers, & HTWPS Head of Trust Wide Physiotherapy Services.

*Some staff have responsibilities in more than one area and as such the number of responses is greater than the number of respondents, which was 17.

Table 15 Clinical physiotherapy specialities covered by the pilot study in 3 NHS Trusts

Education Consortia/Confederations are guided by NHS E policy, and are ultimately accountable to them for ensuring occupational competence in professional education. The use of the language and rubric of occupational competencies in the FfPu questionnaire (Storey et al., 1995; NHS E 1999c) demonstrated sensitivity to the NHS E position and potentially increased the likelihood of acceptance of effectiveness findings, by them. By adopting Hager & Gonczi (1996) holistic approach to competence in adult learners, (based on earlier works Gonczi, Hager and Oliver (1990) and Gonczi (1994)), which melds professional education aspirations in respect of learning and assessment with occupational standards at the correct level of generality, the resulting FfPu questionnaire, based on these two, was acceptable to both professionals and employers.

Stage 7 Main study sampling frame.

The effective population was defined as all 1997 & 1998 diploma level NQABNs and degree level NQPs employed by NHS Trusts in England, qualified for six months and four months respectively, and educated at a university funded by, the study Consortium. High response rates were anticipated and ideally toward the higher of those reported for health care professionals 15%-95% (Cartwright 1998).

Stage 8 Questionnaire design and data collection.

Although the content of the questionnaires was the same the pre-fix to the statements differed according to category of respondent. The version that clinical Preceptors would complete had, for example, the prefix, 'Does the newly qualified Adult branch nurse, of whom you are the clinical Preceptor,' etc. Achieving questionnaire maximum return rates was vitally important. Strategies used were: an attractively designed and engaging questionnaire which was colour coded; a covering letter which explained the purpose and object, and the confidential nature of the research; personally addressed, postage paid reply envelopes; and sequenced reminder postcards and replacement questionnaires (Moser and Kalton 1996).

Identification of first post qualification employment destinations of newly qualified adult branch nurses and physiotherapists.

Upon request, and three months prior to qualification, each of the case study universities provided a list of final year students. In nursing each was coded using their unique ENB index pin number. In physiotherapy each student was given a unique number. Both sets of students were sent an employment questionnaire, covering personal details and future employment intentions. Distribution was by their home university. From returns, a database containing key variables and capable of interrogation was established in Access. The database was updated on an ongoing basis by taking advantage of contact

information e.g. graduation events. In the final analysis the last known or contact address was used in order to make contact.

Confirmation of nursing and physiotherapy managers and clinicians details.

Each Trust DoN or Head of physiotherapy services, or nominee, checked the accuracy of the information the researcher provided and completed omissions. Details were returned and the database revised. In this way the likelihood of the wrong staff being sent a questionnaire was diminished. In respect of DoN & Heads of physiotherapy, their names and addresses were obtained from the NHS Year Book 1997/98 (IHSM, 1997).

Directors of nursing NHS regions of England.

Because of the small sample size of DoN it was decided that other Trust DoN should also be sent the questionnaire. Their views could then be compared with the views of those DoN already surveyed. Inappropriate NHS Trusts were excluded e.g. NHS Ambulance Trusts. Of the remaining, every third eligible NHS Trust DoN was selected.

Questionnaire distribution.

Each person on the nursing and physiotherapy data bases was sent a covering letter, colour-coded FfPu questionnaire: newly qualified-pink, Preceptors/Supervisors-blue, Sisters/physiotherapy Managers-green, and Directors of nursing and physiotherapy Heads, yellow. A copy of the psychometric questionnaire for use by clinical Preceptors is at annex 1. Annex 2 contains the equivalent for newly qualified physiotherapists who self assessed. Both contained background, instructions and biographical sections (Appendices 10 & 11). Reminder postcards and follow questionnaires were sent as appropriate.

Stage 9. Data analysis: a) Factor analysis principal components.

Introduction.

Factor analysis (or principal component analysis) is a statistical method of data reduction (Crichton 2000). Specifically, it is “a technique for finding a small number of underlying dimensions from among a larger number of variables” (West 1991). Its rationale is to understand the underlying structure of the data (Crichton 2000) and enable one to “discern and to quantify the dimensions supposed to underlie performance on a variety of tasks” (Kinnear and Gray 1994). Identifying a small number of dimensions from among the 56 nursing and 47 physiotherapy variables respectively describing the FfPu of NQABNs & NQPs is the objective.

Because the relationship between the variables WAS unknown, exploratory factor analysis WAS used to search for latent variables. The key benefit was that the complex interrelations of phenomena can be reduced to relatively simple expressions.....unsuspected relationships are uncovered which may at first seem startling but later appear to be common sense (Rummel 1970).

Factor analysis results necessitate questioning. “Do the results genuinely indicate that the data can be reduced to a smaller number of underlying dimensions? What interpretation can be put on the underlying factors?” (West 1991). Examining which of the variables have been loaded highly on each factor and then determining a dimension label, which reflects the nature of the variables that correlate with it most highly (West 1991), yields the answers. Labels are psychological constructs. Their appropriateness and accuracy had to be confirmed. In this study, this was achieved by expert opinion (NAG & PAG).

The nature of factors.

Clusters of sizeable correlations among variables in the FfPu test suggest that the variables “may be measuring the same underlying psychological dimension or ability” (Kinnear and Gray 1994). These authors note that there should be

considerably fewer dimensions than factors i.e. fewer dimensions of FfPu than variables/competencies that comprise the questionnaires.

Each dimension comprises of a number of factors. These factors are produced by factor analysis and are “mathematical entities” (Kinnear and Gray 1994). These entities can be considered as classificatory axes, with respect to which the variables in each FfPu questionnaire can be plotted. The “greater the value of each loading on a factor the more important is that factor in accounting for the correlations between that test (*variable*) and the others” (Kinnear and Gray 1994). A major assumption in factor analysis is that the mathematical entities or factors represent “latent variables (i.e. psychological dimensions), the nature of which can only be guessed at by examining the nature of the competencies that have sizeable co-ordinates on any particular axis” (Kinnear and Gray 1994).

Stages in a factor analysis.

Factor analysis is a three-stage process:

1. Production of a matrix of correlation coefficients generated from a) 56 nursing variables/factors/competency combinations and a separate matrix for b) 47 physiotherapy variables/factors/competencies.
2. Factor extraction from each correlation matrix, for a) nursing and b) physiotherapy, by principal factors / principal components.
3. Varimax rotation or factor rotation in order to maximize the relationships between them whilst at the same time maintaining their independence.

Factor extraction.

The factors are “extracted/constructed, one at a time, the process being repeated until it is possible, from the loadings of the tests on the factors so far extracted, to generate good approximations to the correlations in the original R matrix” (Kinnear and Gray 1994). In an ideal world each variable would very strongly relate to only one factor/dimension. In reality, however, a particular variable could relate to more than one factor/dimension. Varimax or factor rotation is a method by which “the relationships between variables and factors can be

adjusted so as to fit most closely the ideal situation” (West 1991). The relationship between variables and factors are indexed by correlation + coefficients / factor loadings.

Orthogonal rotation methods, like varimax rotation, is predicated on the assumption that the factors are “completely independent from each other – they are not correlated in any way” (West 1991). It works by “maximising the variance of the factor loadings for a given variable within the permitted constraints (and) making one or two factor loadings high and others low” (West 1991). The fewer the factors accounting for the correlations the easier it is to “invest those factors with psychological meaning” (Kinnear and Gray 1994). The effect of using the varimax rotation is to minimize the number of factors on which variables have high loadings thereby making it easier to interpret psychologically. The minimum level at which the loadings were reported in this study was 0.4.

Factor analysis results.

In respect of the list of factors produced that constitute a meaningful component from another is a matter of judgement (West 1991). The tradition is that a principal component “should explain or account for a reasonably large proportion of the variance in all the original variables. This is indicated by its having an eigen value greater than 1” (West 1991). In this study an eigen value of 1.1 was selected. As a consequence only those factors with an eigen value greater than 1.1 will be considered as meaningful. “Eigen values are indices of how much variance in the original set of variables a factor or principal component accounts for” (West 1991).

The rotated factor/component matrix is a “table of correlations between the variables and the factors (factor loadings)” (West 1991). The highest factor loading for each variable is identified and, according to its loading, attributed to a given factor. The higher the loadings between variables the greater the potential relationship. In order to ensure internal consistency of the data correlation, reliability scale alpha (Cronbachs alpha) was used (Cronbach 1984). If the

coefficient alpha is low i.e. 0.3, then either the test is too short or the items have little in common (Nunnally 1978).

Criteria for factor extraction.

In factor analysis “only the common factors are required” (Child 1970). The cut-off point, in this study, for these common factors was determined by Kaiser’s criterion. “Only factors having latent roots greater than one are considered as common factors” (Child 1970). An eigen value of 1.1 was selected and, as a consequence, the common factors identified are considered meaningful. Child reports Cattell’s observation of Kaiser’s criterion being “the most reliable when the number of variables is between 20 and 50” (Child 1970). It will be recalled that the number of variables in the physiotherapy study was 47 and in nursing 56. The six variables over and above the 50 threshold is, however, not great and is the minimum number identified by nurses, for a survey of NQABNs FfPu to be considered comprehensive.

In addition a scree test was used in order to identify common factors once the total number of factors has been identified with an eigen value of 1.1. In a scree test the proportion of unique variance increases with the number of factors produced until a point is reached when in the later factors the common variance is swamped by the unique variance. Consequently, it is important to identify “the optimum number of factors which can be identified before the intrusion of non-common variance becomes serious” (Child 1970). In this approach a graph is plotted of proportion of total variance against factor numbers in the order that they are extracted, and the “shape of the resulting curve employed to judge the cut – off point i.e. The point at which the curve straightens out is taken as the maximum number to be extracted” (Child 1970). Factors on the ever-straightening part of the curve can be considered to be the ‘scree of factorial litter’ and discarded (Child 1970). The use of Kaiser’s eigen value of 1.1 and Cattell’s scree test are compatible methodologies in identifying the optimum number of common factors. The factor with the highest proportion of total variance explains most of the common variance. The factor with the second

highest proportion of total variance explains the second most amount of common variance and so on.

Those factors that are considered common because they were identified as such by the above methodologies are still a hierarchy. Some factor analysts take a hard line and only those factors with a variance of 10% and above should be retained and subsequently labelled as a construct. Others based on the notion that dimensions with a variance below 10% can offer unexpected insight, which, if automatically rejected, would be lost. In this study the first factor / dimension with the highest percentage of variance will be identified and labelled. In addition other factor(s) numbered 2 to n with a variance of above 10% will also be labelled, as the 10% of variance is considered to be a suitable 'rule of thumb'. However, in order not to lose any unexpected insight, those below 10% will also be retained.

Confirmation of factor/dimension titles by nursing and physiotherapy advisory groups.

Once all of the factors were labelled for each of the groups of nurses and physiotherapists each NAG & PAG reviewed them for appropriateness. Amendments were made, based on collective experience, and a definitive set of labels agreed. Appendix 12 (nursing) contains the factor / dimension number, percentage of variance, individual factor / competency test items and associated factor loadings as well as and overall reliability coefficient alpha (1997 & 1998 combined data). The range recorded for both nurses and physiotherapists was 0.98 to 0.58. The later and lowest reliability alpha is well above the acceptable minimum of 0.3. Appendix 13 contains corresponding results for physiotherapists.

The rationale underpinning the calculation used to identify the mean percentage of FfPu, for each of the four groups of nurses and physiotherapists, by university of origin and dimension, is contained in appendix 14.

Through the application of principal components a number of dimensions comprising of variable numbers drawn from the 56 nursing and 47 physiotherapy variables, which describe the FfPu of NQABNs & NQPs respectively, were generated and confirmed by the Service. Consequently, it was possible to measure the performance of both groups, from different universities, on these dimensions.

Stage 9 Data analysis b) Quantification: Overall weighted mean percentage of fitness for purpose.

Introduction.

In order to identify a cost per FfPu employee, per university, it is first necessary to calculate an overall weighted mean percentage of FfPu for each of the four groups of assessors, for each of the universities in the case study. The process of calculating each of the overall weighted mean percentages is identical for both professions and a staged process. Four sets of merged data were used in nursing i.e. NQABNs 1997 & 1998 combined, clinical Preceptors 1997 & 1998 combined, etc. The same principle was used in physiotherapy. In this way all the data from the time period relative to the major contract review period 1996-1999, was utilised. A preparatory step was required before the calculation could take place. This is outlined below in 9 d) 3.

Stage 9 Data analysis c) Mean estimates of relative importance of learning/performance outcomes as perceived by four groups of nurses and physiotherapists.

The nursing FfPu questionnaire comprised 15 learning/ performance outcomes. In order to identify a rank order of importance, respondents allocated 150 points; in any way they choose, between the outcomes. Four totals, one for each of the four groups within nursing was calculated, the mean identified and outcomes rank-ordered. The identical process was also undertaken in respect of the four groups of physiotherapists. The number of physiotherapy outcomes was 8 and the number of points available for allocation was 80 (8 x 10).

Stage 9 Data analysis d) Overall weighted mean percentage of fitness for purpose.

The calculation of each overall weighted mean percentage of FfPu, for each of the four groups and associated three universities, for both nursing and physiotherapy, was an 8-step process. Using nursing as the example:

- 1 The factor loadings that fell on each of the 15 separate outcomes were totaled resulting in 15 separate totals (preference).
- 2 The mean of each of the 15 outcomes was identified (importance).
- 3 Each of the 15 separate totals (preference) per dimension was multiplied by the mean of the 15 outcome totals (importance) to yield a preference x importance total.
- 4 For each of the dimensions, which comprised the fitness profile the preference x importance scores, were summed to give a dimension total.
- 5 Each of the dimension totals was added to give an overall preference x importance score.
- 6 The proportion that each dimension made (preference x importance) to a total of 1 (preference x importance) was identified.
- 7 Taking that proportion for first dimension and multiplying it by the previously calculated mean percentage of fitness for that dimension, for a given university and for a given category of assessor, the overall weighted mean percentage of fitness for that dimension was identified.
- 8 The total overall weighted mean percentage of FfPu for a university was the sum of the individual dimensions.

By undertaking the process in nursing and physiotherapy the overall weighted mean percentage of FfPu scores was calculated. This percentage, when the cost per newly-qualified nurse and physiotherapist from each of the universities had been calculated, could be used to calculate a cost per fit for purpose newly qualified employee, per university, per category of assessor.

Stage 10. Resource implications.

The survey was completed within resource allocations that covered IT requirements, printing, stationary and postage.

2.1.2 Conclusion.

In the absence of gold standard FfPu measurement scales two required development in line with protocols for best practice in development (Streiner & Norman 1989) and survey implementation (Moser and Kalton 1996). Theory led thematic analysis was used as the basis for item identification from the literature. Item and overall content validity was confirmed by membership of professional panels. Pre piloting of the draft measurement scales for nurses took place in 10 NHS Trusts in the study Consortium/Confederation area. One Trust did not participate. Piloting of both nursing and physiotherapy scales took place in 3 NHS Trusts in the South West of England. Two of the Trusts were common to both professions. Databases of NQABNs & NQPs educated at universities in the study Consortium were established prior to the main survey distribution. High return rates were encouraged through a covering letter, attractive designed and colour questionnaires.

Factor analysis (principal components) was selected because it is a technique for finding a small number of dimensions, in this study of FfPu, from raw FfPu respondent scores. Internal consistency of the data was confirmed using Cronbach's coefficient alpha technique with Nunally's (1978) criteria of 0.80. Dimension titles were confirmed by the membership of expert panels. The effectiveness measure (OWM%of FfPu) was the product of mean percentage of fitness for purpose scores and mean estimates of relative importance of learning outcomes. Because of the rigour of the developmental process YCON and YCOP may be considered robust and valid measurement scales of fitness for purpose in newly qualified Adult branch nurses and physiotherapists respectively. This was confirmed by actual performance in the field using full sampling frames. Reliability will be confirmed by generating similar results from the same tools on similar, but larger survey populations across England.

2.2 Calculations of Student Attrition, Commissioning Ranges and Categories of NMET Students.

2.2.0 Introduction.

Part two of this methods chapter addresses effectiveness. Specifically, the linked issue of the calculation of student attrition and categories of student numbers to be subsequently used in the calculation of different cost-effectiveness ratios (Table 16). An examination of contrasting methods of calculation of attrition is given. Three categories of student numbers are considered: indexed, in-training and qualified.

	Effectiveness	Cost	Cost- Effectiveness
Methods	1 Developing Outcome Measures: Competence and Performance. 2 Calculations of Student Attrition, Commissioning Ranges and Categories of NMET Students.	3 Application of HEFCE's Five Step Costing Process to NMET Contracts. 4 Calculating Cost per Contracted Student Category and Newly Qualified Employees.	5 Cost-effectiveness: Ratios of Pre-registration Nursing and Physiotherapy Education.

Table 16 Thesis plan for analysis of effectiveness, cost and cost-effectiveness: chapter 2 methods, 2 calculation of student attrition, commissioning ranges and categories of NMET Students.

2.2.1 Effectiveness; calculation of student attrition.

A four point sequenced approach is adopted based on four questions:

- First, what is the nature of the problem?
- Second, what methodologies are available for accessing the information required to address the problem?
- Third, what are the demands of these methods in respect of data collection?
- Fourth what is the basis for the option chosen?

What is the nature of the problem?

Student places have increased significantly since 1994/95 (NAO 2001), but attrition remains problematic. Inconsistency of recording and computing by stakeholders adds to the problem. The NAO recently undertook a survey of the health professional workforce in England. No nationally available comparable data across institutions on NHS funded student completion was available (NAO 2001). Producing robust baseline information is high on the DoH's agenda due to the country-wide variation in data collection procedures (Lipley 2000).

In September 2002 the Benchmarking and Attrition Group will publish their recommendations for a single definition of attrition from NHS funded courses delivered at HEIs (DoH & UUK 2002). This research, in the absence of this single definition has worked within ENB and NHS agreed guidelines, and produced a 'vertical' measure for calculation of attrition.

Against a background of year on year reductions in national student nurse attrition (94/95-19%, 96/97-17% and 97/98-15%) a reported mean attrition rate for nursing of 20.3 % (range 5%-37%) for 1999-2000 qualifiers has been reported (NAO 2001). They also reported an ENB figure of 17%. Clearly before summary attrition figures are used in any calculation there must be consistency in the approach to data collection. For physiotherapy the attrition rate for 1996/97 starters was 8.6% (range 7%-18% AHPs). Concern over calculation of nursing attrition was not transferred to physiotherapy (NAO 2001).

It has been reported that due to the inconsistency of attrition data the DoH have been working with education Consortia to validate ENB data. Inaccurate attrition data could lead to errors in interpretation and subsequent policy development; for example, an institution, being unjustifiably and favourably compared with its neighbours and receiving, as a reward, additional training commissions and funding.

Setting targets for attrition is consistent with NHS performance management. Such action, however, is only meaningful when there is agreement, based on common understanding between all stakeholders involved in respect of: defining, collecting, calculating, reporting and interpreting attrition data.

Categories of NMET students.

In order to be able to calculate a cost per student it is imperative to determine the number of students in each category: commissioned, indexed, in-training and qualified. These numbers are affected by attrition/discontinuation, external transfers-in, etc. In addition student status-full or part time, course undertaken, commencement and expected qualification dates are important considerations. Further, the most appropriate census date(s) at which calculations of student attrition are taken should be carefully selected to give a fair and reasonable picture.

What methodologies are available for accessing the information required to address the problem?

There are only two possible and realistic options for obtaining attrition data. First, approach each university directly. For reasons of commercial sensitivity attrition data was unlikely to be released. Second, to consult the study Consortium. Under reporting requirements between each HEI and the Consortium returns are made. Data is checked, held centrally and regularly updated. From this data, attrition can be calculated. Permission was given to access the data from the study Consortium's business manager.

What are the demands of these methods in respect of data collection?

If the first option had been selected, assuming commercial sensitivity could have been overcome, demands on providers would have been significant. It would also have been a duplication of data held by the study Consortium. Operationalising option two would mean the study Consortium providing the researcher with requested data for various student groups. Student data returns are received by

the study Consortium from HEIs, (under contract monitoring arrangements (NHS E 1996)), are summarised, by category, and recorded in ledgers for reference.

Following earlier discussions between the NHS E and the ENB regarding a review of definitions of student wastage and data collection, an agreed number of definitions were published (ENB 1996a). These were subsequently adopted as a common language by all education Consortia and universities making returns to their local Consortium. It was this common language that was used in respect of data collection during this research.

In physiotherapy, and the other AHPs, there is no tradition or formal timetable of short and long interruptions and resumptions. That is not to suggest that these are irrelevant or inappropriate to AHPs and their students. When occurring they are processed in accordance with individual university regulations.

The national minimum data set profile comprises; numbers of students in training, student recruitment, students leaving the course, total qualifiers in a given quarter, and intake information. From this information it is possible to identify, for each financial quarter, for each of the three years of the major contract review of nursing and midwifery, the numbers of nursing students by branch who indexed, were in-training or qualified. The study Consortium supplied this data as well as commissioning ranges for these two groups as well as for all the students in all the above categories so that the total, of which nursing and physiotherapy, although important, as just two parts, could be calculated.

What is the basis for the option chosen?

The second option was chosen because of the existence of an established methodology that all HEIs complied with based on agreed requirements, definitions, and collection methodology run by the study Consortium. Furthermore, the Consortium was prepared to transpose the verified and required data to blank data collection forms for the purpose of the research.

Contrasting methods of calculation of attrition.

There are at least two different ways of calculating pre-registration nursing and physiotherapy attrition; single cohort over time (horizontal measure) and multiple cohort attrition (vertical measure) at a census date. Both measures are valid but of different use. For example, if the attrition of a single cohort of nurses were required e.g. cohort 'A' (Table 17), then the horizontal measure of attrition would be selected. The attrition figure is the difference between the number of indexed students on day one of the course and the number of students who qualify from the same cohort. In cohort A that would be $190 - 165 = 25$ students. This equates to an attrition percentage of 13.15%. This method of calculation yields a horizontal, long-term measure of cohort attrition. This figure could be compared to the same figure calculated in the identical way for subsequent cohorts e.g. B. Such information would be useful at major contract reviews, using attrition for cohorts A, B and others, to assess trends in cohort performance over the longer term.

This attrition data would not, however, be of much help in the calculation of attrition at a key census point i.e. September in any academic year. In this situation vertical calculation is the method of choice (Table 17). It involves comparing the number of students indexed on courses present at the census date with the number in training at the same date. The difference between the two i.e. the number of students discontinued can then be expressed as a percentage of the total number indexed. This principle can be extended to any number of census dates and, therefore, is applicable to the four financial quarters in each year, and was the method used in this study for calculating the 'in-training' number.

Table 17 shows an imaginary university who commenced the training of pre-registration nurses in September 1997. Additional cohorts were recruited every September thereafter. The dark grey box contains the number of indexed students on day one of the course. The number of students at each yearly census date is less than the index number and this is the net result of an amalgam of discontinuations, transfers in and transfers out, 'back-coursing' as well as long and short interruptions.

Cohort	September 1 st 1997, Students Numbers in Training & Census Date	September 1 st 1998, Students Numbers in Training & Census Date	September 1 st 1999, Students Numbers in Training & Census Date	September 1 st 2000, Students Numbers in Training & Census Date	September 1 st 2001, Students Numbers in Training & Census Date	September 1 st 2002, Students Numbers in Training & Census Date	September 1 st 2003, Students Numbers in Training & Census Date	September 2004 Students in Training	September 2005 Students in Training	Single Cohort Column 1-9 = 10 Attrition %
	1	2	3	4	5	6	7	8	9	
Cohort A Sept 97 Intake	190 (0)	180 (10)	170 (20)	165 (25)						13.15%
Cohort B Sept 98 Intake		210 (0)	209 (1)	190 (20)	189 (21)					10 %
Cohort C Sept 99 Intake			215 (0)	201 (14)	170 (45)	170 (45)				20.93%
Cohort D Sept 00 Intake				222 (0)	207 (15)	201 (21)	199 (23)			10.36 %
Cohort E Sept 01 Intake				615-59 = 556	240 (0)	230 (10)	225 (15)	200 (40)		16.66%
Cohort F Sept 02 Intake					566-81 = 485	260 (0)	240 (20)	220 (40)	200 (60)	23.07 %
						601-76 = 525				
				9.59%	14.31%	12.64%				

**Table 17 University of Poppleton:
Pre registration nursing attrition statistics.**

If in September 2000, an arbitrary census date, the number of students who were no longer in training were identified for each of the 3 cohorts in training (A - 25, B - 20, C - 14,) and subsequently summated this would total 59. This number, 59, expressed as a percentage of the total number of indexed students across the three cohorts i.e. (A - 190, + B - 210, + C - 215 = 615); equates to a multi-cohort attrition rate of 9.59 %. This is a vertical measure of attrition at the September 2000 census date, before the departure of cohort 'A' at the end of their three years training and the arrival of cohort 'D' a further 222 students.

The 'vertical' attrition rate of 9.59% is lower than the 'horizontal' at 13.5% relating exclusively to the cohort 'A'. Both measures of attrition are of value; vertical; a multi-cohort measure, at the September 2000 census date and the horizontal; a uni-cohort measure of attrition for the period September 1997 - 2000. Selective reporting of the lower vertical multi-cohort rate as opposed to the higher longitudinal rate could mislead uninformed observers. Any statement of attrition, must therefore, be accompanied by identification of whether it is a vertical or horizontal attrition measure.

For external use, perhaps as a measure of institutional efficiency, the vertical rate is more useful, but care must be taken in respect of timing of the census date i.e. just before completion of a cohort is more accurate than just after the start. Horizontal is more useful for in-house calculation of whether student retention or promotion activities are working in the longer term.

Students accepted into nurse education are sequentially allocated to the next cohort. In the worked example (Table 17) it is assumed that there is only one September intake of nurses per annum. In reality, there are two. The second falls in either March or April of the same academic year and may not include all four branches. This addition does not, however, affect the underpinning notions of vertical and horizontal measures of student attrition.

HEFCE refers not to attrition but non-continuation rates (HEFCE 1999). HEFCE acknowledge that such rates need to be carefully defined and interpreted. They have a sophisticated recording system for non-continuation rates spanning:

1) participation of under-represented groups (4 categories), 2) non-continuation following year of entry to institution (3 categories), 3) resumption of study after year of inactivity and 4) projected learning outcomes and efficiencies. This methodology was not used in this study for 2 reasons. First, the existence of a nationally agreed ENB & DoH attrition formula (ENB 1996a). Second, readily available student data for NMET courses 1993-1999.

2.2.2 Pre-registration student numbers.

Commissioning ranges 1996-1999.

As part of the integration process local Colleges of Health in the study area merged with their local university. A commissioning band/range was confirmed for each professional group of 'ceiling'/maximum and 'floor'/minimum, figures. Taking pre-registration nurse education at one university, as an example of all the other universities, the 'ceiling' figure for 1996, the first year of integration, was established as 220 student nurses; 150 Adult; 30 mental health; 20 learning difficulties and 20 child. The 'floor' was 179: comprising 140 Adult branch, 14 mental health, 10 learning difficulties and 15 child branch student nurses. The difference between the two totals was 41. The actual number recruited could be anywhere between the two. The same principles apply to physiotherapy students.

Methodology used in identification of indexed numbers 1996-1999.

If a university does not recruit sufficient numbers to meet commissioned places the index number will be lower than the commissioned number. This represents under-recruitment. Study Consortium data enabled generation of a 'year-on-year' institutional profile reflecting each university's ability to recruit both prior to and during the major contract review period.

Pre-registration student numbers.

It takes three years to train a registered nurse or physiotherapist. Consequently, any nurse who indexed during the period June 1993 to March 1999 was similarly

funded by some part of the finances covering the three years of the major contract review. A physiotherapist who commenced training, and was indexed at any of the six sequential September intake dates between 1993 and 1998, would similarly have been funded by some part of the finances for the same review period. The total number of student nurses who indexed and, in an ideal world of no student wastage, would have qualified, was the sum of the twelve cohorts of index numbers. For physiotherapy, it was the sum of the six cohorts of index numbers.

Methodology used in identification of 'in-training' FTE student numbers 1996-1999.

To be able to identify a cost per 'in-training' student nurse per financial quarter, at each of the three universities, it was necessary to first identify, for each quarter, the FTE pre-registration 'in-training' mean. This calculation was also essential to be able to identify a fair share of school and institutional overhead costs to be attributed to a nursing department.

At one university adding together the monthly returns for first three months of the NHS financial year, and dividing by three, yielded the quarterly average. The process was then repeated for the second, third and fourth quarters. The yearly mean was then calculated by summing the four separate quarterly figures. The exercise was repeated three times, once for each of the financial years 96/97, 97/98 and 98/99 comprising the major contract review. At two other universities the yearly mean was then calculated by summing the four separate quarterly figures and dividing by four. The exercise was repeated three times once for each of the financial years 96/97, 97/98 and 98/99 comprising the major contract review.

The necessity for identifying the number of FTE pre registration student physiotherapists was the same as for nursing. The process was also identical for physiotherapists educated at one university. At two other universities the mean was the calculated by summing the four separate quarterly figures and dividing

by four. The exercise was repeated three times, once for each of the financial year's 96/97, 97/98 and 98/99 comprising the major contract review.

Method used in identification of 'completers' / qualified students 1996-1999

Two cohorts of nurses qualify each year and usually six months apart. Taking one university as an example, and having identified the earliest month in the financial year in which nurses qualified, April 1996, the number qualifying from each of the four branches; Adult 47, Child 0, Learning Disability 9 and Mental Health 0, was summated to give 56. The exercise was repeated for the second qualifying group of nurses in November 1996. The number qualifying was; Adult 44, Child 0, Learning Disability 0 and Mental Health 14, a total of 58. Occasionally student 'interrupters' would qualify at a different times during the year. Two such students qualified in March 1997. The three separate figures when summated produced a yearly total of 116. The exercise was repeated three times once for each of the financial years 96/97, 97/98 and 98/99, comprising the major contract review. Only one cohort of physiotherapy students qualifies in the summer of each year. Yearly totals were reported for each of the three universities, pertaining to the three years of the major contract review.

Method for calculation of midwifery, diagnostic and therapeutic radiography, ultrasound and pharmacy FTE in-training student numbers.

Because it was intended to attribute school and institutional overhead costs to each departmental level this could only be achieved if the grand total of FTE in training student numbers was known for all the courses funded by the study Consortium, for each university, and for each of the three financial years of the review. Additional courses at one university were pre-registration midwifery, diagnostic radiography and post-registration education. At another university midwifery and post-registration education and at another: midwifery, diagnostic and therapeutic radiography, ultrasound, pharmacy and post-registration education.

Identification of the number of full time equivalent post registration student numbers.

In addition to providing FT pre-registration education, study universities also offered an extensive range of post-registration courses with a variety of methods of study, attendance patterns, academic value and course lengths. These courses are funded by the study Consortium. Each universities post-registration education activity, like pre-registration, has school and institutional overheads to departmental activity. It is appropriate that post-registration education activity bears its fair share of overhead costs.

Attribution of overhead costs required two pieces of information. First, the number of contracted courses. In the case of one university there were five including post-registration. With the exception of post-registration they were all full time courses and the head count equated to the number of students 'in-training' and, therefore, the number of FTE's. The FTE associated with post-registration education provision had to be calculated because head count & FTEs were different.

A majority of post-registration students are full time NHS employees and undertake education on a part time basis, as work and personal circumstances permit (Appendix 15). Once the number of post-registration FTE's could be identified this number could be added to the other four to give a grand total of FTE's for each School of Health Studies or equivalent. Subsequently, each could then be expressed as a percentage of the total. Each provision's percentage of the total FTE's funded by the study Consortium, could then be used to apportion school and institutional overhead costs to departments. This methodology was consistent with that proposed by Knopf (1982).

In-training student numbers are not static due to 'joiners', 'discontinuations' etc. The total number of FTE's in each School of Health or equivalent varied over time. Consequently, the percentage of each constituent FTE provision also varied. This variation was taken into account in order that the correct apportioning percentage of FTE's pertaining to each of the five provisions was

used in the allocation of all overhead costs. Underpinning this approach was an assumption that all pre-registration students, whether nursing or AHPs, were equal in respect of overhead cost allocation.

2.2.3 Conclusion.

Student attrition has been an ongoing issue in nurse and physiotherapy pre-registration education for many years. Reported rates, even for the same period, differ according to author. Professional and national bodies have agreed that a common approach to measurement and reporting attrition is required if comparisons are to be made. In this study DoH / ENB definitions of attrition and categories of students e.g. 'external transfer in' were adhered to. Longitudinal and vertical methods for student attrition calculation were developed and the strengths of each identified along with occasions of potential misuse because of inappropriate application. The vertical method was chosen on the basis that it is the best technique for calculating census data (per financial quarter) attrition data for indexed, in-training and qualified students and for subsequent inclusion in cost per student and ultimately cost effectiveness ratio calculations. Both pre and post registration student provision must bear their fair share of overhead costs.

2.3 Application of HEFCE's Five-Step Costing Process to NMET Contracts.

2.3.0 Introduction.

Part three addresses the issue of the application of HEFCE's five step costing process to NMET contracts (Table 18). For identification of the most cost-effective provider of pre-registration nursing and physiotherapy education in the case study area, it was necessary to confirm contract sums with the study Consortium. This they were only able to do in a general way because pre-registration block sums often contain multi professional funding. They were also unable to give an account of how recurring NMET funding was internally allocated within each university. In an attempt to overcome this problem, HEFCE's costing process, underpinned by Knopf's costing of nursing education model, was modified and applied. Suitable cost pool titles, content and drivers for departments, schools and institutions were identified and selectively applied. Adherence to the framework increased the likelihood of standardization and comparability of results.

	Effectiveness	Cost	Cost-Effectiveness
Methods	1 Developing Outcome Measures: Competence and Performance. 2 Calculations of Student Attrition, Commissioning Ranges and Categories of NMET Students.	3 Application of HEFCE's Five-Step Costing Process to NMET Contracts. 4 Calculating Cost per Contracted Student Category and Newly Qualified Employees.	5 Cost-effectiveness: Ratios of Pre-registration Nursing and Physiotherapy Education.

Table 18 Thesis plan for analysis of effectiveness, cost and cost-effectiveness: chapter 2 methods, costs 3, application of HEFCE's five step costing process to NMET contracts.

2.3.1 Cost; application of HEFCEs five step costing process to NMET contracts.

What is the nature of the problem?

The problem is that at the time of his research there was no exclusive NMET costing method. HEFCE (1997) had produced a standard in costing HE and, therefore, by association, NMET. This research took place concurrently with developments in the field (HEFCE 1999; JM Consulting 1999) rather than after extensive and reported use across the sector. Without the consistency of approach offered by HEFCE's model in addressing the major constituents of ABC: NMET staff categories and effort, direct and indirect costs, cost driver utilization, results and subsequent comparisons between HEIs providers, would have been flawed.

What methodologies are available for accessing the information required to address the problem?

It was not possible to directly approach each study HEI and request their cost per NQN & NQP for required period because of commercial sensitivity. Disclosure could result in a loss of competitive advantage. Internal university management accounts, which contain the sought after information, are not publicly available. Even if disclosure had occurred without the calculation formula meaningful comparisons of inter university results would not have been possible.

An alternative methodology for securing the cost per NQN and NQP would have been to approach the education Consortia and ask them for this information. This was not possible, however, because they did not possess it. The DoH did publish annually a set of anonymized cost per student nurse and physiotherapist across the sector (NHS E 1998g). These they shared with education Consortia via the ROs. Being anonymized they did not correlate a cost with a given university. Nor did they release their cost calculation formula.

What are the demands of these methods in respect of data collection?

Two basic demands pervade all data collecting activities; consistency and accuracy. Calculation of a cost per student nurse or physiotherapist requires information to be collected about staff: numbers and effort i.e. teaching, research, other activities etc. (even if there is a small or nil return). FTE student numbers per education programme e.g. pre registration nursing, must also be calculated. Expenditure per organisational level by pay and non-pay, cost pools and estates must be identified. HEIs, as independent bodies, are not constrained in respect of accounting procedures, providing they met HEFCE reporting requirements. Consequently, no two universities allocate costs on the same basis. Strict adherence by each university in the above three areas was essential.

What is the basis for the option chosen?

The basis for the option chosen was the development of a NMET costing algorithm, rooted in HEFCEs approach, to be applied retrospectively and based on: a) university management accounts, b) staff effort, c) ABC and using d) FTE student numbers (per education provision), as the cost driver. Benefits of the option chosen include:

- 1) It was the most 'up to date' and acceptable to universities on the basis that HEFCE, and not the NHS, had produced the method. It was a systematic and consistent approach to costing, appropriate for both pre-and post-registration education, and based on linked concepts: resources used (inputs), activities undertaken (process or through-puts), outputs and outcome achieved.
- 2) It ensured that the Consortium's key aims; short term (1996-1999 'baseline' of a cost per course and per student per university for all HEIs), as well as future medium-and-long-term, based on notions of trending in respect of staff effort, student FTEs, and expenditure by categories, were achieved.

The Research Advisory Group approved the development of a NMET costing algorithm, rooted in HEFCEs approach.

The five step costing process applied to pre and post-registration education in the study area.

Step 1: Determine cost objectives.

Two key cost objectives were identified: 1) cost per pre-registration nursing and physiotherapy course and 2) cost per pre-registration nursing and physiotherapy student: indexed; in-training; qualified/fit for academic award/fit for practice practitioner, and fit for purpose employees.

Step 2: Identify activities, which contribute to the cost objectives.

Individual activities, which were similar and contributed to the cost objectives at departmental, school and institutional level were identified and pooled at three levels: department, school and institution.

Six departmental and school level cost pools contained in university final integration bid documents produced by the NHS E and well understood in university finance departments, were used. Whether a return would be made for all cost pools at departmental or school levels would depend on each university's internal accounting procedures. One university may attribute a particular cost to a cost pool and report it at departmental rather than at school level. Another may do the reverse. The importance of consistency in approach in allocation, interpretation and reporting was paramount and clearly stated in the costing guidelines issued to universities (Appendix 16).

Step 3: Assign resource costs to activities.

Management accountants under took this step at each study university. It involved assigning resource costs to activities identified in the cost pools. To ensure consistency in assignment between all universities a detailed costing guideline booklet was produced, based primarily on HEFCE guidelines (1997) and an associated costing algorithm (Appendix 16).

The booklet was circulated to each university as Section F Finance, major contract review documentation pertaining to nursing and midwifery education in autumn 1999. Appendix 16 contains the details spanning allocation of costs to cost pools, and courses.

Accuracy in cost allocation.

Cost allocation is a sequenced and 'bottom up' process i.e. departmental, school & institution. The more stages and people involved the greater the potential for error. At division/department level, it is likely that the Head had responsibility for authorising, via signature, each 'order' having first selected and inserted the correct cost code(s) on the order form. One inaccuracy that could occur in the cost allocation process was the use of incorrect cost codes resulting in costs being higher in one area than another. The more incorrect coding, the greater the cost per item and the more departments involved, (assuming no counter-balancing) the greater the potential inaccuracy.

In order to ensure accurate cost coding, Heads of division/department should regularly review budgets and ensure that order numbers are cross-referenced to orders and compare actual against expected expenditure to ensure accuracy. Differences should be raised with the management accountant as part of ongoing budget monitoring. Recoding of orders should be undertaken if necessary and the budget adjusted and/or variances explained accordingly. Because staff costs are the largest single on-going cost, budget holders should regularly ensure that the number, grade and actual expenditure to date are as predicted. Errors would significantly affect costs. Variances should also be raised with the management accountant and adjustments made.

At school level the Dean makes purchases that need to be properly coded. Because some purchases are made on behalf of the all departments e.g. a new telephone switchboard, expenditure can be large. Incorrect coding is even more distorting. The same checks and balances at department level should exist at school level. In fact, reviews of the School budgets should involve examination of all departmental/divisional budgets as the Dean is usually the overall

designated budget holder. Variances should again be resolved with the management accountant. There is, therefore, double-checking.

All budgets are subject to audit by internal auditors e.g. Universities Internal Audit Consortium (UNIAC). This organization sequentially and randomly audits departmental, school and institutional costs incurred by universities, spanning the three years of the major contract review. Budgets would have been subject to audit and amended accordingly. Consequently, the original or amended audited accounts were viewed as correct. They had been subsumed and published in the Financial Statements for each of the university years covered by the major contract review (1996-1999) and were used by management accountants in the completion of the costing algorithm.

All universities use the audited Final Accounts as the basis of their institution's financial review with the study Consortium contract review panel. The 18 strong panel included both an NHS Trust Director of Finance and the Consortium's contracts officer, for strategic and operational perspectives respectively.

Consequently, for all the above reasons, the differences in the costs for pre-registration nursing and physiotherapy, between institutions, can be considered 'real' and not apparent. This is important because if the costs were not 'real' this would undermine any significance that could be attributed to them, as well as emanated cost effectiveness ratios and subsequent policy implications.

Step Four: Link activities to the cost objectives.

The key cost activities were identified as: the cost of pre-registration nursing and physiotherapy provision, cost per indexed and in-training student, cost per qualified practitioner and cost per fit for purpose newly qualified employee.

Step Five: Analyse and report results.

Interpretation of the results of the costing exercise is undertaken in the Discussion chapter of this dissertation.

Finally, the costing methodology developed in this research matches best practice guidance published two years later related to nursing, midwifery and AHPs. Specifically: inclusion of central service overhead costs, not underestimating cost of attrition, materiality-concentrating on the most significant costs, equitable, fair and reasonably stated costs, including full economic costs; consistency of costing treatment, auditable-reconcilable costs with institutional costs and pragmatism i.e. implementation with as little burden as possible (JM Consulting 2001).

2.3.2 Conclusion.

The study Consortium was unable to track NHS resources through university structures. This problem was overcome via the application of the HEFCE's five-step costing process underpinned by Knopf's (1982) nursing costing methodology in the context of Tsang's economic framework for education production (objectives, prices, inputs, technologies and outputs).

Individual cost pool titles and content were confirmed for all three organisational levels. ABC principles were used to allocate resources to appropriate cost pools for costing nursing and physiotherapy education. The costing algorithm increases the likelihood of standardisation in ABC procedures used by all participating universities.

Internal accounts used by management accountants in completing the costing algorithm would have been audited both by management accountants and UNIAC auditors. As a consequence the differences in the costs, for pre-registration nursing and physiotherapy between institutions, can be considered to be 'real' and not apparent. Consequently, they can be considered as a sound basis for the calculation of CER's, policy analysis and development. Recently published best practice costing guidelines confirm the appropriateness of the devised costing algorithm.

2.4 Calculating Cost per Contracted Student Category and Newly Qualified Employees.

2.4.0 Introduction

Part four of this chapter contains the basis for calculating the cost per categories of pre-registration nursing and physiotherapy students and newly qualified employees (Table 19).

	Effectiveness	Cost	Cost-Effectiveness
Methods	1 Developing Outcome Measures: Competence and Performance. 2 Calculations of Student Attrition, Commissioning Ranges and Categories of NMET Students.	3 Application of HEFCE's Five-Step Costing Process to NMET Contracts. 4 Calculating Cost per Contracted Student Category and Newly Qualified Employees.	5 Cost-effectiveness: Ratios of Pre-registration Nursing and Physiotherapy Education.

Table 19 Thesis plan for analysis of effectiveness, cost and cost-effectiveness: chapter 2 methods 4, calculating cost per contracted student category and newly qualified employees.

2.4.1 Cost, calculating cost per contracted student category and newly qualified employees.

What is the nature of the problem?

There were two major problems to be overcome. To cost any category of student it is necessary to identify departmental, school and institutional elements. Prior to this research, block contract sums per annum were known, but these could not be aggregated to provision per university provider e.g. pre-registration nursing by the study Consortium because they did not have access to individual university course management accounts.

The second problem relates to student numbers. Yearly student numbers for indexed, in-training and qualified students are calculated, but in the absence of a methodology, the number of fit for purpose NQNs or NQPs was not known. Post

registration student numbers must be included in the calculation. Failure to do so would inflate all costs and undermine any cost effectiveness ratios.

What methodologies are available for accessing the information required to address the problem?

The method for identifying student numbers: indexed, in-training and qualified already existed. Methodologies for calculating FTE for part-time post-registration students and fit for purpose NQABNs & NQPs did not exist. These were generated as part of this research.

What are the demands of these methods in respect of data collection?

Data on indexed, in-training and qualified students was available. However, FTE, based on part-time students' academic credit and FfPu scores needed to be calculated. NMET cost data per HEI was held at the study Consortium but was incomplete and uncorrelated. Identified deficits were completed from regional archives. Once completed the correlated expenditure per university, per financial year was checked for accuracy by the study Consortium contracts manager prior to use.

What is the basis for the option chosen?

The option chosen was ABC because it is understood by universities in the study area, is consistent with HE policy, and could be achieved within the research period and at no cost to the research budget.

Linking activities to cost objectives.

The key cost objectives were the cost per pre-registration nursing and physiotherapy provision and the four costs per student benefit. The process of linking activities to the cost objectives was undertaken upon receipt of completed documentation from each university. The link was achieved by a number of

stages that were identical for all universities, for each of the three financial years, and for nursing and physiotherapy provisions.

2.4.2 Cost per education provision per financial year per university.

Identification of the total cost for pre-registration nurse and physiotherapy education.

Pre-registration nurse and physiotherapy education, within the study area, is delivered at three universities. Taking one university as an example, the cost per financial year was calculated by adding together three separate summary costs: 1 departmental, 2 school and 3 institutional overheads. Summation of the three costs generated a total pre-registration education nursing cost for the first financial year 96/97. This same process was applied to the two following financial years. The total cost of pre-registration nurse education at the other universities was calculated identically.

The study Consortium contracts directly with one university for a number of courses including pre-registration BSc (Hons) Physiotherapy. Consequently, the yearly total contract cost was known from the study Consortium's records. What was unknown was the division of costs at departmental, school/faculty and institutional levels. Transference of the costing methodology used at the other universities was inappropriate. This university was, therefore, asked to identify the Physiotherapy's departmental costs as well as school and institutional overheads related to cost pools, and in keeping with their own management accounting principles. Costing collection sheets, were amended to reflect the direct contract status. (See Appendix 16).

Identification of pre-registration nurse and physiotherapy education quarterly costs per financial year at universities in the study area.

Dividing the identified total cost of both pre-registration nursing and physiotherapy provision for the first financial year by four yields a quarterly cost. Taking one university as an example, the total cost of pre-registration nursing

education for the financial year 1996/97 was calculated as was four financial quarters. It was assumed that the consumption of resources was spread equally across each financial quarter. The same process was repeated for successive years.

Four categories of cost per student nurse and physiotherapist were calculated: 1) indexed/registered student; 2) 'in training' student; 3) qualified / fit for academic award / fit for practice practitioner and 4) fit for purpose nurse/physiotherapist as perceived by the newly qualified themselves, their clinical Preceptor/Supervisor, Sisters/Charge nurse / physiotherapy Superintendent and Directors of nursing and Heads of physiotherapy.

Cost per indexed and in-training student.

Financial expenditure per quarter, divided by either the number of indexed or 'in-training' yielded a cost per student. The yearly cost is the sum of the four individual calculations pertaining to the same financial year. The total cost is the sum of the three yearly calculations.

Cost per qualified / academic award / fit for practice student.

Calculating the cost qualified/ academic award/ fit for practice pre-registration student was a three-stage process. Using pre-registration nurse education at one university, as an example, the actual qualification numbers for the period 1996-2000 were identified from the study Consortium's records. For those students who were 'in-training', but who would qualify in the period post May 2000–September 2002, their qualification rate was estimated based on past qualification rates. Each profession's rates for their own university were used as the basis for the calculation. The cost per qualified practitioner for the period of major contract review was then calculated in the same way as has been reported for both indexed and in-training.

Cost per fit for purpose employee.

Students who successfully complete their course are deemed qualified and fit to practice the profession. The cost per qualified student nurse was the baseline figure to which the four separate percentages of overall weighted mean percentage of FfPu (NQ, CP, S/CN & DoN) was applied. This converted the cost per qualified practitioner into four separate costs per FfPu employees. The same applied to physiotherapy.

Using pre-registration nurse education at one university as an example the calculated cost per qualified nurse was £23,141. The newly qualified self-assessment FfPu score was 75.2%. The overall weighted mean percentage of FfPu cost was therefore, £23,141 X 100%, divided by 75.2% to yield £30,773. Because the newly qualified did not self assess themselves as a 100% fit for purpose this means that the cost was greater than the cost per qualified. Three subsequent calculations took place based on clinical Preceptors, Sisters/Charge nurses and DoN overall weighted mean percentage of fitness for purpose (OWM%FfPu). A profile of FfPu scores per university and staff category perception was generated. The same approach was taken in respect of physiotherapy.

2.4.3 Relationship between costs and four categories of student.

From the NHS E and study Consortium's perspectives if the cost per pre-registration indexed student was the same as the cost per 100 percent fit for purpose employee, as would have been the case if no student left the course or interrupted their training, then this is the ideal outcome from a cost-effectiveness perspective.

If it assumed that no significant unbudgeted additional resources were made available that would distort the picture then the cost per 'in-training' student will always be greater than the cost per indexed student. The reason for this was that the same finances supported a smaller student population. The magnitude of cost difference was proportional to the number in training at the census point.

If the number of students qualifying from a given cohort is lower than the number of students who indexed then the magnitude of the difference between them is proportional to the cost of the student. The greater the number who qualified the smaller the cost and vice versa.

Unlike the previous three costs per student, which were based exclusively on the numbers of students at a census point, the cost per fit for purpose employee is a measurement of their clinical effectiveness in the work place. Just because a newly qualified practitioner is deemed fit for Award, Practice (Education) & Professional Standing, it does not necessarily mean that they are fit for purpose. The less fit the newly qualified employee the greater the cost to the NHS in terms of both past expenditure and future remedial costs (Stanswick 1994).

2.4.4 Changes in NMET Contracting; from cost to price per student.

The study Consortium/Confederation has changed the basis of its contracting with university providers. Since 2001 no new 'block' contracts have been offered. These are being replaced by price per student contracts. Price per student is the price paid in a contract between a Consortium/Confederation and a HEI for educating and training a single student on the appropriate pre-registration training programme (NAO 2001). In 2001 one university provider of nurse education in the study Confederation was the first to be moved to such a contract. Guiding principles included: funding for student output not input/indexed numbers, implementation of 13% national threshold on attrition, financial incentives to reduce attrition to rates below 13% and encouragement to introduce strategies to better monitor and understand attrition.

Pricing guidance was considered by the Benchmarking and Attrition Review Group (BARG) on benchmarking prices, per student, for NHS funded contracts for nursing, midwifery and AHPs (DoH & UUK 2002). This was in response to recommendations that there should be a common generic pricing approach for core elements in order to increase VFM and a standard benchmarking pricing formula for NHS pricing programmes (NAO 2001).

The Department of Health has commissioned research to determine a common price per pre-registration nursing and physiotherapy student and make recommendations as to the content of proposed core and non core items e.g. geographical location, accommodation and staffing (DoH & UUK 2002).

Price is the money value of a good, service, asset or factor input (Pass et.al 1993) i.e. In the context of this study the price is what the study Consortium/Confederation was prepared to pay for a fit for practice nurse or physiotherapy student. By comparison cost is the payment incurred by the university in producing this output. The difference between the two is notionally university profit or loss.

The move to a price per student should not affect the true opportunity cost of a nursing or physiotherapy student unless, each contracted university makes fundamental changes in the way it educates nurses, which is unlikely.

Cost per nursing and physiotherapy students in this study was calculated twice. Once based on actual expenditure incurred in delivering pre registration nursing and physiotherapy courses contract income to universities and second based on contract values. Contract income and actual expenditure was the same for some university providers and different for others i.e. actual expenditure significantly exceeded contract income. This position was presumably sustained by a cross subsidy from each university's reserves. The NHS appears to have been subsidised by HE. Consequently, the cost per nursing and physiotherapy student in those universities increased. Calculation of two costs per student (contract value and actual expenditure) is important. Costing on contract value only means that the actual or true cost, which may be higher, and includes the subsidy, is not reported. Costing both, for comparative purpose, is therefore essential.

The devised costing algorithm was able to generate the above two costs per indexed, in-training, qualified and fit for purpose students. With out such a robust algorithm actual expenditure cost many never have been identified and the differences between it and contract cost per student may have gone unrecorded.

The effect of this would have been an artificially low cost per student and CER's recorded for some universities.

2.4.5 Conclusion.

Calculation of four cost effectiveness ratios necessitates previous calculation of four costs per student. Based upon the completed financial returns received from each university the cost for nursing and physiotherapy per financial quarter, over the three years of the major contract review, was summated and a total identified. Methods for calculating the cost per indexed, in-training, award/practice and fit for purpose employee were developed and applied.

Both contract and actual costs per student were calculated in order to reflect the true cost per nursing and physiotherapy student. Consequently, it was possible to compare the costs per fit for purpose nurse and physiotherapist between competing university providers based on contracted and actual expenditure. In this way a basis for value for money judgements was established.

2.5 Cost-effectiveness Ratios of Pre-registration Nursing and Physiotherapy Education.

2.5.0 Introduction.

Part five is the final part of the methodology and focuses on the calculation of cost-effectiveness ratios (CER) (Table 20).

	Effectiveness	Cost	Cost- Effectiveness
Methods	1 Developing Outcome Measures: Competence and Performance. 2 Student Attrition, Commissioning Ranges of Categories of NMET Students.	3 Application of HEFCE's Five Step Costing Process to NMET Contracts. 4 Calculating Cost per Contracted Student Category and Newly Qualified Employees.	5 Cost-effectiveness: Ratios of Pre-registration Nursing and Physiotherapy Education.

Table 20 Thesis plan for analysis of effectiveness, cost and cost-effectiveness: chapter 2 methods 5, cost-effectiveness, ratios of pre-registration nursing and physiotherapy education.

2.5.1 Cost-effectiveness; cost-effectiveness of pre-registration nursing and physiotherapy education.

What is the nature of the problem?

“Cost and effectiveness data can be combined into CE ratios that show the amount of effectiveness that can be obtained from an estimated cost” (Levin 1983). In order to calculate CERs, it is necessary, to identify both the cost and the unit of effect. CER's in NMET are rare because of difficulties of identifying accurate costs and effectiveness measures. Ratios for qualified and fit for purpose nurses and physiotherapists have not been published due to commercial sensitivities over costs and the absence of a suitable natural unit of effect for FfPu.

In this study the unit of effect identified and generated was the overall weighted mean percentage of fitness for purpose (OWM%FfPu). This percentage was the product of the rank order of learning/performance outcomes and the mean percentage of FfPu per dimension of fitness. Further, the cost per student was also identified and the two, cost and effectiveness were brought together to produce ratios for nurses and physiotherapists per university of origin.

What methodologies are available for accessing the information required to address the problem?

Because the fitness for purpose cost effectiveness ratio required did not exist no NMET stakeholders could provide it. Consequently it was generated. Parts one and two of this methods chapter explained how dimensions of FfPu and their mean percentage were generated. Parts three and four explained how various student categories and cost were calculated. Part five focuses on the bringing together of costs and units of effect and especially (OWM%FfPu) to produce various cost effectiveness ratios.

What are the demands of these methods in respect of data collection?

Because cost effectiveness ratios are the products of both cost and a unit of effect it is not possible to produce a ratio when only one of the two components is known.

What is the basis for the option chosen?

Although four different cost effectiveness ratios required calculation for comparative purposes (indexed, in-training, qualified and FfPu) the key ratio was cost per fit for purpose NQABN and NQP employee. It was selected because FfPu was the employer's perspective, the final outcome measure of the education and training process and was the economic perspective of the study Consortium/Confederation. Ratios pertaining to indexed, in-training are input & process ratios respectively. FfA /FfPr and FfPu are output measures and ratios.

Cost-effectiveness of NMET.

NMET cost-effectiveness is based on Drummond et al., (1993) definition and Quades 1967 design methodology. Analysis of comparison of alternative courses of action in terms of their costs and effectiveness in attaining some specified objective required the right objectives to have been specified and a satisfactory performance measure determined (Quade 1967). Thomas's five-stage process spanning: objectives, alternatives, costs (Bowman 1996), model and criteria was adopted. Application in this study is outlined in diagram 8.

The study Consortium/Confederation had a primary interest in FfPu cost effectiveness ratios of newly qualified employees. University policy makers have a primary interest in CERs pertaining to FfA. For PSB policy makers their primary interest is in CERs in FfPr and FfPS. All have a secondary interest in the other three ratios. It is vitally important, that each stakeholder recognises, what Thomas affirmed, that one CER measures only one unit of effect not two. Failure to realise this could result in confusion in policy development based on the juxtaposition of different ratios and the wider vision of the total cost-effectiveness picture that offers.

All ratios generated in any study should be treated with caution (Thomas 1990). CERs generated are rarely unequivocal. The weakest point in many studies is the statistic. Beneficial cancelling out of all the errors of assumption made during the estimation and manipulation of costs and benefits is just as likely as compounding (Drake 1982). This study was no exception.

The issues of subjectivity and information run through all cost-effectiveness studies. Cost effectiveness analysis "does not offer less subjectivity and less use of judgement: it offers a greater quantity of information, and a more systematic and open application of judgement to decisions about the use of resources" (Drake 1982; Levin 1983). This principle was applicable to this study. Further, it enabled the production of a systematic process by which policymakers can make judgements about past use of resources in respect of outcomes generated and make decisions about future use in the context of outcome expectations.

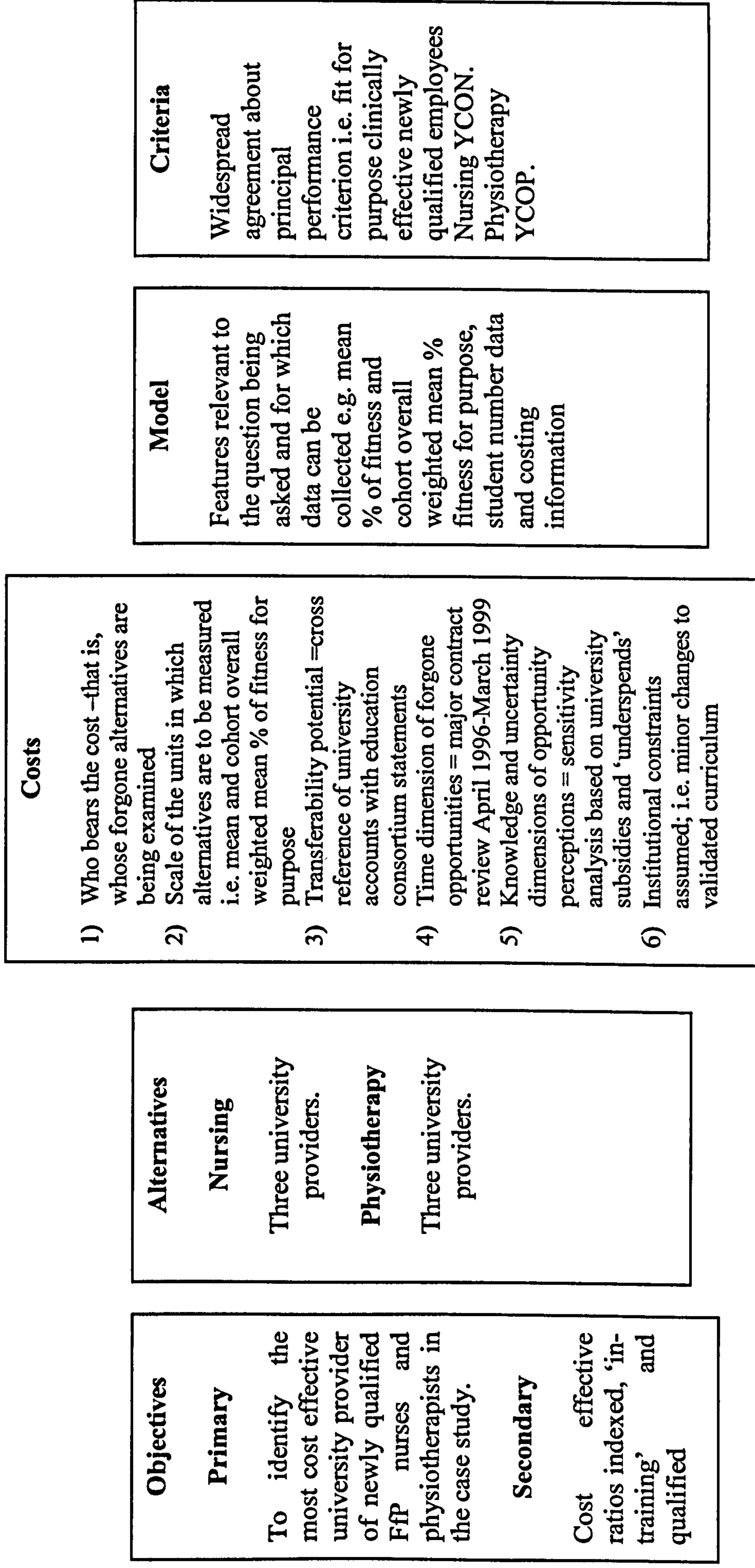


Diagram 8 Cost-effectiveness of pre-registration nursing and physiotherapy education in the case study area (Based on Thomas (1990) 5 stage process & Bowmans (1966) six stage costs).

The eventual purpose of the cost, effectiveness and cost effectiveness ratio results in this research was the development of NMET policy in these areas. To achieve this, policy stakeholder must understand: a) NMET funding, b) course costing algorithms c) cost (£) per student and d) effectiveness product output e.g. mean percentage of fitness & overall weighted mean percentage of fitness for purpose (OWM%FfPu). These are prerequisites to understanding the FfPu cost effectiveness ratios as well as cost per indexed student, award/practice ratios which were generated for contextual and comparative purposes.

2.5.2 Conclusion.

Outcome effectiveness was identified as the overall weighted mean percentage of FfPu (OWM%FfPu) per group of assessors. Using the data on costs and OWM%FfPu per university per category of assessor, this CER was generated. The most important CER is the cost per FfPu NQABN and NQP per university provider. Other ratios, e.g. cost per indexed student, in-training, award/practice, are envisaged for contextual and comparative purposes.

Incremental methods to develop scales, implement, and analyse results were drawn from a wide number and variety of relevant sources:

- 1) Identification of key publications from: a) professional and statutory bodies, b) codes of professional conduct, c) competency documents, d) professional documents,
- 2) Generation of maximum number of possible items/competencies by reference to (1),
- 3) Assurance of content validity by reference to: a panel of experts, (item reduction, addition, clarity etc), a representative sample of the NHS, previous literature,
- 4) Development of a psychometric assessment scale comprising 5 sections; instructions, organisational and biographical data, outcomes and competencies based on the style and structure of higher order occupational standards, open-ended comments section and a hierarchy of outcomes.

- Variations of prefix of address so that the same questionnaire content would be appropriate for all categories of possible respondents,
- 5) Postal questionnaire pilot study and subsequent revision,
 - 6) Major postal surveys of target populations,
 - 7) Analysis of data using SPSS software,
 - 8) Identification of key factors/dimensions of FfPu by use of principal components analysis, varimax rotation, an eigen value greater than 1 and a factor loading of 0.4. Internal consistency of the data generated to be examined using Cronbach's coefficient alpha technique with Nunally's criteria of 0.80 (Appendix 17),
 - 9) Calculation of mean percentage of FfPu (SPSS syntax),
 - 10) Development of NMET activity based costing algorithm and implementation,
 - 11) Calculation of OWM%FfPu,
 - 12) Application of OWM%FfPu to NQABNs & NQPs nursing and costing data,
 - 13) Identification of most cost effective provider of NQABNs & NQPs in the study Consortium.

Return rate results from questionnaires, results of the factor analysis and related analyses, summary of financial expenditure per university, and cost per student is presented in the results chapter.

CHAPTER 3 RESULTS

3.0 Purpose.

The purpose of this chapter is to report the research results on effectiveness i.e. fitness for purpose, cost and cost-effectiveness attributable to four groups of nursing and physiotherapy assessors. The results are presented in the following order:

- First, and by way of context, the overall questionnaire return rates for the combined 1997 & 1998 cohorts of nurses and physiotherapists,
- Second, the rank order of all dimensions of FfPu based upon highest percentage of variance,
- Third, the most important dimension of FfPu per category of assessor, per profession, based highest percentage of variance,
- Fourth, the highest and lowest mean percentage of FfPu, per category of assessor, per profession, per university and including those dimensions where the mean percentage was below a 50% threshold,
- Fifth, the overall weighted mean percentage of FfPu, per category of assessor, per profession, per university and dispersion pattern of NQABNs & NQPs who did not achieve the 50% threshold of fitness,
- Sixth, rank orders of estimates of the relative importance of learning/performance outcomes for nurses and physiotherapists,
- Seventh, a summary of historical financial costs of the participating universities,
- Eighth, cost effectiveness ratios per category of student and fit for purpose employee.

3.0.1 Return rates of questionnaires: Nursing and physiotherapy.

Nursing

Despatch and return rates for the each group of nurse assessors, 1997 & 1998 combined data, is presented in table 21. An overall trend is apparent. The more senior and experienced the respondent category the higher the return rate. Only half the total of NQABNs returned completed questionnaires.

Categories	Questionnaires Despatches	Questionnaires Returned	Percentage % Returned (Rounded to nearest whole number)
Newly Qualified Adult Branch Nurses	288	145	50
Clinical Preceptors	272	160	59
Sisters/Charge Nurses	283	205	72
Directors of Nursing	34	25	74

Table 21 Nursing: Numbers of questionnaires despatched, return rates and associated percentages, per category of assessor.

For NQABNs this may raise questions over result implications. However, balancing the employment profile of respondents and non-respondents revealed no significant difference between them. This may suggest that if they had responded results might have been similar to those obtained which reinforces result interpretation. The Preceptors' 59% return rate is more substantial than that recorded for NQABNs. More confidence can, therefore, be attached to this result. The same can be said for Sisters, 72%, whose return rate was only 2% less than DoN but on higher respondent total i.e. 205 versus 25 respectively. Consequently, the Sisters perception of FfPu may be the most accurate of the four groups.

Physiotherapy.

Despatch and return rates of the four assessor groups are reported in table 22. The more senior and experienced the respondent the higher the return rate with the exception of physiotherapy managers. Physiotherapy Supervisors were the largest group and although the Heads recorded a higher return rate (87%), it was from a much lower despatch total. Consequently, the supervisors' perception of FfPu may be the most accurate of the four.

Categories	Questionnaires Despatches	Questionnaires Returned	Percentage % Returned (Rounded to nearest whole number)
Newly Qualified Physiotherapists	176	109	62
Clinical Supervisors	176	139	79
Physiotherapy Services Managers	160	107	67
Heads of Trust Wide Physiotherapy Services	101	88	87

Table 22 Physiotherapy: numbers of questionnaires despatched, return rates and associated percentages, per category of assessor.

3.1 Dimensions of Fitness for Purpose.

3.1.0 Introduction.

This results chapter consists of three main themes: effectiveness (table 23), cost and cost-effectiveness. The first of these to be reported is effectiveness i.e. fitness for purpose.

	Effectiveness	Cost	Cost-Effectiveness
Results	1 Dimensions of Fitness for Purpose. 2 Mean Fitness for Purpose Per Dimension. 3 Overall Weighted Mean Fitness for Purpose. 4 Estimates of Relative Importance of Learning and Performance Outcomes.	5 Financial Returns	6 Cost Per Category of Qualified Nursing and Physiotherapy Student and Fit for Purpose Employee

Table 23 Thesis plan for analysis of effectiveness, cost and cost-effectiveness: chapter 3 results 1, dimensions of fitness for purpose.

The effectiveness theme consists of 4 parts. The first theme reports for both NQABNs & NQPs, the rank order of most important dimension of FfPu per category of assessor based on percentage of variance. Tables 24 & 25 contain this information for nurses and physiotherapists respectively. The top line of each table, excluding column titles, contains the name of the most important dimension of FfPu, per category of assessor, based on the highest percentage of variance recorded.

Dimension Number	NQABNs	Clinical Preceptors	Sisters/Charge Nurses	Directors of Nursing
1	Adapting Nursing Practice (11.67 %)	Practice Within the Recognised Scope and Current Limitations of Nursing Practice (22.08 %)	Delivery of Cost Effective Nursing Care (25.40 %)	Enable Patients to Meet Their Physical and Physiological Needs Within A Programme of Nursing Care (17.45 %)
2	Ensure An Appropriate Standard of Care Through Continuing Professional Development (8.38 %)	Enable Patients To Meet Their Physiological and Physical Needs (17.80 %)	Enable Patients To Meet Their Physical, Physiological and Psychological Needs (20.41%)	Health and Safety in the Workplace (14.42 %)
3	Enable Patients To Meet Their Physical, Physiological and Spiritual Needs (7.03 %)	Evidence Based Nursing Care (16.75 %)	Ensure the Delivery of Care Through Effective Communication & Professional Frameworks (16.87)	Patient Protection (12.65 %)
4	Optimise Health and Social Well Being (6.63 %)	Effective Communication in Optimising Health and Social Well Being (13.68 %)	Enable Effective Communication to Enhance Patient Safety & Well Being (10.27 %)	Continuing Professional Development and Multi disciplinary Working (11.59 %)
5	Contribute to the Physical & Psychological Well Being of Patients (6.35 %)			Focused Care to Meet Specific Needs (7.80%)
6	Professional Working Relationships With Patients (5.68 %)			Contribute to Well Being of Patients (7.38)
7	Planning and Evaluating Nursing Care (5.20 %)			Optimise Health and Social Well Being (6.36%)
8	Effective Communication (5.09 %)			Evidence Based Nursing Care (5.47%)
9	Enabling Appropriate Care Through Multi-disciplinary teams (4.85 %)			Research & Use of Information Technology to Support Practice (5.01%)
10	Supporting Patients During Interventions (3.96 %)			

In each analysis the next and unreported dimension had an eigen value less than 1.1 and could not be distinguished on the corresponding 'scree plot' of factorial scree (Child 1970).

Table 24 Dimensions of Fitness For Purpose and Associated Percentage of Variance for Four Nursing Assessor Groups

3.1.1 Dimensions of Fitness for Purpose.

Nursing.

Factor analysis was undertaken for each of the four groups of assessors (1997 & 1998 data combined). For NQABNs, ten dimensions were generated which summarised, in descending order of statistical importance, their perceived notion of their own FfPu. The most important dimension was 'Adapting (their) Nursing Practice' with an 11.67% percentage of variance. The second most important was 'Ensure an Appropriate Standard of Care Through Continuing Professional Development' (7.03% variance). Tenth and least important, but not unimportant, based on lowest percentage of variance, was 'Support Patients During Interventions' (3.96%) (Table 24 & Appendix 12).

Clinical Preceptors described the FfPu of NQABNs in four dimensions each with a high percentage of variance. Both the limited number and high individual percentages of variance suggests they had a clear idea of what constitutes FfPu in NQABNs. The most important dimension was the NQABNS ability to 'Practice Within the Recognised Scope and Current Limitations of Nursing Practice (22.08% variance). The least important was 'Effective Communication in Optimising Health & Social Well Being' (13.68 % variance).

Sisters/Charge Nurses, like Preceptors, also had a clear and focused idea of what constitutes FfPu in NQABNs, from their Preceptor perspective. Again they described it in terms of four dimensions each with higher percentages of variance than those recorded by Preceptors, with the exception of the fourth dimension. For Sisters, the most important dimension of FfPu was 'Delivery of Cost Effective Nursing Care (25.4% variance) by NQABNs. The least important dimension was 'Enable Effective Communication to Enhance Patient Safety & Well Being (10.27%)

DoN, described NQABNs FfPu in nine dimensions of fitness. The most important dimension was the their ability to 'Enable Patients to Meet Their Physical and Physiological Needs Within A Programme of Nursing Care' (17.45

% variance) and the least important was 'Research & Use of Information Technology to Support Practice' (5.01% variance). The high percentage of variance explained by the top four dimensions in each assessment indicate their particularly importance.

It will be noted that it is the clinical based grades whose principal factors/dimensions achieved the highest variance and the NQABNs the least. Yet each of the four is above the 10% threshold set by hard line factor analysts as the minimum level required for a dimension to be considered a psychological construct.

Dimension Number	Newly Qualified Physiotherapists	Clinical Supervisors	Physiotherapy Services Mangers	Heads of Trust Wide Physiotherapy Services
1	Clinically Effective Physiotherapy (14.31%)	Planning, Implementing and Evaluating Physiotherapy (14.77%)	Clinically Effective Physiotherapy (20.04%)	Patient Equity in the Context of Practice (21.52%)
2	Frameworks, Legislation and Policies Related to Physiotherapy Practice (10.62%)	Evidence Based Physiotherapy (14.22%)	Issues that Affect Physiotherapy Practice (19.87%)	Clinically Effective Physiotherapy (14.51%)
3	Application of Physiotherapy Practice (8.56%)	Managing Oneself and Working With Others (13.04%)	Patient Rights & Service Equity (19.34%)	Duty of Care to Patients (13.72%)
4	Continuing Professional Development (7.99%)	Adapting Physiotherapy Practice (10.16%)	Application of Physiotherapy Practice (18.21%)	Evidence Based Physiotherapy (11.48%)
5	Enabling Individuals and Groups to Optimise Their Health and Social Well Being (7.34%)	Continuing Professional Development (9.76%)		Range of Physiotherapeutic and or Medical Interventions (10.36%)
6	Clinical Decision Making (6.20%)	Service Equality & Patient Rights (8.44%)		Continuing Professional Development (7.87%)
7	Service Equity & Patients Rights (5.84%)			

In each analysis the next and unreported dimension had an eigen value less than 1.1 and could not be distinguished on the corresponding 'scree plot' of factorial scree (Child 1970).

Table 25 Dimensions of Fitness For Purpose and Associated Percentage of Variance for Four Physiotherapy Assessor Groups

Physiotherapy.

As with nursing a factor analysis was undertaken for each of the four groups of assessors (1997 & 1998 data combined). In respect of NQPs, seven dimensions were generated which described, in descending order of importance, the self perceived notion of FfPu. The most important was to be clinically effective hence 'Clinically Effective Physiotherapy' (14.31% variance). The second most important dimension was 'Frameworks, Legislation and Policies Related to Physiotherapy Practice' (10.62% variance). The seventh and least important, based on lowest percentage of variance, was 'Service Equity & Patients Rights' (5.84% variance) (Table 25, Appendix 13).

Clinical supervisors described the FfPu of NQPs in six dimensions. The key FfPu activity ability is to plan, implement and evaluate physiotherapy hence 'Planning, Implementing and Evaluating Physiotherapy' (14.77% variance). The least important was 'Service Equality & Patient Rights' (8.44% variance) (Table 25, Appendix 13).

Physiotherapy Services Managers had the clearest and most focused idea of what constitutes FfPu in NQPs. They were able to express this in four dimensions each with a high percentage of variance. The key FfPu activity was the NQPs ability to be clinically effective hence 'Clinically Effective Physiotherapy' (20.04% variance). The least important dimension, but still with a very high variance, was 'Application of Physiotherapy Practice' (18.21% variance).

Heads of Trust Wide Physiotherapy Services described the FfPu of NQPs in terms of 6 dimensions of fitness. The most important dimension was 'Patient Equity in the Context of Practice' (21.52% variance) and the least important, 'Continuing Professional Development' (7.87% variance).

Based on a hierarchy of percentage of variance it will be seen that Heads of physiotherapy (21.52% variance) were most clear about which dimension of fitness best expresses NQPs FfPu. They were closely followed by physiotherapy services managers (20.04% variance), clinical supervisors (14.77% variance) and

finally NQPs (11.70% variance). Each was above the 10% threshold of variance set by hard line factor analysts.

The results show that in nursing it was the Sisters/Charge nurses and Preceptors who had the clearest view of FfPu where NQABNs are concerned. This was based on relatively few descriptive dimensions of FfPu and high percentages of variance. In physiotherapy it was the physiotherapy services Managers and to a lesser extent the Heads of physiotherapy (first four dimension only), who had the clearest perception of FfPu. In both professions the newly qualified were least clear about what constitutes FfPu from their own perspective as shown by the relatively large number of dimensions and low variances. However, NQPs have a shared view with their managers that FfPu is about being clinically effective. No equivalent correlation could be found for NQABNs.

3.1.2. Conclusion

The most important dimensions of FfPu from the perspective of four groups of nursing assessors were: Sisters/Charge nurses-‘Cost Effective Nursing Care’ (20.40% variance); Clinical Preceptors-‘Practice Within the Scope and Current Limitations of Nursing Practice’ (22.08% variance); DoN-‘Enabling Patients to Meet Their Physical and Physiological Needs Within A Programme of Nursing Care’ (17.45% variance) and NQABNs-‘Adapting Nursing Practice’ (11.67% variance).

The most important physiotherapy dimensions of FfPu from the perspective of four groups of physiotherapy assessors were: HTWPS-‘Patient Equity in the Context of Practice’ (21.52% variance); Physiotherapy Services Managers-‘Clinically Effective Physiotherapy’ (20.04% variance); Clinical Supervisors-‘Planning, Implementing and Evaluating Physiotherapy’ (14.77% variance) and NQPs-‘Clinically Effective Physiotherapy’ (14.31% variance).

FfPu hierarchy patterns differ between the professions. NQABNs & NQPs self rated their FfPu dimension least confidently. All principal dimensions of FfPu were rated above the 10% variance threshold minimum.

3.2 Mean Fitness for Purpose Per Dimension

3.2.0 Introduction.

The effectiveness theme contains four parts. Part two contains the highest and lowest mean percentages of FfPu, per dimensions of FfPu, attributed to NQABNs & NQPs per university of origin (Table 26). It also identifies those dimensions of FfPu which DoN rated newly qualified nurses educated at universities in the study Consortium/Confederation below a Service approved 50% FfPu threshold.

In order not to identify contributor universities, all are anonymized through the use of randomly selected letters.

	Effectiveness	Cost	Cost-Effectiveness
Results	1 Dimensions of Fitness for Purpose. 2 Mean Fitness for Purpose Per Dimension. 3 Overall Weighted Mean Fitness for Purpose. 4 Estimates of Relative Importance of Learning and Performance Outcomes.	5 Financial Returns	6 Cost Per Category of Qualified Nursing and Physiotherapy Students Student and Fit for Purpose Employees

Table 26 Thesis plan for analysis of effectiveness, cost and cost-effectiveness: chapter 3 results 2, mean percentage of fitness for purpose per dimension of fitness for purpose.

3.2.1 Mean percentage of fitness for purpose per dimensions of fitness for purpose.

The mean percentage of FfPu per university for NQABNs and NQPs was calculated twelve times each for nurses and physiotherapists i.e. four groups of assessors for each of the three university providers. Appendix 18 contains dimension names, calculated mean percentage of fitness for purpose and

associated standard deviation per dimension per university for all four categories of assessors for 1997/1998 data combined. Appendix 19 contains the same information for physiotherapists.

Nursing and physiotherapy results are presented in tabular form per anonymised university (column 1). (Tables 27-30 nursing & 32-35 physiotherapy). For each university the total number of FfPu dimensions identified by factor analysis is reported (column 2). The dimension which recorded the highest mean percentage of FfPu is located in column 3 e.g. 'Contribute to the Physiological and Psychological Well Being of Patients' (86.14%). Also in this column is its rank order position e.g. 5th out of 10. The dimension with the lowest mean percentage of FfPu is located in column 4 e.g. 'Effective Communication' (63.04%) along with its rank order position e.g. 8th out of 10. The mean range between highest & lowest mean percentage of FfPu, is located in column 5. For access they are presented opposite to the narrative to which each relates.

The fewer the dimensions of FfPu and the higher the percentage of variance of each the more clear and confident was each group of assessors about what constitutes FfPu in NQABNs & NQPs. Ideally, only one dimension of FfPu, with a very high percentage of variance, for each assessment group, would exist. The nearer to the ideal the greater the clarity of FfPu for each assessment group.

Nursing

A 50% FfPu threshold was applied to each cohort of students' dimensions of mean percentage of FfPu. Cohorts who scored 50% and above were considered fit for purpose on that dimension. The NAG confirmed the appropriateness of this threshold because a 40% threshold, the minimum level for FfA & FfPr (Education), for HE diplomas and degrees, was considered inappropriate, as it indicated that practising NQABNs could, potentially be, less than half fit for purpose. The NAG felt that all NQABNs should be at least 50% fit on all dimensions. The same decision, and for the same reasons, was reached by the PAG.

Column 1	Column 2	Column 3	Column 4	Column 5 Col 3-Col 4
Cohort and University of Origin	Total Number of FFPu Dimensions	Dimension Number, Label and <u>Highest</u> Mean Percentage of Fitness for Purpose	Dimension Number, Label and <u>Lowest</u> Mean Percentage of Fitness for Purpose	Mean Range
October 1997 & April 1998 Data Combined				
R		5/10 Contribute to the Physiological and Psychological Well Being of Patients 85.55%	1/10 Adapting Nursing Practice 66.93%	18.62%
T	10	5/10 Contribute to the Physiological and Psychological Well Being of Patients 86.14%	8/10 Effective Communication 65.04%	21.1%
V		5/10 Contribute to the Physiological and Psychological Well Being of Patients 85.81%	8/10 Effective Communication 63.04%	22.77%
		Difference - Contribute to the Physiological and Psychological Well Being of Patients 0.59%	Difference Effective Communication	1.67%

Table 27 Nursing: Newly qualified, self-assessment, highest and lowest mean percentage of fitness for purpose and range difference.

Newly Qualified Nurses; Self-Assessment.

Number of Dimensions.

The number of common dimensions expressing FfPu was large at 10 (Column 2) (Table 27).

Highest Mean Percentage of Fitness.

The 5th most important dimension of FfPu out of 10 for all three universities was labelled 'Contribute to the Physiological and Psychological Well Being of Patients' (Column 3). All three universities highest mean percentage of FfPu on this dimension was close: 'R' 85.55%, 'V' 85.81% and 'T' 86.14% (difference 0.59%).

Lowest Mean Percentage of Fitness.

There was no consistent agreement as to which FfPu dimension the NQABNs perceived themselves as performing worst at. For university 'R' it was the most important dimension- 'Adapting Nursing Practice'. For 'T' and 'V' it was, - 'Effective Communication' the 8th most important dimension (Column 4). Two universities lowest mean percentage of FfPu, on this dimension, were close: 'V' 63.04% & 'T' 65.04% (difference 1.67%).

Highest – lowest mean percentage of FfPu: range difference

The difference between the highest and lowest mean percentage of FfPu was large for each of the three universities: 'R' 18.62%, 'T' 21.1% & 'V' 22.77% (Column 5) (difference 4.15%).

Column 1	Column 2	Column 3	Column 4	Column 5 Col 3-Col 4
Cohort and University of Origin	Total Number of FfPu Dimensions	Dimension Number, Label and <u>Highest</u> Mean Percentage of Fitness for Purpose	Dimension Number, Label and <u>Lowest</u> Mean Percentage of Fitness for Purpose	Mean Range
October 1997 & April 1998 Combined				
R		1/4 Practice Within the Recognized Scope and Current Limitations of Nursing Practice 71.69%	3/4 Evidence Based Nursing Care 62.38%	9.31%
T	4	1/4 Practice Within the Recognized Scope and Current Limitations of Nursing Practice 70.48%	3/4 Evidence Based Nursing Care 59.65%	10.83%
V		1/4 Practice Within the Recognized Scope and Current Limitations of Nursing Practice 70.11%	3/4 Evidence Based Nursing Care 57.55%	12.56%
		Difference- Practice Within the Recognized Scope and Current Limitations of Nursing Practice 1.58%	Difference Evidence Based Nursing Care	3.25%

Table 28 Nursing: Clinical preceptors, assessment of newly qualified adult branch nurses; highest and lowest mean percentage of fitness for purpose and range difference.

Clinical Preceptors.

Number of Dimensions.

The number of dimensions expressing FfPu was 4 (column 2 -table 28).

Highest Mean Percentage of Fitness.

NQABNs best performance for all three universities according to their Preceptors was on the most important dimension 'Practice Within the Recognised Scope and Limitations of Nursing Practice' (column 3). All three universities highest mean percentage of FfPu on this dimension was close: 'V' 70.11%, 'T' 70.48% & 'R' 71.69% (difference 1.58%).

Lowest Mean Percentage of Fitness.

For all three universities, 'Evidence Based Nursing Care' was the 3rd most important FfPu dimension they all performed least well at (column 4). The lowest mean percentage of FfPu was close: 'V' 57.55%, 'T' 59.65% & 'R' 62.38% (difference 4.83%). The pattern of university rank order for lowest and highest was duplicated: V, T & R.

Highest – lowest mean percentage of FfPu: range difference.

The difference between the highest and lowest mean percentage of FfPu was large for each of the three universities: 'R' 9.31%, 'T' 10.83% & 'V' 12.56% (Column 5). Difference 3.25%. The pattern of university rank orders for lowest minus highest range difference were duplicated: V, T & R.

Column 1	Column 2	Column 3	Column 4	Column 5 Col 3-Col 4
Cohort and University of Origin	Total Number of FfPu Dimensions	Dimension Number, Label and <u>Highest</u> Mean Percentage of Fitness for Purpose	Dimension Number, Label and <u>Lowest</u> Mean Percentage of Fitness for Purpose	Mean Range
October 1997 & April 1998 Combined				
R		2/4 Enabling Patients to Meet Their Physical, Physiological and Psychological Needs 70.07%	1/4 Delivery of Cost Effective Nursing Care 57.17%	12.9%
T	4	2/4 Enabling Patients to Meet Their Physical, Physiological and Psychological Needs 69.46%	1/4 Delivery of Cost Effective Nursing Care 57.68%%%	11.78%
V		2/4 Enabling Patients to Meet Their Physical, Physiological and Psychological Needs 70.36%	1/4 Delivery of Cost Effective Nursing Care 58.85%	11.51%
		Difference Enabling Patients to Meet Their Physical, Physiological and Psychological Needs 0.9%	Difference Delivery of Cost Effective Nursing Care	1.39%

Table 29 Nursing: Sisters/charge nurses; highest and lowest mean percentage of fitness for purpose and range difference.

Sisters/Charge Nurses.

Number of Dimensions.

The number of dimensions expressing FfPu was 4 (Column 2 table 29).

Highest Mean Percentage of Fitness.

NQABNs best performance for all three universities according to their Sisters/Charge nurses was on the 2nd most important FfPu dimension 'Enabling Patients to Meet Their Physical, Physiological and Psychological Needs' (Column 3). All three universities highest mean percentage of FfPu on this dimension was close: 'T' 69.46% & 'R' 70.07% & 'V' 70.36% (difference 0.9%).

Lowest Mean Percentage of Fitness.

NQABNs worst performance for all three universities according to their Sisters/Charge nurses was on the most important FfPu dimension 'Delivery of Cost Effective Nursing Care' (Column 4). All three universities lowest mean percentage of FfPu on this dimension was close: 'R' 57.17% & 'T' 57.68% & 'V' 58.85% (difference 1.68%).

Highest – lowest mean percentage of FfPu: range difference

The difference between the highest and lowest mean percentage of FfPu was large for each of the three universities: 'V' 11.51%, 'T' 11.78% & 'R' 12.9% (Column 5) (difference 1.39%).

Column 1	Column 2	Column 3	Column 4	Column 5 Col 3-Col 4
Cohort and University of Origin	Total Number of FFPu Dimensions	Dimension Number, Label and <u>Highest</u> Mean Percentage of Fitness for Purpose	Dimension Number, Label and <u>Lowest</u> Mean Percentage of Fitness for Purpose	Mean Range
October 1997 & April 1998 Combined				
R	9	6/9 Contribute to Well Being of Patients 63.5%	3/9 Patient Protection 45.88%	17.62%
T		6/9 Contribute to Well Being of Patients 62.77%	3/9 Patient Protection 50%	12.77%
V		8/9 Evidence Based Nursing Care 62.5%	3/9 Patient Protection 45.18%	17.32%
		Difference Contribute to Well Being of Patients 0.73%	Difference Patient Protection	4.85%

Table 30 Nursing: Directors of nursing, assessment of newly qualified adult branch nurses, highest and lowest mean percentage of fitness for purpose and range difference.

Directors of Nursing.

Highest Mean Percentage of Fitness (Local).

The number of dimensions expressing FfPu was 9 (Column 2 table 30).

Highest Mean Percentage of Fitness (Local).

NQABNs best performance for universities 'T' (62.77%) & 'R' (63.5%) according to DoN, was on the 6th most important FfPu dimension 'Contribute to Well Being of Patients' (Column 3). University 'V' highest mean percentage of FfPu was on the 8th most important dimension 'Evidence Based Nursing Care' (62.5%). Universities 'R' and 'T's mean percentages of FfPu difference were close 0.73%.

Lowest Mean Percentage of Fitness (Local).

NQABNs worst performance for all three universities according to their DoN, was on the 3rd important FfPu dimension 'Patient Protection' (Column 4). All three universities lowest mean percentage of FfPu on this dimension was close: 'V' 45.18%, 'R' 45.88 % & 'T' 50.00% (difference 4.8%). NQABNs from universities 'V' & 'R' scored below the NAG approved FfPu threshold of 50%.

Highest – lowest mean percentage of FfPu (England).

The difference between the highest and lowest mean percentage of FfPu was large for each of the three universities: 'T' 12.77%, 'V' 17.32% & 'R' 17.62% (Column 5) (difference 4.85%).

Column 1	Column 2	Column 3	Column 4	Column 5
Category of Directors of Nursing	Dimension Number	Dimension Label	Percentage of Variance	Mean Percentage of Fitness for Purpose
October 1997 & April 1998 Combined A,B,C,D. Local	2nd out of 7	Adapting Nursing Practice	8.5%	46.39%
	5th out of 7	Delivery of Safe Care Within Resource	6.82%	46.94%
October 1997 and April 1998 qualifiers, from two or more universities in study area. A&C Local	2nd out of 9	Health and Safety in the Workplace	14.42%*	'R' 47.2%
	3rd out of 9	Patient Protection	12.65%*	'T' 47.2% 'V' 47.2%
October 1997 & April 1998 Newly Qualified (NHS Trusts who Employed Nurses from a Single University in study area B & D. Local	4th out of 9	Deliver care within resource	10.31%*	48.5%
	5th out of 9	Enabling Care to Adapt Patient Need	8.6%	49.50%
	6th out of 9	Management of Quality and Information	7.87%	47.70%
	8th out of 9	Enable Informed Care in a Safe Environment	5.88%	49.5%
8 NHS Regions of England	2nd out of 10	Standard Led Nursing Care	11.17%*	47.12%
	4th of 10	Optimize Health and Social Well Being	8.48%	48.86%
	5th out of 10	Delivery & Adaptation of Safe care Within Resource	7.89%	43.14%
	6th out of 10	Enabling Patients to Maximize their Comfort and Mobility Through the Nursing Process	6.22%	31.23%
	9th out of 10	Manage Information and Use Information Technology	4.12%	49.33%
	35 Dimensions	13 Dimensions		

* Percentage of variance 10% or above.

Table 31 Dimensions of fitness for purpose that newly qualified adult branch nurses were perceived by Directors of Nursing not to have reached the threshold of fifty per cent fit for purpose.

Lowest mean percentage of FfPu all categories of director of nursing assessors.

Directors of Nursing assessed NQABNs who qualified from study consortium universities. The Directors comprised of two groups. Those whose Trusts had employed NQABNs from two or more universities in the study Consortium and those that had not. The first group (23) could make relative judgements the second (20) absolute. Because the number of DoN was small it was decided to increase the survey population, for comparative purposes, to include one in three of DoN from appropriate NHS Trusts in England, who employed newly qualified nurses. The total number of these directors was 63. Categories of surveyed DoN appear in column 1 (table 31). Column 2 contains, for each grouping of DoN, the total number of dimensions identified in their factor analysis and the rank order number of the dimensions below the 50% FfPu threshold. Column 3 contains the associated dimension name. The percentage of variance awarded to each dimension is in column 4. Finally, the mean percentage of FfPu for each dimension is in column 5 (Table 31).

The results show that out of a possible 25 dimensions applicable to Directors who employed NQABNs from universities in the study Consortium, NQABNs were rated at below the 50% FfP threshold on 8 dimensions (Table 31). Of the 10 dimensions identified by the 63 Directors of Nursing covering the 8 NHS Regions of England, 5 dimensions recorded FfPu percentages below the 50% FfPu threshold with the lowest 31.23% located on 'Enabling Patients to Maximise Their Comfort and Mobility Through the Nursing Process'. Some dimensions of FfPu below the 50% FfPu threshold were shared between Directors.

Of the 13 (8 plus 5) dimensions at which Directors assessed the newly qualified not to be fit, five recurrent themes emerged; cost-effectiveness, adapting nursing practice, management, supporting and protecting patients, and health and safety in the workplace. Specifically, for each of the five:

- **Cost-effectiveness:**

'Deliver Care Within Resource' (48.5%), 'Cost-Effective Nursing Care' (43.82%), 'Delivery of Safe Care Within Resource' (46.94%) and 'Delivery and Adaptation of Safe Care Within Resource' (43.14%).

- **Adapting Nursing Practice:**

'Enabling Care to Adapt Patient Need' (49.5%), Adapting Nursing Practice (46.39%); and 'Delivery and Adaptation of Safe Care Within Resource' (43.14%).

- **Management:**

'Manage Information and Use Information Technology' (49.33%) and 'Management of Quality and Information' (47.70%).

- **Patient Protection:**

'Patient Protection' (45.88%) and 'Patient Protection' (45.18%).

- **Health and Safety in the Workplace:**

'Health and Safety in the Workplace' (47.9%). and 'Enabling Informed Care in a Safe Environment' (49.5%). It should be noted that two of the four cost-effectiveness dimensions include aspects of health and safety.

Column 1	Column 2	Column 3	Column 4	Column 5 Col 3-Col 4
Cohort and University of Origin	Total Number of FfPu Dimensions	Dimension Number, Label and <u>Highest</u> Mean Percentage of Fitness for Purpose	Dimension Number, Label and <u>Lowest</u> Mean Percentage of Fitness for Purpose	Mean Range
July 1997 & July 1998 Combined				
H		7/7 Service Equity and Patient Rights 82.65%	2/7 Frameworks, Legislation and Policies Related to Physiotherapy Practice 67.71%	14.94%
J	7	7/7 Service Equity and Patient Rights 85.83%	2/7 Frameworks, Legislation and Policies Related to Physiotherapy Practice 64.21%	21.62%
L		7/7 Service Equity and Patient Rights 83.71%	2/7 Frameworks, Legislation and Policies Related to Physiotherapy Practice 63.37%	20.34%
		Difference Service Equity and Patient Rights 3.18%	Difference Frameworks, Legislation and Policies Related to Physiotherapy Practice	6.68%

Table 32 Physiotherapy: Newly qualified, self-assessment, highest and lowest mean percentage of fitness for purpose and range difference.

Physiotherapy.

The column descriptors used in nursing on tables 27-30 inclusive are appropriate to physiotherapy.

Newly Qualified Physiotherapists; Self-Assessment.

Number of Dimensions.

The number of common dimensions expressing FfPu was large at 7-10 (Column 2) (Table 32).

Highest Mean Percentage of Fitness.

The 7th and least most important dimension of FfPu for all three universities was labelled 'Service Equity & Patients Rights' (Column 3). All three universities highest mean percentage of FfPu on this dimension was close: 'H' 82.65%, 'L' 83.71% & 'J' 85.83% (difference 3.18%).

Lowest Mean Percentage of Fitness.

There was consistent agreement that it was the 2nd most important FfPu dimension that the NQABNs perceived themselves as performing worst at; 'Frameworks, Legislation and Policies Related to Physiotherapy Practice' (Column 4). All three universities lowest mean percentage of FfPu was close: 'L' 63.87% & 'J' 64.21% & 'H' 67.71% (Difference 3.84%).

Highest – lowest mean percentage of FfPu: range difference.

The difference between the highest and lowest mean percentage of FfPu was large for each of the three universities: 'H' 14.94%, 'L' 20.34% & 'J' 21.62% (Column 5) (difference 6.71%).

Column 1	Column 2	Column 3	Column 4	Column 5 Col 3-Col 4
Cohort and University of Origin	Total Number of FfPu Dimensions	Dimension Number, Label and <u>Highest</u> Mean Percentage of Fitness for Purpose	Dimension Number, Label and <u>Lowest</u> Mean Percentage of Fitness for Purpose	Mean Range
July 1997 & April 1998 Combined				
H		6 Service Equity and Patient Rights 78.52%	2 Evidence Based Physiotherapy 65.11%	13.41%
J	6	6 Service Equity and Patient Rights 77.56%	2 Evidence Based Physiotherapy 62.44%	15.12%
L		6 Service Equity and Patient Rights 79.14%	2 Evidence Based Physiotherapy 62.01%	17.13%
		Difference Equity and Patient Rights 1.58%	Difference Evidence Based Physiotherapy	3.72%

Table 33 Physiotherapy: Clinical supervisors, assessment of newly qualified physiotherapists, highest and lowest mean percentage of fitness for purpose and range difference.

Clinical Supervisors Assessment.

Number of Dimensions.

The number of dimensions expressing FfPu was 6 (column 2 -table 33).

Highest Mean Percentage of Fitness.

NQPs best performance for all three universities according to their supervisors was on the 6th most important FfPu dimension 'Service Equity & Patient Rights' (column 3). All three universities highest mean percentage of FfPu on this dimension was close: 'J' 77.56%, 'H' 78.52% & 'L' 79.14% (difference 1.58 %).

Lowest Mean Percentage of Fitness.

For all three universities, 'Evidence Based Physiotherapy', the 2nd most important FfPu dimension was the one they all performed less well at (column 4). All three universities lowest mean percentage of FfPu was close: 'L' 62.01%, 'J' 62.44% & 'H' 65.11% (difference 3.1%).

Highest – lowest mean percentage of FfPu: range difference.

The difference between the highest and lowest mean percentage of FfPu was large for each of the three universities: 'H' 13.14%, 'J' 15.12% & 'L' 17.13% (Column 5) (difference 3.99%).

Column 1	Column 2	Column 3	Column 4	Column 5 Col 3-Col 4
Cohort and University of Origin	Total Number of FfPu Dimensions	Dimension Number, Label and <u>Highest</u> Mean Percentage of Fitness for Purpose	Dimension Number, Label and <u>Lowest</u> Mean Percentage of Fitness for Purpose	Mean Range
July 1997 & July 1998 Combined				
H		3/4 Patient Rights & Service Equity 73.33%	2/4 Issues Affecting Physiotherapy Practice 63.17%	10.16%
J	4	3/4 Patient Rights & Service Equity 66.23%	2/4 Issues Affecting Physiotherapy Practice 58.90%	7.33%
L		3/4 Patient Rights & Service Equity 71.50%	2/4 Issues Affecting Physiotherapy Practice 63.54%	7.96%
		Difference Patient Rights & Service Equity 7.1%	Difference Issues Affecting Physiotherapy Practice	2.83%

Table 34 Physiotherapy services managers, assessment of newly qualified physiotherapists; highest and lowest mean percentage of fitness for purpose and range difference.

Physiotherapy Services Managers.

Number of Dimensions.

The number of dimensions expressing FfPu was 4 (Column 2 table 34).

Highest Mean Percentage of Fitness.

NQPs best performance for all three universities according to their service managers was on the 3rd most important FfPu dimension 'Patients Rights & Service Equity' (Column 3). All three universities highest mean percentage of FfPu on this dimension was close: 'J' 66.23% & 'L' 71.51% & 'H' 73.33% (difference 0.7.1%).

Lowest Mean Percentage of Fitness.

NQPs worst performance for all three universities according to their service managers was on the 2nd most important FfPu dimension 'Issues Affecting Physiotherapy Practice' (Column 4). All three universities lowest mean percentage of FfPu on this dimension was close: 'J' 58.90% & 'H' 63.17% & 'L' 63.54% (difference 4.64%).

Highest – lowest mean percentage of FfPu: range difference

The difference between the highest and lowest mean percentage of FfPu was large for each of the three universities: 'J' 7.33%, 'L' 7.96% & 'H' 10.16% (Column 5) (difference 2.83%).

Column 1	Column 2	Column 3	Column 4	Column 5 Col 3-Col 4
Cohort and University of Origin	Total Number of FfPu Dimensions	Dimension Number, Label and <u>Highest</u> Mean Percentage of Fitness for Purpose	Dimension Number, Label and <u>Lowest</u> Mean Percentage of Fitness for Purpose	Mean Range
July 1997 & July 1998 Combined				
H		6/6 Continuing Professional Development 67.77%	4/6 Evidence Based Physiotherapy 55.46%	12.31%
J	6	6/6 Continuing Professional Development 66.21%	4/6 Evidence Based Physiotherapy 54.09%	12.12%
L		6/6 Continuing Professional Development 66.47%	4/6 Evidence Based Physiotherapy 55.37%	11.1%
		Difference Continuing Professional Development 1.56	Difference Evidence Based Physiotherapy	1.21%

Table 35 Physiotherapy: Heads of Trust physiotherapy services, assessment of newly qualified physiotherapists, highest and lowest mean fitness for purpose.

Heads of Trust Wide Physiotherapy Services.

Number of Dimensions.

The number of dimensions expressing FfPu was 6 (Column 2 table 35).

Highest Mean Percentage of Fitness.

NQPs best performance for all three universities according to their Heads of service was on the 6th & least important FfPu dimension 'Continuing Professional Development' (Column 3). All three universities highest mean percentage of FfPu on this dimension was close: 'J' 66.21% & 'L' 66.47% & 'H' 67.77% (difference 1.56%).

Lowest Mean Percentage of Fitness.

NQPs worst performance for all three universities according to their service managers was on the 4th most important FfPu dimension 'Evidence Based Physiotherapy' (Column 4). All three universities lowest mean percentage of FfPu on this dimension was close: 'L' 55.37% & 'J' 54.09% & 'H' 55.46% (difference 0.09%).

Highest – lowest mean percentage of FfPu: range difference

The difference between the highest and lowest mean percentage of FfPu was large for each of the three universities: 'L' 11.1%, 'J' 12.12 % & 'H' 12.31% (Column 5) (difference 1.21%).

Similar to nursing, the results revealed that the NQPs who self-assessed, and the supervisors and clinical managers who assessed them found them to be fit for purpose on each and every one of their own identified dimensions respectively. Unlike DoN, however, Heads of Trust wide physiotherapy services assessed the newly qualified to be fit on all their dimensions. This finding is consistent with

the North West Regional Health Authority (1995) where managers reported that NQPs were competent for their first post.

3.2.2 Conclusion.

Based on the highest and lowest mean percentages of FfPu there is a sliding scale assessor group. The NQABNs rated themselves highest followed by clinical Preceptors, Sisters' Charge Nurses and Directors of Nursing.

Although the NQABNs perceive themselves to be at the top of the FfPu scale having awarded themselves the highest mean percentage of FfPu this was on the largest number of dimensions (10) which suggest a lack of their clarity about what constitutes FfPu for them.

Preceptors and Sister's rated the NQABNs less fit than the newly qualified rated themselves and on fewer dimensions i.e. 4 as opposed to 10. It would seem, therefore, that these two groups have a clear perception of what constitutes FfPu in NQABNs. Of the two, the Sister's recorded the highest return rate (72%) of completed questionnaires and had the highest percentages of variance. Consequently, they may be the most appropriate assessment group (Table 21).

Directors of nursing, like the NQABNs, identified a large number of dimensions but unlike them, rated their FfPu performance lower. This might suggest that DoN may have a more sophisticated view of FfPu from their strategic perspective. Alternatively, it may be due to the small NQABN sample size. Alternatively, and least likely, they may be great divergence of perception among DoN as to what constitutes FfPu in NQABNs. However, this overall trend across groups of clinical and senior managerial staff categories is consistent with the findings of Trostie (1993; 1993a) and Benner and Benner (1979) (Background Part 2; Benefit Estimation).

All categories of DoN rated the newly qualified less fit than did the other three groups of assessors. In respect of Directors who assessed NQABNs from universities covered by the study Consortium in eight of the 25 dimensions i.e.

32%, rated NQABNs as not fit for purpose being below the 50% threshold; but many were very close to it.

The dimension NQABNs covered by the eight NHS Regions in England performed worst at was 'Enabling Patients to Maximize their Comfort and Mobility Through the Nursing Process' (31.32% mean percentage of FfPu).

Five, below the 50% FfPu threshold, themes emerged: cost-effectiveness, adapting nursing practice, management, patient protection, and health and safety in the workplace.

All four groups of physiotherapists assessed the NQPs to be FfPu on their own dimensions. As with nursing, and based on the highest and lowest mean percentage of fitness, there is a sliding scale of fitness. The newly qualified perceive them-selves to be at the top of this scale as reflected by them scoring the highest mean percentage of FfPu out of the four groups of assessors.

Clinical supervisors rated the newly qualified as less fit than the newly qualified rated themselves and on 6 dimensions. Physiotherapy managers rated the newly qualified as less fit than the Supervisors rated them on the fewest number dimensions, four. Heads of physiotherapy services rated the NQPs FfPu on six dimensions. It would seem that physiotherapy services Managers have the clearest notion of what constitutes FfPu.

Physiotherapy Managers and the Sisters/Charge nurses can be considered to have the clearest vision of FfPu for physiotherapy and nursing respectively based on fewest dimensions and highest percentage of variance. Heads of physiotherapy, unlike their DoN equivalents, did not find the NQPs unfit on any dimensions.

3.3 Overall Weighted Mean Fitness for Purpose

3.3.0 Introduction.

Of the four parts of results on the theme of effectiveness, part three contains the results of the overall weighted mean percentage of FfPu per profession, per category of assessor and per university (Table 36).

	Effectiveness	Cost	Cost-Effectiveness
Results	1 Dimensions of Fitness for Purpose. 2 Mean Fitness for Purpose Per Dimension. 3 Overall Weighted Mean Fitness for Purpose. 4 Estimates of Relative Importance of Learning and Performance Outcomes.	5 Financial Returns	6 Cost Per Category of Qualified Nursing and Physiotherapy Student and Fit for Purpose Employee

Table 36 Thesis plan for analysis of effectiveness, cost and cost-effectiveness: chapter 3 results 3, overall weighted mean percentage of fitness for purpose.

3.3.1 Cohort overall weighted mean percentage of fitness for purpose

The natural unit of measurement generated was the overall weighted mean percentage of fitness for purpose (OWM%FfPu). This overall percentage is needed, along with a measure of costs, for the economic analysis to be undertaken. Two sets of OWM%FfPu was calculated, one each for nursing and one for physiotherapy. Each set comprised 12 separate percentages. In nursing this consisted of all three clinical groups and Directors of nursing, who employed the NQABNs from three universities in the study area (4 x 3 = 12). In physiotherapy the four equivalent groups assessed qualifiers from three study area universities.

In other words, the (OWM%FfPu) gives equal weight to each type of assessor. But because the numbers of NQABNs, Supervisors, Sisters/Charge nurses

Categories	R	T	V	Mean	Significance	Differences between highest & lowest OWM%FFPa 95% confidence intervals
Newly Qualified	75.20%	74.71%	73.24%	74.35%	.548	1.96% difference (-2.64% - +6.57%)
Clinical Preceptors	68.32%	66.18%	65.67%	66.71%	.591	2.65% difference (-4.20% - +9.51%)
Sisters/Charge Nurses	63.46%	63.34%	64.53%	63.71%	.850	1.18% difference (-4.34% - +6.71%)
Directors of Nursing A & C	50.87%	52.10%	54.65%	52.57%	*	3.78% difference *

*Not calculated because directors of nursing did not assess individual nurses.

Table 37 Hierarchy of cohort overall weighted mean percentage of fitness for purpose of four groups of nurses and range difference.

	Newly Qualified Adult Branch Nurses	Clinical Preceptors	Sisters/Charge Nurses
Newly Qualified Adult Branch Nurses	X	7.64 (4.4, 10.39)	10.64 (8.03, 13.29)
Clinical Preceptors	X	X	3.00 (0.47, 5.53)

Table 38 Differences and confidence intervals between levels of assessment for nurses.

and DoN varied from 145 (NQABNs) to 23 (DoN) most weight is given to individual DoN, more weight to individual Sisters/Charge nurses, less to individual Preceptors and least to individual NQABNs.

Nursing.

For all three universities the NQABNs self assessed OWM%FFPu was in the range 73.24- 75.20 OWM%FFPu. For Preceptors the range was 65.67%-68.32%. For Sisters'Charge nurses the range was 63.34%-64.53% and DoN it was 50.87%-54.65% (Table 37). To compare FFpu between universities (columns of table 37), we used the Scheffe test (Altman 1991). As the differences were not significant, we constructed confidence intervals from the same Scheffe test. The lack of significance justifies pooling assessments across universities when comparing different levels of assessor.

To compare FFpu between these levels (rows of table 37 excluding the 4th row DoN as they did not assess individual nurses), we again used the Scheffe test. As the differences were highly significant, we used 'least significant differences', (i.e. t test with variances pooled across all assessments) to construct narrower confidence intervals than the more general Scheffe test would have yielded. These results confirm and quantify the substantial differences between levels of assessors (table 38). In short there is strong statistical evidence that FFpu falls as the seniority of the nursing assessor rises.

Physiotherapy.

For all three universities the NQPs OWM%FFPu were in the range 71.16%-74.27%. For supervisors, the range was 67.15%-70.00%. Managers' range scores were 62.30%-68.56% and Heads of service 60.41%-63.58% (Table 39).

To compare FFpu between universities (columns of table 39), we again used the Scheffe test (Altman 1991). As the differences were not significant, we constructed confidence intervals from the same Scheffe test.

Categories	II	J	L	Mean	Significance	Differences between highest & lowest OWM%FTPu 95% confidence intervals
Newly Qualified	74.27%	71.66%	71.16%	72.43%	.301	3.10% difference (-2.1% - +8.39%)
Clinical Supervisors	70.00%	67.89%	67.15%	68.35%	.352	2.85% difference (-2.24% - +7.89%)
Physiotherapy Services Managers	68.56%	62.30%	66.17%	65.68%	.106	6.26% difference (-1.08% - +13.60%)
Heads of Physiotherapy Services	63.58%	60.41%	61.45%	61.81%	*	3.17% difference *

*Not calculated because heads of physiotherapy services did not assess individual physiotherapists.

Table 39 Hierarchy of cohort overall weighted mean percentage of fitness for purpose of four groups of physiotherapists and range difference.

	Newly Qualified Physiotherapists	Clinical Supervisors	Physiotherapy Services Managers
Newly Qualified Physiotherapists	X	4.01 (1.36, 6.66)	6.80 (3.91, 9.69)
Clinical Supervisors	X	X	2.79 (0.05, 5.52)

Table 40 Differences and confidence intervals between levels of assessment for physiotherapists

The lack of significance justifies pooling assessments across universities when comparing different levels of assessor.

To compare FfPu between these levels (rows of table 39, excluding the 4th row Heads of Physiotherapy Services, as they did not assess individual physiotherapists), we again used the Scheffe test. As the differences were highly significant, we used 'least significant differences' (i.e. t test with variances pooled across all assessments) to construct narrower confidence intervals than the more general Scheffe test would have yielded. These results confirm and quantify the substantial differences between levels of assessors (table 40). Again there is strong statistical evidence that FfPu falls as the seniority of the physiotherapy assessor rises.

Nursing and physiotherapy.

Examination of the OWM%FfPu between nursing assessors (Table 37) and the OWM%FfPu between physiotherapy assessors (Table 39) reveals, that NQABNs & NQPs rated themselves the most FfPu of the four groups of assessors, and by similar mean percentages; nursing (74.35%) and physiotherapy (72.43%). Clinical Preceptors and physiotherapy Supervisors rated the NQABNs & NQPs at a lower level, and by similar mean percentages; (66.71%) and (68.35%) respectively. Sisters and physiotherapy Manager levels again rated at a lower level and by similar percentages: (63.71%) and (65.68%) respectively. Finally, DoN and Heads of physiotherapy rated lower than Sisters & physiotherapy Managers but by differing percentages: DoN (52.57%), physiotherapy Heads rated the NQPs at nearly 10% higher (61.81%). This low level of fitness awarded by DoN appears to be consistent with concerns reported in the literature (Storey et al., 1995, University of Manchester 1996; O'Hanlon & Andrews 1997; Runciman et al., 1998; NHS E 1998c & NHS E 1999).

Each OWM%FfPu, per assessor and university, was a measure of outcome effectiveness. It was used along with cost data to calculate the cost per FfPu nursing and physiotherapy student, for each of the four groups of nursing and physiotherapy assessors per university (Methods part 4).

Number of nurses and physiotherapists who did not achieve the 50% threshold of overall weighted mean percentage of fitness for purpose.

The number of nurses and physiotherapists who rated the newly qualified as not having achieved a 50% threshold of overall weighted mean percentage of fitness were calculated. With the NQABNs, who self assessed, only one employee from University 'R' self rated in this way. Clinical Preceptors rated 20 NQABS, from across all three universities, or 12.5% of the total, as below the 50% threshold. No two universities had identical profiles. University 'R' recorded the fewest number 4, of NQABNs below the threshold and 'V' the largest at 9. University 'T' recorded 7.

Sisters recorded a total of 29 or 14.15% of the total number of NQABNs they assessed as below the 50% threshold. As for clinical Preceptors no two universities had identical profiles. 'V', recorded the lowest at 7, 'T' 9 and 'R' the 13. Table 41 & graphs 1 – 3 contain the results.

The number of newly qualified nurses rated below the 50% threshold increased with the seniority of the assessor group.

	R	T	V	Total	Number Assessed	% of total re number assessed
NQABNs	1	0	0	1	145	.7%
Clinical Preceptors	4	7	9	20	160	12.5%
Sisters Charge Nurses	13	9	7	29	205	14.15%

Table 41 Nursing: Total number of nurses who did not achieve the 50% threshold within the overall weighted mean percentage of fitness per university of origin and grade of assessor.

	H	J	L	Total	Number Assessed	% of total re number assessed
NQPs	0	1	1	2	92	1.9%
Clinical Supervisors	1	3	2	6	139	4.32%
Physiotherapy Services Managers	3	4	4	11	97	11.34%

Table 42 Physiotherapy: Total number of physiotherapists who did not achieve the 50% threshold within the overall weighted mean percentage of fitness per university of origin and grade of assessor.

Two NQPs from Universities 'J' & 'L' or 1.9% of the total who self rated were below the 50% FSPu threshold. No NQPs were below the threshold from university 'H'. Clinical supervisors rated 6 NQPs or 4.3% below the 50% threshold. In rank order these were Universities 'J', 'L' and 'H'.

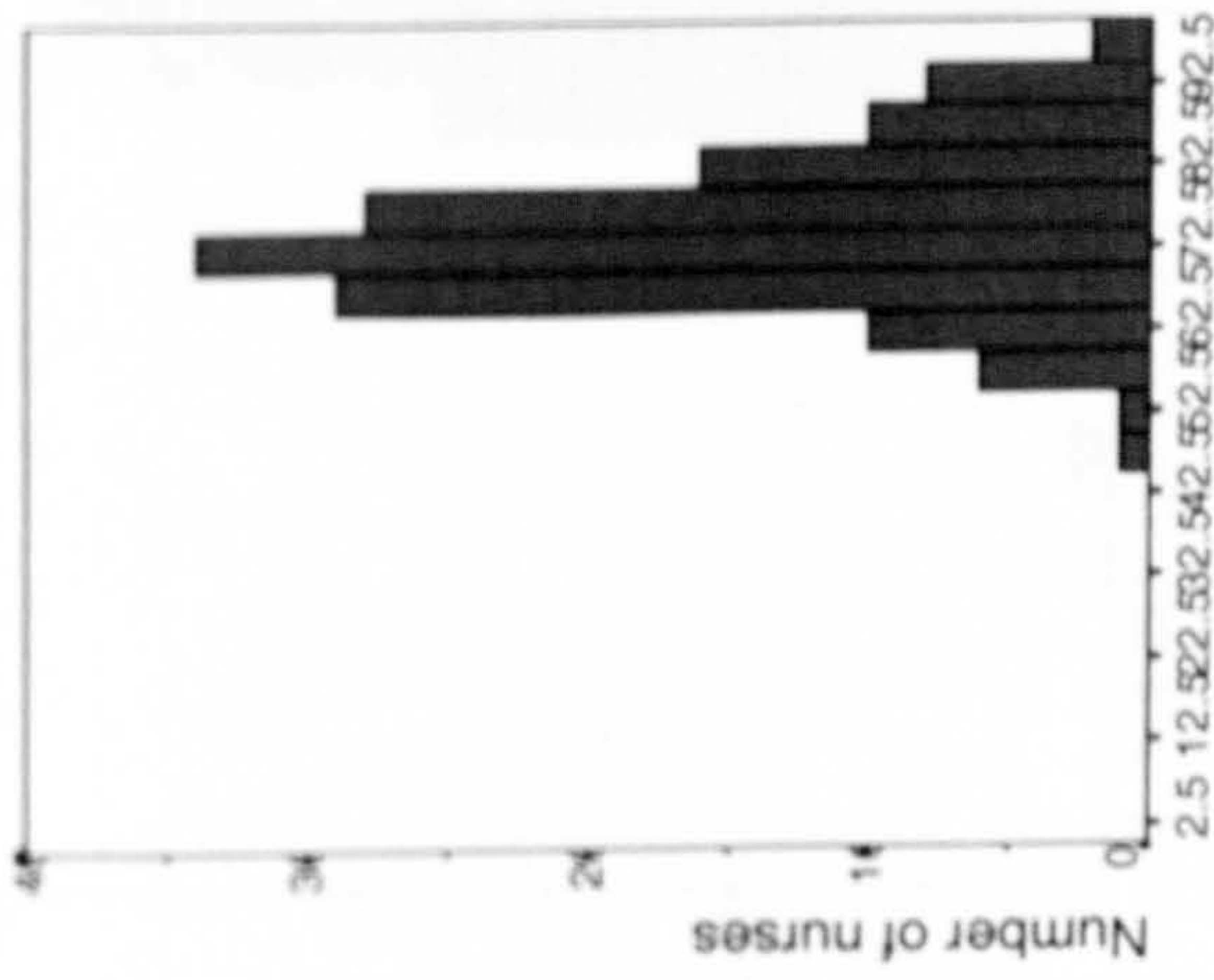
In respect of service managers two universities 'J' & 'L' had identical profiles i.e. 4 NQPs below the threshold. University 'H' recorded the least with 3. Overall, a total of 11 or 11.34% of the total of NQPs assessed were below the 50% threshold. Table 42 and graphs 3 – 6 contain the results.

The number of newly qualified physiotherapists rated below the 50% threshold increased with the seniority of the assessor group.

3.3.2 Conclusion

Although the number of individual NQABNs and NQPs rated at below the 50% threshold of OWM%FSPu increases with the seniority of the assessor a significant majority of NQABNs & NQPs were above the threshold.

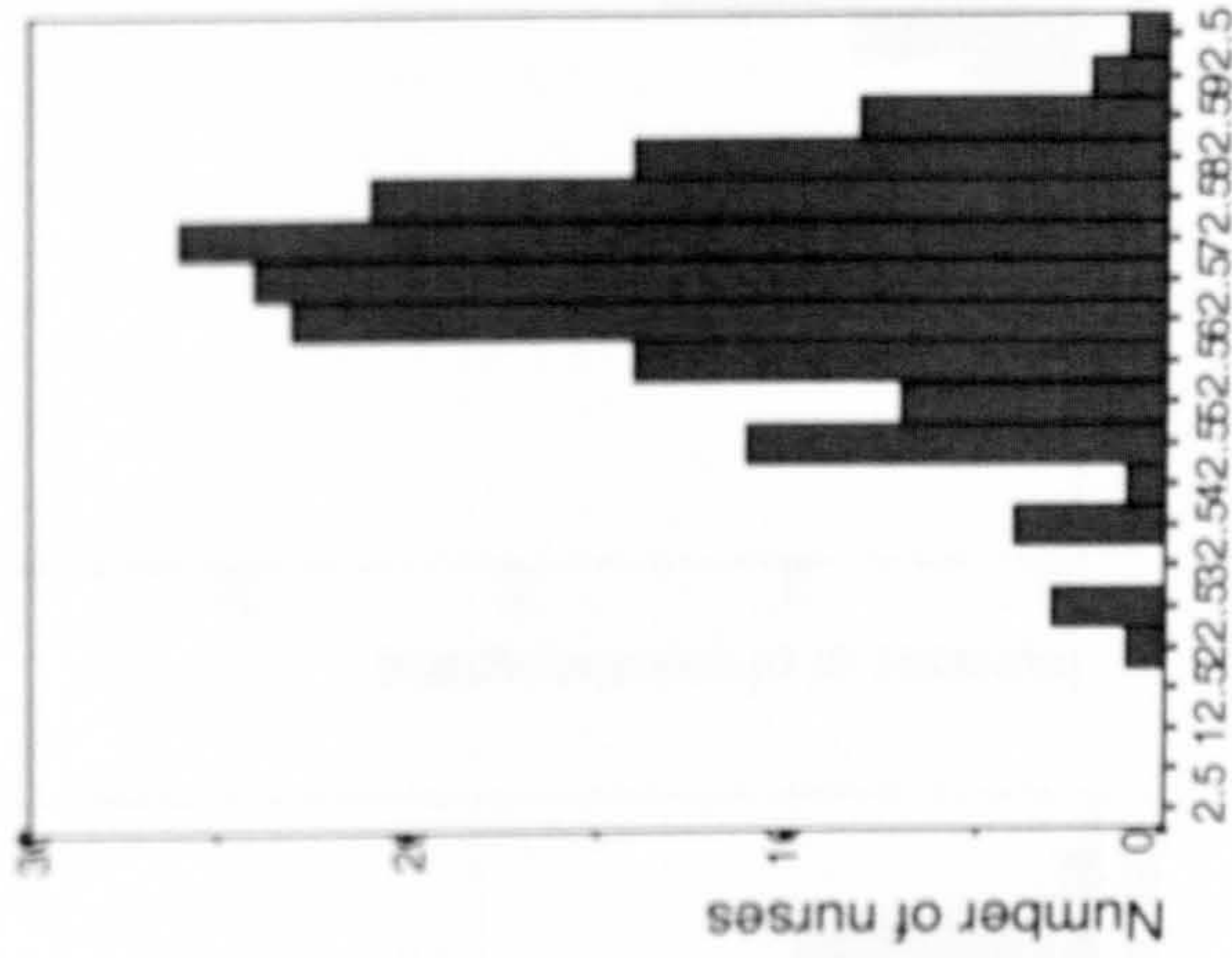
Newly Qualified Nurses



Mean % weighted importance

Graph 1

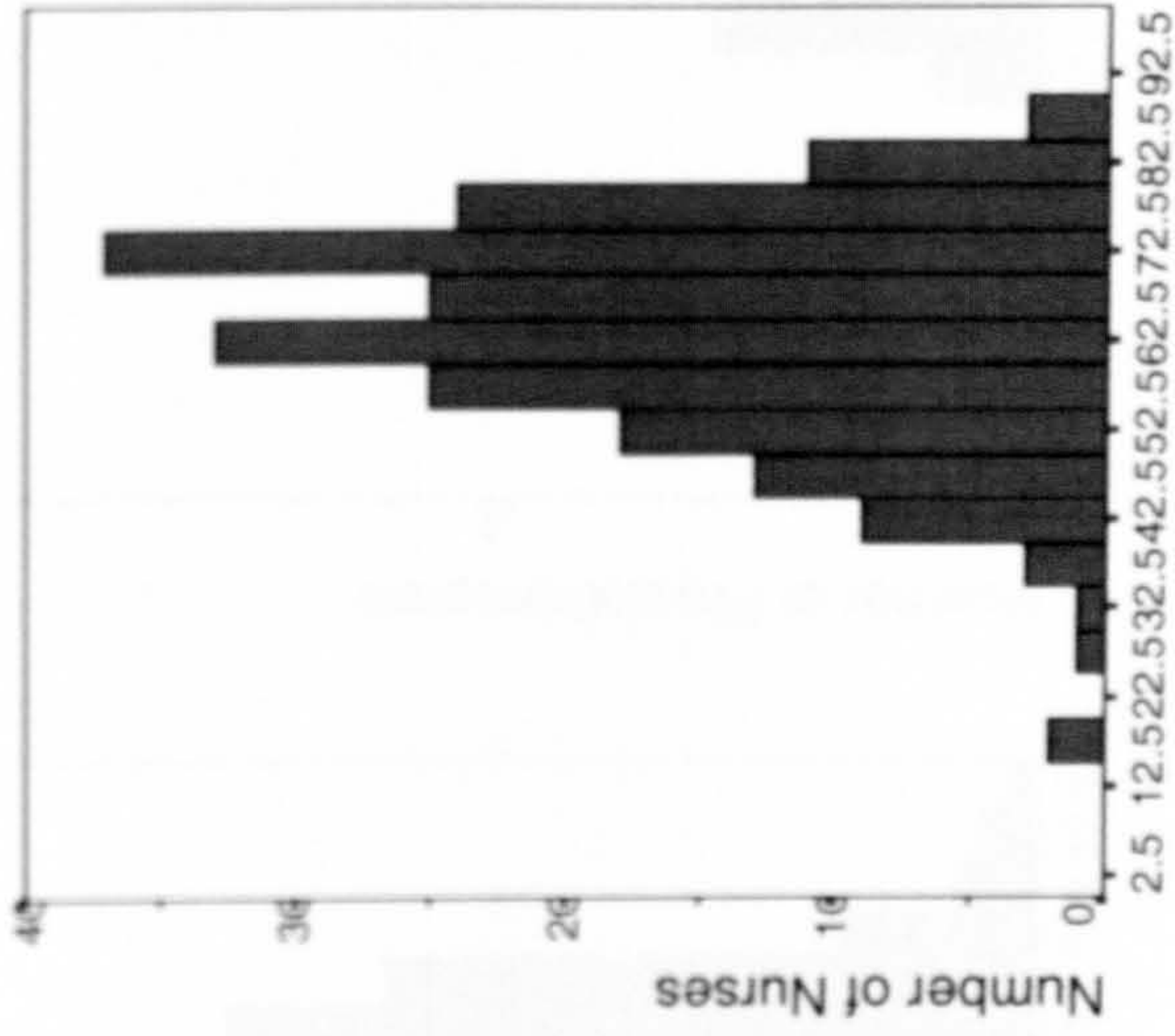
Clinical Preceptors



Mean % weighted importance

Graph 2

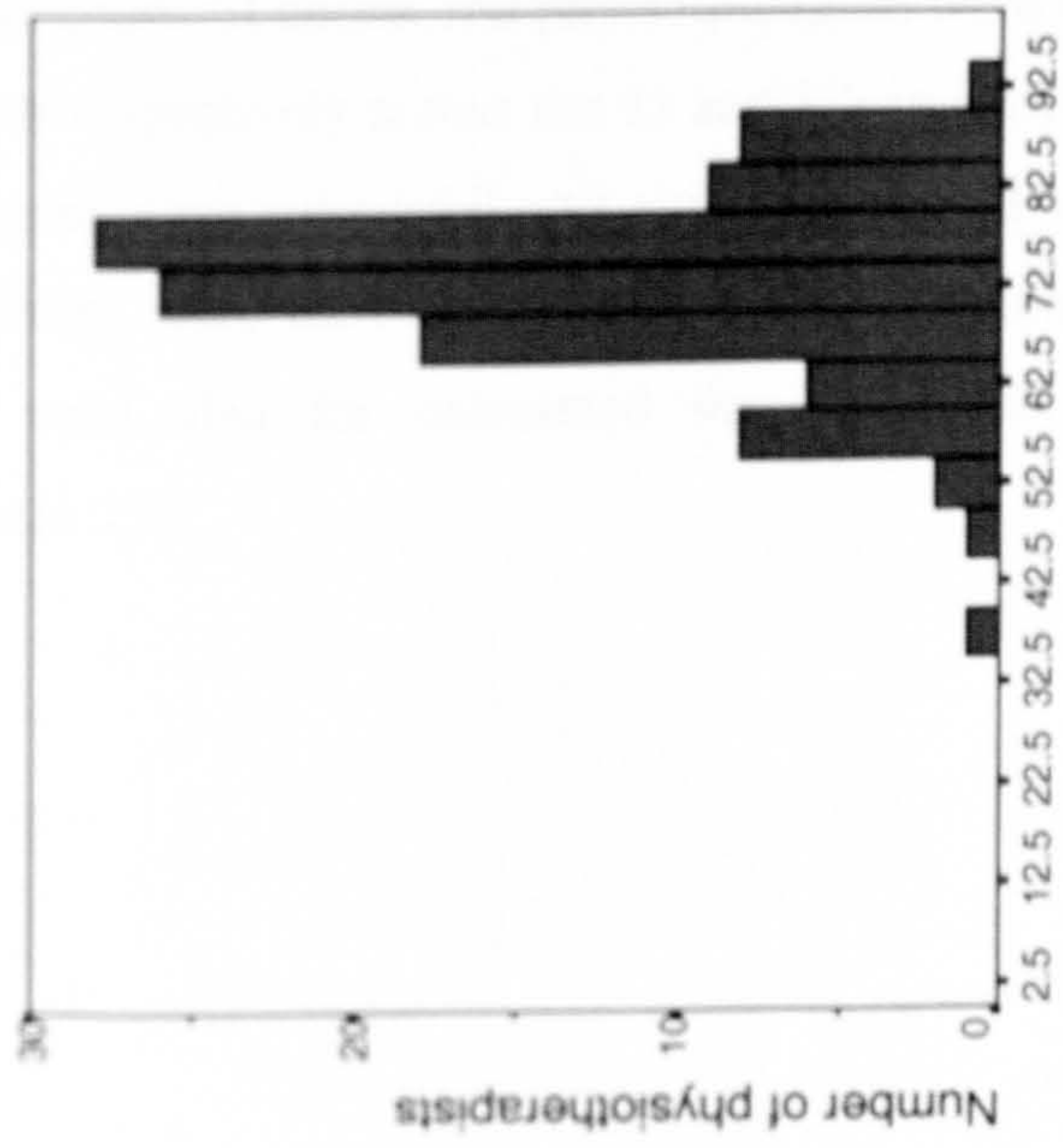
Sisters & Charge Nurses



Mean % weighted importance

Graph 3

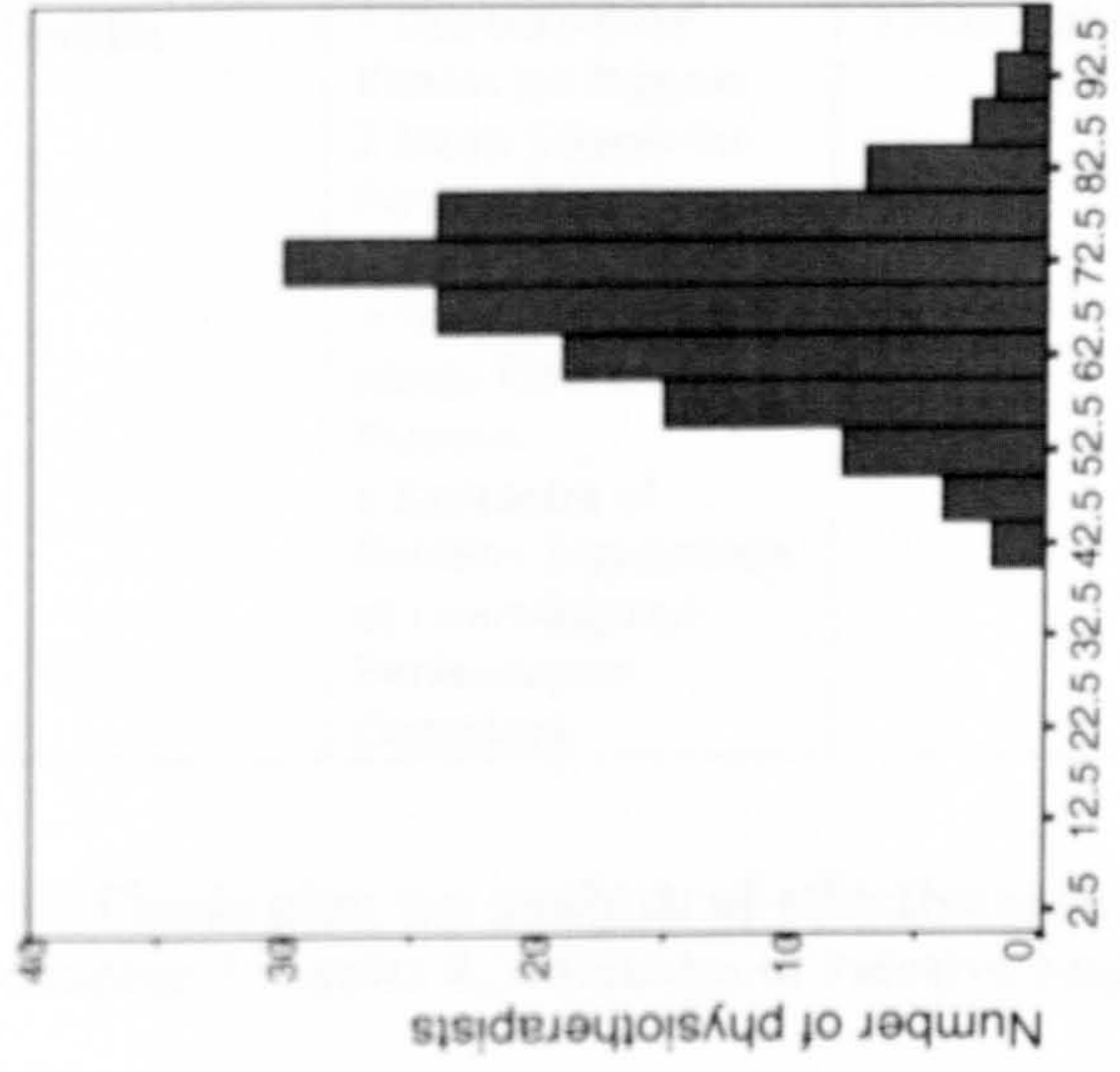
Newly Qualified Physiotherapists



Mean % weighted importance

Graph 4

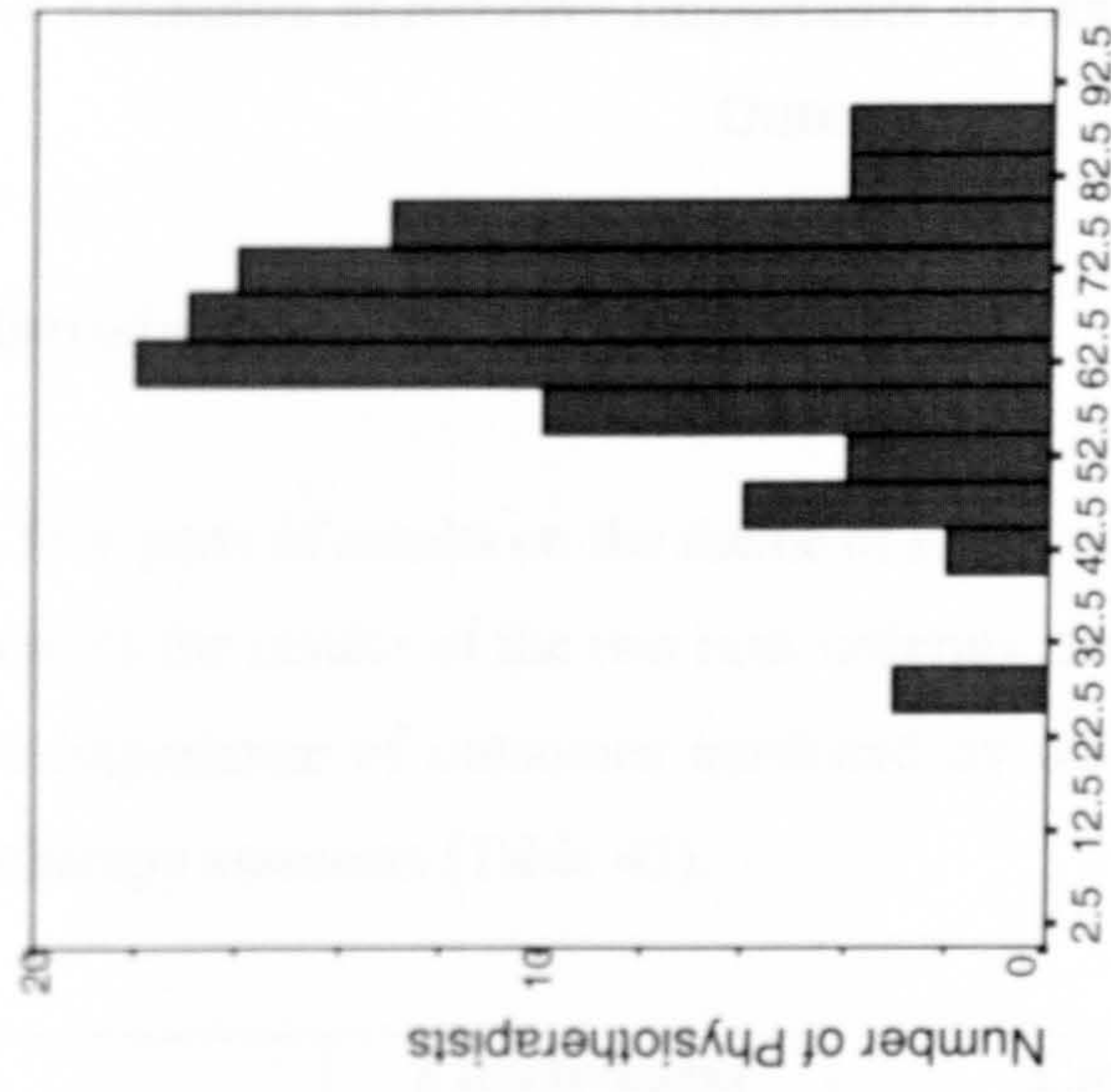
Clinical Supervisors



Mean % weighted importance

Graph 5

Physiotherapy Managers



Mean % weighted importance

Graph 6

3.4 Estimates of Relative Importance of Learning and Performance Outcomes

3.4.0 Introduction.

Of the four parts of results on the theme of effectiveness, this the fourth and final part, reports the results of the two rank ordering exercises of the estimates of the relative importance of outcomes attributed by the four groups of nursing and physiotherapy assessors (Table 43).

	Effectiveness	Cost	Cost- Effectiveness
Results	1 Dimensions of Fitness for Purpose. 2 Mean Fitness for Purpose Per Dimension. 3 Overall Weighted Mean Fitness for Purpose. 4 Estimates of Relative Importance of Learning and Performance Outcomes.	5 Financial Returns	6 Cost Per Category of Qualified Nursing and Physiotherapy Student and Fit for Purpose Employee

Table 43 Thesis plan for analysis of effectiveness, cost and cost-effectiveness: chapter 3 results 4, estimates of relative importance of outcomes.

Four categories of nurses and physiotherapists were requested to allocate 150 and 80 points respectively across the 15 and 8 learning/performance outcomes. From this, means were calculated and outcomes placed in rank order of importance. Rank orders were identified 1997/1998 nurses combined (Appendix 20). Rank orders were also for calculated for 1997/1998 physiotherapists combined (Appendix 21).

Year of Assessment and Professional Grouping	Outcome Rank Order (1-4)	Outcome Rank Order (14 th and 15 th)
Newly Qualified 1997/1998 Combined	<ul style="list-style-type: none"> 1 Deliver nursing care in response to patients needs 2 Enable effective communication with patients 3 Enable patients and groups to optimize their health & social well being 4 Enable patients to attain maximum independence in situations of dependency 	<ul style="list-style-type: none"> 14 Support patients' spirituality, faith and related pastoral care needs 15 Contribute to the management of resources, information and quality
Clinical Preceptors 1997/1998 Combined	<ul style="list-style-type: none"> 1 Deliver nursing care in response to patients needs 2 Enable effective communication with patients 3 Enable patients and groups to optimize their health & social well being 4 Maintain and develop patient identity and relationships 	<ul style="list-style-type: none"> 14 Support patients' spirituality, faith and related pastoral care needs 15 Contribute to the management of resources, information and quality
Sisters/Charge Nurses 1997/1998 Combined	<ul style="list-style-type: none"> 1 Deliver nursing care in response to patients needs 2 Enable effective communication with patients 3 Demonstrate and apply knowledge and understanding of issues that affect nursing practice 4 Enable patients to attain maximum independence in situations of dependency 	<ul style="list-style-type: none"> 14 Support patients' spirituality, faith and related pastoral care needs 15 Contribute to the management of resources, information and quality
Directors of Nursing A & C	<ul style="list-style-type: none"> 1 Deliver nursing care in response to patients needs 2 Enable effective communication with patients 3 Contribute to the welfare of patients 4 Maintain and develop patient identity and relationships 	<ul style="list-style-type: none"> 14 Contribute to the management of resources, information & quality 15 Respond to changing demands

Table 44 Nursing: Summed overall rank order of learning/performance outcomes in respect of newly qualified adult branch nurses.

3.4.1 Nursing.

Clinical Nursing Grades and Directors of Nursing.

Based on rank order positions of highest mean rank order outcomes one and two were consistent across all four assessment groups: 1, 'Deliver Nursing Care in Response to Patients Needs' & 2, 'Enable Effective Communication with Patients' (Table 44).

Rank order outcomes 14 'Support Patients' Spirituality, Faith and Related Pastoral Care Needs' & 15 'Contribute to the Management of Resources, Information and Quality' were the same for NQABNs, Preceptors and Sister/Charge nurses. For DoN who assessed the NQABNs educated at universities covered by the study Consortium, there was agreement that 'Contribute to the Management of Resources Information and Quality' was the 14th most important outcome. 'Respond to Changing Demands' was ranked 15th (Table 44).

3.4.2 Physiotherapy.

1997/1998 Combined; Newly Qualified, Supervisors, Managers and Heads

Based on rank order positions of highest mean it was noted that all four groups ranked 'Deliver Physiotherapy in Response to Patients Needs' in first place as the most important FfPu performance outcome (Table 45). 'Manage Oneself and Work with Others to Optimize Results,' Supervisors and Managers identified this outcome as the 2nd most important. For the newly-qualified it was the 3rd most important. 'Research and Evaluate Practice' was the newly-qualified physiotherapists and Heads of service 4th most important FfPu outcome. 'Demonstrate and Apply Knowledge and Understanding of Issues that Affect Practice' was the fourth most important.

Year of Assessment and Professional Grouping	Outcome Rank Order (Top Four)	Outcome Rank Order 8 th & Last
Newly Qualified 1997/1998 Combined	<ul style="list-style-type: none"> 1 Deliver physiotherapy in response to patients needs 2 Enable individuals and groups to optimize their health and social well being 3 Manage oneself and work with others to optimize results 4 Research and evaluate practice 	8 Respond appropriately to changing demands
Clinical Supervisors 1997/1998 Combined	<ul style="list-style-type: none"> 1 Deliver physiotherapy in response to patients needs 2 Manage oneself and work with others to optimize results 3 Enable individuals and groups to optimize their health and social well being 4 Demonstrate and apply knowledge and understanding of issues that affect physiotherapy practice 	8 Promote equality to all individuals in physiotherapy practice
Physiotherapy Services Managers 1997/1998 Combined	<ul style="list-style-type: none"> 1 Deliver physiotherapy in response to patients needs 2 Manage oneself and work with others to optimize results 3 Enable individuals and groups to optimize their health and social well being 4 Demonstrate and apply knowledge and understanding of issues that affect physiotherapy practice 	8 Promote equality to all individuals in physiotherapy practice
Heads of Trust Wide Physiotherapy 1997/1998 Combined	<ul style="list-style-type: none"> 1 Deliver physiotherapy in response to patients needs 2 Demonstrate and apply knowledge and understanding of issues that affect physiotherapy practice 3 Enable individuals and groups to optimize their health and social well being 4 Research & evaluate practice 	8 Promote equality to all individuals in physiotherapy practice

Table 45 Physiotherapy: Summed rank order positions of learning/performance outcomes per professional category of physiotherapists combined 1997/1998 combined.

FFPu outcome for supervisors and service managers whilst for Heads it was the second most important. Supervisors, managers and Heads of service all identified 'Promote Equality to All Individuals in Physiotherapy Practice' as the least important outcome. For NQPs it was 'Responding Appropriately to Changing Demands'.

3.4.3 Conclusion.

Based on combined data for all four groups of nursing assessors, and regardless of clinical experience and seniority, all selected the same two performance outcomes as being the first and second most important; 1, 'Deliver Nursing Care in Response to Patients Needs', and 2, 'Enable Effective Communication with Patients'. Newly qualified Adult Branch nurses, clinical Preceptors and Sisters/Charge nurses groups also identified the same two outcomes as least important: 14 'Support Patients' Spirituality, Faith and Related Pastoral Care Needs' AND 15, 'Contribute to the Management of Resources, Information and Quality'.

In physiotherapy, the picture was clear in that all four groups of assessors, and again regardless of clinical experience and seniority, all selected the same most important outcome; 'Deliver Physiotherapy in Response to Patients Needs'. Clinical Supervisors, Managers and Heads all selected 'Promote Equality to all Individuals in Physiotherapy Practice', as the least important.

All groups of nursing & physiotherapy assessors chose the same most important outcome 'Deliver Nursing Care (Physiotherapy) in Response to Patients Needs'.

3.5 Financial Returns

3.5.0 Introduction.

The theme of cost focuses on the historical financial costs (Table 46) of the three university providers of pre-registration nursing education and the three university providers of pre-registration physiotherapy education covered in this research and related to the NHS financial period 1996/1999.

	Effectiveness	Cost	Cost- Effectiveness
Results	1 Dimensions of Fitness for Purpose. 2 Mean Fitness for Purpose Per Dimension. 3 Overall Weighted Mean Fitness for Purpose. 4 Estimates of Relative Importance of Learning and Performance Outcomes.	5 Financial Returns	6 Cost Per Category of Qualified Nursing and Physiotherapy Student and Fit for Purpose Employee

Table 46 Thesis plan for analysis of effectiveness, cost and cost-effectiveness, chapter 3 results, 5 financial returns.

3.5.1 Financial returns.

In order to be able to identify the most cost-effective provider of pre-registration nursing and physiotherapy education in the case study area it was necessary, as a preliminary step, to identify departmental, school and institutional expenditure per university. Further, to identify individual university income from the case study Consortium's NMET contracts for the three NHS financial years (1996-1999), comprising the major contract review period. Differences between university expenditure at departmental and overhead levels, and trends in university expenditure over income from NMET contracts, were noted.

Summary expenditures: Nursing Universities 'R', 'T' & 'V' 1996–1999.

University 'R' 1996–1999.

The summary expenditure total, for each department, was calculated by summing departmental costs to the previously calculated school and institutional overheads, attributable to that department, to yield a total. For pre-registration nursing, for 1996-97, this was £2,890,150. The same procedure was followed in respect of the periods 1997-98 and 1998-99. The resultant totals were £2,922,760 (1997-98) and £3,141,260 (1998-99) (Table 47, graph 7).

University 'T' 1996–1999.

The summary total was calculated in the same way for university 'T' as it was for 'R' above (Table 47, graph 8).

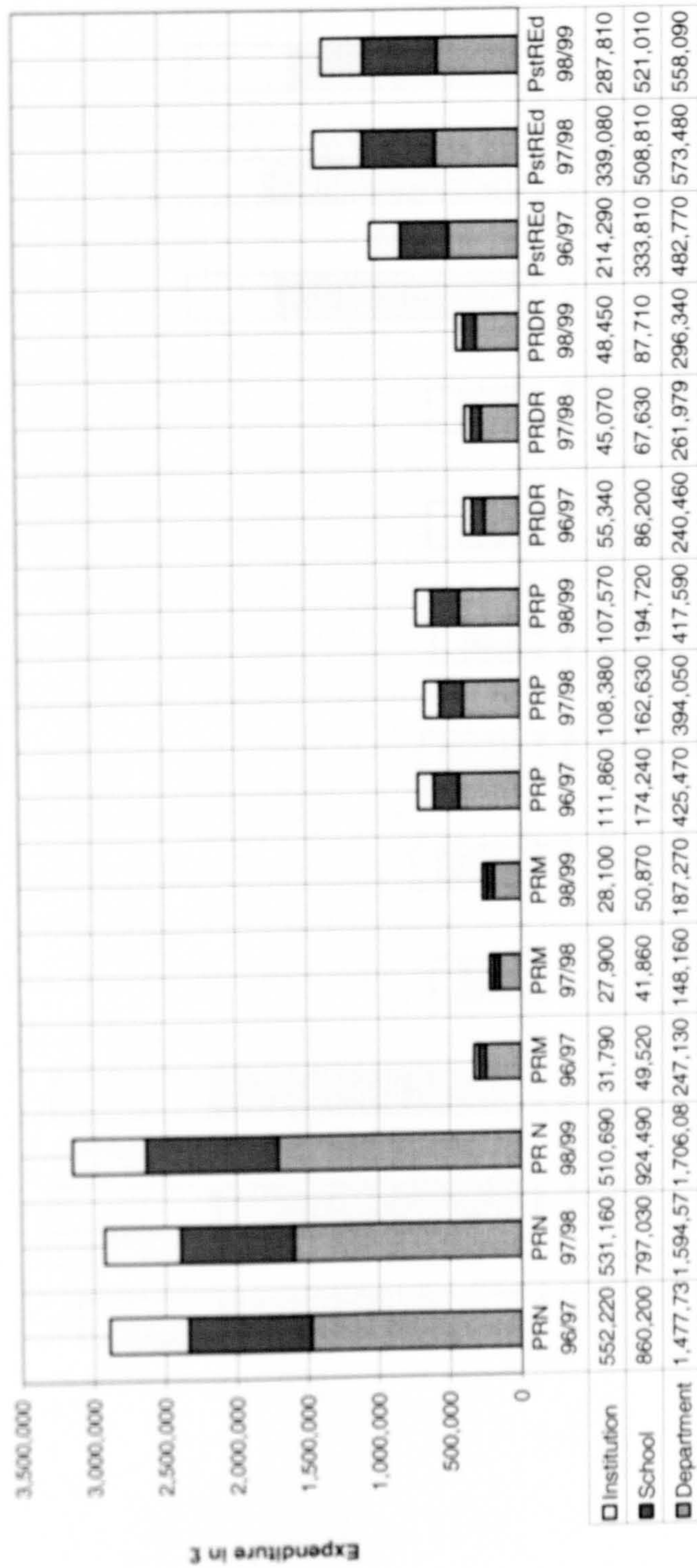
University 'V' 1996–1999.

Because university 'V' had not complied with the costing instructions, in that they had not indicated what proportion of the premises and integration set up costs were consumed by each provision/department directly or as overhead charges, it was not possible to undertake the same comparative analysis as for universities 'R' & 'T'. The total cost was, therefore, the sum of the five expenditures: department, school, institution, premises and integration set up costs (Table 47, graph 9). University 'V' non-compliance did not, however, prevent cost-effectiveness ratios being calculated for this university.

	1996/97	1997/98	1998/99	1996/97	1997/98	1998/99	1996/97	1997/98	1998/99	1996/97	1997/98	1998/99
	R	R	R	T	T	T	V	V	V	V	V	V
Level												
Departmental Expenditure	£ 1,477,730	£ 1,594,570	£ 1,706,080	£ 2,087,230	£ 2,132,650	£ 2,117,170						
Departmental %	51.12%	54.55%	54.31%	67.10%	64.12%	64.40%						
School Expenditure	£ 860,200	£ 797,030	£ 924,490	£ 48,824	£ 62,531	£ 56,598						
School %	29.76%	27.26%	29.43%	1.56%	1.88%	1.72%						
Institutional Expenditure	£ 552,220	£ 531,160	£ 510,690	£ 974,380	£ 1,130,728	£ 1,113,753						
Institutional %	19.12%	18.17%	16.25%	31.32%	33.99%	33.87%						
Total Expenditure	£ 2,890,150	£ 2,922,760	£ 3,141,260	£ 3,110,434	£ 3,325,909	£ 3,287,521	£ 4,690,443	£ 4,888,959	£ 4,934,350			
Total %	100%	100%	100%	100%	100%	100%	100%	100%	100%			
Department & School Expenditure Combined	£ 2,337,930	£ 2,391,600	£ 2,630,570	£ 2,136,054	£ 2,195,181	£ 2,173,768						
Department School Comb' %	80.89%	81.82%	83.74%	68.87%	66.00%	66.12%						

Table 47 Departmental, school and institutional allocated cost and associated percentages of total cost of pre-registration nurse education at universities in the study area.

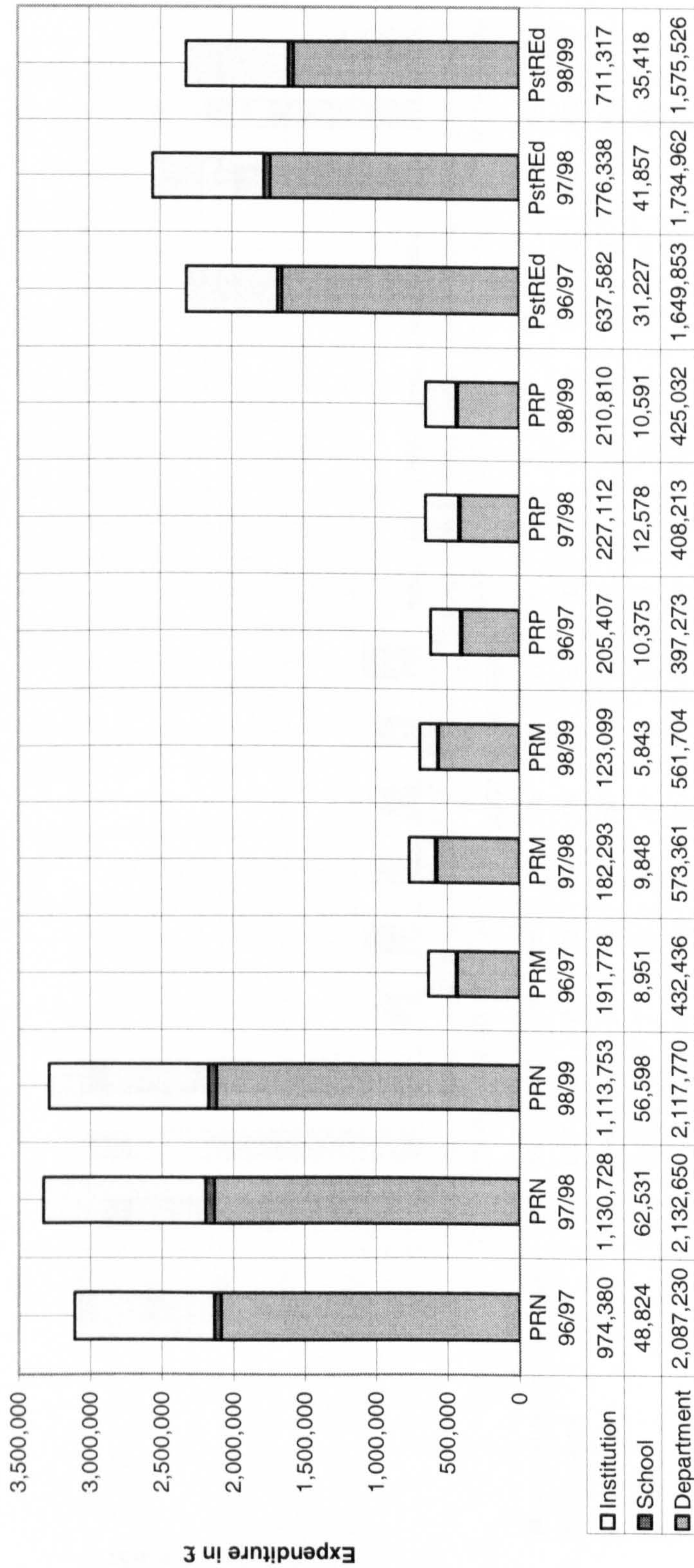
Graph 7 Departmental, School and Institutional Expenditure Components: University R 1996-1999



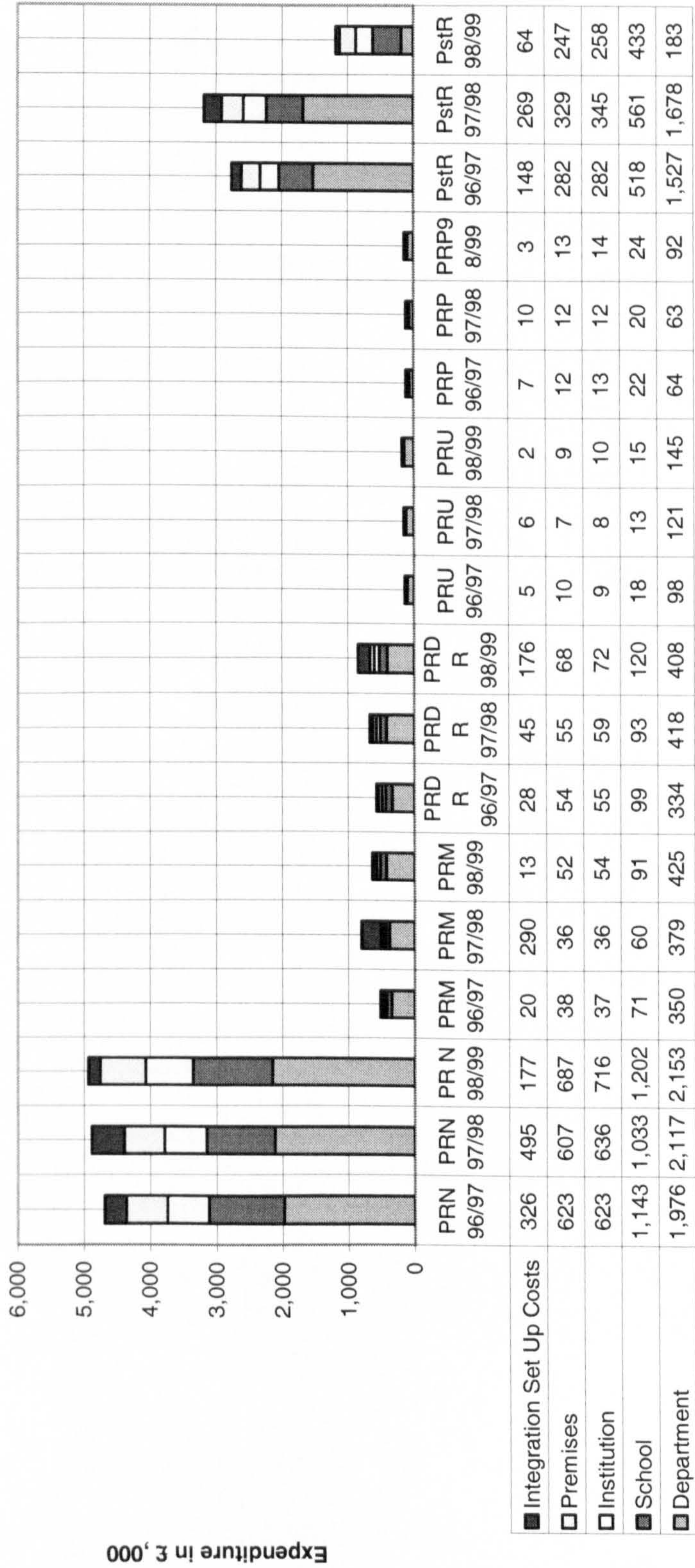
Organisational Levels

Department School Institution

Graph 8 Departmental School and Institutional Expenditure Components: University T 1996-1999



Graph 9 Departmental, School and Institutional Expenditure Components: University V 1996-1999



Organisational Levels

■ Department ■ School □ Institution □ Premises ■ Integration Set Up Costs

For each of the three years of the review university 'R' expended less at departmental level than 'T' and more at the school (overhead) level. A combined departmental and school total was also calculated which revealed that 'R' expended more on its pre-registration nursing contract across each of the three expenditure years than did 'T' (Table 47, graphs 7 & 8). Also, 'T' expended nearly twice as much as 'R' on institution overheads. When the overall total expenditures (departmental, school and institutional overheads) are compared between 'R' & 'T', 'T's expenditure for each of the three financial years was greater. It was not possible to undertake this exercise for University V because it is not known how the premises and integration set up costs were allocated between departments, across the school, and institutionally as overheads. Overall 'V's expenditure was, however, greater than both 'R' & 'T's.

Summary expenditures: Physiotherapy Universities 'H', 'J' and 'L' 1996–1999.

The same task was undertaken in pre-registration physiotherapy as it was in nursing. University 'H's expenditure at departmental level is greater than at School level, for the three years of the review. 'J's expenditure at School level was minimal. When departmental costs are added to school overheads the resulting sum, for each of the three years of the major contract review, reveals that 'H' expends more than 'J' for all three years (Table 48). At institutional level 'J's overheads are approximately double 'H's. The total contract income to University 'L' from the study Consortium was known. Its distribution pattern across the three reporting categories, department, school and institution was unknown. As a consequence it was not possible to undertake the same exercise that has been undertaken for universities 'H' and 'J' (Table 48).

3.5.3 Conclusion.

No two universities were alike in respect of expenditure split between the three organisational levels. In the case of pre-registration nursing at University 'R' expended less at the departmental level, but more at the School level than did University 'T'. University 'R' institutional overhead was almost half that of 'T'.

In pre-registration physiotherapy education, University 'H' expended more at department and school overhead levels than did University 'J'. University 'H' institutional overhead was almost half that of 'J'. Universities 'T's nursing and 'J' physiotherapy institutional overheads are approximately twice Universities 'R' and 'H'.

Two universities, one nursing 'V' and one physiotherapy 'L', did not comply with the costing instructions, but did provide total expenditure costs. This did not prevent cost-effectiveness ratios being calculated for these two universities.

	1996/97	1997/98	1998/99	1996/97	1997/98	1998/99	1996/97	1997/98	1998/99	1996/97	1997/98	1998/99
Level	H	H	H	J	J	J	L	L	L	L	L	L
Department Expenditure	£ 425,470	£ 394,050	£ 417,590	£ 397,273	£ 408,213	£ 425,032						
Department %	59.79 %	59.24 %	58.00 %	64.80 %	63.00 %	65.75 %						
School Expenditure	£ 174,240	£ 162,720	£ 194,720	£ 10,375	£ 12,578	£ 10,591						
School %	24.48 %	24.46 %	27.04 %	1.69 %	1.94 %	1.63 %						
Institutional Expenditure	£ 111,860	£ 108,380	£ 107,570	£ 205,407	£ 227,112	£ 210,810						
Institutional %	15.72 %	16.29 %	14.94 %	33.50 %	35.05 %	32.61 %						
Total Expenditure	£ 711,570	£ 665,150	£ 719,880	£ 613,055	£ 647,903	£ 646,433						£ 519,000
Total %	100 %	100 %	100 %	100 %	100 %	100 %						£ 516,400
Department & School Expenditure Combined	£ 599,710	£ 588,7700	£ 612,310	£ 407,648	£ 420,791	£ 435,623						
Department School Comb' %	84.27 %	83.70 %	85.05 %	66.49 %	64.94 %	67.38 %						

Table 48 Departmental, school and institutional allocated cost and associated percentages of total cost of pre-registration physiotherapy education at universities' in the study area.

3.6 Cost per Category of Qualified Nursing and Physiotherapy Students and Fit for Purpose Employees

3.6.0 Introduction.

Part 6 of this chapter reports the cost-effectiveness ratios for cost per indexed, in-training, qualified and FfPu NQABNs and NQPs (Table 49). It also identifies for each ratio the most cost-effective university provider.

	Effectiveness	Cost	Cost-Effectiveness
Results	1 Dimensions of Fitness for Purpose. 2 Mean Fitness for Purpose Per Dimension. 3 Overall Weighted Mean Fitness for Purpose. 4 Estimates of Relative Importance of Learning and Performance Outcomes.	5 Financial Returns	6 Cost Per Category of Qualified Nursing and Physiotherapy Student and Fit for Purpose Employee

Table 49 Thesis plan for analysis of effectiveness, cost and cost-effectiveness: chapter 3 results, cost-effectiveness 6; cost per student and newly-qualified employees

3.6.1 Nursing.

Cost per indexed student: Universities 'R' 'T' & 'V' 1996/1999.

The pattern for the three years of the major contract review 1996-1999 revealed that University 'R's cost per indexed student was, for each or the three years of the review, consistently lower than that of Universities 'T' & 'V'. The range of cost per index across the three universities was £5,115–£5,915. The rank order of increasing cost per indexed student, per university, for the three years combined was, 'R' £15,555, 'V' £16,078 and 'T' £16,919 (Graph 10).

Cost per 'in-training' student: Universities 'R' 'T' & 'V' 1996/1999.

The pattern in respect of 'in-training' fluctuated. In the NHS financial year 1996-97 the rank order of increasing cost was £5,638 ('V'), £5,885 ('T') & £6,182 ('R'). In 1997-98 it was £5,901 ('R'), £6,033 ('V') & £6,390 ('T'). For 1998-99 all three were virtually the same, range £5,932-£5,999. The rank order of the cost per 'in-training' student, per university, for the three years combined was £17,603 ('V'), £18,052 ('R') & £18,244 ('T') (Graph 11).

Cost per qualified/fit for academic award/fit for practice practitioner 1996/1999.

A mixed pattern emerged across each of the three years of the review. 'T' consistently recorded the lowest cost followed directly by 'R' for 1996/97 and 'V' for 1997/98 and 1998/99. Over the three years the rank order was: 'T' £19,837, 'V' £21,892 and 'R' £23,141 (Graph 12).

Cost per fit for purpose newly qualified employee 1996/1999.

The lowest cost per FfPu staff nurse per university provider, based on NQABNs self-assessment of FfPu, 1996-1999, was £26,552 ('T'), followed by £29,891 ('V') and £30,773 ('R') (Graph 13). The same trend per university provider continued, but with increasing costs attributable to Preceptors, Sisters and Directors of nursing.

Cost per category of student and NQABN: Universities 'R' 'T' & 'V' 1996/1999.

Comparing the totals of the three universities across the following: 1) cost per indexed, 2) cost per 'in-training' student, 3) cost per fit for practice practitioner, and 4) cost per fit for purpose employee, revealed:

- A progressive increase in costs across the seven assessment categories (cost per indexed (1) to cost per fit for purpose NQABN based on Directors of nursing assessment (7) (Graph 13),
- The most expensive provider of cost per indexed nurse was University 'T' followed by 'V' & 'R' (Table 50, Graph 13),
- The most expensive provider of cost per in-training nurse was University 'T' followed by 'R' & 'V' (Table 50, Graph 13),
- The most expensive provider of fit for award, practice, qualified practitioners was University 'R', followed by 'V' & 'T' (Table 50 Graph 13).
- The most expensive provider of fit for purpose newly qualified employee across all four categories of assessors was University 'R', followed by 'V' and 'T' (Table 50, Graph 13).
- The range difference between the three universities in respect of cost per in training nurse was virtually the same in 1998/99 (Graph 11).

The determining factors in whether a nursing university had high or low cost per fit for purpose employee was determined by a combination of three factors:

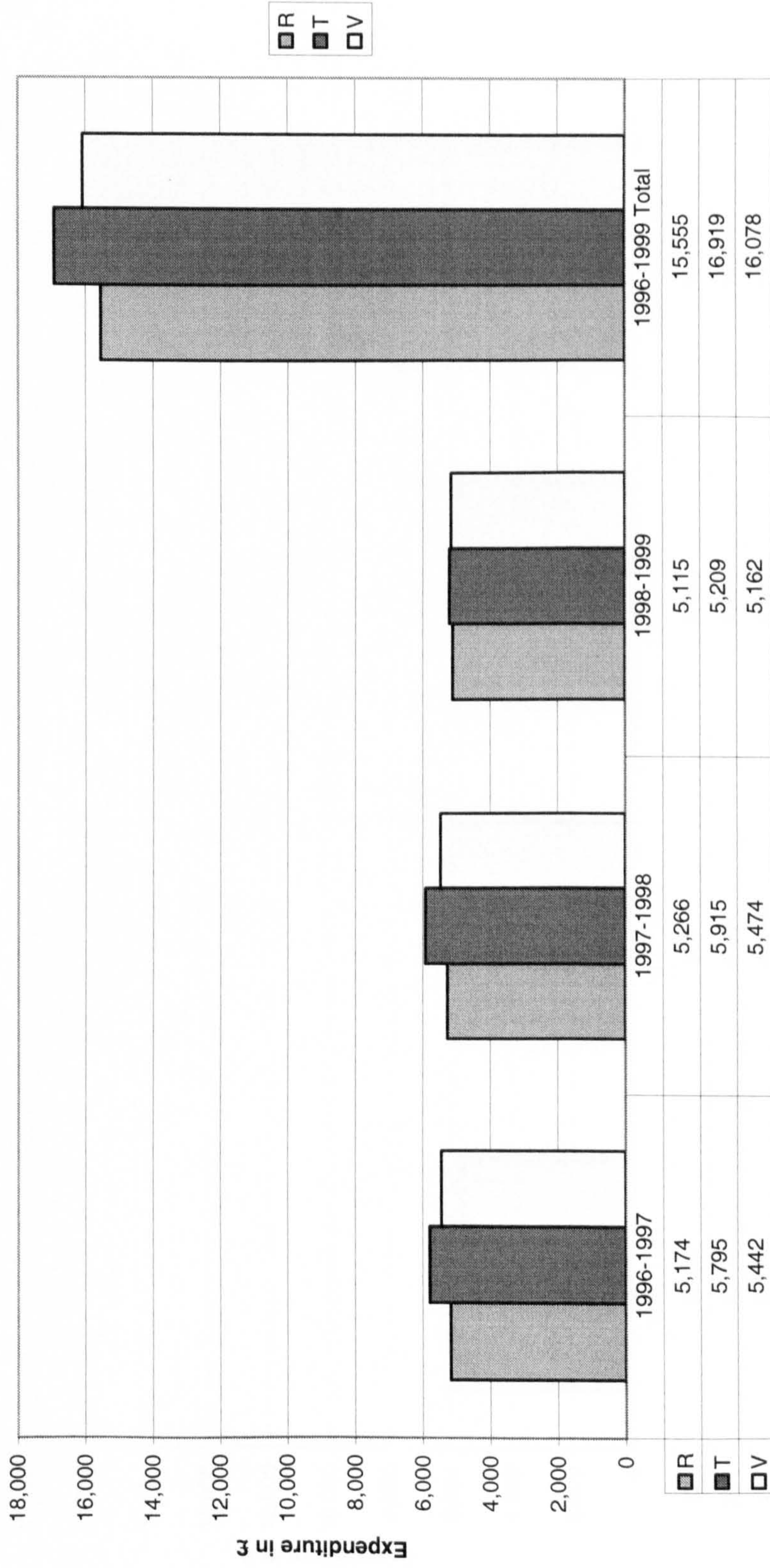
- 1) initial cost per indexed student,
- 2) number of students who qualify,
- 3) overall weighted mean percentage of fitness for purpose.

The range of cost per indexed nurse across providers was small £15,555-£16,078, a difference of only £523 (Graph 13). Attrition rates were high. The magnitude of difference in overall weighted mean percentage of fitness of the newly-qualified, between individual assessment groups, per university, was small (Table 50) and could not offset the effect of high attrition. High attrition rates outweighed any competitive advantage of having the lowest three year NMET contract value i.e. cost per indexed student. From the employers' perspective, two costs were especially important. First, cost per indexed student, which amounts to the budgeted cost to the NHS of producing, after three years, a newly qualified fit for award/practice/ professional nurse. The second is the actual cost of a fit for purpose nurse which is higher than budget.

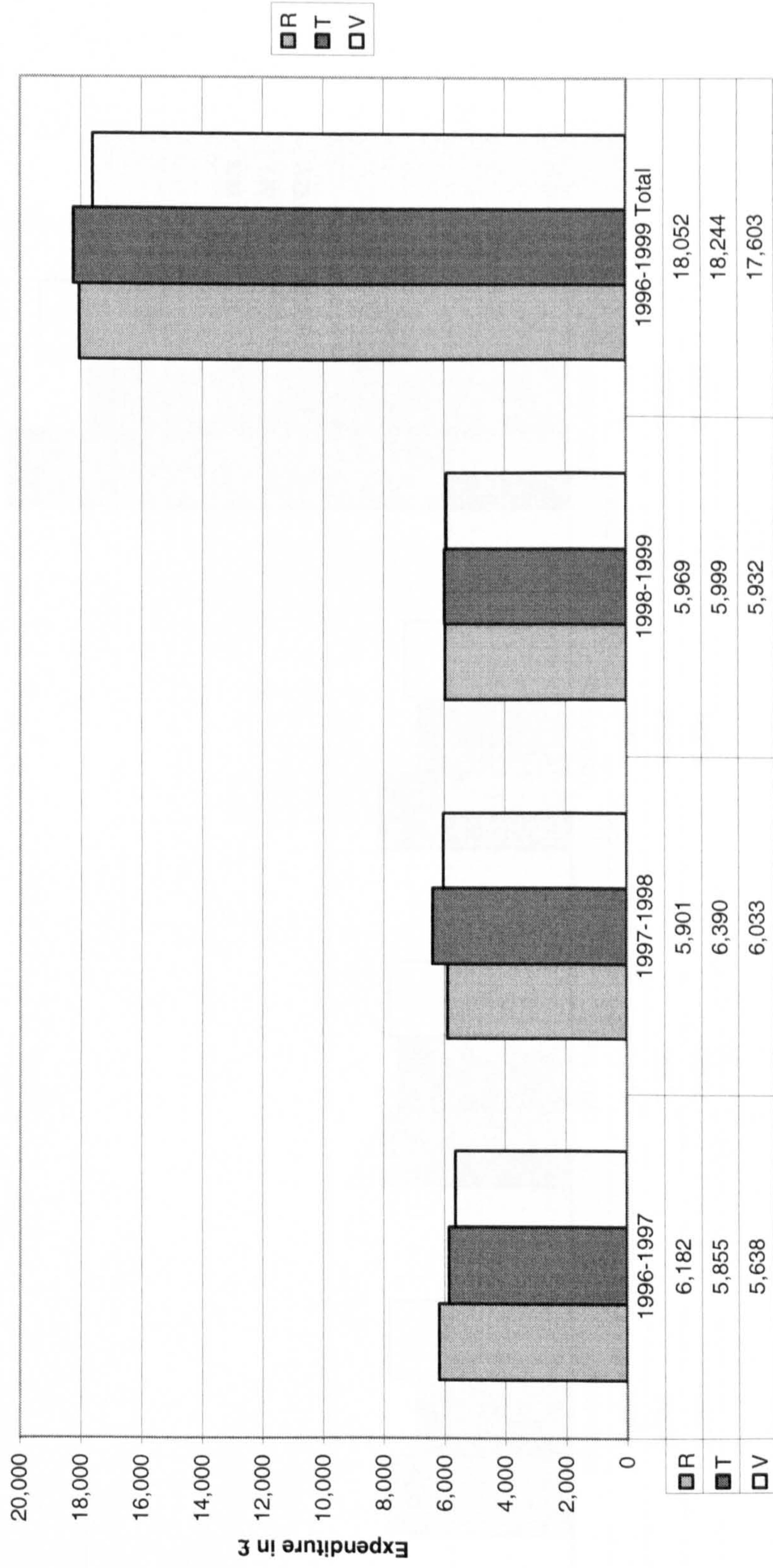
Department	Indexed		In Training		Qualified/Fit for Practice NQABN		Overall Weighted Mean % of Fitness for Purpose by Professional Group and Cost per Fit for Purpose Student as Perceived by Four Professional Groups							
	£		£		£		NQN %	£	CP %	£	S/CN %	£	DoN %	£
R	15,555		18,052		23,141		75.20	30,773	68.32	33,871	63.46	36,465	50.87	45,490
T	16,919		18,244		19,837		74.71	26,552	66.18	29,974	63.34	31,318	52.10	38,074
V	16,078		17,603		21,892		73.24	29,891	65.67	33,336	64.53	33,889	54.65	40,058

Table 50 Cost per indexed, in-training, qualified and fit for practice, and fit for purpose newly qualified nurse educated at Universities R, T and V.

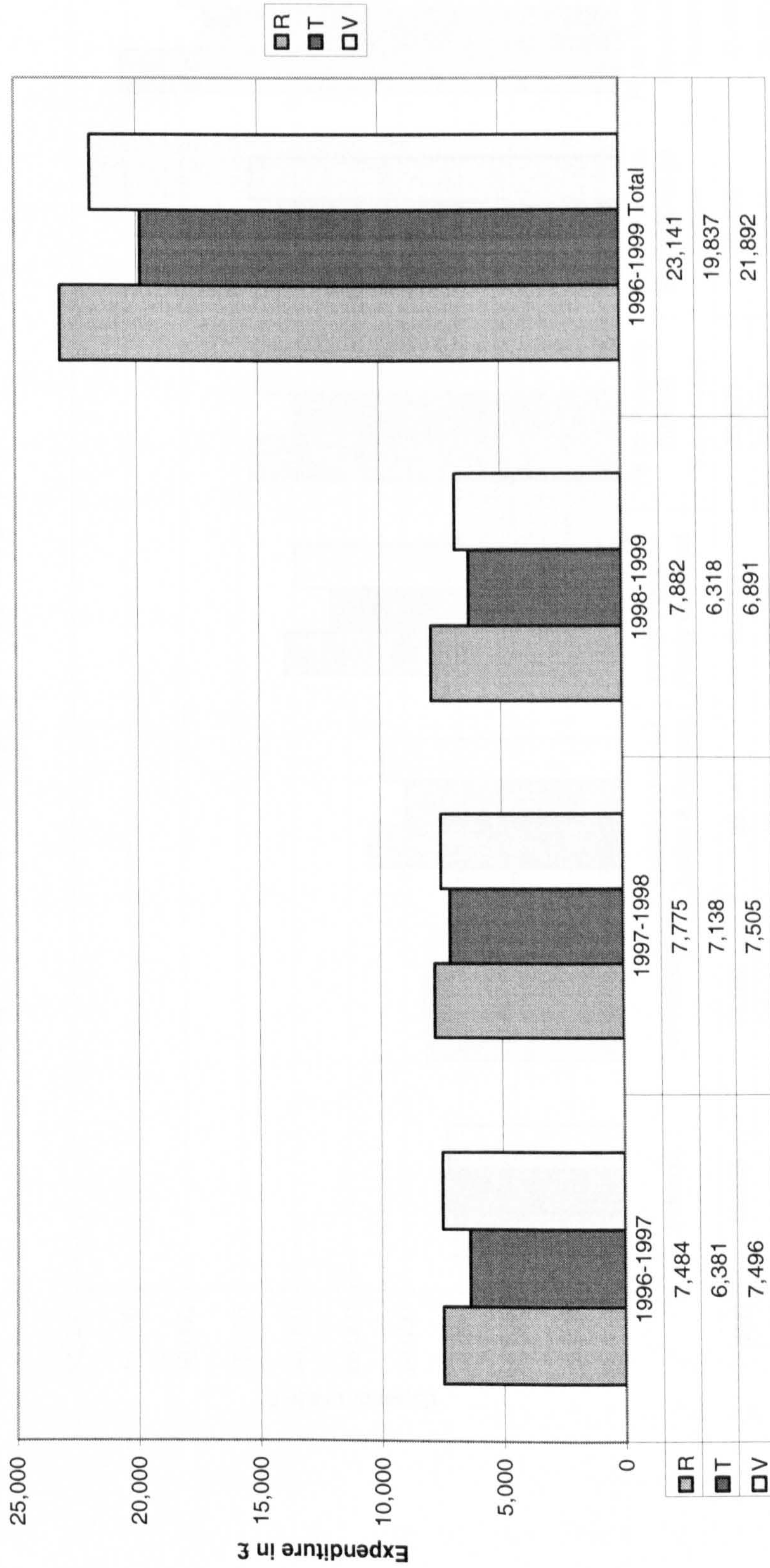
Graph 10 Cost Per Indexed Nursing Student By University By Year



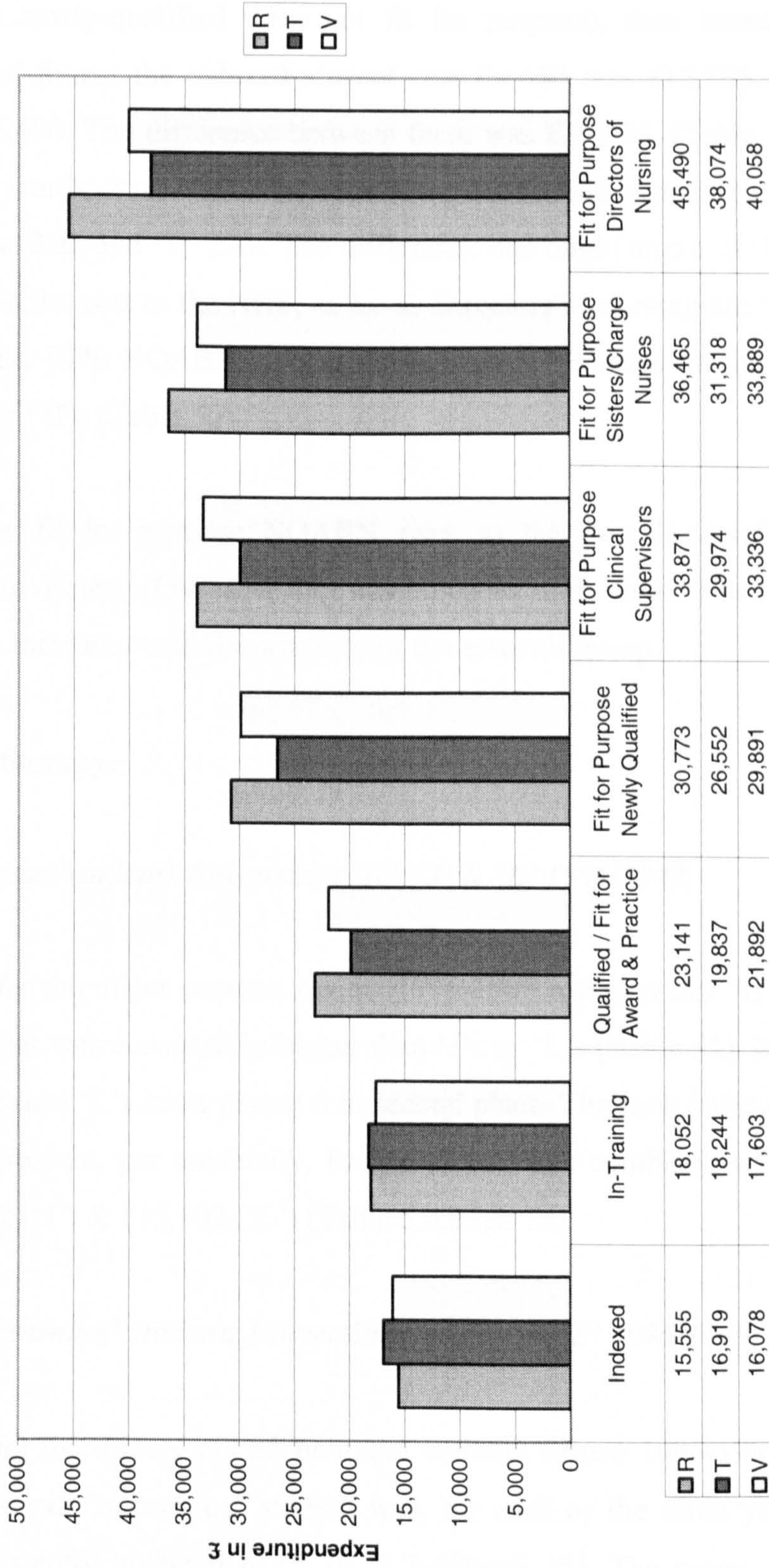
Graph 11 Cost Per In-Training Nursing Student By University By Year



Graph 12 Cost Per Qualified Nurse By University By Year



Graph 13 Cost Per Nursing Student By Category By University By Year



The magnitude of the difference varies between universities depending upon which of the four FfPu employee costs is selected. If, for example, Directors of nursing are chosen (it was this category of staff, that the literature had indicated, believed the newly-qualified were not fit for purpose), then based on their dimensions of fitness the indexed student cost for 'R' was £15,555. The FfPu cost was £45,490. The difference between them was £29,935, (Table 50, Graph 13). In other words, it was 2.92 times more expensive than budgeted for. For 'T' the figure was 2.25 and 'V' 2.49. The difference, one might argue, at 'R' by way of example, is the cost to the NHS, as far as Directors of nursing are concerned, of producing a FfPu NQABN whose fitness is 50.87% based on their selected dimensions of FfPu (Table 50).

The cost per fit for purpose NQABN rises as the overall weighted mean percentages of fitness (OWM%FfPu) attributed to them falls. The fall in this effectiveness increases with the seniority of the assessor group.

3.6.2 Physiotherapy.

Cost per indexed student: Universities 'H', 'J' & 'L' 1996/1999.

The pattern for the major contract review 1996-1999 revealed that 'H's cost per indexed student was consistently higher than 'J's or 'L's (Table 51). In the third year of the review 'L's costs placed it in second place. The rank order of the cost per indexed student, per university, for the three years combined was £19,819 ('H') £17,682 ('J') & £15,102 ('L') (Table 51 Graph 14).

Cost per 'in-training' student: Universities 'H', 'J' & 'L' 1996/1999.

The pattern for the three years of the major contract review 1996-1999 revealed that 'H's cost per 'in-training' student was, for each or the three years of the review, consistently higher than 'J' or 'L's (Graph 15). The range, across the three years for the universities was £4,086-£7,586. The rank order of the cost per 'in-training' student, per university, for the three years combined was £20,668, ('H'), £17,949 ('J') & £13,633 ('L') (Graph 15).

Cost per qualified/fit for academic award/fit for practice practitioner: Universities 'H', 'J' & 'L' 1996/1999.

The consistent pattern reported above for 'in-training' was also identified for this category across each of the three years of the review. 'H' consistently recorded the highest cost followed by 'J' & 'L' respectively. Naturally, this pattern was repeated in the combined total for the three years £21,678 ('H') £18,692 ('J') and £13,845 ('L') (Graph 16).

Cost per fit for purpose newly-qualified physiotherapist employee: Universities 'H', 'J' & 'L'.

Like the cost per in-training and qualified the same consistent pattern of cost per fit for purpose physiotherapist emerged across each of the three years of the review with 'H' being consistently the most expensive, 'J' the second most expensive and 'L' the least expensive (Table 51). This pattern was consistent across each of the four groups who assessed (Graph 17).

Cost per category of student and newly qualified physiotherapist: Universities 'H', 'J' & 'L' 1996/1999.

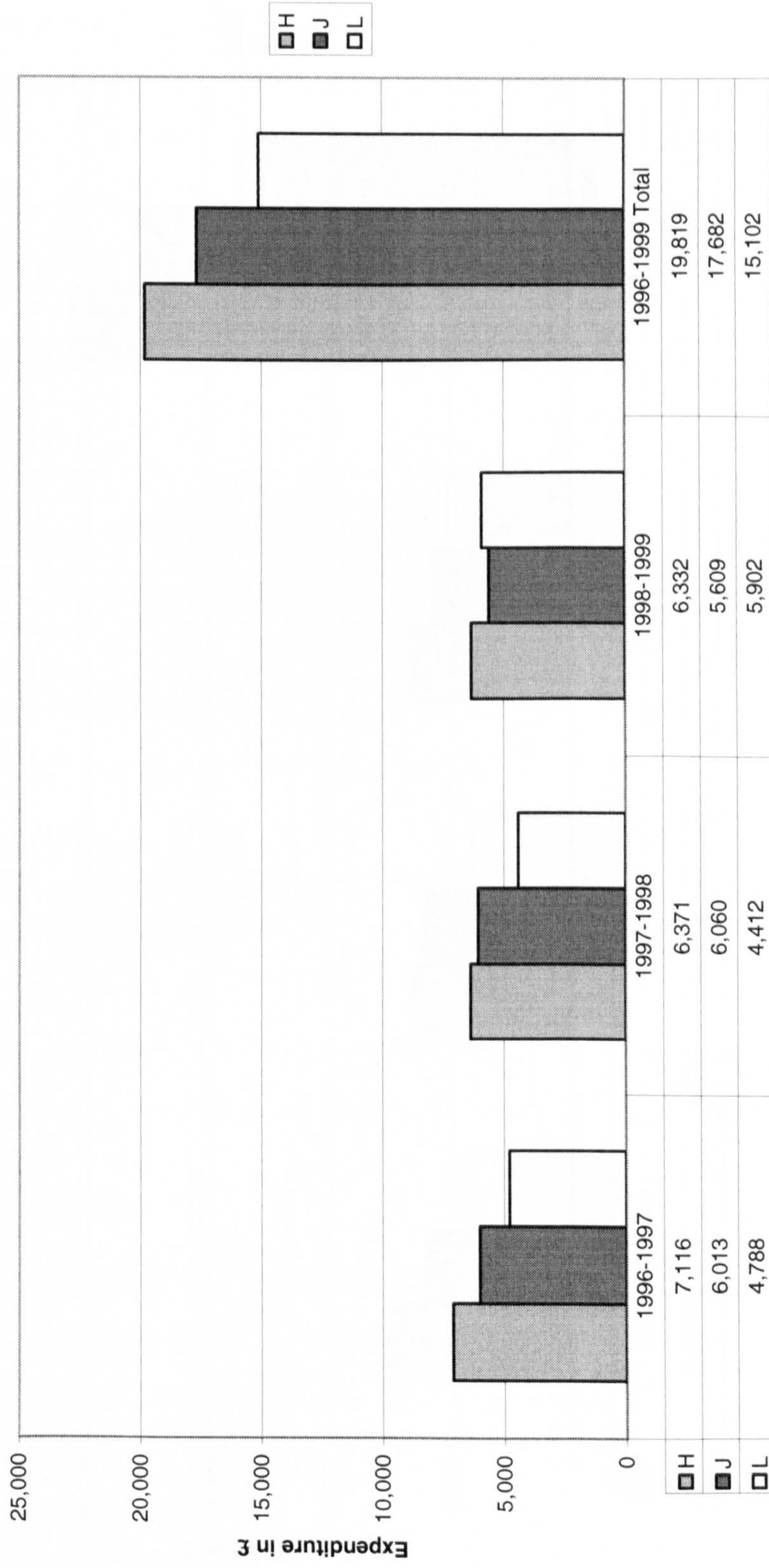
Comparing the totals of the three universities across the 1) cost per indexed, 2) cost per 'in-training' student, 3) fit for practice practitioner, and 4) the cost per FfPu employee, reveals:

- A progressive increasing rise in costs across the seven assessment categories (cost per indexed (1) to cost per fit for purpose physiotherapist based on Heads of physiotherapy services assessment (7) (Graph 17).

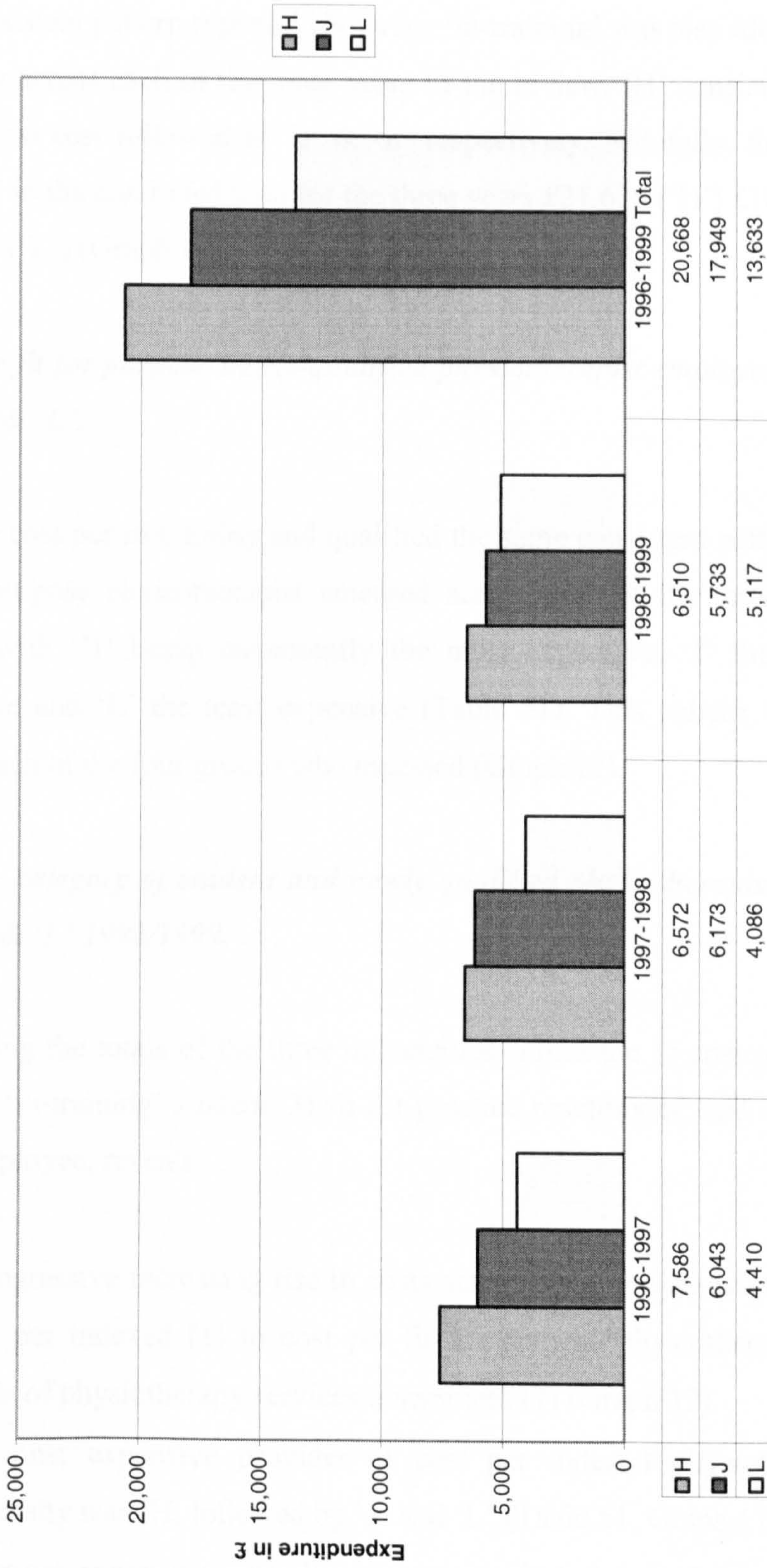
Department	Indexed £	In Training £	Qualifier /Fit for Practice £	Overall Weighted Mean % of Fitness for Purpose by Professional Group and Cost per Fit for Purpose Student as Perceived by Four Professional Groups							
				NQP %	£	CS %	£	PSM %	£	HTW PS %	£
H	19,819	20,668	21,678	74.27	29,164	70.00	30,968	68.56	31,619	63.58	34,096
J	17,682	17,949	18,692	71.66	26,084	67.89	27,532	62.30	30,003	60.41	30,941
L	15,102	13,633	13,845	71.16	19,456	67.15	20,618	66.17	20,923	61.45	22,530

Table 51 Cost per indexed, in-training, qualified and fit for practice, and fit for purpose newly qualified physiotherapist educated at the Universities 'H', 'J' & 'L'

Graph 14 Cost Per Indexed Physiotherapy Student By University By Year



Graph 15 Cost Per In-Training Physiotherapy Student By University By Year



Cost per qualified/fit for academic award/fit for practice practitioner: Universities 'H', 'J' & 'L' 1996/1999.

The consistent pattern reported above for 'in-training' was also identified for this category across each of the three years of the review. 'H' consistently recorded the highest cost followed by 'J' & 'L' respectively. Naturally, this pattern was repeated in the combined total for the three years £21,678 ('H') £18,692 ('J') and £13,845 ('L') (Graph 16).

Cost per fit for purpose newly-qualified physiotherapist employee: Universities 'H', 'J' & 'L'.

Like the cost per in-training and qualified the same consistent pattern of cost per fit for purpose physiotherapist emerged across each of the three years of the review with 'H' being consistently the most expensive, 'J' the second most expensive and 'L' the least expensive (Table 51). This pattern was consistent across each of the four groups who assessed (Graph 17).

Cost per category of student and newly qualified physiotherapist: Universities 'H', 'J' & 'L' 1996/1999.

Comparing the totals of the three universities across the 1) cost per indexed, 2) cost per 'in-training' student, 3) fit for practice practitioner, and 4) the cost per FfPu employee, reveals:

- A progressive increasing rise in costs across the seven assessment categories (cost per indexed (1) to cost per fit for purpose physiotherapist based on Heads of physiotherapy services assessment (7) (Graph 17).
- The most expensive provider of cost per indexed physiotherapists was University was 'H, followed by 'J' and 'L' (Table 51, Graph 17).
- The most expensive provider of cost per in-training physiotherapists was University 'H', followed by 'J' and 'L' (Table 51, Graph 17).

- The most expensive provider of fit for award, practice, qualified practitioners was University 'H' followed by 'J' & 'L' respectively (Table 51, Graph 17).
- The most expensive provider of fit for purpose newly qualified employees, across all four categories of assessors is University 'H', followed by 'J' and 'L' (Table 51, Graph 17).
- There is always a differential between the three universities across all of the cost categories,
- The hierarchy of universities was the same for all four categories of cost per student and fit for purpose physiotherapist.

In physiotherapy, the same three determining factors that were identified in nursing and determined whether a university had a high or low cost per fit for purpose employee, were equally applicable to physiotherapy. Namely:

- 1) initial cost per indexed student,
- 2) number of students who qualify,
- 3) overall weighted mean percentage of fitness for purpose.

Of the three, the index cost was the major determinant. The reason for this is that the other two factors, the number of qualifying students from each of the three universities was low, and similar. Second, the magnitude of the difference between universities in respect of overall weighted mean percentage of fitness, for each of the individual groups of assessors, was small (Table 51). Therefore, the university with the lowest initial NMET three year contract value was 'L' £15,102 and £4,717 less expensive than the most expensive that was the major factor in determining which of the three providers was the most cost effective (Graph 17).

The same rationale for the employer's perspective applied to nurses is applicable to physiotherapists. Using Heads of Trust wide physiotherapy services dimensions of fitness (Table 51) the magnitude of difference in cost at 'H', between indexed student £19,819 and fit for purpose physiotherapist £34,096

was £14,277. (Put another way it was 1.7 times more expensive. 'J's was 1.7 and 'V's 1.5 more times expensive (Table 51, Graph 17).

The cost per fit for purpose physiotherapist, like that of the NQABN rises as the overall weighted mean percentages of fitness (OWM%FfPu) attributed to them falls. The fall in effectiveness increases with the seniority of the assessor group.

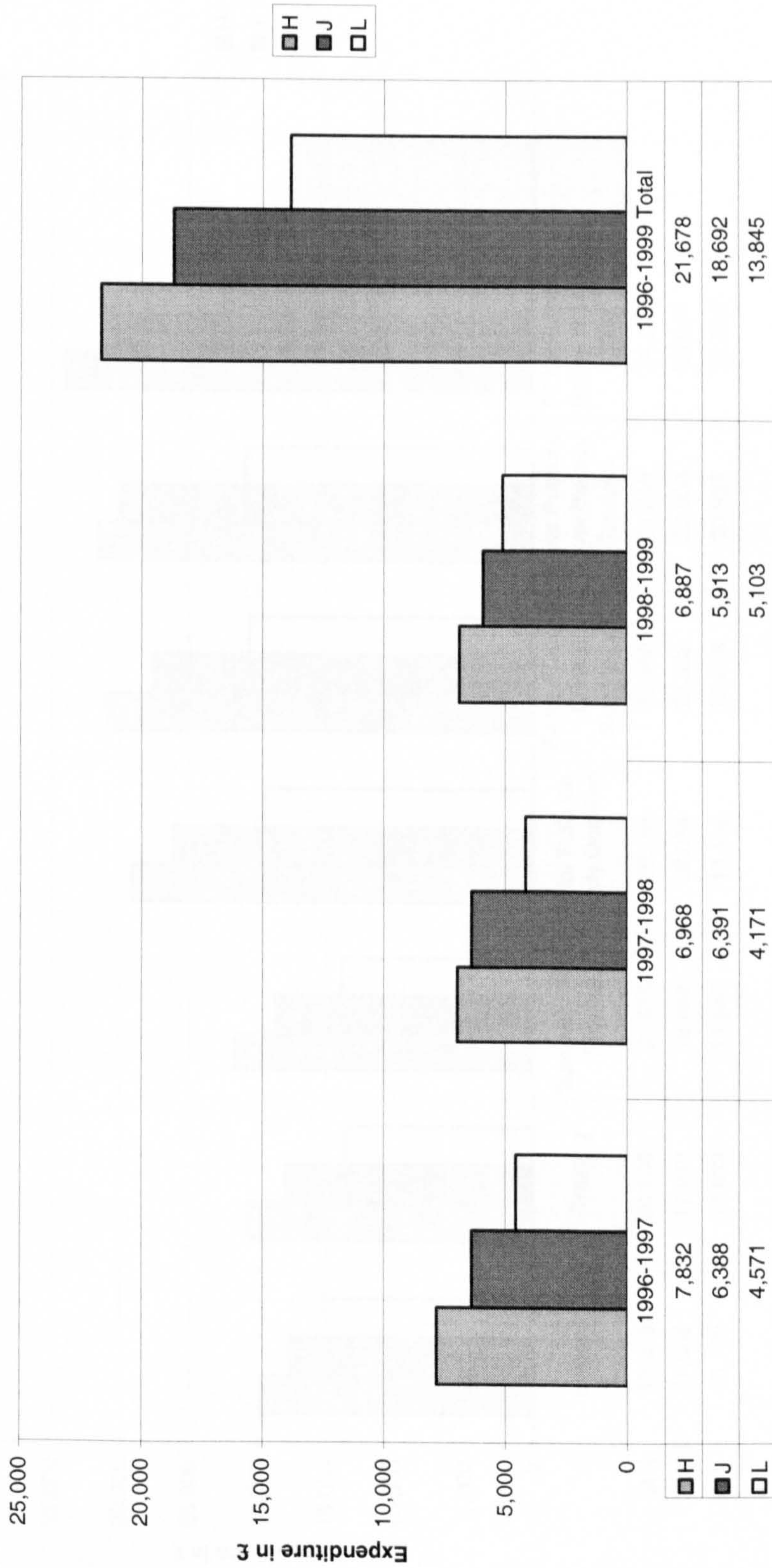
3.6.4 Conclusion

In pre-registration nursing it was the number of students that qualified, which was the major determinant in university cost-effectiveness. The magnitude of the difference in overall weighted mean percentage of FfPu of NQABNs was minimal within each of the four separate assessment groups across each of the university providers (Table 50). The minimal differences were insufficient to offset the major effect of high vertical student attrition and the competitive advantage of one university having the lowest cost per indexed student.

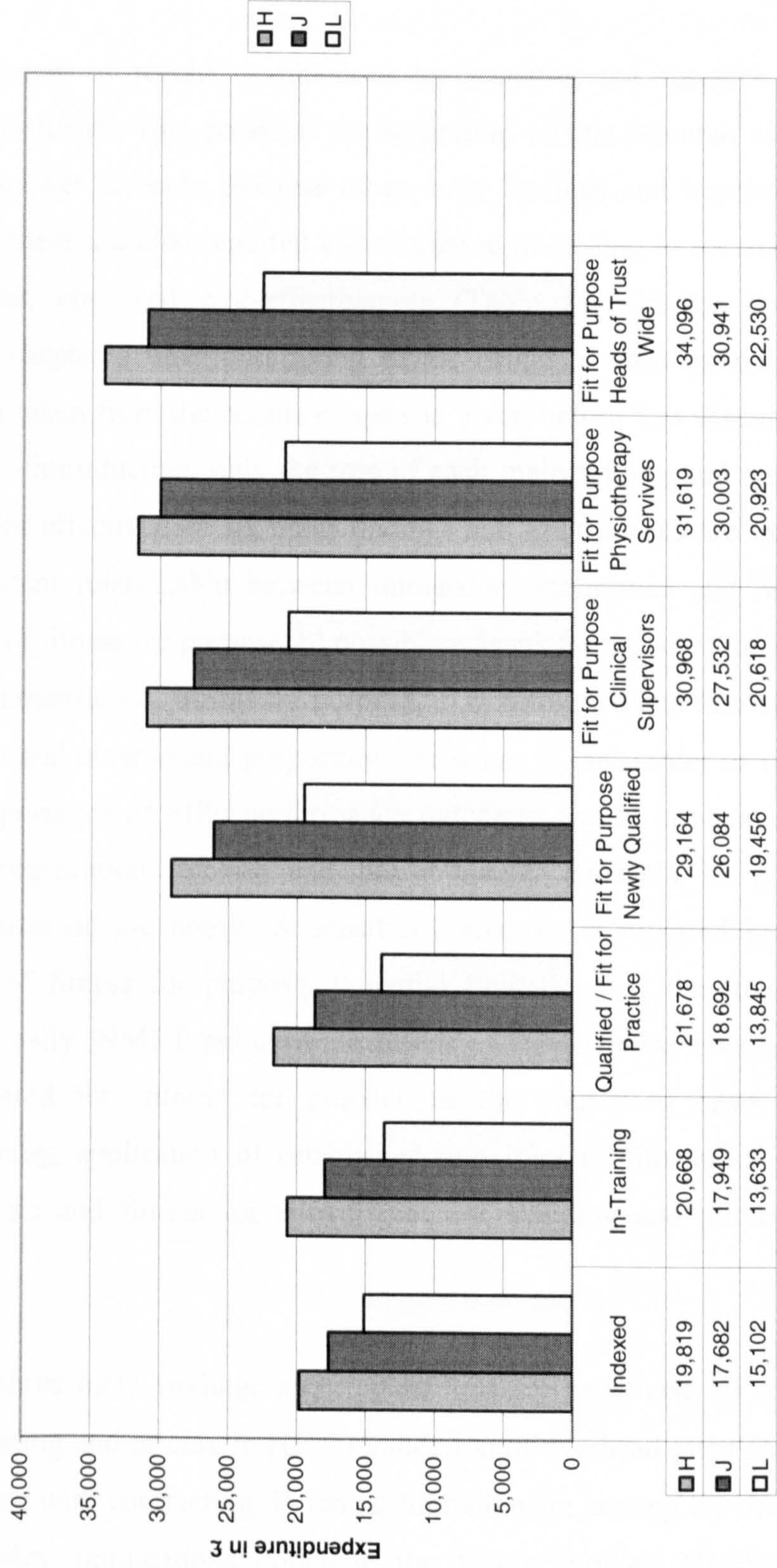
In respect of physiotherapy student attrition was low and comparable between universities. Also comparable, within assessment groups, was the overall weighted mean percentage of fitness for purpose attributed to NQPs from each university. These two factors cancelled each other out. Consequently, it was the large difference in the cost per indexed physiotherapy student between the three providers (£15,102– £19,819) a difference of £4,717, which was the main determinant in establishing the most cost effective provider of fit for purpose NQPs in the study area (Table 51 Graph 17).

Cost per fit for purpose NQABN and NQP rises as the overall weighted mean percentages of fitness (OWM%FfPu) attributed to them, falls. The fall in effectiveness increases with the seniority of the assessor group.

Graph 16 Cost Per Qualified Physiotherapist By University By Year



Graph 17 Cost Per Physiotherapy Student By Category By University By Year



CHAPTER 4 DISCUSSION OF RESULTS

4.0 Introduction.

The discussion of results commences by restating the research questions, according to theme, first posed at the beginning of this research along with a summary answer to each. Because other main findings and implications were discovered these are also reported and discussed according to recurrent themes: effectiveness, cost and cost-effectiveness (Table 52). In the body of the discussion chapter a brief description of the origin of each main finding and implication taken from the results chapter is given before it is discussed in full. Here, in this introduction, only the title of each main finding and implication is reported. For effectiveness six main findings and implications are examined: a) an inconsistent relationship between dimension importance and actual mean percentage of fitness for purpose, b) possible reasons for the selection of the most important dimension of fitness for purpose, c) & d) overall and individual fitness for purpose and inverse and proportional schema, e) rank order of estimates of relative importance of FfPu performance outcomes and f) implications for pre and post registration nursing and physiotherapy curricula of effectiveness findings based on a-e above. A sensitivity analysis is reported in respect of thresholds of fitness for purpose. Potential limitations of the study are then reported. Finally, NMET policy implications of effectiveness research findings are considered for: fitness for practice as the confirmed basis of NMET commissioning, application of established principles of fitness for purpose in trend analysis and fitness for award, practice, standing and purpose and the curriculum.

In costing three main findings and implications are examined: g) relationships between costing and pricing in HE, h) validation of overhead rates and i) NMET cost variation with contracting. Potential limitations in costing are then reported. Finally, policy implications conclude the theme: pricing NMET contracts, overhead rates, contract flexibility; student numbers and attrition, and subsidy and under-spend in delivery of NMET contracts.

In cost effectiveness four main findings and implications are examined: j) cost-effectiveness in the real world, k) results in context: cost effectiveness ratios for pre-registration nursing and physiotherapy students in the context of published costs and ratios l) determinates of cost per fit for purpose employee; and m) identification of the most cost-effective university provider of fit for purpose adult Branch nurses and physiotherapists educated in the study Consortium/Confederation. Potential limitations are then noted. Finally, NMET policy implications of cost effectiveness ratio research findings are discussed in the context of a proposed NMET policy framework. The chapter concludes with reaffirmation of the main findings of this research and the identification of future research questions.

Discussion	Effectiveness	Cost	Cost-Effectiveness
	1 Effectiveness and Fitness for Purpose: Main Findings and Implications, Sensitivity Analysis, Potential Limitations and Policy Implications.	2 Costing and Pricing of NMET Contracts: Main Findings and Implications, Potential Limitations and Policy Implications.	3 Cost-effectiveness of Pre-Registration Nursing & Physiotherapy Education: Main Findings and Implications, Potential Limitations and Policy Implications.
4 Summary of Main Findings and Future Research			

Table 52 Thesis plan for analysis of effectiveness, cost and cost-effectiveness: chapter 4 discussion of results, 1 effectiveness, potential imitations and implications.

Based on the critical literature review a number or research questions were identified. They fell into two categories: theoretical and methodological, and practical spanning benefits/effectiveness, cost and cost effectiveness. The theoretical and methodological questions and their summary answer are reported below.

Theoretical and methodological research questions.

Benefits / Effectiveness

RQ1. Which was the most appropriate fitness benefit, from the economic perspective of employers, for use in the CEA? The identified benefit was FfPu (Benefit Identification).

RQ2. What were the main causes of the theory-practice gap that can negatively affect acquisition and maintenance of competence, performance and effectiveness? The main causes are: utility of advocated theories for practice; transferability of learning between settings; lack of reflection; conflicting perceptions of practitioners' and nurse educators' roles; loss of balance between academic and practice values; excessive demands placed on educators and lack of resources. High aspects of provision scores for nursing and other subjects allied to medicine might suggest that the effect of the gap, in the study consortium universities, may be minimal (Benefit Estimation).

RQ3. Were there any appropriate, valid and reliable psychometric measurement scales of FfPu for NQABNs & NQPs? No gold standard FfPu scales could be identified from the literature (Benefit Estimation).

RQ4. What methodologies produce profiles of FfPu so that the resultant scores can be used to calculate CER's? The methods are psychometric testing, survey methods, and factor analysis (Benefit Estimation).

Cost.

RQ5. How was NMET funded, contracted and publicly accountable? NMET was funded via NMET (later MPET) levy on Health Authorities. Education consortia have 'block contracts' with HE providers on behalf of the NHS. Public accountability is provided via the rigour of the contracting process (Cost Identification).

RQ6. Was there an economic framework for the production of NMET? Tsang's economic framework accommodates the NMET production function i.e. objectives, prices, inputs, technology and outputs of NMET (Cost Identification).

RQ7. What costing methodologies does HE use in England in general and in nursing and physiotherapy in particular? HEFCE uses a 5-step activity based costing model, which accommodates nursing and physiotherapy costing models (Cost Estimation).

RQ8. What are the characteristics of pre-registration nursing & physiotherapy student attrition? The main reasons are: academic failure, personal circumstances (including financial pressures), alternative employment/career choices, illness, transfer to other NMET or non NMET courses, and dissatisfaction with the quality of the programme including cost and quality accommodation/practice/placement timetable (Cost Estimation).

Cost-effectiveness.

RQ9. Which was the most appropriate full economic analysis for this research? A cost effectiveness analysis was the most appropriate because, for both nursing and physiotherapy, there were two or more competing university providers. For each a measure of their cost per student and student effectiveness (FfPu) can be generated, and expressed as a CER. These can be compared, within profession, in order to identify the most cost effective university provider (Benefit and cost comparison).

Practical research questions.

The four key research questions are addressed in the remainder of this thesis. These questions are:

RQ10 How, in practice, was FfPu measured? Fitness for practice was measured using a valid and reliable psychometric measurement scale for Adult Branch

nurses (YCON) and physiotherapists (YCOP) (Chapter 2 Methods 2.1 Developing Outcome Measures: Competence and Performance)

RQ11 How, in practice, were costs measured? Costs were measured using HEFCE's five-stage activity based costing algorithm. (Chapter 2 Methods 3 Application of HEFCE's Five-Step Costing Process to NMET Contracts)

RQ12 Which of the competing universities was the most cost effective at producing fit for purpose NQABNs & NQPs? Out of three universities University 'T' was the most cost effective provider of Adult Branch nurse education. For physiotherapy out of three universities University 'L' was the most cost effective.

RQ13 What are the policy implications arising from the hierarchy of cost effectiveness ratios in respect of NMET objectives, prices, inputs, technology and outputs? Policy implications relate to the following areas and each is discussed in depth as the conclusion of the effectiveness, cost and cost-effectiveness theme.

4.1 Effectiveness and Fitness for Purpose: Main Findings and Implications, Sensitivity Analysis, Potential Limitations and Policy Implications.

4.1.1 Main Findings and Implications.

In respect of effectiveness / fitness for purpose six main findings and implications were reported in 4.0 introduction and are explored in detail below.

a) An inconsistent relationship between dimension importance and actual mean percentage of fitness for purpose.

A relationship is proposed between the most discriminating dimension of FfPu, per professional grouping, based on highest percentage of variance, and 2) mean percentage of FfPu per identified dimension. (Results chapter Effectiveness 1 Dimensions of Fitness for Purpose and 2 Mean Fitness for Purpose Per Dimension).

Factor analysis (principal components) was the method applied to the raw data generated from the application of YCON and YCOP to all four assessment groups of nurses and physiotherapists respectively. Dimensions of FfPu for NQABNs & NQPs were identified. The most important dimension of FfPu was the one with the highest percentage of variance. A mean percentage of FfPu, per dimension, per category of assessor, was calculated. The highest mean percentage of fitness was located on the dimension of fitness the assessment group believed the NQABNs and NQPs performed best at. The lowest mean percentage was located on the dimension of fitness the assessment group believed the newly qualified performed worst at (Tables 53 & 54).

A relationship exists between certain dimensions of fitness for purpose and the attributed mean percentage of fitness for purpose. The relationship can be positive, negative or in between the two. The most important dimensions of FfPu for NQABNs and NQPs are located in row 2 of tables 53 & 54, respectively. Row 3 contains the dimension, which achieved the highest mean percentage of fitness. This dimension may or may not be the same dimension as in row 2. Finally, row 4, contains the dimension which achieved the lowest mean

percentage of fitness. Again, the dimension contained in row 4, may or may not be the same as in row 2.

	Newly Qualified (Self Assessed)	Clinical Preceptors (Assessment of Newly Qualified)	Sisters/ Charge Nurses (Assessment of Newly Qualified)	Directors of Nursing (Assessment of Newly Qualified)
(Row 2) Dimension 1 Most Important Dimension of Fitness	Adapting Nursing Practice (% of variance 11.67) <i>Mean % of FfPu * 66.31%</i>	Practice Within the Recognised Scope and Current Limitations of Nursing Practice (% of variance 22.08) <i>Mean % of FfPu * 75.75%</i>	Delivery of Cost Effective Nursing Care (% of variance 25.4) <i>Mean % of FfPu * 57.83%</i>	Enable Patients to Meet Their Physical and Psychological Needs Within a Programme of Nursing Care (% of variance 17.96) <i>Mean % of FfPu * 51.01%</i>
(Row 3) Highest Mean % of Fitness Dimension, Which Newly Qualified, Performed Best At. (Row 3)	5/10 Contribute to the Physical and Psychological Well Being of Patients <i>Mean % of FfPu * 85.20 %</i>	1/4 Practice within the Recognised Scope and Current Limitations of Nursing Practice <i>Mean % of FfPu * 75.75 %</i>	2/4 Enabling Patients to Meet Their Physical, Physiological and Psychological Needs <i>Mean % of FfPu * 69.94 %</i>	6/9 Contribute to the Well Being of Patients <i>Mean % of FfPu * 62.92%</i>
Row 4 Lowest Mean % of Fitness Dimension, Which Newly Qualified, Performed Worst At.	8/10 Effective Communication <i>Mean % of FfPu 65%</i>	3/4 Evidence Based Nursing Care <i>Mean % of FfPu * 59.88%</i>	1/4 Delivery of Cost Effective Nursing Care <i>Mean % of FfPu * 57.83%</i>	3/9 Patient Protection <i>Mean % of FfPu * 47.2%</i>

* All 3 Universities combined

Table 53 Nursing: Relationship between the most important dimension, highest and lowest mean percentage of fitness for purpose per dimension 1997 & 1998 combined.

a1) Inconsistent relationship between dimension importance and actual mean percentage of FfPu: nursing.

When the most important dimension (row 2) was the same dimension with the highest mean percentage of fitness for purpose (row 3) a positive relationship occurred. This happened with clinical Preceptors, when they identified that the most important fitness for purpose dimension that NQABNs should possess, was 'Practice Within the Recognised Scope and Current Limitations of Nursing Practice' (22.08% of variance). The FfPu dimension, which NQABNs were rated highest at by their Preceptors, was the most important dimension 'Practice Within the Recognised Scope and Current Limitations of Nursing Practice' (75% Mean FfPu) (Table 53). Consequently, a positive relationship exists between the most important dimension and the dimension the NQABNs were perceived to perform best at i.e. they were most fit for purpose at.

Negative relationships also exist. Sisters/Charge nurses identified the most important dimension of FfPu for NQABNs as 'Delivery of Cost Effective Nursing Care' (25.4% of variance) (Row 2). The dimension they rated NQABNs performing worst at was 'Delivery of Cost Effective Nursing Care' (57.83% mean fitness) (Row 4). This most important dimension and best performance were negatively correlated.

For the NQABNs, who self assessed, there was neither a definitive positive or negative relationship. They were most fit for purpose at the fifth most important dimension out of ten. For DoN, they rated the NQANBs as most fit on the 6th most important dimension out of 9 (Table 54).

The NAG membership confirmed the appropriateness of each dimension label. Why certain constructs/dimensions and not others were generated by the exploratory factor analysis is an important question.

a2) Inconsistent relationship between dimension importance and actual mean percentage of FfPu: physiotherapy.

The proposed correlation between the most discriminating dimensions of FfPu, per professional grouping, as identified by its highest percentage of variance and mean percentage of FfPu per identified dimension, is applicable in physiotherapy as well as in nursing.

In none of the four groups of physiotherapy assessors was the most important dimension of FfPu (row 2), the dimension, which achieved the highest (row 3) or lowest (row 4) mean percentage of FfPu (See table 54). Consequently, there were no definitive positive or negative correlations.

b) Possible reasons for the selection of the most important dimension of fitness for purpose.

For both nursing and physiotherapy why certain constructs/dimensions and not others were generated by the exploratory factor analysis is an important question.

Newly qualified adult branch nurses - most important dimension of FfPu.

The Project 2000 curriculum aimed to engender in all students, a sound knowledge and theory base, interpersonal skills, life sciences, research awareness, communication and person insight skills (Macleod Clark et al., 1997, Runciman et al., 1998, UKCC 1999, DoH 1999). Further, they were to be capable practitioners with well-developed skills of clinical reasoning, and as registrants better able to adapt their practice and implement evidence based practice (UKCC 1999; DoH 1999). In other words, an amalgam of competencies drawn from the four core components of professional competence: knowledge/cognitive, functional, personal/behavioural and values/ethics and overarched by meta-competencies (Cheetham & Chivers 1998). The selection of the dimension 'Adapting Nursing Practice' by NQABNs from all three universities as the most important dimension of FfPu is an overt expression that one of the key objectives of Project 2000 courses has been achieved. It also

confirms the achievement of important EU competency criteria of continuous improvement and adaptation to rapidly changing environments (EC 1998 XV/E/8481/4/97-EN).

The above knowledge, skills, attitudes, values and life skills of those accepted into training are further enhanced as a consequence of experiencing HE. This is true of all entrants regardless of age or experience. Mature entrants and/or experienced health care assistants prior to training, will have more and different experience to draw upon than school leavers. These enhanced life and other skills are a contributing factor in adaptation of nursing practice. It would be surprising if this were not so because possession of such skills is one of the reasons why they were recruited.

There is also a pragmatic aspect as to why 'Adapting Nursing Practice' was identified as the most important dimension by the newly qualified. There are often a wide variety of post qualification posts for NQABNs. A first choice may not have been available at qualification. Consequently, each NQABN needs to be able to demonstrate to perspective employers, that they have sufficient experience to be able to adapt their practice according to the requirements of the posts that are available. This is essential because they need a job not least because of the difficult financial situations of many at the point qualification.

The newly qualified, from all three universities, rated their fitness highest on 'Contribute to the Physical and Psychological Well Being of Patients'. The reason for this may be because patient-centred care, in which basic human needs are met, is still a major focus of the nursing curriculum. It is perhaps also an easier dimension to achieve best performance in, than 'Adapting Nursing Practice', although it must be admitted that adaptation is still required when 'Contributing to the Physical and Psychological Well Being of Patients'. Alternatively, it may have been an easier dimension to measure.

Communication skills is another key component of Project 2000 courses and a declared outcome characteristic to be present in all NQNs (Macleod Clark et al 1997, Runciman et al 1998, UKCC 1999, DoH 1999). Why NQABNs choose

'Effective Communication' as the dimension of FfPu they were least fit at is unknown. However, it may be due to a sense of the challenge of effective communication required to meet the wide cultural diversity of practice. A mean percentage of 65% against a threshold of 50%, would seem to suggest that they are addressing the challenge from a sound vantage point.

Clinical preceptors-most important dimension of FfPu in NQABN.

Preceptors identified the most important dimension of fitness as the one they rated the newly qualified most fit at i.e. 'Practice Within the Recognised Scope and Current Limitations of Nursing Practice' (22.08% of variance, 75.75 mean percentage of fitness). Preceptors as experienced practitioners have a different perspective to NQABNs. One reason, for their choice, might be that they expect NQABNs to recognise their inexperience and relatively narrow scope of practice and to have the maturity to limit their practice accordingly. The fact that they rated the fitness for purpose of the newly qualified highest on their most important dimension might suggest that the newly qualified are practising appropriately and demonstrating that maturity. A further reason for this may lay in the curriculum of study. A high profile is given to professional standards and conduct, which addresses both acts and omissions, and is contained in 'The Scope of Professional Practice' (UKCC 1992a).

Implementing evidence-based practice is another declared objective of Project 2000 courses (Macleod Clark et al., 1997, Runciman et al., 1998, UKCC 1999, DoH 1999). Preceptors rated the newly qualified as least fit at 'Evidence Based Nursing Care', (59.88% mean percentage of FfPu all three universities). This rating may be a reflection that this dimension is one of the hardest to achieve and is, perhaps, more difficult to achieve than 'Practice Within the Recognised Scope and Current Limitations of Nursing Practice', which may be considered to be a pre-requisite. If the reverse had been found this might suggest that YCON may not have been sufficiently discriminating.

Sisters/Charge nurses-most important dimension of FfPu in NQABN.

It has already been stated that professional groups reflect their experience, responsibilities and view of the professional nursing world. Given the budget-holding status of many ward managers, it is not surprising that this group of staff identified the most important dimension of a fit for purpose NQABN as the ability to 'Deliver Cost-Effective Nursing Care' (Variance 25.4%, mean percentage of fitness 57.83%).

The newly qualified, quite naturally, were not rated as most fit on this difficult dimension but on 'Enabling Patients to Meet their Physical, Physiological and Psychological Needs' (69.94% mean percentage of fitness). This dimension would seem to equate with basic nursing care. This result is similar to that in respect of the NQABNs' self-assessment. The two appear to reinforce each other, but the Sisters/Charge nurses rated them lower on it than the newly qualified rated themselves.

This result is interesting because this dimension is an essential pre-requisite for the 'Delivery of Cost-Effective Nursing Care', which the newly qualified were rated least fit at (57.83%). If patient needs are not being met, then however inexpensive nursing care is, it is not cost-effective. This does not mean that NQABNs have no effect in respect of delivering such care. For example a nurse, as part of her risk assessment, may use both rubber gloves and an antiseptic spray, when perhaps only the former was required. If such instances were repeated frequently and by all newly qualified staff and/or by others, then the cumulative cost would become significant. Over time, along with other inappropriate use of resources, over which they have control, this could lead to significant wastage, and reduction of clinical cost-effectiveness. The 57.83% mean fitness percentage suggests that, the message about cost effective care, has been understood, there is much room for improvement, which is only to be expected.

Directors of nursing-most important dimension of FfPu in NQABN

The most important dimension of fitness for NQABNs as far as DoN were concerned, was 'Enable Patients to Meet Their Physical and Physiological Needs' Within a Programme of Nursing Care' (17.96% of variance). The newly qualified were rated at 51.01% fit on this dimension, which is only just above the 50% threshold.

Directors rated the newly qualified most fit at 'Contribute to the Well Being of Patients' (62.92% mean FfPu) but this was only 11.92% above the rating on the most important dimension identified above. Contribute to the Well Being of Patients' is similar to those dimensions that NQABNs were rated most fit at by Sisters/charge nurses - 'Enabling Patients to Meet their Physical and Physiological Needs' (69.94% mean FfPu) and the newly qualified who self assessed 'Contribute to the Physical and Psychological Well being of Patients' (85.20%).

Directors of nursing rated the newly qualified as least fit at 'Patient Protection' and 'Health and safety in the Workplace' (47.2% mean percentage of fitness). This issue is high on Directors' agendas for legal, political, and clinical governance reasons. Patients negligently injured and/or abused by NQABNs, because they did not possess the necessary competencies and/or professional standing to prevent such an outcome, may seek financial compensation from NQABNs employing Trust because of vicarious liability.

	Newly Qualified (Self Assessed)	Clinical Supervisors (Assessment of Newly Qualified)	Physiotherapy Services Managers (Assessment of Newly Qualified)	Heads of Trust Wide Physiotherapy Services (Assessment of Newly Qualified)
Row 2 Dimension 1	Clinically Effective Physio Therapy <i>(% of variance 14.31)</i> <i>Mean % of Fitness * 75.06%</i>	Planning, Implementing and Evaluating Physiotherapy <i>(% of variance 14.77)</i> <i>Mean % of Fitness * 67.71%</i>	Clinically Effective Physio Therapy <i>(% of variance 20.04)</i> <i>Mean % of Fitness * 66.02%</i>	Patient Equity in the Context of Practice <i>(% of variance 21.52)</i> <i>Mean % of Fitness * 61.17%</i>
Row 3 Highest Mean % of Fitness	7/7 Service Equity and Patient Rights <i>Mean % of Fitness * 84.01%</i>	6/6 Service Equity and Patient Rights <i>Mean % of Fitness * 78.45%</i>	3/4 Patients Rights and Service Equity <i>Mean % of Fitness * 70.27%</i>	6/6 Continuing Professional Development <i>Mean % of Fitness * 66.78%</i>
Row 4 Lowest Mean % of Fitness	2/7 Frameworks , Legislation and Policies Relating to Physio therapy Practice. <i>Mean % of Fitness * 65%</i>	2/6 Evidence Based Physiotherapy <i>Mean % of Fitness * 63.27%</i>	2/4 Issues That Affect Physiotherapy Practice <i>Mean % of Fitness * 61.79%</i>	4/6 Evidence Based Physiotherapy <i>Mean % of Fitness * 54.92%</i>

**All 3 Universities combined*

Table 54 Physiotherapy: Relationship between the most important dimension, highest mean percentage of fitness for purpose performance per dimension 1997 & 1998 combined only.

Newly Qualified Physiotherapists: most important dimension of FfPu.

The newly qualified identified the most important dimension of fitness as 'Clinically Effective Physiotherapy' (14.31% variance). In other words FfPu, for them, was synonymous with clinical effectiveness. The main focus of the physiotherapy curriculum is about producing physiotherapists who are capable of providing clinically effective physiotherapy. Sequenced and progressive curricular components, spanning theory and practice, ensure the development of physiotherapy skills, their application and context in practice. It constitutes a practitioner–scientist curriculum model (Higgs & Tichen 1995) and practitioner. The process of research and evaluation underpins and informs all physiotherapy practice (CSP 1996a). It is not surprising therefore, that clinically effective physiotherapy was identified as the most important dimension of fitness.

Similar to nursing, physiotherapy students bring with them into training knowledge, skills, attitudes, values and life skills. An increasing number are mature students. Many have work experience as physiotherapy assistants or health care support workers. For some HEI's such experience is mandatory. These experiences are developed and transferred into practice and find expression as the ability to secure the commitment of people, and/or to show sensitivity to the needs of others. Both are important underpinnings of clinically effective physiotherapy.

The same pragmatic reason why this dimension is the most important, for newly qualified physiotherapists as well as NQABNs is the need for employment both to commence their career and to ensure financial health.

The dimension the newly qualified rated their best performance upon was 'Service Equity and Patient Rights' (84.01 % mean fitness all three universities). The reason for this might be that one of the eight main outcomes of physiotherapy education is 'Promoting Equality to All Individuals in Physiotherapy Practice'. This notion, is fundamental to both treatment of individuals and management of practice spanning; non-discriminatory practice, confidentiality, informed consent and respect and dignity of the individual (CSP

1996; CSP 1996a). It would seem therefore, that this outcome is being achieved by the NQPs because it is a major part of their curriculum of study.

The newly qualified rated their lowest performance on 'Frameworks, Legislation and Policies Relating to Physiotherapy Practice (65 % mean fitness). It should be recognised that this figure is well above the threshold of 50% FfPu. The reason why they scored less well on this dimension than any other, but still well, is that it is not until employed and responsible for their own actions and omissions, rather than the vicarious responsibility of their supervisor and others, that the significance of ethical and professional frameworks, related legislation and health and social policies become personally important.

Clinical supervisors: most important dimension of FfPu.

Clinical Supervisors identified 'Planning, Implementing and Evaluating Physiotherapy' as the most important dimension of fitness (14.77% of variance). This is similar to 'Clinically Effective Physiotherapy' identified by newly qualified physiotherapists. Its repetition would again suggest the importance and influence of the practitioner–scientist curriculum model and practitioner. The reason why Supervisors chose this dimension might be because physiotherapy is basically about three related activities; planning, implementing & evaluating physiotherapy. If a practitioner is competent in these three, as confirmed by their performance, then he/she is fit for purpose. Clearly, with a mean fitness rating of 67.71% all newly qualified from all three universities were deemed fit by their clinical Supervisors.

The Supervisors rated the newly qualified most fit at 'Service Equity and Patient Rights' (78.45%). This dimension is particularly important in physiotherapy as it underpins and finds expression in 'Planning, Implementing and Evaluating Physiotherapy'. This is an interesting finding as it mirrors the finding in the newly qualified, but at an expected lower level of awarded mean percentage of fitness.

The dimension on which Supervisors rated the newly qualified least fit was 'Evidence Based Physiotherapy' (63.27%). This is a recognised competence for modern day practice (DoH 1997) and has been observed by Supervisors to be present in newly qualified physiotherapists educated at two universities in England but not featured in this study (Wiles et al., 1999). The performance of the newly qualified on this competence is not surprising as it is the hardest dimension to successfully achieve. This finding reinforces the finding in nursing because clinical Preceptors, the equivalent to Supervisor in physiotherapy, also rated the newly qualified lowest on this identical dimension, and with similar percentages of fitness (nursing 59.88%). The newly qualified, identified the most important dimension of FfPu as 'Clinically-Effective Physiotherapy', which is closely related to 'Evidence Based Physiotherapy', which they maturely did not rate themselves as most fit at.

Physiotherapy services managers: most important dimension of FfPu.

The Managers identified the most important dimension of FfPu as 'Clinically-Effective Physiotherapy' (20.01% of variance). The reason for their choice might be that as a manager their focus is to ensure that the newly qualified are clinically effective because patient throughput and discharge success rates are likely to be higher. Consequently, patients and managers will perceive the Service as successful. Interestingly, the NQPs also selected the same dimension of FfPu as being most important. Supervisors, it will be recalled selected 'Planning Implementing & Evaluating Physiotherapy Practice', a closely related dimension, as the most important. There is, therefore, a consistent trend in the most important dimension across these three grades of staff.

The dimension the Managers rated the newly qualified most fit at was 'Patients Rights and Service Equity' (70.27 % mean fitness). This mirrors the finding of the newly qualified and clinical supervisors. The reason for the dominance of this dimension was again the importance of clinical governance in the treatment of individuals and the management of practice.

The dimension the newly qualified were rated least fit at was 'Issues That Affect Physiotherapy Practice' (61.79 % mean fitness), but well above the 50% FfPu threshold. This dimension includes issues pertaining to resources, health and social policies, legislation, scope and limitation of practice, medico-legal and patient management issues and physiotherapy outcomes (CSP 1996). These can be considered as the context of practice, in which clinically effective physiotherapy is aspired to and delivered is particularly important to managers.

Heads of trust physiotherapy services: most important dimension of FfPu.

Heads of service identified the most important dimension of FfPu in NQPs as 'Patient Equity in the Context of Practice' (21.52 % of variance). The reason for this might be that as Heads of service their primary concern was to ensure that NQPs promote equality to all individuals in physiotherapy practice through respect, communication, confidentiality, promotion and support of patient's rights' and choices, and through non-discriminatory practice. In doing so, the clinical governance agenda, which they are managerially responsible for, is addressed.

The dimension of fitness that the Heads rated the NQPs most fit on was 'Continuing Professional Development' (66.78 % mean fitness). The reason for this might be because they have observed that the newly qualified have not only recognised the importance of undertaking CPD but that they are taking personal responsibility for responding to its challenge (Wiles et al., 1999) and are making best use of provided opportunities to enhance, update and develop their knowledge and skills within available resources, including their own.

The dimension Heads of service rated the newly qualified lowest at, but still above the threshold of 50%, was 'Evidence Based Care' (54.92% mean fitness). The importance of this dimension by employers of newly qualified physiotherapists educated elsewhere has been noted (Wiles et al., 1999) as a recognised competence for modern day practice (DoH 1997). This lowest rating is understandable as it was one of the hardest meta-competence/macro outcomes to achieve based as it is on critical appraisal of research evidence and the

application of findings in order to optimise clinical effectiveness. Interestingly, Clinical Supervisors also rated the NQPs lowest (63.27%) on the same dimension. The fact that two of the four professional groups did so gives both credence to the existence of the dimension itself, and to the difficulty NQPs have in this regard, by not being rated higher on it by these two groups of assessors. Recurrence of dimensions also confirms the appropriateness of the competencies comprising YCOP.

Overall the variety of the dimensions of fitness for purpose were more homogeneous in physiotherapy focusing around planning, implementing and evaluating clinically effective physiotherapy and service equity, and patient rights thus reflecting the greater stability of physiotherapy education over the past decade.

Nursing and physiotherapy: most important dimension of FfPu

For newly qualified physiotherapists, their Supervisors and Managers, there is consistency in selecting the most important dimension of fitness for purpose in newly qualified physiotherapists i.e. 'Clinically Effective Physiotherapy'. This dimension is consistent with definitions of fitness for purpose (HEQC 1994b; NWRHA 1994; Luker et al., 1996; HEQC 1996; EC EX/E/8481/4/97-EN 1998; Runciman et al., 1998; NHS E 1999; Cross 1999; NHS E 1999; UKCC 2000). Further, the mean percentage of fitness for purpose was in the range 66.02% - 75.06% well above the 50% threshold. Given that the production of fit for purpose physiotherapists was a Consortium objective, this policy goal was achieved.

Unlike physiotherapy what constitutes the most important dimension of fitness for purpose in nursing differs between the four groups of nurse assessors. Newly qualified nurses are fit for purpose on the most important dimension for each type of assessor. The variety of the dimensions of fitness for purpose was more homogeneous in physiotherapy than in nursing reflecting the greater stability of physiotherapy education over the past decade.

c) and d) Weighted mean percentage of fitness for purpose: overall and individual inverse-proportional schema of assessment.

c) Overall weighted mean percentage of fitness for purpose (OWM%FfPu)

Overall weighted mean percentage of fitness for purpose (OWM%FfPu) per university, per each of the four professional groupings in nursing and physiotherapy, was a product of the dimension importance (rank order score) multiplied by preference (factor loading). At all universities, and for all groups of assessor, the calculated OWM%FfPu for NQABNs and NQPs was above the 50% threshold. (See results chapter parts 3 Overall Weighted Mean Fitness for Purpose and 4, Estimates of Relative Importance of Learning and Performance Outcomes).

There is strong statistical evidence that FfPu falls as the seniority of the physiotherapy assessor rises. NQABNs & NQPs consider themselves most fit out of the four profession-specific groupings. Nursing Preceptors and physiotherapy Supervisors rated the newly qualified less fit than the newly qualified rated themselves. Sisters/Charge nurses and physiotherapy Managers rated the newly qualified as less fit for purpose than the Preceptors but more fit for purpose than Directors of nursing and Heads of physiotherapy. The specific percentages are identified in table 37 for nursing and 39 for physiotherapy.

From these percentages it will be seen that overall weighted mean percentage of fitness for purpose falls as the grade of assessor rises. It is suggested, that this phenomenon is called the inverse proportional schema of overall weighted mean percentage of fitness for purpose.

Both the overall weighted mean percentage of fitness for purpose per professional group and the percentages actually awarded are consistent with what an informed observer might have expected. That is, the newly qualified perhaps have an over-generous view of their performance. This may be based on their own perception of what nursing is, along with inexperience or over-enthusiasm. For progressively more experienced staff, each has their own perception of FfPu

and the standards of performance expected, based on that experience. Consequently, the overall weighted mean percentage of fitness for purpose of the newly qualified falls as the experience of the assessor raises i.e. the inverse proportional schema of fitness for purpose.

The range difference between each of the three universities for each of the four groups of assessors assessing NQABNS is small. Validity comes from consistency across the four types of assessor (table 37). Reliability comes from consistency between cohorts. This suggests that YCON and the formulae for calculating OWM%FfPu are valid and reliable.

In physiotherapy the pattern was the same as for nursing. As a consequence the inverse proportional schema of overall weighted mean percentage of fitness for purpose also applies (Table 39). Like nursing the range difference between universities and assessors assessing NQPS was small and for the same reasons.

Nursing and Physiotherapy.

The Heads of services (61.8 % mean OWM%FfPu all three universities) did not, however, rate the newly qualified as low as the DoN did (52.57 % mean OWM%FfPu, all three universities). Both categories of senior managers do not have the time to directly observe newly qualified staff working in a variety of practice settings. Consequently, their views will have been affected by read reports and sought opinion. The actual percentages, and difference in magnitude, between the two mean percentages is understandable because FfPu appears to be more of an issue for senior staff in nursing.

In Troskie's study (1993, 1993a), her hypothesis was that there would not be a considerable difference between the self-evaluation of the newly qualified nurse and that of his/her supervisor. In all three areas of her study (communication, management, and scope of practice skills), the null hypothesis was rejected. In each case there was a significant difference. Benner and Benner (1979) reported the same finding. Specifically that newly qualified nurses perceived themselves to be competent and more competent than the nurse educators and service

personnel believe them to be on the same 112 skills. The nursing service staff considered the newly qualified to have extremely low actual competency levels. Research implications' findings from this study reinforce Troskie's and Benner's results.

d) Individual weighted mean percentage of fitness for purpose (IWM%FfPu) measure

In respect of the number of individual nurses calculated to be below the threshold of 50%, the number of NQABN & NQPs rose with the seniority of assessor. The figures for nursing were;

- 1 out of 145 (0.7%) NQABNs
- 20 out of 160 (12.5%) clinical Preceptors.
- 29 out of 205 (14.15%) Sisters. (Table 41).

In physiotherapy figures were;

- 2 out of 92 (1.9%) NQPs.
- 6 out of 139 (4.32%) Clinical supervisors.
- 11 out of 97 (11.34%) Managers. (Table 42).

The 'least significant differences' was used to construct narrower confidence intervals than the more general Scheffe test would have yielded. The results confirm and quantify the substantial differences between levels of assessors (tables 38 & 40). There is strong statistical evidence that FfPu falls as the seniority of the nursing and physiotherapy assessor rises.

Although the numbers are different, the trend for both professions is the same. Consequently, it is suggested, that this phenomenon is called the proportional schema of individual fitness for purpose. In both professions, at the individual practitioner level, it is possible to be a fit for award, practice and professional standing, yet, for a small but significant number, not fit for purpose. This needs to be seen in context however, because a significant majority are fit on all four fitness benefits.

The reason for the increasing number of individual newly qualified nurses being rated below the 50% threshold by more senior staff may be the same as already reported by Troskie (1993, 1993a) and Benner and Benner (1979) for average fitness: newly qualified nurses perceive themselves more competent than the nurse educators and service personnel believe them to be. Again this may reflect the theory practice gap.

Factors affecting overall and individual weighted mean percentage of fitness for purpose.

While (1994) argued that the focus of concern prior to the registration of nurses should be their performance in real life situations. Registered, competent nurses, it was reported, are not always performing at an adequate level. Thus, competent nurses need to be differentiated from those who perform adequately in real life contexts. This research has responded to While's request. First, it has identified that NQABNs performance on dimensions of fitness for purpose (mean percentage) was above the 50% threshold for NQABNS, Preceptors and Sisters. Second, dimensions of fitness have been identified which Directors of Nursing rated the mean percentage of fitness for purpose performance of the newly qualified below the 50% threshold, even though registered as competent. Third, nurses and physiotherapists were rated above the 50% threshold of fitness in respect of overall weighted mean percentage of fitness for purpose i.e. competent and FfPu. Fourth, that a small but progressive number of individual nurses and physiotherapists per university were identified, by the hierarchy of assessors, as being not being fit for purpose yet were registered competent i.e. fit for award, practice and professional standing.

Directors of nursing were the only group to rate certain cohorts NABQN's below the mean 50% FfPu threshold of fitness. The lowest percentage was 46.39%. This is only just below the threshold and may be explained by reference to Benner (1984) and Phillips (1994). Benner's model of nursing competence, spanning novice to expert, saw the proficient and expert nurses characterised by; being able to see situations as complete entities i.e. the 'overall picture' (proficient), having an "intuitive grasp of each situation and zeroing in on the

accurate region of the problem without wasteful consideration of a large range of unfruitful, alternative diagnoses and solutions” (Benner 1984). This is similar to Phillips ‘performance in general’, i.e. that the component competencies are no longer distinguishable, having become features of performance in general. Phillips also recognises that competence is not a linear, orderly, spaced progression moving in one direction only or from one level to another. It can regress as well.

Newly qualified practitioners in this research are believed to be working at the advanced beginner category in Benner’s 5-stage scale. They demonstrate marginally acceptable performance even though their UKCC registered status indicates that they are competent. Benner’s definition of competence does not equate with the UKCC interpretation. For her, competent is equitable with a nurse who has been qualified for two or three years and has spent that time in the same clinical situation. The assessment of NQABNs took place six months after qualification and commencement of employment. The longer the period between qualification and assessment, the more the YCON would be measuring consolidated learning i.e. the three-year pre registration course plus six months preceptorship.

Overall weighted mean percentage of fitness for purpose is believed to be an appropriate proxy measure of university effectiveness in producing newly qualified FfPu practitioners. Consequently it was used in the calculation of cost-effectiveness ratios of fitness because it is a broad measure of performance outcome (importance mean FfPu %) and dimension (preference factor loading).

The generation and subsequent use of such results, along with others which express the relationship between indicators and outcomes of the education process like student achievement, is considered to be an extreme example of the quantitative approach to quality and especially if published in a league table (Pope et al., 2000). These authors argue, “direct links between complex factors within the education process may not be accessible to simple measurement”. This research confirms that view. Consequently, an integrated, service-approved, scientific methodology has been devised and tested, which establishes that the

education outcome, overall weighted mean percentage of fitness for purpose, as a legitimate proxy for university effectiveness in producing such staff.

e) Rank order estimates of relative importance of nursing and physiotherapy learning / performance outcomes.

Fifteen and eight learning / performance outcomes were identified for pre-registration nursing and physiotherapy respectively. All outcomes were undertaken in the context of work and the work environment and are affected by the personalities and motivation of both the student and newly-qualified plus all those with whom they interact (Cheetham & Chivers 1998).

Nursing

Rank order outcomes one and two were consistent across all four assessment groups. These were: 1) 'Deliver Nursing Care in Response to Patients Needs' and 2, 'Enable Effective Communication with Patients'. Rank order outcome one is consistent with Henderson's 1961 definition of nursing, focusing as it does on the patient in sickness and in health. 'Enable Effective Communication with Patients', is a meta-competency. The high rank order of this outcome should not be surprising given that it is a key aim of Project 2000 courses (UKCC 1999; DoH 1999). According to the NHS Plan, by 2002 all staff must be able to show that they can communicate with patients (Pittilo 2001).

Rank order outcomes 14 'Support Patients' Spirituality, Faith and Related Pastoral Care Needs' & 15 'Contribute to the Management of Resources, Information and Quality' were the same for NQABNs, Preceptors and Sister/Charge nurses. Only Directors of Nursing who assessed newly qualified nurses educated at universities in the study Consortium/Confederation were different. For them 'Contribute to the Management of Resources Information and Quality' was fourteenth most important with 'Respond to Changing Demands' being the fifteenth.

Physiotherapy.

In physiotherapy the most important performance outcome identified was 'Deliver Physiotherapy in Response to Patients Needs'. This result is interesting because it seems to suggest that all groups of physiotherapists, regardless of age, experience and grade recognized the need for newly qualified physiotherapists to be responsive to the needs of patients (Hollenbury 1994). There is no consistent opinion about which of the other seven outcomes is the next most important. However, 'Enabling Individuals and Groups to Optimize their Health and Social Well Being' was either second or third in each of the four groups rank ordering as was 'Manage Oneself and Work with Others to Optimize Results'. Apart from the NQPs all other groups identified 'Promote Equality to All Individuals in Practice' as the least important performance outcome.

Nursing and Physiotherapy.

Given there are many possible permutations of possible rank order of the outcomes, the degree of consistency for both nursing and physiotherapy but especially nursing is interesting.

The fact that all four groups of nurses and physiotherapists selected the same performance outcome as the most important i.e. 'Deliver Nursing Care (Physiotherapy) in Response to Patients Needs' suggests that there may be some shared aspects, pertaining to professional education or work culture, that places the needs of the patient at the centre of professional education and activity. In pre-registration education, the ethos and focus of the course, as well as the quality assurance mechanisms, contributed to by professional and statutory bodies, employers and HEIs are major contributing factors in ensuring that both pre-and post-registration education are patient-focused. There may be discrete modules, which address this issue. Alternatively, it may be a recurrent theme throughout a high proportion of all or a significant number of modules that comprise the course.

Other contributing factors may be the constant stream of DoH or NHS E publications which place the patient at the centre of policy e.g. 'A First Class Service: Quality in the New NHS' (NHS E 1998h), with out workings which affect all grades of staff delivering care. Alternatively, it may be the similar stream of articles in professional journals or employer updates e.g. NHS trusts, which pick up the strategic lead of Government and, in operational terms, place the patient or client first e.g. clinical governance (Openaire 1999 & 2000).

Also interesting is that physiotherapists and nurses attribute a common importance to the outcome 'Enabling Patients and Groups to Optimize their Health and Social Well-Being'. In both professions, where the newly qualified were concerned, this outcome was rank-ordered second. For Preceptors and supervisors it was the third most important.

Physiotherapy managers and Sisters/Charge nurses both identified the importance of 'Applying Knowledge and Understanding of Issues that affect their Physiotherapy & Nursing Practice (Fourth & third respectively).

At the lower end of the rank order of outcomes in nursing, where all three clinical grades were concerned, 'Contribute to the Management of Resources, Information and Quality' was in last position. For groupings of Directors of nursing it ranked either fourteenth or fifteenth out of fifteen. Given the Directors' of nursing strategic perspective, one might have expected this outcome to rank higher. One reason why it was not might be is that they were asked to rate the relative importance of the fifteen outcomes for all newly-qualified adult branch nurses. Consequently, 'Contribute to the Management of Resources, Information and Quality' may have been perceived, as its prefix suggests, as something NQABNs contribute to and, at their stage of development, secondary to the main agenda of 'Deliver Nursing Care in Response to Patients' Needs'. Thus, they rated it lower. Even so one might have expected it to be higher, especially given that quality is for some synonymous with FfPu. Just as concerning is that 'Respond to Changing Demands' was not higher placed, although its conceptual correlation with 'Resources, Management and Quality' suggests that where one is located the other should be close by.

The least important performance outcome for Clinical supervisors, Managers and Heads of physiotherapy was 'Promote Equality to All Individuals in Physiotherapy Practice'. This outcome is very closely linked to the dimension of FfPu 'Service Equity and Patient Rights' which the newly qualified recorded highest mean % of FfPu were (Newly qualified 84.01%, clinical supervisors 78.45% and physiotherapy managers 70.27%). Thus it would seem that the least important rank ordered performance outcome is the most important dimension of FfPu as far as Clinical supervisors, Managers and Heads of Physiotherapy are concerned.

f) Implications for pre-&-post registration education curricula of effectiveness findings.

In respect of effectiveness/FfPu six main findings and implications were reported in 4.0 introduction. (See results chapter parts 1–4 inclusive: 1 Dimensions of Fitness for Purpose, 2 Mean Fitness for Purpose Per Dimension, 3 Overall Weighted Mean Fitness for Purpose, 4 Estimates of Relative Importance of Learning and Performance Outcomes).

Each of the eight groups of nurse and physiotherapist assessors has its own perception of what is important in terms of both rank orders of performance outcomes and dimensions of FfPu. A number of key questions arise. Whose set of outcomes and dimensions are the most important? Should one set of outcomes dominate to the exclusion of others so that, for example, the new nursing curriculum, 'Making a Difference', should exclusively reflect one of the four groups of nurse's perception of FfPu?

Fortunately, in nursing, all four groups agreed that the most important outcome of FfPu is 'Deliver Nursing Care in Response to Patients Needs'. The new curriculum could be developed and 'weighted' with this outcome as a 'touch stone'. 'Enabling Effective Communication with Patients' was identified as the second most important outcome for all four groups. Again, this outcome could feature, weighted accordingly. The outcomes pertaining to spirituality, the

management of resources, information and quality, were considered to be the least important outcomes of fitness, but not unimportant.

Modular content and academic levels should be sensitive to rank orders, assuming that issues of academic award e.g. module level, and fitness for practice and standing have been addressed by identifying appropriate UKCC outcomes and competencies, attributable to the module under design. In this way Whittington & Boore's (1988) recommendation that patterns of nursing competence appropriate for evaluation of practice form a basis for sound curriculum achievement would be successfully addressed. The same arguments and implications apply to physiotherapy, as the most important outcome was 'Deliver Physiotherapy in Response to Patient Needs'.

What is not being suggested, for either profession, is a slavish approach. What is suggested is that the emerging concept of fitness for purpose based on dimensions of fitness and rank order importance of learning and performance outcomes could be integrated with academic, practice and professional standing perspectives in the new policy climate.

At a second level, individual module content and level should also attempt to reflect the importance of dimensions of FfPu/clinical effectiveness, based on percentage of variance and mean percentage of FfPu. It will be recalled that the Sisters identified only 4 dimensions of fitness. Other groups recorded more. This small number and high variance suggested that Sisters were very clear as to what constituted FfPu in NQABNs, from their perspective, and how important each dimension was.

For them 'Delivery of Cost Effective Nursing Care' had the highest variance at 25.4% and is the most important dimension. Other groups identified other dimensions as the most important (Table 53). The different choices reflect different perspectives. In respect of the Sisters' dimension on cost-effectiveness according to nurse academics and clinicians, students should experience it in the final year of the course once the essential prerequisite content has been covered. By comparison, the dimension 'Health & Safety in the Workplace' should be

addressed in the first year of the course and before students go out on clinical practice, in order to ensure the health and safety of patients, colleagues and themselves in the workplace.

The example quoted above, in respect of DoN, is particularly important because it was the second most important dimension of fitness, with a variance of 14.42%, and because NQABN's educated at University 'R' were rated at 47.2% FfPu and, therefore, just below the 50% threshold. Appropriate modular content should, therefore address areas of student weakness as well as developing existing strengths.

The 'Making a Difference' curriculum, at one of the study universities, was determined in part by all the results from the four nursing assessment groups pertaining both to dimension importance and related NQABNs performance. The curriculum reflects the needs and expectations of employers' perspective. Consequently, it is a natural extension and inclusive part of the sequenced link between fitness for award, practice, professional standing and purpose.

In 2004 the first students to qualify from the above mentioned university's new nursing course, based on the above principles (validated May 2001 and based on UKCC Outcomes and Competencies and YCON) will have experienced a curriculum which addressed Service-identified needs including the aspirations of the newly-qualified.

The most important dimensions of fitness, based on highest percentage of variance, addressed in the new curriculum, are outlined below along with the attributable professional group:

- 1 'Adapting Nursing Practice' (NQABN's).
- 2 'Practice Within the Scope and Current Limitations of Nursing Practice' (Clinical Preceptors).
- 3 'Delivery of Cost-Effective Nursing Care' (Sisters/Charge Nurses).
- 4 'Enabling Patients to Meet Their Physical and Psychological Needs' (Directors of Nursing).

Similarly the dimensions of FfPu/clinical effectiveness, where DoN rated the newly qualified below the 50% threshold of cohort mean percentage of fitness, must also be reflected in appropriate modules:

- 1 'Delivery of Cost-Effective Nursing Care' / 'Delivery & Adaptation of Safe Care Within Resource',
- 2 'Adapting Nursing Practice',
- 3 'Management, Information, Technology and Quality',
- 4 'Patients Protection',
- 5 'Health and Safety in the Workplace'.

A combination of the above is the approach used by the proposed new 'Making a Difference' nursing curriculum at one of the universities.

The most important dimensions of fitness based on highest percentage of variance, to be addressed in any new physiotherapy curriculum are outlined below.

- 1) 'Clinically Effective Physiotherapy' (NQPs).
- 2) 'Planning, Implementing and Evaluating Physiotherapy' (Clinical supervisors).
- 3) 'Clinically Effective Physiotherapy' (Managers).
- 4) 'Patient Equity in the Context of Practice' (Heads of service).

Enacting all the above should help both to raise fitness for purpose levels and to overcome the theory practice gap and reduce attrition.

4.1.2 Sensitivity analysis: Thresholds of fitness for purpose.

Each nursing and physiotherapy advisory group approved the 50% benchmark threshold of mean FfPu. Both groups rejected the 40% minimum threshold acceptable for academic performance and award as it indicated that practising NQABNs & NQPs could, potentially be, less than half fit for purpose. (See results chapter part 2 Mean Fitness for Purpose Per Dimension).

If a 40% FfPu threshold had been accepted this would have resulted in all study consortium cohorts of NQABN's, being fit for purpose. Adopting the 50%

threshold, Directors rated the newly qualified, educated at universities in this study Consortium/Confederation below the threshold on eight of the twenty five dimensions. The NQABNs who self assessed, Preceptors and Sisters all rated newly-qualified above the 50% threshold on all dimensions. No cohorts of physiotherapists were rated below the 50% threshold on any dimensions by any of the four assessment groups.

The range of mean FfPu spanning the eight dimensions and assessed by DoN, was 46.39% - 49.5%. Directors of Nursing from the eight NHS Regions of England, rated the NQABNs below the 50% FfPu threshold on five out of a possible ten dimensions. The lowest mean percentage of fitness attributed in the study was 31.23% (Table 31). It fell on the sixth most important dimension 'Enabling Patients to Maximise their Comfort and Mobility Through the Nursing Process'.

The number of rated dimensions below the threshold is important because the eight NHS Regions of England was the largest sample group at 63 Directors. Directors from this group along with those Directors who rated NQABNs educated at universities in the study Consortium identified similar dimensions with mean percentage of FfPu below the 50% threshold; 'Delivering of Safe Care Within Resource' (46.94%), 'Deliver Care within Resource' (48.5%) & 'Delivery and Adaptation of Safe Care Within Resource' (43.14%). Duplication suggests that these dimensions are common FfPu problem to NQABNs (Table 31).

The dimensions on which the newly qualified who were perceived not to be fit for purpose at spanned five themes: 1) cost-effectiveness; 2) adapting nursing practice; 3) management; 4) patient protection and, 5) health and safety (Table 31). The reasons for levels of performance below the 50% threshold may include these dimensions not being formally taught or assessed; if they are, they may not be integral. For these or other reasons these dimensions may be most susceptible to the theory practice gap. However, it is difficult to reconcile these explanations with the excellent Quality Assurance Agency scores for nursing.

Certainly, under Rule 18a, none of these five appear as formal competencies that students must have achieved by the end of the course. Interestingly these five, along with others, do feature in the new 'Fitness for Practice Curriculum' of outcomes and competencies. At the request of the Director of Policy Development, Commission for Education, UKCC, the Yorkshire Competency Outcomes for Nursing were submitted in evidence (Barton 1998) and cited in the UKCC publication Fitness for Practice (UKCC 1999). The YCON statement 10.2 'Adapting nursing practice to meet various unpredictable circumstances' appears as an expression of the competence for entry to the register under 'Demonstrate sound clinical judgement across a range of differing professional and care delivery contexts' (UKCC 2000a). Others also appear. Mapping, by nurse academics, of YCON outcomes and statements to UKCC Pre-registration nursing outcomes, to be achieved for entry to the branch, and competencies, for entry to the register, revealed that all UKCC outcomes and competencies were covered (Barton 2001).

To date, pre-registration education curricula have not been greatly influenced by the employers' FfPu agenda in the same way that post registration curricula have. The above five dimensions are all key purpose characteristics as identified in the literature and confirmed by the factor analysis. Their formal inclusion into pre-registration nurse education curricula is a vital and important way of raising their profile. Inclusion would result in a more balanced curriculum with a higher output of fitness for purpose, from input of fitness for practice, professional standing and award.

This research has identified that current nursing and physiotherapy education curricula, i.e. with out an overtly conscious FfPu focus, but based on award, practice and professional standing, has produced NQABNs and NQPs deemed by clinical nursing and both by clinical and Head physiotherapy grades, to be fit for purpose. Only Directors of Nursing found some cohorts of NQABNs not fit on some dimensions.

The magnitude of the shortfall below the 50% threshold of the NQABNs educated at universities is small (3.61%). Targeted raising of the profile of FfPu

in pre registration nurse education in the future, perhaps only by a small amount, might, enable all cohorts' performance to achieve the minimum 50% threshold of fitness or to perform at higher levels.

4.1.3 Potential limitations.

There are five potential limitations related to effectiveness.

Sample size.

Even if all of the respondents in nursing and physiotherapy who were sent the FfPu questionnaire had returned them, the total survey population would still have been relatively small. The total nursing survey population per group was; NQABN's 288, Preceptors 272, Sisters/Charge nurses 283 and Directors of nursing 34. An overall total 877. In physiotherapy the population was; NQPs 176, supervisors 176, physiotherapy managers 160 and heads of service 101; total 613. Time permitting, a third cohort of NQABNs & NQPs would have been surveyed. However, this would only have increased the survey population by half.

YCOP: professional language.

The Physiotherapy Advisory Group advised that the integrity of the Curriculum Framework Document (CFD) (CSP 1996a) including language, on which the YCOP for physiotherapists was based, should be respected. Consequently, the language used was not necessarily the most appropriate in all circumstances.

YCON: partial compliance with all of the ACE Report recommendations.

The YCON questionnaire requested that each respondent rate the FfPu of a NQABN. Although the recommendations contained in 'Assessment of Competencies in Nursing and Midwifery Education and Training, ACE Project, (ENB 1993) were relevant, it was not possible to comply with them, because of the wide range of different forms of assessment evidence which can serve as a

basis on which a decision about learning and assessment can be made. Reasons for non-compliance were that the survey populations in this research, for both professions, were located throughout England. It was not possible, other than by a clear explanation and a worked example, to prepare the populations to complete the questionnaire.

YCON did not include any request for the rater to produce written accounts of analytical reflection between clinical events and general nursing principles, as it was thought that clinical staff may have considered the assessment work involved to be excessive, and thus not return either the FfPu/YCON questionnaire or the written accounts. The danger was that although valuable in respect of increasing the quality of the results, it would have resulted in a poor questionnaire return rate (Moser & Kalton 1993). YCON & YCOP partially complied with ACE recommendations, in the sense that NQABNs were rated by more than one person acting as an accredited witness (ENB 1993).

Validation of YCON & YCOP.

If 'gold standard' FfPu scales had existed for both nursing and physiotherapy they could have been administered simultaneously and confirmed the criterion validity of YCON and YCOP. Their absence meant that validity had to be established against performance in the field. Virtually all factors produced were interpretable. They varied between types of assessor in ways that were consistent with assessor grade and experience and the variety of the dimensions of fitness for purpose were more homogeneous in physiotherapy than in nursing thus reflecting the greater stability of physiotherapy education over the past decade.

Assessment period.

Assessment of NQABNs & NQPs took place 6 and 4 months respectively after qualification and employment commencement. Consequently, some consolidated post qualification of learning was measured rather than exclusive pre-registration learning.

4.1.4 Policy implications of effectiveness research findings for NMET stakeholders.

Fitness for practice: the confirmed basis of NMET commissioning.

Prior to this research there was only one option in respect of commissioning NMET i.e. fitness for practice. A theoretical alternative now exists; fitness for purpose at a threshold of 50% underpinned by award, practice (education) and standing. Which of the two is the most appropriate basis for NMET commissioning and why?

Dimensions that characterise fitness for purpose are relative measures of performance and not absolute. Dimensions or their emphasis can change over time for each grade of staff. Further, they are not all embracing. They reflect the current and contemporary needs of the Service and patients at the time the newly qualified were surveyed. If curricula are quickly adjusted to these dimensions, and students successfully embrace them, the likelihood of the newly qualified being perceived as not fit for purpose at qualification should be reduced. Consequently, the Service may claim greater ownership of these newly qualified staff both in training and at qualification because their views have been overtly adopted.

Given that it has been shown, that for a small, but significant, number of individual newly qualified Adult Branch nurses and newly qualified physiotherapists it is possible to be fit for award, practice and standing, but not purpose, there is a case for raising the profile of fitness for purpose within the existing nursing & physiotherapy courses in the study area. As a consequence, it is argued that the basis of NMET commissioning should remain as fitness for practice, but a higher profile should be given to fitness for purpose dimensions, through the opportunity offered by the 'Making a Difference' nursing curricula (and to physiotherapy degree courses). This was the object of the new 'Making a Difference' nursing course, at one university, validated on these principles in May 2001.

All validated curricula undergo minor adjustments over their five year validated 'life-time' in order to remain current. Major curricular changes take place at the quinquennial review. Professional and statutory bodies, education Consortia/Confederations and, in the case of physiotherapy, the Privy Council, formally acknowledge and recognise quality-assured academic awards which are linked primarily with fitness for practice and professional standing. It is the stability of these characteristics, which enable long-term fitness for practice commissioning, to be undertaken: a provider role (Rushforth & Ireland 1997). These bodies, under current arrangements, are not in a position to recognise a curriculum based exclusively on dimensions of fitness for purpose and no such curriculum is proposed. However, the inclusion of concept of fitness for purpose within the UKCC outcomes and competencies, would seem to suggest that Rushforth and Ireland's practice; a provider role and purpose; provider model may not be as mutually exclusive as they argued. Rather, that the two are capable of some degree of harmonisation but not in a way that devalues either but in a way so that students are ever more likely to be fit for purpose as well as practice.

Principles of fitness for purpose

Two principles has been established which help to interpret fitness for purpose. These are important for Confederation policy makers to know so that they can judge if: newly qualified nurses and physiotherapists are most fit for purpose on the most important dimension of fitness, and that fitness for purpose consistently falls as the seniority and experience of the assessor rises. The later is manifested at the overall and individual fitness for purpose levels.

These principles are collectively important at two levels. First, to ensure valuable resources are targeted at specific problems and associated universities and second for the establishment of trends for future comparisons by stakeholders. For example a Confederation may wish to target the assessment of fitness for purpose in newly qualified nurses by only one of the four groups of assessors. Consequently, they could use the appropriate mean produced in this research for the group of interest as a benchmark and then adjust their scores up or down by use of the relevant percentages produced in this research for other groups of

assessor as appropriate. Given the greater homogeneity in fitness for purpose dimensions physiotherapy across assessors this approach would be more appropriate for this profession.

Fitness for award, practice, standing, purpose and the curriculum.

The notion of being fit for practice, but not purpose is not new (Troskie 1993; 1993a, Benner 1979). What is new is that this research evidence demonstrates that it is not just a theoretical possibility. Directors of nursing identified certain dimensions of fitness for purpose where newly qualified Adult Branch nurses were below the 50% threshold. This has many policy implications for all the stakeholders including: HEI's, Workforce Development Confederations, NHS Trusts, professional and statutory bodies, DoH, & NHSE.

These findings, however, must be treated with caution, for the survey sample was small for all groups of nurses and physiotherapists. Consequently, results may not be representative of a larger sample. If, however, a large sample was used, and the reported pattern and its magnitude persisted or increased, then it would suggest that the results are valid and reliable. That being the case a policy response is necessary from stakeholders.

The new 'Making a Difference' pre-registration curriculum content should in addition to its fitness for award, practice and professional standing foci, reflect fitness for purpose i.e. the employer's perspective. This could be achieved, in nursing, by inclusion of a) all dimensions of fitness, regardless of how well the newly qualified were perceived to have performed and b) the fifteen learning/performance outcomes. In this way benefits of both the provider role (FfPr) and purchaser model (FfPu) (Rushforth & Ireland 1997) accrue.

Because NQABNs, educated at universities in the study Consortium/Confederation, were rated (mean percentage of fitness) below the 50% fitness for purpose threshold on eight dimensions spanning five themes; adapting nursing practice, cost effectiveness, management, patient protection and health and safety, post-registration education provision should focus, in part, on

these themes. By implementing these two approaches the profile of FfPu can be raised for both groups. Where common inter-professional dimensions and outcomes exist they could be delivered via multi-professional education delivered to multi-professional groups.

Generated policy and operational outworking in respect of continuing professional development (CPD), are that newly qualified practitioners cannot be called back to their home university for 'remedial education' to address fitness for purpose shortfalls (Standwick 1994) for two reasons. Firstly, in the time lapse between assessment and uptake of education, practitioners may have reached the threshold required as argued by Macleod et al., 1996; Kelly 1996 and UKCC 1999. Secondly, and perhaps most importantly, the UKCC and CPSM registration is not dependent upon successful completion of competencies contained in YCON and YCOP respectively. Registered competence is dependent upon the possession of an appropriate and valid higher education qualification, which denotes that the minimum standard (award, practice (education) and professional standing) has been achieved.

Post 2003, when all newly qualified nurses from all four branches, possess a qualification, awarded following successful completion of a validated 'Making a Difference' curriculum initiative which covers all the UKCC outcomes and competencies, spanning all four domains of fitness, then every nurse should be fit on all four measures. If it can be shown, via the application of YCON, and factor analysis and related methods, that a small number are still not FfPu, then the reasons given above for not addressing still remain valid, if unanswered. A solution will need to be found.

The solution at regional and/or local level could be a post-registration programme based on the identified dimensions of fitness for purpose. Fortunately, the mean percentage of FfPu per university has identified those dimensions where the newly qualified were perceived to be below, and above, the 50% threshold. Individual factors within each dimension could form the core course content.

Analysis of specific FfPu dimension themes in nursing and physiotherapy reveals, in essence, a clinical governance agenda (Gosling 1999) spanning: adapting nursing practice, clinical effectiveness, cost-effectiveness, management, supporting and protecting patients, health and safety and CPD etc. It would not matter if course participants were already fit for purpose on certain dimensions, as all participants would raise their profile on all dimensions. For some, this would be to the 50% threshold. For others they would be aspiring to higher performance.

The provision of courses would not necessarily require any increase in funding, as existing post-registration NMET monies could be retargeted. The course content and associated post registration awards, if built into a formal programme, could also count towards post-registration education preparation (PREP) requirements for nurses (UKCC 1995). The employer's agenda would be overtly met (Standwick 1994). Where necessary this last point might attract Trust funding.

The position of the HEIs in respect of producing fit for purpose employees is inextricably linked to that of professional and statutory bodies. There are three levels of problem. First, at the mean percentage of fitness for purpose level per dimension; Directors rated newly qualified Adult Branch nurses below the 50% fitness for purpose threshold on eight of the twenty-five dimensions. Second, they rated the overall weighted mean percentage of fitness for purpose for newly qualified Adult Branch nurse in the very low fifties. Finally, for a small, but significant, number of newly qualified Adult Branch nurses and physiotherapists they were deemed not fit for purpose.

If both bodies accept the existence and evidence of the three related problems as outlined then the proposed pre and post-registration approach, along the lines of that outlined above, could be an appropriate response. The significance of stakeholders accepting that there is a fitness for purpose problem that requires resolution over and above that of newly qualified staff gaining post registration experience to overcome it should not be underestimated.

The fitness for purpose agenda is a key component of the role of the Workforce Development Confederation. Their role is to monitor the magnitude of the problem perhaps using YCON and YCOP, or the new Benchmarking Standards for nursing and physiotherapy, plus other methodologies used or developed in this research. Through performance management of NMET pre and post-registration education contracts resources could be provided via new money or retargeting of existing funds. Regional Offices would advise the DoH/NHS E on progress and results.

One of the primary objectives of the survey protocol was the generalisation of the methodology to the population of newly qualified Adult Branch nurses and physiotherapists in England as well as to the Child, Mental Health and Learning Disabilities branches of nursing. YCON and YCOP appear both valid and reliable in the field. This evidence suggests a positive policy decision for YCON & YCOP could be that they are used as benchmark standards of FfPu of NQABNs & NQPs. The generic nature of YCON suggests that it is transferable to other branches of nursing. YCON has been examined and pre published results are promising. If satisfactorily used in one Confederation area they could be used in other areas as well.

Education Consortia/Confederations need to have an integrated approach to the collection and analysis of NMET data, with specific outcomes in mind e.g. calculation of overall weighted mean percentage of fitness for purpose. Analysis of fitness data, using the methodology generated in this study, would enable inter-university comparisons in the study area to continue to be made. This will enable education Consortia/Confederations to respond to the national policy aim, to enable the NHS to secure a sufficient supply of health care professionals who are educated and trained to high standards and who are fit for the purpose of providing a high quality service to patients.

4.1.5. Conclusion.

Six main findings and implications were identified and explored. Overall an inconsistent relationship exists between dimension importance and actual mean

percentage of fitness for purpose for both nurses and physiotherapists with the exception of Clinical Preceptors. Possible reasons for inconsistencies were given. Newly qualified nurses and physiotherapists were rated progressively less fit for purpose by senior groups of assessors. Both professions agreed that the most important performance outcome of fitness for purpose was 'Deliver Nursing Care (Physiotherapy) in Response to Patients Needs'. Finally, dimensions of fitness for purpose and the most important performance outcomes should influence future pre-registration nursing and physiotherapy curricula.

In respect of policy fitness for practice is the confirmed as the appropriate basis of NMET commissioning. Because newly qualified nurses and physiotherapists were rated progressively less fit for purpose by senior groups of assessors valuable resources should be targeted at this problem. Stakeholders undertaking their own fitness for purpose research based on assessor performance of the newly qualified could use the fitness results generated by this research for comparisons and adjustments to their own results.

4.2 Costing and Pricing of NMET Contracts: Main Findings and Implications, Potential Limitations and Policy Implications

4.2.0 Introduction.

The second major theme of this research is costing and pricing of NMET contracts (Table 55). Three main findings and implications are examined: g) relationships between costing and pricing in HE, h) validation of overhead rates and i) NMET cost variation with contracting. Potential limitations in costing are then reported. Finally, policy implications of each main finding conclude the theme: pricing policy, overhead rates, contract flexibility; student numbers and attrition, and subsidy and under-spend in delivery of NMET contracts.

Discussion	Effectiveness	Cost	Cost-Effectiveness
	1 Effectiveness and Fitness for Purpose: Main Findings and Implications, Sensitivity Analysis, Potential Limitations and Policy Implications.	2 Costing and Pricing of NMET Contracts: Main Findings and Implications, Potential Limitations and Policy Implications.	3 Cost-effectiveness of Pre-Registration Nursing & Physiotherapy Education: Main Findings and Implications, Potential Limitations and Policy Implications.
	4 Summary of Main Findings and Implications and Future Research.		

Table 55 Thesis plan for analysis of effectiveness, cost and cost-effectiveness: chapter 4 discussion of results 2, costing & pricing of NMET contracts.

4.2.1 Main Findings and Implications.

Three main findings and implications are examined: g) relationships between costing and pricing in HE, h) validation of overhead rates and i) NMET cost variation with contracting.

g) Relationships between costing and pricing in HE.

Full pricing is a methodology which “sets the price of a product by adding a percentage profit mark up to average cost or unit total cost, where unit total cost is composed of average or unit variable cost and average or unit fixed cost” (Pass et al., 1993). Although based on costs, managers also take into consideration demand and competition by varying profit mark up, both over time and between products.

The issue of full pricing is relevant to the HE sector. Demands from the market place for keen prices, and the requirements of funding agencies e.g. EU, MOD, DoH, necessitate accurate cost information. Knowledge of costs must precede pricing of services. The Transparency Review (TR) was set up, in part, so that HEIs would focus on the development of costing models (KPMG 2000). To date, according to HEFCE, HEIs do not have quality information on their costs and revenue from activities. This makes informed pricing difficult.

HEIs must set prices for their courses in the knowledge of the costs of production (Tsang 1998). Failure to identify accurate costs means that prices set for services could be low. In this case, costs incurred in delivering the service may be higher than income received. Similarly, prices may be set high and costs incurred in delivery could be lower than price so that income exceeds expenditure. Cost can also equal price; this is known as cost-price as the price for the product or service just covers its production and distribution costs, with no profit margin added. In all three scenarios, the market price for a service is the price that the consumer will pay.

The costing and pricing culture of HE is relatively new. The TR of HE has speeded its emergence amongst senior academic managers, but is still in its infancy for most HE staff. The costs of teaching, research and other activities may not be fully known to the university providing them (JM Consulting 2000). This situation, although understandable, is not an acceptable substitute for knowing, on a service-by-service basis, the cost and price of each.

Costs may be in excess of income received. The greater the frequency of this occurrence the greater the cumulative difference between costs and income. In a collegiate university, departments or planning units in surplus may subsidize those in deficit.

Services, which generate income over and above costs, must be identified and differentiated from those that do not. It is possible, in the short term, to deliver a number of services, ideally as small as possible, in which the costs are greater than the income received, providing the institution as a whole is in surplus. The decisions facing many HEIs today is how long they continue to fund 'loss-making' activities and by doing so take away resources from departments whose activities generate income over costs.

The nature of a corporate, strategic approach to cost incurrence, the generation of surplus and distribution patterns, may differ between universities. Some may be prepared, for a given period, to offer lower prices, which do not cover costs, in order to capture market share (JCPSG 2000). Such an action can be short-or-long term depending on university pricing strategy. External factors that affect price and, therefore, costs are: competitors, political and legal constraints, and customers.

According to the NAO (2001) report, the consequences of major contract reviews revealed:

- further expansion of student numbers is not possible without investment in capital infrastructure which would affect cost and price per student,
- absence of information prevented understanding and comparison of HEIs costing policies due to commercial confidentiality between some HEIs and WDCs,
- there was a wide variation in price per student for the same qualification within an overall reduction in the price per student, in real terms and in the extent of price variation,
- there was no common contract or standard benchmark prices,

- a lack of benchmark standards in assuring quality (NAO 2001).

Both historical and structural factors contributed to variations in the price per student since 1996. Factors potentially relevant to the study Consortium/Confederation include:

- Staff salaries,
- Increased pension costs of NHS staff transferred to higher education, (This would have affected two of the universities studied in this thesis).
- Different types of contract spanning block contracts, fee per student, and competitive tendering. (Pre-registration contracts in the study consortium were block contracts with the exception of one university 'L', which was fee per student).
- Increased commissions in student numbers with some Consortia/Confederations achieving efficiency gains. (All pre-registration providers of nursing and physiotherapy, in this study, received increased commissions. Efficiency gains were achieved by reductions in attrition, especially in nursing, since 1996).
- Some HEIs offering deliberately low prices or lowering their price during contract negotiation in order to retain an existing, or win a new contract. (It is not known whether this happened in this study area).

The same report identified that two-thirds of Consortia monitored price per student (NAO 2001) from among a range of local factors which affect costs and prices: staff salaries, pension commitments, accommodation costs especially multi-sited provision, support costs to students i.e. student and staff costs in respect of clinical placements, cost of providing IT, library services and equipment.

h) Validation of overhead rates.

The national average overhead rate charged by HEIs is around 41%. The national average rate charged for nursing and midwifery is 28% and for other health

professional programmes including physiotherapy 25% (NAO 2001). Thus overheads in NHS funded contracts were, on average, lower than for non NHS contracts (DoH & UUK 2002).

In this study, of the three universities educating nurses and the three educating physiotherapists, overhead rates were calculated for two nursing and two physiotherapy providers. Two universities overhead rates could not be calculated because they only provided an expenditure total.

At universities 'R' and 'T' (nursing) the three-year average overhead rate was calculated at 18% and 33% respectively. For universities 'H' and 'J' (physiotherapy) the three-year average was 33 % and 25% respectively (Tables 47 & 48). University 'R' was below the 28% nursing sector mean by 10% and University 'T' was above the mean by 5%. University 'H' was below the 25% sector mean by 10% and University 'J' above the mean by 8%. (Results chapter part 5 Financial Returns). Results from this study were comparable with the overall national picture.

The implication of different, and especially low overheads rates is that, if they were allocated at the national average of 28% for nursing and 25% for physiotherapy, then in those universities with a higher overhead rate there would be a greater percentage on contract income available to be expended on delivering nursing and physiotherapy contracts within departments. The converse also applies.

i) NMET cost variation with contracting.

Contract cost variation.

There is a relationship between contract cost, student population and tuition cost per student. Contract price is determined by a number of factors: local negotiations between regional officers and HEI's; contract duration; number of sites of course delivery, competitive tendering etc. It is not known which combination of factors, or their weighting, determined prices at the universities

in this study. Coopers and Lybrand (1995) reported that in their study local negotiations were the determining factor. Certainly, the basis for the major contract review in this study was the content of the integration documents (1996) between former colleges of health and their local university. These identified the contract values agreed by the Region, the study Consortium and each university. They were based upon the maximum number of students that could be educated at no additional cost. The role played by other factors is not known.

Contract flexibility; student numbers and attrition.

Coopers and Lybrand (1995) confirmed that good practice suggests that contract values should be sensitive to activity purchased, be linked to student numbers, and there should be a clear mechanism within each contract for identifying how movements in student numbers affect contract value. Further, "the cost per student and overall VFM are strongly influenced by the flexibility with which contract values are sensitive to variations in activity in student numbers" (Coopers and Lybrand 1995). This formal relationship between student numbers, costs and contract implications, has been confirmed (Namate 1995; NAO 2001). The study Confederation has from 2001 entered into a price per student, output-based contract with one university provider based on the above principles. The intention is for all remaining pre-registration NMET contracts to follow.

In situations where student contract numbers are increasing (NHS Plan 2000), consideration will need to be given to increased resources and the rationale for their allocation. Confederations would clearly not want any increases in their costs above inflation. The effect of this would be, from their perspective, a desired reduction in the price paid per student. Universities would resist increased contract numbers with no accompanying 'real' increase in contract income to cover additional costs. A jointly agreed formula, governing the effect of student numbers on contract price needs to be generated. The Benchmarking and Attrition Group have just reported on standardised prices for NHS-funded courses at HEIs and a standard contract for NHS learning and development. (DoH UUK 2002) The pricing formula and the attrition report have not yet been published.

Challenging national attrition targets have been set for pre-registration nursing and midwifery at 13%, and at 10% for allied health professions for 2000/1 intakes (DoH 2000a). The advantage of a target is clarity and accountability. Yet, reflection on the targets raises the question whether the percentage attrition figure for each group is a vertical multi-cohort target by a census date, or a horizontal uni-cohort attrition figure spanning three years.

Some institutions will have attrition levels below target. If the target is interpreted as the minimum, attrition could, for some providers, rise to the minimum. For others, whose attrition rate is much higher than target, it is very difficult to see how they can achieve the improvements required in the timeframe (Saunders 2001). An important first step in improving nurse and physiotherapy attrition, across the whole of the sector, is a consistent definition of attrition, and especially calculation methodology to be used by the NHS, HEFCE & HEIs in all discussions.

The necessity to have these in place is made clear when different sources of student attrition are compared. A national pre-registration attrition rate of 14% was reported for the period 1993-1999 (ENB 1999; ENB 2000a). The NAO reported an ENB-calculated attrition at 17% (time span not stated) and their own survey revealed attrition at 20%. This research revealed attrition rates for the three universities in the study area for twelve cohorts of nurses (1993-1999) and six cohorts of physiotherapists (1993-1999). Those covered by the 1996-1999 NMET major contract review period were for nursing; 35%, 17% and 27%. These figures are high because of the higher attrition rate amongst the early cohorts of Project 2000, especially at the first and third of these HEIs. In nursing the new target attrition 13% was below recorded attrition levels.

For physiotherapy, the NAO reported an attrition rate of 8.6% for physiotherapists who commenced training in 1996/97. The Chartered Society of Physiotherapy, unlike the ENB, does not publish annual attrition statistics. The pre-registration Education Officer provided them. Predicted attrition in physiotherapy for 2000 was 6% (CSP 1999, CSP 1999a). In this research, for physiotherapy for 1993-1999, attrition was calculated for each university at 7%,

6% and 8% respectively. The attrition rate for each university was below the new national attrition rate. In physiotherapy the target attrition 10% was above recorded current attrition levels.

The difference in expenditure on nursing was not the major reason why the cost per overall weighted mean percentage of fitness for purpose was different between the universities. This was due to a high student nurse multi-cohort vertical attrition rate: 35%, 17% and 27%. Fewer students qualified, but of those that did the various groups of assessors rated them at approximately the same level of fitness for purpose.

If nursing study universities can continue to reduce their student attrition, which it appears to have done over the last year or so, whilst simultaneously maintaining the fitness for purpose of its newly qualified nurses, then any of the three could be the most cost effective provider.

4.2.2 Potential limitations.

Minor errors.

Minor errors in attribution, conversion, transposition in student attrition calculation, staff effort and costing data are always possible. Diligence and double-checking of all figures and calculations has, however, kept these to an absolute minimum. Parity of cost effectiveness ratios produced from this study with those of others confirms this claim.

Teaching, research and other service activities.

It will be recalled that pre-registration nursing and physiotherapy are primarily teaching-only block contracts. Preparation, teaching, marking, clinical supervision, and course administration etc., constitute teaching. However, some staff effort may have been spent on research and/or other activities i.e. short courses, consultancy etc, and attributed to teaching. This is estimated to be minimal due to the use of the staff effort survey (Appendix 16).

NMET contract costs, data provided for business not research purposes.

The costs used in this research were obtained from the review of contract information given for business and not research purposes. All overall contract values were confirmed as accurate (checked against source documents) by the finance and contracts manager of the study consortium. The Consortium provided estimates, where exact costs were not known.

4.2.3 Policy implications.

Pricing is affected by various factors that drive up the cost and price per student: pricing policy, overhead rates and contract flexibility; student numbers and attrition, subsidy and under-spend in delivery of NMET contracts; and organisation of the curricula and efficiency of education programmes (Namate 1995). The last two were addressed in the effectiveness theme of this chapter. The rest are examined below.

Pricing policy.

Price per student is the price paid in a contract between a Consortium or Confederation and an HEI for educating and training a single student on the appropriate pre-registration training programme (NAO 2001).

At present all HEIs as independent organisations can set their own prices for NMET courses. In establishing these HEIs must know their costs of production ideally based on activity based costing as advocated in the Transparency Review. Further, they must be clear on the type of contract entered into for example: price equal to cost, price set below cost, or price set at cost plus contribution to overheads. Not all contracts have to be the same; the number and type of each will reflect the university's pricing strategy.

Three approaches to pricing policy have been identified resulting in differing prices (NAO 2001).

- Price set equal to cost - true of 15% of HEI's in England,
- Price set below cost - true of 10% of HEIs across England,
- Price set at cost plus contribution to overheads - true for 71% of the HEIs across England. For nursing and midwifery contracts the range of overheads was 3%-58% (mean of 28%). For physiotherapy the mean percentage was 15%, the lowest for all groups.

The remaining 4% set price higher than cost by an unknown amount.

It is not known which, if any, of the universities in the study adopted any one of the above approaches to pricing during past contract negotiations with the study Consortium.

In this study the costing algorithm facilitated the identification of departmental and school costs and university overheads and thus some insight into whether price exceeded costs or vice-versa. However, commercial sensitivity prevented firm conclusions on this relationship.

It is not possible to sustain nursing and physiotherapy education in HE when there is no capacity to generate surplus over expenditure required to rationalize, update and develop NMET in order to remain competitive. Only efficiency savings to reduce costs could increase surplus in the short term.

Ideally Confederations should know, for each course, which type of contract it is entering into with each HEI so that the portfolio of different types of funded course, can be seen as a balanced whole. Commercial sensitivities preclude this.

So Confederations make judgements about VFM based on price and quality. Reference points include past price and quality specifications. Care is needed to ensure they are comparing 'like with like'. One key objective of this research

was to generate a common unit of effectiveness (OWM%FfPu) that could be used in such comparisons. Along with transparent costs inter-university comparisons of effectiveness (fitness for purpose), which embraces attrition, are crucial.

The relationship between price, quality and thus value for money is at the heart of proposals from the Benchmarking and Attrition Review Group (BARG) on standardised prices per student together with a standard national contract for NHS funded learning and development, including nursing, midwifery and allied health professionals contracts (DoH & UUK 2002). These were in response to earlier recommendations that, to increase VFM, there should be a generic pricing approach for core elements and a standard pricing formula for NHS programmes (NAO 2001).

The BARG report has the status of a consultation document, but its content is likely to be largely accepted in the autumn of 2002, because it confirms the earlier NAO (2001) proposals. The BARG report confirms the principle of transparency as a key value underpinning the reorganisation of funding along interdisciplinary lines. Transparency enables education commissioners, including WDCs, fully to account for their use of funding. Currently many NMET contracts are subject to commercial confidentiality. This hinders transparency, partnership and assurance of value for money. The proposed way forward is a new model which provides a standard national price and contracts in which the relationship between cost and price is transparent. (DoH & UUK 2002).

When there is no standard unit price for NMET education, WDCs seek the best price for the NMET they purchase, but the true costs to providers are obscured by commercial confidentiality. Consequently, some prices are below costs, necessitating cross subsidies. This study found that this was true for two universities educating nurses and one educating physiotherapists. Alternatively, prices may be substantially above costs, which may make it difficult for WDCs to achieve targets for student numbers. Though most provider prices cluster around the national average (NAO 2001), variations frequently cannot be

explained in terms of cost or the quality and effectiveness of the associated education.

Against this background the BARG have recommended, from the three pricing models considered, the model of fixed tuition costs for students training for healthcare professions - “a standard core national rate for agreed outputs to be paid to Higher Education establishments providing NHS commissioned learning and development for entry to health care professions. Non core additions, at standard rates, would support pressures that did not apply uniformly to all HEIs, including geographical factors and the nature of the teaching estate” (DoH & UUK 2002). This is analogous to the HEFCE model in which a (periodically reviewed) standard national price based on HEI costs, is set for a particular type of course, with additional standardised non core items to reflect special course features e.g. location (London or not). In the long term the core price will include all capital and accommodation costs for HEIs, but transitional arrangements will be needed to bring some HE estates up to an acceptable standard. In essence BARG have approved the NAO (2001) recommendation of generic pricing for core elements with flexibility for geographical location, and current accommodation and staffing levels.

The benefits of the standard national price, underpinned by the standard contract covering investment in academic staff and capital, are likely to include:

- removal of uncertainty arising from periodic retendering and short contracts, which have led to higher HEI NMET prices,
- greater transparency in the use of public money (an aim shared with the Transparency Review of HE),
- greater clarity in the contribution to price by estate and facilities costs,
- assurance of value for money,
- harmonisation of activity levels and funding rates,
- separate identification of both standard payments and non core additions,
- more constructive relationships between HEIs and WDCs based on the sharing of information and thus genuine partnership, and

- judgements about course commissioning based on assessed educational quality rather than price.

The Department of Health has already commissioned work to identify an indicative common price for pre-registration nursing and midwifery education and the range of factors to be considered in setting core and non-core costs.

The first rejected pricing model was the status quo, in which contract price is negotiated between WDC's and HEIs. This was rejected for three reasons, all illustrated by this study. First, there was no clear relationship between costs and prices and little co-operation or transparency in course development. Second, commercial sensitivities resulted in protective attitudes towards innovation, information sharing, and discussion of quality. Finally, the NHS had only limited information on the costs underlying prices it paid for NMET.

The second rejected pricing model was the 'actual cost comparator model,' based on actual costs of HEIs openly negotiated against national costing protocols - essentially the model used in this study. This was rejected because significant resources would have been used in assessing costs, and this was thought to outweigh the advantage of assessing the comparative costs of different institutions. While illustrating the benefits of comparative costing, this study has confirmed BARG's concern about resources.

Overhead rates.

The national average overhead rates for nursing and physiotherapy are 28% and 25% respectively (NAO 2001). Universities in this study had rates either above or below these averages. The overhead rate, which is part of the price per student, is important to the study Confederation. They recognise that making a contribution to a collegiate university's central functions e.g. personnel, registry etc., is a legitimate cost. However, they are keen to ensure a correct balance between direct and overhead costs so that there are always sufficient and adequate resources available for Schools of Health to expend on delivering NMET contracts.

Contract flexibility; student numbers and attrition.

The study Confederation has from 2001 entered into a price per student, output-based contract with one university provider. The intention is for all remaining pre-registration NMET contracts to be output based. Realisation of this will be post BARG consultation report acceptance. The rationale behind the study Confederations change was that 'block contracts' prevented easy identification of cost by separate provision e.g. pre- registration nursing from midwifery, or radiography from physiotherapy. This situation was made more difficult as contract details changed to reflect changes in student numbers. Estate costs and premises charges further complicate the situation. These are not uniformly met from the same source. Some are consortium-funded whilst others are regionally-funded.

An equally important reason was a change in educational policy reflecting national policy (NAO 2001) toward student wastage, level of qualifiers and recruitment, characterised by acceptance of an earlier articulation of the benefits of a "harder" approach based on performance review, contract flexibility and 'steps', plus 'rewards' and 'penalties' (Coopers and Lybrand 1995). From September 2001 national attrition rates of 13%, (nursing) and AHPs (10%) including physiotherapy, are the benchmarked levels. These are perceived to be unattainable for some and for others there is little incentive to improve (NAO 2001). Interestingly, the study Confederation has introduced financial incentives to improve student retention. Their exact nature is unknown due to commercial confidence.

The 'harder' approach necessitates accurate attrition data. Two methods exist: 'vertical' and 'horizontal'. Selection of the correct one by all respondent universities is essential if any degree of trust is to be placed in intra and inter university comparisons. Failure to do so could lead to either unfair penalties or unearned rewards, when attrition figures are factored into cost per student calculations and subsequently compared with contract cost per student across HEIs.

In an attempt to improve cost-effectiveness in pre-registration nurse and physiotherapy education in the study Confederation, a critical review of student wastage and related issues, with an associated performance review linked to funding, is ongoing. In this research one of the three nursing universities had the lowest vertical multi-cohort attrition rate and another university had the lowest vertical multi-cohort attrition rate for physiotherapists. In respect of pre-registration nursing it was student attrition and its effect in raising costs, rather than differences in outcome effectiveness (OWM%FfPu), which determined institutional cost-effectiveness.

Reasons for interruptions to courses include personal, ill health, maternity and other reasons. Students return to their course following such an interruption and usually to a later cohort of students ('back-coursing') in most cases. The importance of the facility of 'interruption' cannot be over emphasised. Its existence and subsequent utilisation significantly reduces the likelihood of discontinuation, which would be more common if the flexibility, offered by short and long term interruptions, did not exist. This flexibility can be used in unexpected circumstances, for example: personal ill health, extended sickness of spouse, children and bereavement. etc. It is also helpful in situations when the student knows that he or she has a problem, but has not confided in tutors, for example financial difficulty, perhaps due to having given up paid employment to undertake a bursaried course.

It should be remembered though, that help and advice for students is available, which if used might have prevented a training interruption. On the other hand, a balance must be achieved between the appropriate use of the facility and possible abuse of the system that this flexibility offers.

The second category of leaver is outright discontinuation and is subdivided into two main types:

- 'Trainee request', voluntary.
- 'Academic and professional reasons' compulsory and invoked by the university with whom the student is registered.

Resumption is when a discontinued student resumes their education. This is a rare event.

Student attrition is not a new phenomenon. Although the magnitude of pre-registration nursing and physiotherapy attrition per university in the study area was a major focus of this research, the identification and subsequent quantification of the causes was not. Common causes identified in the literature were, however, reported (NAO 2001) for the academic year 1998/99, the third year of the major contract review in this study. Universities in the study area were part of the NAO survey of HEI's in England, which recorded nursing and midwifery (NAO 2000a) and allied health professions attrition data and causes (NAO 2000b).

The fact that all the universities in this study had significant student attrition rates suggests that each provider needs to examine their technical efficiency. Clearly, none are technically efficient, (Tsang 1998) as they are not producing the maximum output of newly qualified Adult Branch nurses and or newly qualified physiotherapists from their NMET funding. Those universities who produce more fit for practice and purpose employees, relative to indexed numbers of students, are more technically efficient than those who produce less.

According to the NAO the main reasons for pre-registration nursing discontinuation were: academic failure (of either or both the academic or clinical component of the programme), personal circumstances (including financial pressures), taking up employment or other career choice, illness, transfer to other NMET-funded programmes; transfer to other non-NMET-funded programmes; dissatisfaction with the quality of the programme, including cost and other.

Strategies to reduce discontinuation have been proposed (NAO 2001). These include making sure that all staff, but especially personal tutors involved in pastoral care, are aware of the reasons for exit and offer support to all students, but especially older students, early in the programme. Early identification of students with academic difficulties is essential in order to provide them with

support and encouragement to attend study skills sessions. Sharing and adoption of best practice based on national research is encouraged (NAO 2001).

Most, if not all, universities have in place initiatives for recruitment, increasing retention and minimising discontinuation. This is consistent with one of the core functions of WDCs who, working collaboratively with universities and the NHS organisations, itself an expression of joint responsibility, are to reduce attrition at all points on the student pathway-from promoting the NHS as a career, to student recruitment, selection, retention (NAO 2001) financial, academic and pastoral support (DoH 2002). In England, all three have been working on appropriate strategies. They include:

- more pro-active recruitment from the local health economy, together with ensuring that students identify with one 'home' NHS Trust in order to boost post-qualification local recruitment,
- developing fast-track entry routes to adult diploma programmes
- expanding the number of health care assistants sponsored to go on to nursing diploma programmes. (Consortia/Confederation fund 80% of salary costs, 20 % are expected to be provided by the employer NHS Trust),
- initiatives to increase the numbers of black and minority applicants,
- developing nursing cadet schemes,
- providing financial support to help NHS Trusts set up cadet schemes for school leavers at 16 and provide them with on-job training and experience until such time as they are eligible to enrol on a diploma course,
- using local colleges' provision of access programmes for potential students whose educational qualifications would prevent them being accepted through normal entry routes.
- developing relationships with Training and Enterprise Councils (and in future the Learning and Skills Councils) to promote the health professions as a career.

- development of national guidance on building placement capacity and improving the quality of practice placements (NAO 2001).

At least one university in this study has a designated recruitment and student support manager whose agenda has been expressed above. Other universities share the agenda amongst other staff.

Of the six universities studied some are more efficient than others. Without defined criteria in terms of output e.g. number of fit for practice practitioners and outcomes e.g. fit for purpose employees it is difficult to make judgements about the right combination of inputs. High wastage rates suggest, however, that institutions are not economically efficient. (Tsang 1998). To improve student recruitment and retention needs a more scientific and rigorous approach comprising:

- Ensuring that appropriate people are recruited into training, judged by academic, personal and employer criteria,
- Once they are in-training ensure that the educational experience (both academic and clinical) is relevant, thereby minimizing the theory-practice gap,
- Specifying fitness for academic award, practice, professional standing and purpose as essential goals for each student,
- In particular making the curriculum more service-centred, FfPu dimensions are embraced into the curriculum will enable external efficiency to be established and subsequently raised in both profile and threshold.

Subsidy and under-spend in delivery of NMET contracts.

A further benefit of costing NMET using the same methodology is that stakeholders may not be aware of university subsidy or under-spend in respect of individual university contracts over the period pertaining to the major contract review. The reality of the existence of cross subsidies have been recently been reported (DoH & UUK 2002). Trends in subsidies or annual under-spending over

the three years of the review were observed in this study, based on university declared figures. Trends differ across universities.

The cost-price relationship of the universities covered in this study was reported above; for three universities cost was equal to price, for three others expenditure was greater than contract income i.e. price below cost. It is not known if this was a formal policy decision or an end of year unexpected outcome. In these cases ensuring that cost was equal to price would necessitate a subsidy from non-NHS reserves or the carrying forward of a deficit.

Subsidy of NMET contracts, even on a declining basis, is an important issue. It gives rise to questions concerning the adequacy of funding within each university's independent financial status. For example, in respect of two universities in this study, was the year on year NMET levy sufficient to fund the contract? If it was adequate, why was additional money expended on delivery?

The reason for this action might have been, in the short term, the need to consolidate a department within the university structure, thereby enabling it to acclimatise to actual contract income over time. Given each university's independent financial status, one could speculate that it should not matter to the study Consortium/Confederation that HE appears to be subsidising the NHS, especially if it occurred for the purpose of acclimatisation. But clearly, it does matter and in all time frameworks.

In the study confederation, the next major review of NMET contracts is likely to be undertaken in 2003. Assuming this is based on standardised prices and a standard contract for NHS funded learning, it will be of particular importance as a benchmark for future comparison of university providers. It will also raise the issue of cross subsidy and its prevalence within each university.

From Confederation's perspective the benefits that accrue from a standardized approach to pricing NMET are: understanding the process of rigorous costing and subsequent pricing; analysis and interpretation of results between competing HEIs; and in the context of, other issues notably the four paradigms of fitness, an

informed basis for implementation and subsequent review of policy implications. Both the process and results of costing and subsequent pricing should be performance managed by Confederations in close collaboration with each HEI. Based on the funding value of partnership working underpinning the proposed new standardized prices and standard NHS contract HEIs will not be passive observers. By 2003, they will have four years post inaugural major contract review experience of NMET costing & pricing to draw upon in the context of the four fitness paradigms.

4.2.4 Conclusion.

Three main findings and implications were identified and explored: relationships between costing and pricing in HE, validation of overhead rates and NMET cost variation with contracting. In the first main finding it was confirmed that there are many types of cost and price relationships. The costing and pricing culture of HE is relatively new. Depending on the portfolio of cost and price relationships chosen in respect of courses, cost can be in excess, below or equal to price. In a collegiate university, departments or planning units in surplus may subsidize those in deficit. Major NMET contract reviews have reduced price per student in real terms.

National average overhead rates for nursing and midwifery 28% and physiotherapy 25% have been identified. Overhead rates were calculated for two university providers of nurses and two providers of physiotherapists. In each profession a different university was above and below the national rate. Those below the rate were expending a greater percentage than those above the rate on departmental activities.

For contract cost variation and flexibility good practice suggests that contract values should be sensitive to activity purchased, be linked to student numbers, and that the cost per student and overall VFM are strongly influenced by these factors. Although student attrition is falling challenging national targets for nursing 13% and AHPs 10% have been implemented. In this study the national target in nursing is below current attrition levels and in physiotherapy it is above.

Policy implications were identified in respect of pricing NMET contracts, overhead rates and contract flexibility. It is not possible to sustain nursing and physiotherapy education in an HEI when there is no capacity to generate surplus over expenditure required to rationalize, update and develop NMET in order to remain competitive.

Consequently, adoption of the Benchmarking and Attrition Review Group recommendations on standardised prices and a standard NHS contract for learning and development should generate both the environment and resources for longer-term investment, but in the context of VFM. For overhead rates, the lower the rates are from the NHS perspective the more resources there are for direct nurse and physiotherapy education. A balance, however, must be struck between university overheads and direct costs so that both competing requirements are met.

It is in all stakeholders interest to ensure that attrition is as low as possible and at least equal to national rates. Nursing must be encouraged and supported to reduce attrition by enacting best practice in respect of recruitment, retention and minimizing strategies. In physiotherapy, care must be taken to prevent complacency so that attrition rates are not allowed to increase to the national minimum of 10%.

Subsidies from HE reserves or the carrying over of debt from one financial year to another must be discouraged as its existence suggest that either the contract price was insufficient or activities within a School of Health or may have been imbalanced. Benchmark standardised prices and NHS contracts funding learning and development will hopefully address this problem.

4.3 Cost-effectiveness of Pre Registration Nursing and Physiotherapy Education: Main Findings and Implications, Potential Limitations and Policy Implications.

4.3.0 Introduction.

In cost effectiveness (Table 56), four main findings and implications are examined: j) cost-effectiveness in the real world, k) results in context: cost effectiveness ratios for pre-registration nursing and physiotherapy students in the context of published costs and ratios l) determinates of cost per fit for purpose employee; and m) identification of the most cost-effective university provider of fit for purpose adult Branch nurses and physiotherapists educated in the study Consortium/Confederation. Potential limitations are then noted. Finally, NMET policy implications of cost effectiveness ratio research findings are discussed in the context of a proposed NMET policy framework. The chapter concludes with reaffirmation of the main findings of this research and future research questions.

Discussion	Effectiveness	Cost	Cost-Effectiveness
	1 Effectiveness and Fitness for Purpose: Main Findings and Implications, Sensitivity Analysis, Potential Limitations and Policy Implications.	2 Costing and Pricing of NMET Contracts: Main Findings and Implications, Potential Limitations and Policy Implications.	3 Cost-effectiveness of Pre-Registration Nursing & Physiotherapy Education: Main Findings and Implications, Potential Limitations and Policy Implications.
	4 Summary of Main Findings and Implications and Future Research.		

Table 56 Thesis plan for analysis of effectiveness, cost and cost-effectiveness: chapter 4 discussion of results: 3 cost-effectiveness of pre-registration nursing & physiotherapy education.

4.3.1 Main Findings and Implications.

In respect of costing six main findings and implications were reported in 4.0 introduction and are explored in detail below.

J) Cost-effectiveness in the real ideal world.

In an ideal world there would be no student attrition and cost per student would be lower. All students would be one hundred per cent fit for award, practice (education), professional standing and purpose. Consequently all four categories of fitness would cost the same and all four cost effectiveness ratios would be the same. In reality, however, student numbers fluctuate. They fell in this study across indexed, in training and qualified categories due to student discontinuations, internal transfers out, etc. Consequently, the costs of the remaining students increased. The four groups of assessors did not rate newly qualified Adult Branch nurses and physiotherapists as being one hundred per cent fit for purpose. Fitness fell with the increasing seniority and experience of the assessor group. Consequently the cost per fit for purpose employee rose.

The implication of these research findings was that there was a need to establish a progressive number of cost-effectiveness ratios commencing with cost per indexed student, calculated at the commencement of training, and concluding with cost per fit for purpose newly qualified Adult Branch nurse and physiotherapist calculated at the end of training. Once calculated ratio comparison aids both operational and strategic management by universities and the study Consortium/Confederation in the real world of nurse and physiotherapy education.

k) Results in context and sensitivity analysis: Cost effectiveness ratios for pre-registration nursing and physiotherapy students in the context of published costs and ratios.

The nature of 'block' contracts prevents Confederations from calculating their own comprehensive range of cost-effectiveness ratios for pre-registration nursing and physiotherapy students. They cannot allocate block contract values into direct and overhead costs per provision because they do not know how each university internally allocates these costs. It was for this reason that the study Confederation has moved to price per student contracts.

At a rudimentary level Consortium/Confederations can calculate a cost per indexed nursing and physiotherapy student by making assumptions about cost allocation of block contracts and dividing the assumed cost by the number of indexed students. Such a calculation can be augmented from three potential sources: a) independently commissioned research e.g. physiotherapy (Lumley 1998), b) national database communication and national bodies' reports e.g. (NHS E 1998; NAO 2001), and c) HEI's declared cost per student. The latter is rare due to commercial sensitivities.

Analysis of the literature revealed that price per student is the price paid in a contract between a Consortium/Confederation and a HEI for educating and training a single student on the appropriate pre-registration training programme (NAO 2001). Published results are compared with the cost per indexed/commissioned ratios produced in this study in order to a) ascertain the degree of harmony between the two and b) establish where the research generated ratios are located in the range of published prices.

Nursing.

The Deputy Section Head, Human Resources Directorate, NHS E provided an NMET contracts database. It contained an anonymised sample of 53 institutions nursing and midwifery contracts for 1996/97 & 1997/98 reported lowest, highest and average price per commissioned i.e. indexed student for England (NHE E 1998g). The range was £2,068 to £8,545 (1997/98). The database placed 2 of the 53 providers in the range of £2,000-£4,000; 15 in the range £4,000-£5,000; 20 between £5,000-£6,000, 13 between £6,000-£8,000; and 3 in the range £8,000-£14,000. This distribution was bell shaped with the apex in the range £5-6,000. The average price per student fell from £5,637 to £5,518 across the reporting periods.

No relationship was reported between 'old' & 'new' universities in respect of price per commissioned student, as might have been expected, due to the former having higher superannuation costs. In fact, both the cheapest and the most expensive were attributable to the 'new' universities. Contracts placed following

a tendering exercise were not necessarily any cheaper than those negotiated without. Finally, the price per commissioned student was greater where contracts were for smaller numbers of students (NHS E 1999b). This outcome differed from Coopers and Lybrand's (1995) finding of the reverse.

The NAO identified the national contract commissioned price per student paid by the DoH for nursing and midwifery contracts, excluding bursaries at 1998/99 prices. The range was £2,569–£10,570, mean price £4,991 (NAO 2001). This figure continues the decline of the national mean price per student from the previous reporting period. Within the study region of this research the range of price per commissioned student was identified at £4,000- £5,800 (NAO 2001). No local mean price was reported. Some HEI's within the national NAO study did not provide them with essential requested information. Comparisons of research generated costs per indexed student with prices generated by the NHS E (1998g) and the NAO (2001) are reported in table 57.

The NHS E (1999g) and NAO (2001) nursing estimates are national. Consequently, they cannot validate local estimates generated in this study. However, they are a useful reference point. Comparison reveals that Universities 'R' & 'V' were below the NHS E price per indexed student for the period 1996/97 by £463 and £195 respectively. University 'T' was above the range by £159. In comparison with the NAO figure for 1998/99 all three universities were above the mean: 'R' by £124, 'T' by £299 and 'V' by £171. The closeness of the three sets of ratios would suggest the costing algorithm used in this study was a sound basis for the calculation of subsequent 'in-training', qualified and fitness for purpose cost effectiveness ratios (Table 57).

University	1996/97 Barton		NHS E* 1996/97		1997/98 Barton		NHS E* 1997/98		1998/99 Barton		NAO + 1998/99	
	Mean Cost	Mean Price	Mean Cost	Mean Price	Mean Cost	Mean Price	Mean Cost	Mean Price	Mean Cost	Mean Price	Mean Cost	Mean Price
R	£5,174		£5,266		£5,115		£5,518		£5,290		£4,991	
T	£5,796	£5,637	£5,915		£5,290				£5,162			
V	£5,442		£5,474									

*NHS E (1998g) NMET Contract Database Communication with Regional Office Education Leads, NHS E Leeds
+ NAO 2001.

Table 57 Comparative analysis of cost and price per indexed nursing students.

University	1996/97 Barton		NHS E* 1996/97		1997/98 Barton		NHS E* 1997/98		Lumley 1997/98		1998/99 Barton		NAO + 1998/99		Lumley 1998/99	
	Mean Cost	Mean Price	Mean Cost	Mean Price	Mean Cost	Mean Price	Mean Cost	Mean Price	Mean Price	Mean Price	Mean Cost	Mean Price	Mean Cost	Mean Price	Mean Cost	Mean Price
H	£7,116		£6,371		£7,525		£6,332		£6,486		£6,332		£5,570		£6,492	
J	£6,013	£6,001	£6,060		£5,177		£5,609				£5,609				£4,898	
L	£4,788		£4,412		£6,460		£5,902				£5,902				£4,939	

*NHS E (1998g) NMET Contract Database Communication with Regional Office Education Leads, NHS E Leeds.
+ NAO 2001
Lumley 1998

Table 58 Comparative analysis of cost and price per indexed physiotherapy students.

Physiotherapy.

Two of the three physiotherapy estimates are national, NHSE (1999g) & NAO (2001). Consequently, they similarly cannot validate the local estimates generated in this study. However, as in nursing, they are useful reference points.

Nationally.

The NMET Database Physiotherapy (NHS E 1998g) reported the price per commissioned student for 24 institutions undertaking pre-registration physiotherapy education. The range of reported prices was £4,767-£7,439 (1996/97) & £1,825 to £9,426 (1997/98). Why the lowest figure fell across the two reporting periods was not reported. Four of the eight contracts with the 'old' universities were among the most expensive six: £7,600, £7,000, £6,300 and £6,000 (NHS E, 1999b). Three out of the remaining four contracts with old universities were among the five cheapest: £5,300, £4,800, £4,400 and £1,825. The average price per student increased from £6,001 to £6,460 across the reporting periods (Table 58).

The NAO identified the contract price paid by the DoH for physiotherapy contracts, excluding bursaries, at 1998/99 prices ranged from £2,955-£6,084, mean £5,570 (NAO 2001). This figure halted the increase of mean price from the previous reporting periods £6,001 to £6,460 (Table 58). The reason for the halt is unknown but may be due to the NHS E and the NAO basing their calculations on different sources of information and or incomplete lists. The NAO reported that that like for nursing, some HEIs providers did not provide pricing information.

1996/97.

Comparison of University 'L' data with the mean indexed commissioned students for the period 1996/97 (NHS E) revealed that university 'D' was less expensive by £1,213. University 'H' & 'J' were both above the mean by £1,115 & £12 respectively.

1997/98.

Comparing the same sources, all three universities were below the NHS E national average; 'H' by £89, 'J' by £400 and 'L' by £2,048.

1998/99.

In comparison with the NAO figure for 1998/99 all three universities were all above the mean 'H' by £762, 'J' by £39 & 'L' by £332.

Tendered physiotherapy contacts were not necessarily cheaper. This was a similar finding to nursing. Like nursing, the price per student was greater where contracts were for smaller numbers of students (NHS E, 1999b).

Locally.

1997/98 & 1998/99.

Comparing the research findings (1997/98) of each university with Lumley's 1998 results for the same universities revealed Lumley's price per indexed student was £1,193 more for University 'H'. Her prices for Universities 'J' and 'L' were £943 and £74 more respectively.

Comparing the research findings (1998/99) of each university with Lumley's 1998 results for the same universities revealed that her price for university 'H' was £160 more than for Universities 'J' and 'L' £619 and £963 less respectively.

The results of the cost-effectiveness study were based on university-declared NMET expenditure for the period of major contract review. What some universities expended was different from the revenue received. Adding in under-spends or removing subsidies and recalculating the cost-effectiveness ratios produced a sensitivity analysis. Their purpose was to identify any changes in cost-effectiveness based on what would have happened if all universities had strictly adhered to NMET contract values. The cost per indexed, in-training, qualified and fit for purpose nurse, based on actual expenditure not contract

values was presented in tables 50 & 51 for nurses and physiotherapists respectively (Appendix 22).

Sensitivity Analysis: Nursing.

A sensitivity analyses were undertaken in which the cost per category of students was recalculated based on actual expenditure rather than on contract value paid to each university spanning the three years of this economic review 1996-1999. The results of the sensitivity analysis are reported in table 59.

	Actual Expenditure/Cost			Contract Income		
	Universities R, V & T			Universities R, T & V		
	Highest Cost	Middle Cost	Lowest Cost	Highest Cost	Middle Cost	Lowest Cost
Indexed	T £16,919	V £16,078	R £15,555	T £15,874	R £15,708	V £15,477
In- Training	T £18,244	R £18,052	V £17,603	R £18,209	T £17,058	V £16,947
Qualified (FfPr)	R £23,141	V £21,892	T £19,837	R £23,350	V £21,117	T £18,990
FfPu	R	V	T	R	V	T

Table 59 Sensitivity analysis: cost per indexed, in-training, qualified and fit for practice, and fit for purpose newly-qualified nurse.

Table 59 reveals that, based on actual university expenditure, University 'R' (dark grey box), which had the lowest cost per indexed nurse, became progressively more expensive through the cost of in-training student to cost per qualified and was the most expensive provider of fit for purpose NQABNs. This was because it had the highest student attrition rate of the three providers. Overall fitness levels between universities were comparable.

By comparison, if the three university providers had only expended their contract income, this would have reduced Universities 'T' and 'V' cost per indexed student and slightly increased the cost of this category of student at University 'R'. The effect would have been to change the order of the universities at the indexed and in-training levels but not to alter the final position of the three universities in respect of cost per qualified nurse and, therefore, cost per fit for purpose university when compared with the final position of the same three universities based on actual expenditure: 'R', 'V' and 'T'.

Taking the results of the sensitivity analysis and placing them in the context of the NHS E & NAO nationally calculated price per indexed student resulted in the magnitude of difference in the ranges being small: £215-£262 (1996/97 NHS E); £15-£376 (1997/98 NHS E), £138-207 (1998/99 NAO). The closeness of the three sets of ratios again suggests the costing algorithm used in this study is a sound basis for the calculation of in-training, qualified and fitness for purpose cost effectiveness ratios.

Physiotherapy.

As for nursing, the same sensitivity analysis and the placing of results in context were undertaken in physiotherapy. The relationship of the most expensive provider of all three categories of students and fit for purpose physiotherapist, per university provider, is reported in table 60.

	Actual Expenditure/Cost			Contract Income		
	Universities H, J & L			Universities H, J & L		
	Highest Cost	Middle Cost	Lowest Cost	Highest Cost	Middle Cost	Lowest Cost
Indexed	H £19,819	J £17,682	L £15,102	H £19,991	J £16,529	L £15,102
In- Training	H £20,668	J £17,949	L £13,363	H £20,783	J £16,772	L £13,663
Qualified (FfPr)	H £21,678	J £18,692	L £13,845	H £21,879	J £17,479	L £13,845
FfPu	H	J	L	H	J	L

Table 60 Sensitivity analysis: cost per indexed, in-training, qualified and fit for practice, and fit for purpose newly-qualified physiotherapist.

There was no change in the order of the most expensive provider of pre-registration physiotherapy education based on actual expenditure. University 'L' (dark and light grey) still had the lowest cost. This university had the lowest indexed cost per indexed student because actual expenditure was the same as contract income whereas for university 'H' it increased slightly and university 'J' it fell. The magnitude of the fall was not sufficient to reduce it to the level of 'L's. Because student attrition was low and comparable for all three universities and the overall weighted mean percentage of fitness for purpose was similarly comparable, neither of these two factors could offset the advantage of university 'L's low indexed cost.

The results of the sensitivity analysis cost per indexed student (contract values rather than actual expenditure) calculated in this study, in the context of the NHS E, NAO & Lumley's calculated price per indexed student, resulted in differences that were generally larger than for nursing. The identified differences were £69-£1,395 (1996/97 NHS E), £39-£2,048 (1997/98 NHS E), £39-£274 (1997/98 Lumley), £332-£768 (1998/99 NAO) £160-£963 (1998/99 Lumley). Differences

may be attributed to the smaller number of students indexed or contract values. Out of the three Lumley's range is closest.

Ideally a second sensitivity analysis based on the new pricing mechanisms rather than the old should have been undertaken. Unfortunately, this was not possible because, although the national Benchmarking and Attrition Review Group on prices reported in July 2002, the precise pricing formula is still being developed. Nevertheless the costing algorithm reported in this thesis, supported by the separate sensitivity analysis, provides the best available estimate of the true costs (if not prices) of nursing and physiotherapy education in the study Confederation.

In the future the national standardised pricing system will permit comparisons of HEI prices at core and non-core levels across all funded courses including pre-registration nursing and physiotherapy.

BARG rejected the 'actual cost comparator model', the model used in this study, as the national model because significant resources would have been used in assessing costs. However this does not mean that this approach is inappropriate when accuracy is important, for example in evaluative research. Furthermore the proposed national model will facilitate comparative studies at both core and non core levels. It is likely that the DoH will want to receive national, regional and local information that will enable them to compare the effectiveness and efficiency of both WDCs and the HEIs they commission. Certainly, the NAO (2001) saw the UKCC outcomes for nurses as the measure of course effectiveness. On this basis investment can be more accurately targeted. Thus this study has highlighted some of the potential of the proposed national pricing system to enhance cost-effectiveness as well as to rationalise prices.

1) Determinants of cost per fit for purpose employee.

The determining factors in whether a university has high or low cost per fit for purpose employee are:

- 1) The initial cost per indexed student,

- 2) The number of students who qualify,
- 3) Overall weighted mean percentage of fitness for purpose.

For nursing, it was the number of students who qualified that was the major determinant in cost-effectiveness ratio because the overall mean percentage of fitness for purpose were similar even though cost per indexed student differed.

For physiotherapy, it was the indexed cost that was the major determinant because the number of qualifying students from each of the three universities was comparable, consistently high and the magnitude of the difference between universities in overall mean percentage of fitness was small.

So in both nursing and physiotherapy, the fitness for purpose performance of the newly qualified was similar in magnitude, for each category of assessor, regardless of where they were educated. All universities are equally effective in producing fit for purpose newly qualified employees. Whether one university is more cost-effective than another does not, therefore, depend on effectiveness but on costs and student attrition.

To reduce costs initial student recruitment must be to 'ceiling' figures with maximum subsequent retention and minimal discontinuations. If achieved, and if contract values remain at the same level, then all CERs will improve.

m) Identification of the most cost-effective provider fit for purpose newly qualified nurses and physiotherapists.

Prior to this research, essential information pertaining to course costs, student data and fit for purpose data was either uncoordinated or did not exist. Now that a rigorous scientific methodology has been developed embracing these they can be assimilated and cost effectiveness ratios calculated. This development may be of assistance to Confederations whose policy objectives include reducing cost, increasing effectiveness and achieving value for money of contracted NMET.

All universities have different numbers of students who indexed at the start of each cohort and different historical costs. In nursing university 'T's pre-registration nurse attrition was less than the other two universities. Although their cost per 'in training' student rose, it did not rise as much as the other two because of their lower attrition rate. There was little variation in percentages of fitness for purpose across grades of assessor. Consequently, when this percentage was divided into the cost per qualified student to give a cost per fit employee, the small differences in between groups was not of sufficient magnitude to offset the higher cost due to student attrition. Thus 'T' is the most cost effective provider relative to the others. In physiotherapy, University 'L's advantage of lowest cost per indexed student could not be offset by the other two universities because there was little difference in their student attrition and overall fitness for purpose.

4.3.3 Potential limitations.

Education contribution to service and service contribution to education.

According to Lloyd Jones and Akehurst (1999) pre-registration nursing students make a contribution to service. Consequently, if known and taken into account, the cost per qualified student for all three universities would be lower than that reported in this study, and would affect the interpretation of results. Qualified staff, when supervising and mentoring students, contribute to education. This contribution was recognised when the new Project 2000 courses replaced traditional nurse education, when sequential increases in clinical staffing levels occurred because of the supernumerary status of student nurses. Whether the two neutralise each other and the cost remains the same is unknown.

Accuracy of data and processes.

Cost effectiveness ratios generated in any study should be treated with caution (Thomas 1990) as they are potentially limited by the accuracy of all the processes and steps that comprise them. Although every attempt was made to ensure the accuracy of data generation and manipulation pertaining to both costs and effectiveness, the possibility of inaccuracy cannot be completely ruled out.

4.3.4 Policy framework for responding to results of the analysis of NMET costs and effectiveness.

NMET Policy Framework.

Confederations are expected to work in partnership with HEIs to ensure that education meets the needs of patients and that all contracts are VFM (DoH 2002). “VFM is about cost & quality of the training and the extent to which the student is fit for purpose...based on a clear definition of what employers expect in terms of outcomes and competencies” (NAO 2001).

Identification of a hierarchy of cost-effective providers based on ratios of pre-registration indexed students, in-training qualified and fit for purpose newly qualified Adult Branch nurses and physiotherapists is vitally important in policy terms. These ratios raise VFM questions, which have implications for policy formation and review. The ratios can be particularly useful but require an appropriate NMET policy framework to ensure their significance is recognised and policy flows from them. Such a policy framework would be utilised by key NMET stakeholders, some of whom would operationalise it. Knapp’s economic welfare model of need (1984) and Tsang’s education production function (1998) have been adapted and are proposed as the basis for a policy framework (Diagram 9).

An example of how the adapted model would work is that the study Consortium’s mission statement indicated that its aim is the production of a sufficient number of fit for purpose newly qualified employees to meet the needs of the Service. The overall weighted mean percentage of fitness for purpose for all newly qualified Adult Branch nurses, as assessed by the Directors was low: ‘R’ 50.87%, ‘T’ 52.10% and ‘V’ 54.65%. If these figures were received by the study Confederation along with the cost of producing this level of fitness and expressed as a cost effectiveness ratio (including student attrition), they might be considered inconsistent with the mission statement and poor value for money. How this problem is addressed is for key stakeholders to decide in consultation with appropriate HEIs. It is however, likely to involve the identification of

objectives, consideration of how inputs are used and what changes in educational technologies may be required (Diagram 9). Resolution involves Tsang's (1998) approach to education production function and efficiency.

4.3.5 Conclusion.

Four main findings were reported: cost effectiveness in the real world, cost effectiveness ratios, determinants of cost effectiveness fitness for purpose and identification of the most cost effective provider of fit for purpose Adult Branch nurses and physiotherapists in the study Confederation. In respect of the first it was confirmed that not all students complete training and are 100% fit for purpose. Consequently the cost per student increases, from cost per indexed student to cost per fit for purpose employee.

Cost per indexed student produced in this study were compared to the price per indexed student reported by independently commissioned researches, national database communication and national bodies' reports. The closeness of the three sets of ratios suggests that the costing algorithm used in this study was a sound basis for the calculation of subsequent ratios. The consistency of the three sets of ratios based on contract income to a university rather than actual expenditure confirms the appropriateness of the costing algorithm.

Determinants of the cost per fit for purpose newly qualified Adult Branch nurse and physiotherapist employee were: the initial cost per indexed student, the number of students who qualify and overall weighted mean percentage of fitness for purpose. For nursing, it was the number of students who qualified that was the major determinant in determining the cost-effectiveness, for physiotherapy it was the contract value. All universities were equally effective in producing fit for purpose newly qualified employees. Whether one university was more cost-effective than another depended not on effectiveness but on costs and student attrition. The most cost effective providers of fit for purpose Adult Branch nurses and physiotherapist respectively were University 'T' and 'L' respectively.

An NMET policy framework based on Knapp's economic welfare model of need (1984) and incorporating Tsang's education production function (1998) was proposed. The framework is capable of addressing cost effectiveness issues such as value for money as well as single item issues in respect of effectiveness or costs. In respect of value for money, low outcome fitness and high costs are considered a need, which requires reducing or removing. Removal is achieved through the appropriate use of inputs and educational technologies by providers. Stakeholders would determine the specifics and the Confederation would performance manage. Resources would be targeted and best practice shared.

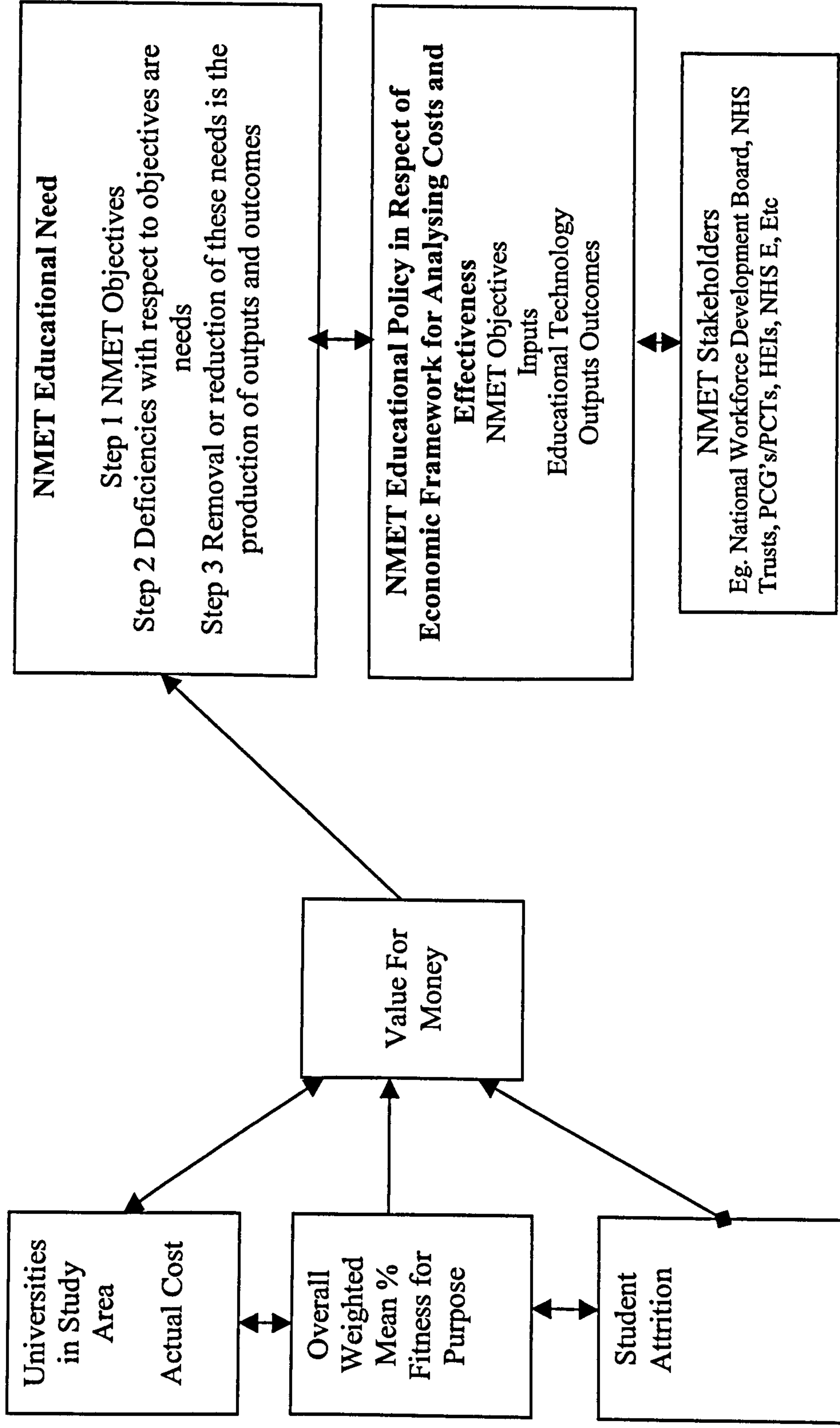


Diagram 9 Policy framework for responding to results of the analysis of NMET costs and effectiveness

4 Summary of Main Findings and Implications and Future Research.

4.4.0 Introduction.

This is the final part of the discussion (Table 61) and has two foci. The first comprises a summary of the main findings and implications i.e. what has been achieved in this research in the three recurrent themes: fitness, cost and cost-effectiveness. Second, a list of recommendations for new research to be undertaken in order to address questions raised by this research.

Discussion	Effectiveness	Cost	Cost-Effectiveness
	1 Effectiveness and Fitness for Purpose: Main Findings and Implications, Sensitivity Analysis, Potential Limitations and Policy Implications.	2 Costing and Pricing of NMET Contracts: Main Findings and Implications, Potential Limitations and Policy Implications.	3 Cost-effectiveness of Pre-Registration Nursing & Physiotherapy Education: Main Findings and Implications, Potential Limitations and Policy Implications.
Part 4 Summary of Main Findings and Implications and Future Research.			

Table 61 Thesis plan for analysis of effectiveness, cost and cost-effectiveness: chapter 4 discussion of results, 4 Summary of main findings and implications, and future research.

A multi-disciplinary health sciences approach has been adopted to the effectiveness, cost and cost-effectiveness of pre-registration nursing and physiotherapy education. The project both at inception, during and at completion complied with the three established basic principles pertaining to health sciences: practical relevance, inter-disciplinary collaboration and scientific rigour.

4.4.1 Effectiveness.

This research has made a contribution to knowledge about effectiveness in nine ways. Firstly, four paradigms of benefits/fitness were described and their inter-relationships explored, with the resultant selection of fitness for purpose as the

most appropriate benefit/outcome for NHS employers. A revised definition of professional competence based on performance was generated.

Secondly, the thesis has contributed to research methods in the form of three formulae: 1) the mean percentage of FfPu for each group of nursing and physiotherapy assessors, 2) the overall weighted mean percentage of fitness for purpose across all groups of assessors and 3) vertical summary of multi-cohort student attrition notably for use in calculation of cost effectiveness ratios.

Thirdly, descriptions of newly qualified Adult Branch nurses and newly qualified physiotherapists fitness for purpose were established in terms of a hierarchy of dimensions based on percentage of variance. Fourthly, mean percentages of fitness for purpose per dimension were calculated for all groups of nursing and physiotherapy assessors. Fifthly, a positive correlation between dimension importance and highest mean percentage of fitness for purpose was established for clinical Preceptors and a negative correlation for Sisters/Charge nurse. Sixthly, for both professions the most important fitness outcome for all groups of assessors was 'Delivering Nursing Care (Physiotherapy) in Response to Patients Needs'.

Seventhly, against a 50% fitness for purpose threshold approved by both senior nursing and physiotherapy assessors seven out of the eight groups of assessors rated newly qualified Adult Branch nurses and newly qualified physiotherapists above the 50% threshold of fitness for purpose using the mean percentage. Only Directors of Nursing rated newly qualified Adult Branch nurses educated at universities in the study Confederation just below the threshold in five areas; cost effectiveness, adapting nursing practice, management, patient protection and health and safety in the workplace.

Eighthly, bringing together data on competence preference (factor loading) and outcome importance (rank order scores) resulted in production of an overall weighted mean percentage of fitness for purpose for each group of assessors for each university. This confirmed that a small but significant number of individual newly qualified Adult Branch nurses and newly qualified physiotherapists can be

fit for award, standing, practice, but not purpose. A direct relationship between the number of individual newly qualified Adult Branch nurses and newly qualified physiotherapists who were not fit for purpose and assessor seniority was established. There is a similar relationship for average fitness.

Finally, NMET policy toward existing pre and post registration curricular should reflect the hierarchy of estimates of relative importance of learning and performance outcomes identified by the Service. For nursing this was 'Deliver Nursing Care in Response to Patients Needs'. In physiotherapy it was 'Deliver Physiotherapy in Response to Patients Needs'. Curricula should also be influenced by the dimensions of fitness for purpose, regardless of whether newly qualified nurses or physiotherapists were rated above or below the 50% threshold of fitness. In this way a Service sensitive curriculum can be generated. This would help ensure that newly qualified practitioners are fit on all four paradigms whilst acknowledging that fitness for practice is the main basis of NMET commissioning.

4.4.2 Cost.

Careful reconciliation of the study consortium funding of NMET with each universities expenditure, based on both an ABC costing algorithm derived from primarily HEFCE's costing methodology and rigorous internal auditing procedures means that calculated costs can be considered to be sufficiently accurate.

Three main findings were identified from the analysis of cost data. Firstly, costing and pricing in higher education are separate but related concepts. Accuracy in the former is an essential pre-requisite for accurate pricing. Secondly, each university has a different overhead rate. Finally, the direct relationship between contract price, student attrition and price per qualified student is crucial and must be reflected in policy.

In respect of pricing NMET contracts three approaches to pricing policy in England were identified resulting in differing prices: price set equal to cost, price

set below cost and price set at cost plus contribution to overheads. It is not known which of the universities in this study used which pricing approach to their contracts. The policy implications of this are that if the study Confederation does not know the pricing basis of each contract then understanding the significance of performance to contract and making recommendations for a change, in the interest of all stakeholders, is more difficult.

Overhead rates must be at an appropriate level so that both Schools of Health, containing departments of nursing and/or physiotherapy, and central university functions, are adequately and fairly funded. A 'harder approach', in which contract income falls as student numbers decline and cost per student increases, is being adopted by the study Confederation. It is adopting contracts with a price per student output rather than nebulous block contracts. In the short term internal university subsidies may be used to fund shortfalls. However, ongoing multi university losses, so that HE is subsidising NMET, are unsustainable.

The Benchmarking and Attrition Review Group on standardised prices and a standard NHS contract for learning and development should generate both the environment and resources for longer-term investment, but in the context of VFM. For overhead rates, the lower the rates are from the NHS perspective the more resources there are for direct nurse and physiotherapy education. A balance, however, must be struck between university overheads and direct costs so that both competing requirements are met.

4.4.3 Cost-effectiveness.

Cost effectiveness analysis generated five main findings and implications. Firstly, a sequence of cost effectiveness ratios was generated commencing with cost per indexed student calculated at the commencement of training and concluding with cost per fit for purpose nurse and physiotherapist employee calculated at the end of training. Subsequent comparison of these ratios aids both operational and strategic management by universities and the study Confederation.

Secondly, analysis of the literature revealed that only price per indexed student had been reported in the literature. Comparison of these, with the cost per indexed student derived in this study, revealed a high degree of correlation. This suggests the costing algorithm used in this study is a sound basis for the calculation of subsequent in-training, qualified, and fit for purpose cost effectiveness ratios.

The differences between our results and the three sources of price per indexed physiotherapy student (NHS E, NAO & Lumley) were greater. This may have been due to either errors of cost allocation and or numbers of commissions which magnifies inter university cost differentials, or because the published figures were based on contract income and not on actual university expenditure.

A sensitivity analysis was undertaken in both nursing and physiotherapy. The closeness of the three sets of cost effectiveness ratios of indexed student nurses was affirmed on the basis of contract values as well as actual expenditure. In physiotherapy using contract values rather than expenditure values, raised one university's costs, lowered another and left a third unchanged. On balance these analyses reinforce conclusions.

Fourthly, the cost per fit for purpose Adult Branch nurse and physiotherapist was based on the interplay of three factors, initial cost per indexed student, the number of qualified students and average overall fitness for purpose. The key factor in nursing was high student attrition, but in physiotherapy it was the low initial cost per indexed student. The cost per practitioner was consistently lower at one university for nursing and another for physiotherapy.

Finally, the cost effectiveness analysis necessitated a policy framework for responding to both process and results of the analysis of NMET costs, effectiveness, other issues notably student attrition, and pricing. Knapp's economic welfare model of need, incorporating Tsang's education production function, is proposed as the basis for this framework spanning the three themes. The framework should involve key stakeholders, some of whom would operationalise it.

4.4.4 Future research.

This discussion leads to the identification of six areas of potential future research.

Firstly, for a small, but significant number of newly qualified Adult Branch nurses and newly qualified physiotherapists they appear to be fit for award, practice and standing, but not purpose. This is a significant finding. As a consequence a further cost-effectiveness study with a larger sample from all universities offering nursing and physiotherapy education, covered by Workforce Development Confederations in England, should be undertaken to ensure generalisability before policy formation.

Secondly, there is a need to develop other fitness for purpose questionnaires for midwifery, health visiting and other allied health professions, with the subsequent use of the data in major contract and curriculum reviews. This would lead to a standardized and comprehensive approach to measuring fitness for purpose in all NMET professions.

Thirdly, Lloyd Jones and Akehurst (1999) observed that any calculated cost per pre-registration nursing student includes a substantial financial contribution to Service. When taken into account this reduces cost per student and affects cost-effectiveness ratios. Research is needed to incorporate their methodology into the costing algorithm, which is equally applicable to physiotherapy and other health professional education.

Fourthly, attrition was the key factor in nursing that drove up cost-effectiveness ratios. To understand attrition needs a combination of qualitative approaches e.g. unstructured interviews with learners and a through review of existing research, both quantitative and qualitative. Any resulting new policy should be underpinned by a baseline of a rigorous student attrition database.

Fifthly, estimating mean fitness for purpose and identifying a small, but significant number of newly qualified Adult Branch nurses and newly qualified

physiotherapists who are not fit for purpose, generates two research questions the results of which would help to reduce attrition and raise effectiveness. First, can applicants who will not be fit for purpose be predicted from baseline student data, and can selection of fitness for purpose students be improved? Second, can one predict those students who will not be fit for purpose at the point of qualification, and improve their education and training to improve this outcome?

Finally, does fitness for purpose measure at the end of preceptorship, predict the future performance of nurses and physiotherapists? This needs to be established via a follow up study using respondents who took part in this study.

In short the research reported in this thesis has created a health science approach to the effectiveness, cost and cost effectiveness of NMET, generated new empirical findings in this field, and a feasible and useful research agenda for the future.

References

Adderley, B., V. and Brock, A., M. (1977) Evaluating clinical performance in nursing. Journal of Advanced Nursing, 2, pp.355-363

Aggleton, P., Allen, M., and Montgomery, S. (1987) Developing a system for the continuous assessment of practical nursing skills. Nurse Education Today, 7, pp.158-164

Airedale NHS Trust (1999) Clinical governance Openaire, Staff Magazine of Airedale NHS Trust No 60 April 1999, Airedale NHS Trust

Airedale NHS Trust (2000) Clinical governance action plan, Openaire, Staff Magazine of Airedale NHS Trust No 70 April 2000, Airedale NHS Trust

Allan, D. and Cornes, D. (1998) Impact of management of change projects on practice. Journal of Advanced Nursing, 27, pp. 865-869

Altman, D. G. (1991) Practical Statistics for Medical Research, London Chapman and Hall

Ashworth, P and Longmate, M. (1998) theory and practice: Beyond the dichotomy. Nurse Education Today 13, pp.321-327

Aston-McCrimmon, E. and Hamel. (1983) Physical therapy competencies: a market study. Physiotherapy Canada. 35, 2, pp.77-83

Aston-McCrimmon, E. (1984) Trends in clinical practice: an analysis of competencies. Physiotherapy Canada. 36, 4, pp.184-188

Australian Council of Physiotherapy Regulating Authorities (1994) Australian physiotherapy competency standards. Body Control Systems, Brisbane, Australia

Australian Nursing Council Inc (2000) 3rd ed. National competency standards for the registered nurse and the enrolled nurse, <http://www.anci.org.au/competencystandards.htm>

Barrett, C. and Myrick, F. (1998) Job satisfaction in preceptorship and its effect on the clinical performance of the preceptee. Journal of Advanced Nursing, 27, pp.364-371

Barton, B., A. (1998) Yorkshire competency outcomes for nurses Unpublished document

Barton, B., A. (1998) Yorkshire competency outcomes for physiotherapists Unpublished document

Barton, B., A. (1989) Yorkshire Competency Outcomes for Nurses, standards for West Yorkshire Education Purchasing Consortia, In UKCC, (1999) Fitness for Practice, The UKCC Commission for nursing and Midwifery Education, UKCC

Barton, B., A. (2001) Advanced Diploma in Higher Education Nursing: A Research based Curriculum- Module Guide Unpublished Document.

Bartram, D. (1996) The involvement of higher education in the delivery of S/NVQs in higher level vocational qualifications. London: NCVQ

Benner, P., and Benner, R., V. (1979) The new nurse's work entry: A troubled sponsorship. The Tiresias Press, Inc. New York City

Benner, P. (1984) From Novice to expert: excellence and power in clinical nursing practice. Addison-Wesley Publishing Company, California

Benner, P. & Tanner, C (1987) clinical Judgement: how expert nurses use intuition. American Journal of Nursing 87, 23-31

Benner, P. and Wrubel, J (1989) The primacy of caring: Stress and coping in health and illness, Addison-Wesley Publishing Company

Benner, P., Tanner, C.A., & Chesla, C.A (1996) Expertise in nursing practice. Springer Publishing Company New York

Bennett, B., A. (1957) Why Student Nurses Leave Nursing Mirror May 403

Birch, J. (1975) To nurse or not to nurse? London, Royal College of Nursing

Bircumshaw, D. (1989) A survey of the attitudes of senior nurses towards graduate nurses. Journal of Advanced Nursing. 14, pp.68-72

Bjork, I. (1995) Neglected conflicts in the discipline of nursing: perceptions of the importance and value of practical skill. Journal of Advanced Nursing. 22, 6 pp 6-12

Black H. and Wolfe A (1990) eds, Careers and occupational information centre, HMSO, London, pp.15-21

Boss, L., A. (1985) Teaching for clinical competence. Nurse Educator, 10, pp.8-12

Bowman, M., J. (1966) The costing of human resource development in Robinson, E., A., E. and Vaisey, J.(eds) The Economics of Education. London, Macmillan

Boyatzis, R., E. (1982) The competent manager: a model for effective performance. Wiley, New York, NY

Boyd, E.M. and Fales, A.W. (1983) Reflective learning: Key to learning from experience. Journal of Humanistic Psychology. 23, pp. 99-117

Bradshaw, A. (1997), Defining clinical competence in nursing. (Part 1), Journal of Clinical Nursing, 6: pp.347-354

Bradshaw, A. (1998), Defining clinical competence in nursing. (Part 2), Journal of Clinical Nursing, 7: pp.103-111

Briggs, A. (1972) Report of the committee on nursing. London, HMSO

Burke, L., M. (1993) The future of the specialist nurse teacher: Two different models explored. Nurse Education Today, 13 pp. 40-46

Burns, M., G. (1958) The shift system. Nursing Mirror July 25, 1273-1274

Callery, D. (2000) Parity assurance methods for peer analysis of quality assurance in teaching and nursing, Nurse Education Today, 20, pp.273-380

Caney, D. (1983) Competence—can it be assessed? Physiotherapy 69, 8, pp.302-304

Care Sector Consortium (1992) National occupational standards for care, HMSO

Care Sector Consortium (1998) National occupational standards for care, HMSO

Cartwright A. (1998) Health surveys in practice and in potential: a critical review of their scope and methods, King's fund publishing office

Chartered Society of Physiotherapy (1996) Rules of professional conduct. The Chartered Society of Physiotherapy, London

Chartered Society of Physiotherapy (1996a) The curriculum framework document. The Chartered Society of Physiotherapy, London

Chartered Society of Physiotherapy and The Council for Professions Supplementary to Medicine, (1996b) 'Validation guidelines' Chartered Society of Physiotherapy and The Council for Professions Supplementary to Medicine, London

Chartered Society of Physiotherapy (1998) Reasons for withdrawal personal communication The Chartered Society of Physiotherapy, London

Chartered Society of Physiotherapy (1999) National student intake by year 1989-1999 & percentage of growth. The Chartered Society of Physiotherapy, London

Chartered Society of Physiotherapy (1999a) Projected final year output of newly qualified for 200/2001 & 2002. The Chartered Society of Physiotherapy, London

Chartered Society of Physiotherapy (2002) Introducing the health professions council, Frontline Series 3 No3, The Chartered Society of Physiotherapy, London

Cheetham, G. and Chivers, G. (1996) Towards a holistic model of professional competence. Journal of European Industrial Training, Vol. 20. No.5, pp.20-30

Cheetham, G. and Chivers, G. (1998) The reflective (and competent) practitioner. Journal of European Industrial Training, Vol. 22. No.7, pp.267-276

Cheetham, G. (1999) The acquisition of professional competence. Ph.D. University of Sheffield

Child, D. (1970) The essentials of factor analysis, Holt, Reinhart and Winston, London

Christman, N., J. (1971) Clinical performance of baccalaureate graduates. Nursing Outlook. 19, pp.54-56

Clifford, C. (1995) The role of the nurse teachers: concerns, conflicts and challenges. Nurse Education Today. 15 pp.11-16

Coakley, A.N. (1997) Nurse education: attrition rates in the UK Nursing Standard Vol 11 Num 48 pp.45-47

Cook, S.H. (1991) Mind the theory/practice gap in nursing. Journal of Advanced, 16, pp.1462-1469

Cooper, R and Kaplan, R., S. (1988) Measure costs right: make the right decisions, Harvard Business Review (September–October) pp.96-103

Coopers and Lybrand (1995) Cost of higher education by education provider–Project “CHEEP” Draft Report, Leicester

Council for Professions Supplementary to Medicine (1979) PSM education and training: The next decade. Higher and further education working party

Council for Professions Supplementary to Medicine ‘State registration: An introduction’ (undated) CPSM, London

Council for Professions Supplementary to Medicine (1997) Who we are and what do we do CPSM, London

Crichton, N (2000) Information point: Principal component analysis, Journal of Clinical Nursing 9 pp.321-329

Cronbach, L., J. (1984) Essentials of psychological testing, 4th Edn. Harper and Row Publishers, New York

Cropper, P. (1996) An education in costing. Public Finance March p.21-22

Cross, E., M. (1983) Student evaluation and assessment in clinical situations Physiotherapy 69, 8, pp.304-308

Cross, V. (1999) ‘The same but different; a delphi study of clinicians’ and academics’ perceptions of physiotherapy undergraduates’ Physiotherapy, Vol. 85 No1

Courtney, M. (1991) A study of the teaching and learning of biological sciences in nurse education. Journal of Advanced, 16, pp.1110-1116

Cox, P., D., La, D., H. and Pappachan, M. (1999) Acquisition of physiotherapy competencies during clinical placements. Physiotherapy Canada Spring pp.113-119

Dale, A. (1994), The theory-theory gap: The challenge for teachers. Journal of Advanced Nursing, 20, pp.321-325

Day, M. (1994) Pre-registration advanced diploma in nursing studies: assessment handbook Sheffield and North Trent College of Nursing and Midwifery

Day, M., and Basford, L. (1995) 'Fit for care, Nursing Times Vol. 91 pp. 42-43

Day, M. (1995a) Vocational Training its Role in Nursing Standard Vol 9, Nos 51

Dearing, R. (1977) Higher Education in the learning society: report of the National Committee, HMSO. Norwich

Department of Employment (1995) A vision for higher level occupational qualifications, London, HMSO

Department of Health (1989) Working for Patients, HMSO, London

Department of Health (1989a) 'Working for patients education and training', Working Paper 10, HMSO London

Department of Health (1993) The challenges for nursing and midwifery in the 21ST Century: The Heathrow Debate, Department of Health, London

Department of Health. (1994) Nursing, midwifery and health visiting education: A statement of strategic intent. Department of Health, London

Department of Health (1995) EL (95) 27 Education and training in the New NHS. Department of Health, Leeds

Department of Health (1995b) EL (95) 84 Building on the benefits of occupational standards and national vocational qualifications (NVOs) in the NHS. Department of Health, Leeds

Department of Health (1995c) The joint declaration of principles, (CVCP & NHS), Department of Health, London

Department of Health, (1997) The New NHS: modern, dependable. Department of Health, London

Department of Health, (1999) Making a difference: strengthening the nursing, midwifery and health visiting contribution to health and healthcare. Department of Health, London

Department of Health, (2000) The NHS Plan, A plan for investment, a plan for reform, Cm 4818-1, Stationery Office, 2000

Department of Health, (2000a): HSC 2000/030: Human Resources Performance Framework. Department of Health, London

Department of Health, (2002) Workforce Development Confederations Agenda Item 7: Paper 4.2

Department of Health and Universities UK (2002) Funding Learning and Development for the Healthcare Workforce: Consultation on the Review of NHS Education and Training Funding and the Review of Contract Benchmarking for NHS Funded Education and Training, Department of Health and Universities UK

Dinsdale, P. (1998) Staying the course, Nursing Standard, 12 31 1998 p.14

Drake, K. (1982) The cost effectiveness of vocational training: A survey of British studies Economics of Education Review 2 (2), pp.103-125

Drummond, F., Stoddart, G., L, and Torrance, G., W. (1993) Methods for the economic evaluation of health care programmes, Oxford University Press, Oxford

Dunn, D. (1986) Assessing the development of clinical nursing skills. Nurse Education Today 6, pp 28-35

Dyson, J. (1992) The importance of practice. Nursing Times, 88. (40) pp. 44-46

Easmon, C. (1997) The universities and the NHS - Managing the markets, in 1997/98 NHS handbook Twelfth Edition, ed Merry, P. JMH Publishing, Kent pp.243-251

Easmon, C. (1999) Education and training in the NHS 1999/2000, NHS Handbook Fourteenth Edition, ed Merry, P. JMH Publishing, Kent pp. 241-247

Elkan, R. and Robinson, J. (1993) Project 2000: the gap between theory and practice. Nurse Education Today, 13 pp.295-298

Elkan, R. and Robinson, J. (1995) Project 2000: a review of published research Journal of Advanced Nursing, 22 pp.386-392

Ellis, R. Ed (1988) Professional competence and quality assurance in the caring professions. London, Chapman and Hall

Ellis, R and Whittington D, Social Skills, Competence and Quality in Ellis, R. Ed (1988) Professional competence and quality assurance in the caring professions. London, Chapman and Hall.

Elzubei, M. and Sherman, M. (1995) Nursing skills and practice. British Journal of Nursing, 4, 18, 1087-1092

English National Board for Nursing, Midwifery and Health Visiting (1993)
Assessment of competencies in nursing and midwifery education and training
(the Ace Project), ENB, London

English National Board for Nursing, Midwifery and Health Visiting (1994)
Reframing the framework: a manager's perspective. English National Board for
Nursing, Midwifery and Health Visiting

English National Board for Nursing, Midwifery and Health Visiting (1996)
Mapping the nursing competencies required in the context of multi-disciplinary
health care provision (An Exploratory Study), ENB, London

English National Board for Nursing, Midwifery and Health Visiting (1996a) Pre
and post registration student nurse and midwife records. Circular 1996/06/SR
June 1996. ENB London

English National Board for Nursing, Midwifery and Health Visiting, (1999)
Students statistics report 1993/94 – 1997/98 ENB, London

English National Board for Nursing, Midwifery and Health Visiting, (2000)
Annual Report, ENB London

English National Board for Nursing, Midwifery and Health Visiting, Students
Statistics Report 1994/54 – 1998/99 2nd Edition (2000a), ENB, London

English National Board for Nursing, Midwifery and Health Visiting, (2000b) The
quality of nursing, midwifery and health visiting education programmes: A
national view of annual reports 1989/99, ENB, London

English National Board for Nursing, Midwifery and Health Visiting, (2000c)
Education in Focus: Strengthening Pre-Registration Nursing and Midwifery
Education, ENB London

Entwistle, N. J., & Entwistle A., C. (1991) Developing, revising, and examining conceptual understanding: the student experience and its implications. Centre for research on learning and instruction. University of Edinburgh

Entwistle, N. (1992) The impact of teaching on learning outcomes in higher education: A literature Review CVCP

Eraut, M. (1985) 'Knowledge creation and knowledge use in professional contexts. Studies in Higher Education. 10, pp. 117-133

Eraut, M., & Cole, G. (1993) Assessing competence in the professions. Institute of continuing and professional education, University of Sussex, Strategy Unit

Eraut, M. (1994) Developing Professional knowledge and competence. Falmer Press, London

Eraut, M., Alderton, J., Boylan, A., and Wraight, A. (1995) Learning to use scientific knowledge in education and practice settings: an evaluation of the contribution of the biological, behavioral and social sciences to pre-registration nursing and midwifery programmes. English National Board for Nursing Midwifery and Health Visiting, London

European Commission, Advisory Committee on Training in Nursing. Report and Recommendation on the competencies required to take up the profession of nurse responsible for general care in the European Union (1998) European Commission Brussels XV/E/8481/4/97-EN.

Fairbrother, P., and Ford., S. (1998) Lecturer practitioners: A literature review. Journal of Advanced Nursing, 27, pp. 274-279

Fennell, E. (1987) Guidance notes: first three arrive on schedule. Competence and Assessment. 3, pp 2-5

Fitzpatrick, J.M., While, A., E. and Roberts J., D. (1992) The role of the nurse in high-quality patient care: a review of the literature. Journal of Advanced Nursing. 17. pp.1210-1219

Fitzpatrick, J. M., While, W., E. and Roberts, J.D. (1994) The measurement of nurse performance and its differentiation by course of preparation. Journal of Advanced Nursing. 20, pp.761-768

Fitzpatrick, J. M., While, W., E. and Roberts, J.D. (1997) Measuring clinical nurse performance: development of the King's Nurse Performance Scale. International Journal of Nursing Studies 34, 3, pp.222-230

Fleming, D. (1992) The concept of meta-competence. Competence and Assessment 16.9. pp.9-12

Ford, S., G. (1985) Clinical competence of physiotherapy students: development of an assessment form. NZ Journal of Physiotherapy. 13. 3. pp.4-6

Fraser, M. (1989) Into the unknown. Nursing Times, 85 (27), pp.68-70

Galley, A., L. and Forster, P. (1978) Assessment of professional competence: The clinical teacher's responsibility. Australian Journal of Physiotherapy. 24 pp.53-59

General Nursing Council for England and Wales (1996) Annual Report 1996. London, GNC

Giot, E. A. (1993) Assessment of competence in clinical practice—a review of the literature. Nurse Education Today, 13, 83-90

Giot, E. A. (2000) Graduate nurses: critical thinkers or better decision makers? Journal of Advanced Nursing 31 (2) 288-297

Glen, S. & Clark, A. (1999) Nurse education: a skill mix for the future, Nurse Education Today 19 pp.12-19

Gonczi, A., Hager. and Oliver, L (1990) Establishing competency-based standards in the professions, Research Paper, Canberra, Australian Government Publishing Service in, Cheetham, G (1999) 'The acquisition of professional competence'. Ph.D. University of Sheffield

Gonczi, A. (1994) Competency based assessment in the professions in Australia. Assessment in Education 1 (1): 27-44

Gould, D. and Ream, E (1993) Assessing nurses' hand decontamination performance. Occasional Paper. Nursing Times 89, pp.46-50

Hall, D., T. (1986) Career development in organisations. Jossey-Bass, San Francisco, CA.

Hager, P. and Gonzi, A. (1996) Professions and competencies Chapter 14, pp.246-260 in, Boundaries of adult learning. Edwards, R., Hanson, A and Raggett, P. (Eds), (1996) Routledge, London

Hallett, C. (1997) Learning through reflection in the community: the relevance of Schon's theories of coaching to nursing education. International Journal of Nursing Studies, 34, 2, pp.103-110

Harden, R. and Cairncross, R. (1980) Assessment of practical skills; the objective structured practical examination. Studies in Higher Education 5: 2, pp.187-196

Hayes, K., W, Huber, G, Rogers, J and Sanders, B (1999) Behaviours that cause clinical instructors to question the clinical competence of physical therapy students, Physical Therapy, 79 (7) pp.653-667

Hayes, N. (2000) Doing psychological research; gathering and analysing data, Open University Press, Buckingham Philadelphia

Health and Care Professions Education Forum (1997) A comparative study of the arrangements for clinical placements across 10 health care professions; recommendations for improved practice. London. H&CPEF

Higgs, J & Titchen, A. (1995) The nature, Generation and Verification of Knowledge, Physiotherapy, Vol 81, No 9

Higher Education Funding Council for England, Scottish Higher Education Funding Council and the Higher Education Funding Council for Wales (1997) Management information for decision making: Costing guidelines for higher education institutions, Higher Education Funding Council for England

Higher Education Funding Council for England (1999), Joint costing and pricing steering group training material: Costing and pricing for decision-makers in higher education, Higher Education Funding Council for England

Higher Education Quality Council, National Health Service Executive and North Yorkshire College of Health (February 1994a) 'Improving the effectiveness of quality assurance systems in non-medical healthcare education and training: Report on workshop attended by WP10 'Leads' ' Higher Education Quality Council; London

Higher Education Quality Council, National Health Service Executive and North Yorkshire College of Health (August 1994b) 'Improving the effectiveness of quality assurance systems in non-medical healthcare education and training: Report on Workshop' Higher Education Quality Council; London

Higher Education Quality Council, National Health Service Executive and North Yorkshire College of Health (March 1995) 'Improving the effectiveness of quality assurance systems in non-medical healthcare education and training: Report on Plenary Workshop' Higher Education Quality Council; London

Higher Education Quality Council (1996) 'Improving the effectiveness of quality assurance systems in non-medical healthcare education and training' Higher Education Quality Council; London

Hilton, P.A. (1996) Clinical skills laboratories: teaching practical skills. Nursing Standard, 10, 37, pp.44-47

Hirst, P. (1993) Educational theory in, Hammersley M (ed.) Educational Research: Current Issues, pp 149-159. Paul Chapman, London

Hislop, S., Inglis, B., Cope, P., Stoddart, B., and McIntosh C. (1996) Situating theory in practice: student views of theory-practice in Project 2000 nursing programmes. Journal of Advanced Nursing, 23, pp. 171-177

Hogstel, M., O. (1977) Associate degree and baccalaureate graduates: do they function differently? American Journal of Nursing 77, pp.1598-1600

Holloway, I., and Penson, J. (1987) Nurse Education and Social Control. Nurse Education Today. 7, pp. 235-241

Hollenbery, S. (1994) Looking to the future: an alternative view. Physiotherapy 80, 103A –104A

Horton, R. (1993) A questionnaire survey to investigate how basic grade physiotherapists in certain District General Hospitals in the North West of England view their training as preparation for clinical life. Unpublished BSc Hons Physiotherapy Dissertation University of Manchester

Howell, F., J. (1978) Employers' evaluations of new graduates Nursing Outlook 26. pp.448-451

Howson, J and Mitchell, M. (1995) Course costing in devolved institutions: perspectives from an academic department Higher Education Review September, pp.64-68

Hughes, F. (1985) What do nurses do? Senior Nurse 2 (4): 19

Hunt, A., Adamson, B., and Harris L. (1998) Physiotherapists' perception of the gap between education and practice. Physiotherapy Theory and Practice. 14 125-138

Hutt, R. (1989) Lasting the course. Part 4. Findings and conclusions, Senior Nurse, Vol 9 3 pp 4-8

Institute of Health Services Management (1997) The IHSM health and social services year book 1997/98, IHSM, Great Britain

JM. Consulting Ltd (1998) The regulations of nurses, midwives and health visitors: Report on a review of the nurses, midwives and health visitors Act 1997, J.M Consulting, Bristol

JM Consulting (1999) Transparent approach to costing: Manual of guidance and implementation, overview and implementation sections A and B. JM Consulting, Bristol

JM Consulting (1999a) Transparent approach to costing: Manual of guidance and implementation, reference manual sections C and D. J M Consulting, Bristol.

JM Consulting (2000) Transparent approach to costing: Volume 2 Reference manual J M Consulting, Bristol

JM Consulting (2001) Costing nursing and other health professional teaching provision J M Consulting <jmconsulting-adm@dial.pipex.com>

Joint Costing and Pricing Steering Group (2000) Pricing toolkit for higher education sector, KPMG for Joint Costing and Pricing Steering Group

Jordan, S. (1994) Should nurses be studying bioscience? Nurse Education Today. 14, pp.417-426

Jowett, S. Walton, I. and Payne, S. (1994) Challenges and changes in nurse education—a study of the implementation of Project 2000. NFER, Slough

Kelly, B. (1996) Hospital nursing: 'it's a battle!' a follow up study of English graduate nurses. Journal of Advanced Nursing. 14, 5, pp.1063-1069

Kinnear, P., R., and Gray, C., D. (1994) SPSS for windows: made simple. Psychology Press, East Sussex

Knapp, M., K. (1984) The economics of social care, Macmillan Publishers, London

Knight, C., M., Moule, P and Desbottes, Z. (2000) The grid that bridges the gap, Nurse Education Today. 20, pp.116-122

Knopf, L. (1982) National league for nursing, Cost of nursing education: A manual for analysis of expenditures Part 1 Method, directions and examples diploma program. National League for Nursing, New York, New York

Knopf, L. (1982a) National league for nursing, Cost of nursing education: A manual for analysis of expenditures Part 1 Method, directions and examples baccalaureate program. National League for Nursing, New York, New York

Knopf, L. (1982b) National league for nursing, Cost of nursing education: A manual for analysis of expenditures Part 1 Method, directions and examples associate degree program. National League for Nursing, New York, New York

KPMG (2000) Strategic development of costing in higher education, KPMG, Birmingham

Kramer, M (1974), Reality shock: Why nurses leave nursing CV Mosby, St Louis

Lancet Commission on Nursing (1932) Lancet. February 20, 415-417

- Lancet Commission on Nursing (1932a) Lancet. February 27, 473-475
- Lancet Commission on Nursing (1932b) Lancet. March 5, 532-533
- Lankshear, A. (1990) Failure to fail: the teacher's dilemma. Nursing Standard. 4, pp.35-37
- Lawler, J. (1991) Behind the screens. Churchill Livingstone, Edinburgh in, Knight, C., M., Moule, P and Desbottes, Z (2000) The grid that bridges the gap, Nurse Education Today. 20, pp.116-122
- Le Var, R. (1996) NVQ's in nursing and midwifery: A question of assessment and learning? Nurse Education Today 16, 85-93
- Levin, H., M. (1983) Cost effectiveness, a primer, Beverley Hills, Sage
- Lindop, E. (1987) Factors associated with student and pupil nurse wastage, Journal of Advanced Nursing. 12. 751-756
- Lindop, E (1991) individual Stress Among Nurse in Training: Why some leave, others stay. Nurse Education Today. 11. 110-120
- Lipley, N. (2000) Inquiry launched into student drop-out rates, Nursing standard, 26 Vol 14, N0 45
- Loomis, J (1985) Evaluating clinical competence of physical therapy students. Part 1: The development of an instrument. Physiotherapy Canada. 37, 2, 83-89
- Loomis, J (1985a) Evaluating clinical competence of physical therapy students. Part 2: The development of an instrument. Physiotherapy Canada. 37, 2, 91-98
- Luker, K. Carlisle, C. and Riley, E. (1996) Project 2000 fitness for purpose. Report to the Department of Health, University of Liverpool and Warwick

Lumley Associates (1998) Review of physiotherapy education and training Provision in the Northern and Yorkshire Region Part I Report. Pocklington, York

Lumley, C. (1998a) Review of physiotherapy, education and training provision in The Northern & Yorkshire Region 1998, Part 2, Appendices, Lumley Associates, York

Lloyd Jones, M & Akehurst, F. (1999) The cost and value of pre-registration clinical placements for Project 2000 students, Journal of Advanced Nursing, 30 (1) 169-178

Mackety, C., J. (1989) Development of performance criteria: its purpose and objectives Laser Nursing 3, 1, pp.15-18

Macleod Clark J., Maben, J. and Jones, K. (1996) Project 2000: perceptions of the philosophy and practice of nursing. English National Board for Nursing, Midwifery and Health Visiting, London

Macleod Clark J., Maben, J. and Jones, K. (1997) Project 2000: perceptions of the philosophy and practice. Journal of Advanced Nursing 26, pp246-256

MacGuire, J. (1969) Research Findings on Recruitment and Withdrawal 2. Nursing Times, February 27, 33-36

Mackenzie, A. (1992), 'Learning from experience in the community: an ethnographic study of district nurse students. Journal of Advanced Nursing, 17: pp.682-691

Maggs, C. and Rapport F. (1996) Getting a job and growing in confidence: the dual experience of newly qualified midwives prepared by pre-registration route. NT Research 1 (1) pp.68-78

Mallik, M. (1993) Theory-to-practice links. Senior Nurse, 13, 4 pp. 41-46

Management Charter Initiative (1997) Management standards, Management Charter Initiative, London

Manninen, E. (1988) Changes in nursing students' perceptions of nursing as they progress through their education, Journal of Advanced Nursing, 27(2): 390-8

Mansfield, B. (1990) Knowledge, evidence and assessment. In Knowledge and competence: Current Issues in Training and Education (Black H. and Wolfe A eds), Careers and Occupational Information Centre, HMSO, London, pp.15-21

Mansfield, B. and Mathews, D. (1985) Job competence. A description for use in vocational education and training. Further Education Staff College, Bristol

Marsick, V. J. (1987) Learning in the workplace. Croom, Helm, London

Martell, R and Harris, C. (1996) Call to adapt or die. Therapy Weekly May 16 p.3

Maxwell, L. (1995) The cost of error. Nursing Times, August 4, 1021

McCaughty, D. (1991) The theory practice gap in nurse education: its causes and possible solutions. Findings from an action research study. Journal of Advanced Nursing, 16, pp.1055-1061

McCaugherty, D. (1992) The gap between nursing theory and practice. Senior Nurse, 12, 6 pp.44-48

McClosky, J., C. (1983) Nursing education and job effectiveness Nursing Research 32, 1 pp.53-58

McElroy, A. (1997) Developing the nurse teachers' role: the use of multiple focus groups to ensure grassroots involvement. Nurse Education Today, 17, pp.145-149

McManus, E., (1995) Competence: a concept analyses. (Unpublished document) in, McManus, E., S. and Sieler, P, A. (1998) Freedom to enjoy learning in the 21st century: developing an active learning culture in nursing. Nurse Education Today 18, pp. 322-328

Medley, D., M. (1984) Teacher competency testing and the teacher Educator, in Katz, L.G. and Rajhas, J.D Eds Advances in Teacher Education Vol 1 Ablex New York

Meerabeau, L. (1992) Tacit nursing knowledge: an untapped resource or a methodological headache? Journal of Advanced Nursing, 17, pp.108-112

Melia, K.M. (1983) Student nurses' constructions of occupational socialisation. Sociology of Health and Illness. 6, (2), 132-151

Messick, S. (1984) The psychology of educational measurement Journal of Educational Measurement. 21, p.215-238

Moncur, C (1985) Physical therapy competencies in rheumatology. Physical Therapy 65, 9, pp.1365-1372

Moores, B. (1971) Patterns of student wastage. International Journal of Nursing Studies. 8. 61-71

Moser, C., A & Kalton, G. (1996) 2nd edition Survey methods and social investigation. Dartmouth Publishing Company Ltd

Moule, M. (1999) 'Contracting for nurse education: Nurse leader experiences and future visions' Nurse Education Today Vol.19. pp.164-171

Mulhall, A. (1997) Nursing research: our world not theirs? Journal of Advanced Nursing, 25, pp. 969-76

Myles, A. (1995) New wine in old bottles , In Jolly M, Brykozynska, G (1995) Nursing Beyond Tradition and Conflict, Mosby

Namate, D., E. (1995) The cost of registered nurse-midwifery education in Malawi. Journal of Advanced Nursing 22, pp. 410-415

National Audit Office (1992) Nursing education: Implementation of Project 2000 in England, London, HMSO

National Audit Office (2000a) A national audit office survey of higher education institutions in England, nursing and midwifery, Summary & Recommendations London, HMSO

National Audit Office (2000b) A national audit office survey of higher education institutions in England, nursing and midwifery, London, HMSO

National Audit Office (2001) Education and training the future health professional workforce for England. London, HMSO

National Foundation for Education Research. (1992) Nursing education: implication of Project 2000 in England, London, HMSO

Neary, M. (1994) Teaching practical skills in colleges. Nursing Standard 8, 27, pp.35-38

Nelson, L., F. (1978) Competence of nursing graduates in technical, communicative and administrative skills. Nursing Research. 27, 2, pp.121-125

Newman, M. (1984) Theory for nursing practice, Nursing Science Quarterly. 7, 4, pp. 28-29

Newton, G. (1996) Talking up nursing, Nursing Standard, Vol 11: 2 p.16

NHS E (1994) Managing the new NHS: Functions and responsibilities in the new NHS Department of Health

NHS E (1995) EL (95) 27 Education and training in the new NHS. Department of Health

NHS E Institute of Nursing, and NHS (E) Northern and Yorkshire Chaplains & Pastoral Care Committee (1995a) A framework for spiritual, faith and related pastoral care, NHS E, Leeds

NHS Center for Reviews and Dissemination (1996) Undertaking systematic reviews of effectiveness, University of York: NHS CRD

NHS E (1996) Information requirements /pre registration training. NHS E Durham

NHS E (1997) EL (97) 30 Devolution of responsibilities to education consortia. Department of Health

NHS E (1997a) Non-medical education and training levy: Accountability report. Department of Health

NHS E. (1998) Integrating theory and practice in nursing. A report commissioned by the chief nursing officer/director of nursing NHS E Leeds

NHS E (1998a), 'Non medical education and training (NMET) Funding: devolution to education consortia', Health Service Circular 1998/044, NHS E

NHS E, (1998b), 'Non medical education and training (NMET) 1997/98 accountability report', Health Service Circular 1998/222, NHS E

NHS E (1998c) Pathways to competent care services: Occupational standards for health care: Executive summary. Department of Health

NHS E (1998d) Health Service Circular 1998/222 Non-medical education & training (NMET) 1997/98 accountability report. Department of Health

NHS E (1998e) HSC 1998/034 NHS Trusts: Accounting for non-medical education and training (NMET) Department of Health

NHS E (1998f) Health Service Circular 1998/080 Non-medical education and training (NMET) student funding; transfer of responsibilities from Department of Education and Employment (DfEE) to Department of Health. Department of Health

NHS E (1998g) NMET contract database communication with regional office education leads, NHS E Leeds

NHS E (1998h) A first class service: Quality in the new NHS, NHS E

NHS E, (1999) Non medical education and training (NMET): Good contracting guidelines', Health Service Circular 1999/072, NHS E

NHS E (1999a) Executive Northern & Yorkshire regional education development group: annual report on 1998/99 business plan for 1999/2000. September 1999 Department of Health

NHS E (1999b) NMET Initial analysis of variation in contract costs communication with regional office education leads, NHS E Leeds

NHS E (1999c) Our healthier nation: Mental health national service frameworks, Department of Health, London

NHS E (2000) A Health Service of all talents: Developing the NHS workforce. Consultation Document on the Review of Workforce Planning, Department of Health

North West Regional Health Authority.(1994) Education purchasing standards for first post competences. North West Regional Health Authority

Nunnally, J., C. Psychometric Theory, (1978) Second Edition, McGraw-Hill Book Company, New York

Nursing and Midwifery Council (2002) About the NMC, <http://www.nmc-uk.org/cms>

O'Brien, D. (1984) Evaluation of an undergraduate nursing course. Journal of Advanced Nursing 9, pp. 401-406

O'Connor, S., E., Pearce, J., Smith, R., L., Vogeli, D. and Walton., P. (1999) Monitoring the quality of pre-registration education: development, validation and piloting of competency based performance indicators for newly qualified nurses. Nurse Education Today. 19, pp. 334-341

O'Hanlon, M., and Andrews, D. (1996) Occupational standards: A framework for clinical effectiveness. Royal Liverpool and Broadgreen University Hospitals NHS Trust

Orr, J., R. (1990) Tradition v Project 2000 – Something old, something new. Nurse Education Today. 10.58-62

Osborne, P. (1991) Nurse teacher and ward-based earning. Senior Nurse, 11, 4, pp.28-29

Pass, C., Loews, B., & Davies L (1993) Collins Dictionary of Economics 2nd Edition Harper Collins

Phillips, T., Bedford, H., Robinson, J. and Schostak, J. (1994) Education, dialogue and assessment: creating partnership for improving practice. English National Board for Nursing, Midwifery and Health Visiting, London

Pittilo., M. (2001) 'Trust me I'm a physicians's assistant, THES March 2 2001 No 1, 476 p.18-19

Pope, R., Garrett, R., & Graham L. (2000) Quality assurance for nursing and midwifery education: an analysis of the approach in England Nurse Education Today, 20, pp.341-349.

Price Waterhouse (1998) Nurse retention and recruitment. Bristol, Price Waterhouse

Quade, E., S. (1967) Introduction and overview. In Goldman, T., A. (ed) Cost-effectiveness Analysis. New York: Praeger

Quality Assurance Agency (1997) Subject review handbook 1998-2000. Quality Assurance Agency for Higher Education

Quality Assurance Agency (2000) First draft nursing and physiotherapy benchmarking standards, Quality Assurance Agency for Higher Education

Quality Assurance Agency (2001a) Consultation draft benchmarking academic and practitioner standards in health care subjects, Quality Assurance Agency for Higher Education

Quinn, F. (1988) The principles and practice of nurse education, 2nd edn. Chapman Hall

Quinn, F., M. (1994) The demise of the curriculum in health care education; The challenge of the market, ed by Humphreys, J and Quinn, F., M, Chapman Hall, London

Radwin, L. (1998), Empirically generated attributes of experience in nursing. Journal of Advanced Nursing, 27, pp.507-513

Rafferty, A. M. Allcock, N. and Lathlean, J. (1992) Theory/practice gap: taking issue with the issue. Journal of Advanced Nursing. 23, pp. 685-691

Rafferty, D. (1992a) Implications of the theory/practice gap for project 2000 students. British Journal of Nursing, 1, 10, pp 507-513

Ramsammy, B and Humphreys, J. (1994) Case study: Incorporation and the responsive college in health care education; The challenge of the market, ed by Humphreys, J and Quinn, F., M, Chapman Hall, London

Redfern, S., J. (1978) Absence and Wastage in trained nurses: a selective review of the literature. Journal of Advanced Nursing. 3. 231-249

Rethans, J., J. Van Leeuwen, Y., Drop, R., Van Der Vleutens, c. and Sturmanas, F. (1990) Competence and performance: two different concepts in the assessment of quality of medical care. Family Practice 7, 3, pp.168-174

Richardson, R. (1998) 'The role of personal tutor in nurse education: towards an understanding of practice in a college at a particular point in time' Journal of Advanced Nursing 27: pp.1265-1272

Robinson, J. (1993) Three years on: experiences of a Project 2000 demonstration district. Suffolk and Great Yarmouth College of Nursing and Midwifery with Suffolk College, UK in, Bradshaw, A. (1997), Defining clinical competence in nursing. (Part 1), Journal of Clinical Nursing, 6: pp.347-354

Rolfe, G. (1998) The theory-practice gap in nursing: from research-based practice to practitioner-based research. Journal of Advanced Nursing 28 (3) pp.672-769

Rolls, E., (1997) Competence in professional practice: some issues and concerns Educational Research Vol 39 N0 2

Royal College of Nursing, (2001) Evidence to the review body for 2001: realising the future, Royal College of Nursing of the United Kingdom

Rummel, R., J. (1970) Applied factor analysis, Evanston, Northwestern University Press

Runciman, P. (1990) Competency-based education and the assessment and accreditation of the work-based learning in the context of project 2000 programmes of nurse education: a literature review. The National Board for Nursing, Midwifery and Health Visiting for Scotland

Runciman, P. Dewar, B. and Goulbourne, A. (1998) Employers' needs and the skills of newly qualified Project 2000 staff nurses final report' Queen Margaret College

Rushforth, H. and Ireland, L. (1997) Fit for Purpose? The contextual forces underpinning the provision of nurse education in the UK. Nurse Education Today, 17, pp.437-441

Russell, I. (1996) Graduate School of Health Studies, Survey Research Methods, Module Notes, University of York

Russell, I. Di Blasi, Z., Lambert, M., and Russell D. (1998) Systematic reviews and meta-analyses: opportunities and threats in evidence-based fertility treatment, Royal College of Obstetricians and Gynaecologists, London

Saunders, C. (2001) 'More resources are needed to train NHS staff, THES Times Higher Education Supplement March 2 No 1,476 p.3

Scapens, W., S., Ormston, A., L., and Arnold, J. (1994) The development of overhead recovery models at the University of Manchester in, Management Accounting in Universities ed by Berry, R., H, Chartered Institute of Management, London

Schon, D., A. (1983) The reflective practitioner: How professionals think in action. London, Maurice Temple Smith Ltd

Schon, D., A. (1987) 'Educating the reflective practitioner. San Francisco, Jossey-Bass Inc

Schultz, T., W. (1963) The economic value of education, New York, Columbia University Press

Schwirian, P., M, Basta, S., M, Baer, C., L, Larabee, G, and Jones, R. (1979) Prediction of Successful Nursing Performance (Parts 3 and 4) Department of Health, Education and Welfare, Hyattsville, Maryland, in Fitzpatrick, J. M., While, W., E. and Roberts, J.D. (1994) The measurement of nurse performance and its differentiation by course of preparation. Journal of Advanced Nursing, 20, pp.761-768

Shearer, M. (1989) Progressing nicely. Nursing Times 85 (3): pp.60-61

Sheffield and North Trent College of Nursing and Midwifery (1994) Pre-registration advanced diploma in nursing studies, Assessment Handbook, Guidelines for Nurse Teachers and Assessors, Sheffield and North Trent College

Slevin, O., and Buchenham, M. (1992) Project 2000. The teacher speaks innovation in nursing. Champion Press, Edinburgh

Smith, P., C. and Kendal. L., M. (1967) Retranslations of expectations: an approach to the construction of unambiguous anchors for rating scales. Journal of Applied Psychology 47, pp149-155

Statutory Instrument 1989 No 1456 The nurses, midwives and health visitors approval order London, HMSO

Standing Liaison Committee of Physiotherapists Within the E.U. (1996) The practice of physiotherapy in the European Union. Standing Liaison Committee of Physiotherapists Within the E.U

Stanwick, S. (1994) The market supply for education: supply and demand in Health care education; The challenge of the market ed by Humphreys, J and Quinn, F., M, Chapman Hall, London

Stevenson, D. (1996) 'The pitfalls of Project 2,000. Nursing Times 92, 1, pp.54-55

Storey, L. O'Kell, S. and Day, M. (1995) Utilising national occupational standards as a complement to nursing curricula. NHS E, London

Storey, L. O'Kell, S and Day, M (1995a) Utilising national occupational standards as a complement to nursing curricula Executive Summary. NHS E, London

Streiner, D. L., and Norman, G. R (1989) Health measurement scales, A practical guide to their development and use Oxford Medical Publications, Oxford University Press

Taylor, R. and Pearson, A. (1994) Total quality management in research and development, The TOM Magazine, Vol. 6. No. 1 pp. 26-34

Thomas, H (1990) Education costs and performance A cost-effectiveness analysis, Cassell, London

Trades Union Congress, Skills 2000. London. TUC 1989

Trent Regional Health Authority (Undated) In the Balance: the cost and benefits of clinical placement in health care education. Northern Health care Consortium

Troskie, R. (1993) Critical evaluation of the newly qualified nurse's competency to practise- Part 1 Curationis 16, 3, pp.50-55

Troskie, R. (1993a) Critical evaluation of the newly qualified nurse's competency to practise- Part 2 Curationis 16, 3, pp.56-61

Tsang, M., C. (1998) Cost analysis for educational policymaking: A review of cost studies in education in developing countries, Review of Educational Research, Vol 58 2 pp. 181-230

United Kingdom Central Council for Nursing, Midwifery & Health Visiting (UKCC 1988) Project 2000: Proposed rules for the standard, kind and content of future pre-registration nursing education, United Kingdom Central Council for Nursing Midwifery and Health Visiting, London

United Kingdom Central Council for Nursing, Midwifery & Health Visiting (UKCC) (1992). Code of professional conduct UKCC, London

United Kingdom Central Council for Nursing, Midwifery & Health Visiting (UKCC) (1992a). Scope of professional practice UKCC, London

United Kingdom Central Council for Nursing, Midwifery & Health Visiting (UKCC) (1995). PREP and you, UKCC London

United Kingdom Central Council for Nursing, Midwifery & Health Visiting (UKCC 1988) Project 2000: Proposed rules for the standard, kind and content of future pre-registration nursing education, United Kingdom Central Council for Nursing Midwifery and Health Visiting, London

United Kingdom Central Council (1998a) The UKCC commission for education, agendum 7.2, March 1998, UKCC, London

United Kingdom Central Council for Nursing Midwifery and Health Visiting (UKCC) (1999) Fitness for practice London, UKCC

United Kingdom Central Council for Nursing, Midwifery & Health Visiting (2000) European Commission directive 77/453/EEC – training programme for nurses responsible for general care. Registrar's Letter 15/2000, May 2000. UKCC, London

United Kingdom Central Council for Nursing, Midwifery & Health Visiting (2000a) Requirements for pre-registration nursing programmes. Registrar's Letter 17/2000, May 2000. UKCC, London

University of Manchester (1996) 'The future healthcare workforce' Summary Statement, University of Manchester

Van Gennep., A. (1990) The Rites of Passage. London: Routledge and Kegan Paul.

Verry, D., and Davies, B. (1976) University costs and outputs, Elsevier, Oxford

Wandelt, M., A. and Stewart, D., S. (1975) Slater nursing competencies rating Scale. Appleton-Century-Crofts, New York

Webb, C.,Y., Y Collier, G. and Anderson, S (1996) The clinical competence of recent Hong Kong physiotherapy graduates as perceived by themselves and other practicing physiotherapists. Hong Kong Physiotherapy Journal 14, pp.17-20

Weinstein, J. (1998) The use of occupational standards in professional education, Journal of Interprofessional Care, Vol 12 No 2.

Welsches, L., J., Dixon, F., A. and Stanford, E., D. (1974) Typological prediction of staff nurse performance rating. Nursing Research 23, 402-409

West, R. (1991) Computing for psychologists: statistical analysis using SPSS and MINITAB, Harwood Academic Publishers

West, W. & Rushton, R. (1986) The Drop Out Factor. Nursing Times. December 31. 29-31

West Yorkshire Education & Training Consortium (1997) 1996-1997 Annual report. West Yorkshire Education & Training Consortium

Wiles, R., Payne, S., Barnitt, R., Wheeler, A and Swan, R. (1999) A Comparison of different types of pre-registration education for occupational therapists and physiotherapists and its relevance to first post performance, Health Research Unit, School of Occupational Therapy and Physiotherapy, University of Southampton, Southampton.

Williams, F., J & Waterman, H. (1996) An examination of nurses practices when performing aseptic technique for wound dressings. Journal of Advanced Nursing, 23 (1) pp.48-54

Williams, P. (1995) 'Competent to practice? A case for occupational standards' Radiography. Vol. 1, pp.121-125

Williams, P., L. (1998) Using theories of professional knowledge and reflective practice to influence educational change. Medical Teacher Vol. 20. No 1

Williams, P. and Berry, J. (1997) 'Competent to practice?' University of Salford

While, A., E. (1994) competence versus performance: which is the more important? Journal of Advanced Nursing. 20, pp.525-531

While, A., Robers, J and Fitzpatrick, J. (1995) A comparative study of outcomes or pre-registration nurse education programmes. English National Board for Nursing, Midwifery and Health Visiting, London

Wilkinson, R. (1996) Nurses' concerns about IV therapy and device. Nursing Standard 10, 35, pp.35-37

Whittington, D., and Boore, J. (1988) Competence in Nursing in Ellis, R. Ed (1988) Professional competence and quality assurance in the caring professions. London, Chapman and Hall

Wolf, A. (1994) Assessing the broad skills within occupational competence. Competence and Assessment. 25, pp3-6

Wolf, Z., R. (1981) The concept of caring: Beginning exploration. Candidacy paper, University of Pennsylvania School of Nursing, Philadelphia, PA in, Kenney, J W.(1996) Philosophical and Theoretical Perspectives for Advanced Nursing Practice, Jones & Bartlett, Sudbury

Wolf, Z., E, Giardino, E., R, Osborne, P., A, and Ambrose, M., S. (1996) Dimensions of nurse caring in, Kenney, J W. (1996) Philosophical and Theoretical Perspectives for Advanced Nursing Practice, Jones & Bartlett, Sudbury

Wolff, P. (1996) Designing and delivering competence based degrees, University of Lincoln and Humberside and the University of Huddersfield

Woodhall, M. and Blaug, M. (1968) Productivity trends in British secondary Education, 1950-1963. Sociology of Education 41 (1), pp1-15

Yorkshire Health, (1993) 'Achieving change, The development of education commissioning', An occasional paper, Yorkshire Health

Zarett, A. (1980) Is the BSN better? RN 43, 3, pp.28-33

Annex 1 Yorkshire Competency Outcomes for Nurses

Outcome 1

Enable Patients and Groups to Optimize their Health and Social Well-Being

Statement 1.1 Does the newly qualified adult branch nurse, of whom you are the clinical preceptor*, assess patients' health needs and raise awareness of health issues thereby enabling patients and their families to optimize their health and social well being? This means for example that she:

Descriptors
a) Assesses patients' holistic health needs as a basis for planning, implementing and evaluating health and social well being.
b) Ensures that health issues are raised in order to optimize patient and family health and social well being.
c) Enables patients to maintain their daily living activities.
d) Enables patients and their families to have access to information about issues that affect their health and social well being.

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Statement 1.2 Does the newly qualified adult branch nurse, of whom you are the clinical preceptor, promote good health and the use of preventative approaches, by using interventions that are within the scope of professional practice? This means, for example, that she:

Descriptors
a) Enables patients to manage their health and illness through health promotion and by raising awareness of psychological and sociological perspectives.
b) Enables patients to have access to preventative approaches that promote good health.
c) Enables patients to have access to appropriate interventions that promote good health.

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Statement 1.3 Does the newly qualified adult branch nurse, of whom you are the clinical preceptor, teach and advise patients, carers and others in order to optimize their health and social well being? This means, for example, that she:

Descriptors
a) Enables patients and significant others to learn to optimize their health and social well being through informal and formal health education activities and programmes.
b) Enables patients and significant others to learn to use equipment which supports their well-being.

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Outcome 2
Demonstrate and Apply Knowledge and Understanding of
Issues that Affect Nursing Practice

Statement 2.1 Does the newly qualified adult branch nurse, of whom you are the clinical preceptor, practice within the effects of resource limitation? This means, for example, that she:

Descriptors
a) Plans, prioritizes, and implements appropriate nursing care within available resources.
b) Practices within available resources with due regard for the purchaser/ provider divide and service contracts.

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Statement 2.2 Does the newly qualified adult branch nurse, of whom you are the clinical preceptor, demonstrate and apply knowledge and understanding of ethical, health and social policies and the professional framework of nursing practice? This means, for example, that she:

Descriptors
a) Acts legally, ethically and professionally in all circumstances.
b) Assesses, on an ongoing basis, the impact of nursing practice on the role of other professionals within healthcare delivery.
c) Practices in accordance with the ethics of health care, professional rules and policies.

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Statement 2.3 Does the newly qualified adult branch nurse, of whom you are the clinical preceptor, deliver care consistent with legislation relevant to nursing practice? This means, for example, that she:

Descriptor
a) Delivers care consistent with relevant legislation e.g. Community Care Act and Health & Safety at Work Acts.

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Outcome 3 Maintain and Develop Patient Identity and Relationships
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Statement 3.1 Does the newly qualified adult branch nurse, of whom you are the clinical preceptor, develop professional working relationships with patients? This means, for example, that she:

Descriptors
a) Establishes, develops and sustains professional working relationships with patients at the appropriate time
b) Recognizes the appropriate time to terminate professional working relationships with patients and actions accordingly

Circle One

Very Low Fitness *Very High Fitness*

0	1	2	3	4	5	6	7	8	9	10
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Statement 3.2 Does the newly qualified adult branch nurse, of whom you are the clinical preceptor, support patients and significant others? This means, for example, that she:

Descriptors
a) Enables patients to maintain their interests, identity and emotional well being whilst receiving care.
b) Enables patients and significant others to feel supported whilst receiving a care service.
c) Enables patients to prepare for, and transfer to, different care requirements.

Circle One

Very Low Fitness *Very High Fitness*

0	1	2	3	4	5	6	7	8	9	10
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Outcome 4 Enable Effective Communication with Patients

Statement 4.1 Does the newly qualified adult branch nurse, of whom you are the clinical preceptor, listen to patients, carers and their families? This means, for example, that she:

Descriptor
a) Ensures that patients, carers and their families are listened to during all stages of care.

Circle One

Very Low Fitness *Very High Fitness*

0	1	2	3	4	5	6	7	8	9	10
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Statement 4.2 Does the newly qualified adult branch nurse, of whom you are the clinical preceptor, effectively communicate with patients where there are communication differences and or difficulties? This means, for example, that she:

Descriptors
a) Ensures that information on patient communication abilities is obtained and agreed to by appropriate others.
b) Enables patients to communicate where there are communication differences or difficulties.

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Statement 4.3 Does the newly qualified adult branch nurse, of whom you are the clinical preceptor, effectively communicate with others through the use of interpreting services? This means, for example, that she:

Descriptors
a) Enables patients to receive interpreting services to meet identified communication differences.
b) Enables patients to communicate through the use of interpreters.
c) Enables patients to evaluate the effectiveness of the interpreting service.

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Statement 4.4 Does the newly qualified adult branch nurse, of whom you are the clinical preceptor, effectively communicate with those who do not use a recognized language or may need to communicate through physical contact? This means, for example, that she:

Descriptors
a) Determines ways in which patients who do not use a recognized language communicate.
b) Develops and maintains relationships with patients who do not use a recognized language.
c) Develops and maintains relationships with patients who may require physical contact as a mode of communication.

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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<h2 style="margin: 0;">Outcome 5</h2> <h3 style="margin: 0;">Contribute to the Welfare of Patients</h3>

Statement 5.1 Does the newly qualified adult branch nurse, of whom you are the clinical preceptor, plan, organize and evaluate nursing care? This means, for example, that she:

Descriptors
a) Assesses, plans, organizes and implements patient care.
b) Evaluates the effectiveness of care.
c) Provides discharge advice.

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Statement 5.2 Does the newly qualified adult branch nurse, of whom you are the clinical preceptor, determine ways in which the service can support patients? This means, for example, that she:

Descriptors
a) Enables patients' service needs to be identified based upon the evaluation of information obtained.
b) Enables each patients care plan to be based on co-ordinated decisions.
c) Enables each patient's requirements to be met by the maintenance and monitoring of services.

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Statement 5.3 Does the newly qualified adult branch nurse, of whom you are the clinical preceptor, treat each patient with dignity and sensitivity? This means, for example, that she:

Descriptors
a) Enables patients to be treated with the courtesy, dignity, sensitivity and respect they are due.
b) Enables patients to receive the information necessary in order for them to make decisions.
c) Includes the patient in the planning of his/her care.

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Statement 5.4 Does the newly qualified adult branch nurse, of whom you are the clinical preceptor, optimize the health and well being of patients through the administration of medication? This means, for example, that she:

Descriptors	
a)	Enables patients to receive education and advice about their medication including pain control.
b)	Prepares and administers drugs/medication within agreed protocols.

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Statement 5.5 Does the newly qualified adult branch nurse, of whom you are the clinical preceptor, support patients when they are distressed? This means, for example, that she:

Descriptors	
a)	Contributes to the prevention of a patient's distress.
b)	Enables patients to seek appropriate support in times of distress.

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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<p>Outcome 6</p> <p>Enable Patients to Attain Maximum Independence in Situations of Dependency</p>
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Protection, Advocacy and Management of Behaviour

Statement 6.1 Does the newly qualified adult branch nurse, of whom you are the clinical preceptor, contribute to the protection of patients from aggressive and abusive behaviour? This means, for example, that she:

Descriptors	
a)	Minimizes both the level and the effects of aggressive and abusive behaviour in care environments.
b)	Minimizes the risk to patients by monitoring and managing episodes of aggressive and abusive behaviour.
c)	Manages episodes of aggressive and abusive behaviour.

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Statement 6.2 Does the newly qualified adult branch nurse, of whom you are the clinical preceptor, enable the provision of advocacy for patients? This means, for example, that she:

Descriptors
a) Enables patients to both establish the need for advocacy and obtain an advocate.
b) Acts as an advocate on a patient's behalf.
c) Enables patients to assess the effectiveness of advocacy.

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Patient Mobility

Statement 6.3 Does the newly qualified adult branch nurse, of whom you are the clinical preceptor, enable patients to maintain and improve their mobility? This means, for example, that she:

Descriptors
a) Enables patients to maintain their mobility in their immediate environment.
b) Enables patients to increase their mobility.
c) Enables patient's use of mobility appliances.

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Patient Movement and Handling

Statement 6.4 Does the newly qualified adult branch nurse, of whom you are the clinical preceptor, enable moving and handling of patients to maximise their physical comfort? This means, for example, that she:

Descriptors
a) Ensures that environments and patients are prepared for efficient and safe moving and handling.
b) Enables patients to move efficiently and safely from one position to another.
c) Enables patients to prevent and minimize the adverse effects of pressure.

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Patient Hygiene and Appearance

Statement 6.5 Does the newly qualified adult branch nurse, of whom you are the clinical preceptor, enable patients to maintain their personal hygiene and appearance? This means, for example, that she:

Descriptors
a) Enables patients to maintain their personal cleanliness.
b) Enables patients to undertake personal grooming and dressing.

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Patient Nutrition

Statement 6.6 Does the newly qualified adult branch nurse, of whom you are the clinical preceptor, enable patients to consume sufficient and appropriate food and drink? This means, for example, that she:

Descriptors
a) Enables patients to choose appropriate food and drink.
b) Enables patients to prepare for the consumption of food and drink.
c) If necessary, enables patients to receive normal and supplementary feeding in order to remain hydrated and well nourished.
d) Ensures accurate records of food and fluid intake are maintained.

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Patient Continence

Statement 6.7 Does the newly qualified adult branch nurse, of whom you are the clinical preceptor, enable patients to achieve continence and to access and use toilet facilities? This means, for example, that she:

Descriptors
a) Enables patients to maintain continence.
b) Enables patients to manage their incontinence.
c) Enables patients to access and use toilet facilities.
d) Ensures that patients' body waste is collected, observed, measured and appropriately disposed of.

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Patient Comfort

Statement 6.8 Does the newly qualified adult branch nurse, of whom you are the clinical preceptor, enable patients to achieve physical comfort? This means, for example, that she:

Descriptors
a) Enables the minimization of patient discomfort and pain.
b) Enables patients to rest by providing the necessary conditions.

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Death and Bereavement

Statement 6.9 Does the newly qualified adult branch nurse, of whom you are the clinical preceptor, support and care for patients and others through the process of death and dying? This means, for example, that she:

Descriptors
a) Enables patients and others significant to them to adjust to the knowledge of an expected death.
b) Enables patients to be appropriately supported as they die.
c) Observes the privacy, dignity, religious and cultural beliefs of dying patients and their families.
d) Enables the deceased person to be transferred to an agreed location.

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Outcome 7

Enable Patients to Maintain Personal Independence

Statement 7.1 Does the newly qualified adult branch nurse, of whom you are the clinical preceptor, enable patients to move from a supportive to an independent living environment? This means, for example, that she:

Descriptors
a) Enables patients to plan for a new environment.
b) Enables patients to maintain their personal activities of daily living.
c) Enables patients to maintain a clean, safe and secure living environment, which requires a greater degree of independence.

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Outcome 8
Deliver Nursing Care in Response to Patients Needs

Context of Care

Statement 8.1 Is the newly qualified adult branch nurse, of whom you are the clinical preceptor, aware of the context of care? This means, for example, that she:

Descriptors
a) Enables patients from multi-cultural backgrounds to receive nursing care that is sensitive to their needs.
b) Works in conjunction with both the voluntary and private sectors.
c) Enables patients to receive appropriate help and advice from the voluntary and private sectors.

Circle One

<i>Very Low Fitness</i>	<i>Very High Fitness</i>
0	10

Statement 8.2 Does the newly qualified adult branch nurse, of whom you are the clinical preceptor, assess and define patient's needs and circumstances? This means, for example, that she:

Descriptors
a) Assesses and identifies patients' needs and circumstances including social/life skills.
b) Evaluates and reviews patients needs' and circumstances on an ongoing basis.
c) Measures, monitors, interprets and responds to clinical observations of patients on an ongoing basis.
d) Carries out clinical activities (e.g. injections & dressings) skillfully and safely.

Circle One

<i>Very Low Fitness</i>	<i>Very High Fitness</i>
0	10

Managing the Organization of Care for Patients

Statement 8.3 Does the newly qualified adult branch nurse, of whom you are the clinical preceptor, plan, document and evaluate care? This means, for example, that she:

Descriptors
a) Ensures that patients' needs are identified in the selection and implementation of an appropriate care plan.
b) Ensures patients receive safe and effective nursing care informed by psychology, sociology, biological sciences and pathology.
c) Contributes to the final decision to discharge patients within defined protocols.

Circle One

<i>Very Low Fitness</i>	<i>Very High Fitness</i>
0	10

Nursing Standards

Statement 8.4 Does the newly qualified adult branch nurse, of whom you are the clinical preceptor, contribute to the development of nursing practice standards? This means, for example, that she:

Descriptors
a) Determines standards necessary to effectively meet patient needs.
b) Develops standards in collaboration with care team members.
c) Enables standards of practice to be implemented and monitored.

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Evidenced Based Care

Statement 8.5 Does the newly qualified adult branch nurse, of whom you are the clinical preceptor, evaluate standards that contribute to continuous improvements and dissemination of evidence-based care? This means, for example, that she:

Descriptors
a) Evaluates effectiveness of agreed standards.
b) Enables access to and promotions of the database on information of effective care practice.

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Tissue Viability

Statement 8.6 Does the newly qualified adult branch nurse, of whom you are the clinical preceptor, enable patients to maintain tissues in a healthy condition? This means, for example, that she:

Descriptors
a) Enables patients to maintain skin integrity.
b) Enables patients to be provided with those conditions, which optimize wound healing.
c) Enables patients to receive a tissue viability risk assessment.
d) Intervenes as appropriate.

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Basic Life Support

Statement 8.7 Does the newly qualified adult branch nurse, of whom you are the clinical preceptor, administer basic life support? This means, for example, that she:

Descriptors
a) Identifies and responds to clinical emergencies.
b) Identifies the need and are able to perform basic cardio-pulmonary resuscitation.
c) Enables patients to receive prepared drugs administered by others in emergency situations.

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Supervision of Staff

Statement 8.8 Does the newly qualified adult branch nurse, of whom you are the clinical preceptor, supervise staff? This means, for example, that she:

Descriptors
a) Assesses the ability of those she is supervising to carry out care.
b) Delegates appropriate care and other activities to appropriate staff.
c) Monitors and evaluates the performance of staff undertaking delegated care activities.

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Outcome 9

Understand the Need for Nursing Practice to be Research Based

Statement 9.1 Does the newly qualified adult branch nurse, of whom you are the clinical preceptor, understand research and evaluate nursing practice? This means, for example, that she:

Descriptors
a) Enables patients to benefit from research perspectives in health and social care.
b) Enables patients to benefit from the critical appraisal of research evidence and, where appropriate, the application of findings.
c) Evaluates the outcomes of nursing intervention.

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Statement 9.2 Does the newly qualified adult branch nurse, of whom you are the clinical preceptor, recognize the importance of providing cost effective nursing care? This means, for example, that she:

Descriptors	
a)	Ensures that care, which is delivered, is cost effective.
b)	Ensures nursing care is evaluated to determine cost effectiveness.

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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<h2>Outcome 10</h2> <h3>Respond Appropriately to Changing Demands</h3>
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Statement 10.1 Does the newly qualified adult branch nurse, of whom you are the clinical preceptor, transfer skills and knowledge to a variety of settings? This means, for example, that she:

Descriptors	
a)	Ensures that interpretation and problem solving skills have influenced assessment findings.
b)	Ensures effective evaluation of care.
c)	Enables patient care to be delivered to appropriate standards taking into account differing organizational settings.

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Statement 10.2 Does the newly qualified adult branch nurse, of whom you are the clinical preceptor, adapt nursing practice to meet various unpredictable circumstances? This means, for example, that she:

Descriptors	
a)	Establishes appropriate professional relationships with patients as a basis for appropriate care.
b)	Manages self and practice within differing environments.

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Statement 10.3 Does the newly qualified adult branch nurse, of whom you are the clinical preceptor, enable patients and significant others to adjust explore and manage change? This means, for example, that she:

Descriptors	
a)	Enables patients to explore the implications of change and their options.
b)	Enables patients and their significant others to manage the process of change.

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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<h2>Outcome 11</h2> <h3>Maintain a Safe Workplace Environment</h3>
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Statement 11.1 Does the newly qualified adult branch nurse, of whom you are the clinical preceptor, maintain health, safety and security in the workplace? This means, for example, that she:

Descriptors	
a)	Ensures safety and security in the work environment.
b)	Ensures the maintenance of standards of health and safety in working practice.
c)	Ensures the minimization of risks arising from health emergencies.

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Statement 11.2 Does the newly qualified adult branch nurse, of whom you are the clinical preceptor, control the risks of infection during care delivery? This means, for example, that she:

Descriptors	
a)	Maintains a clean working environment.
b)	Monitors and controls the risk(s) of infection.
c)	Ensures that aseptic techniques are implemented when there are risks of introducing infection.

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Statement 11.3 Does the newly qualified adult branch nurse, of whom you are the clinical preceptor, maintain patient and staff safety through the correct use of powered medical devices whilst in hospital? This means, for example, that she:

Descriptors
a) Ensures that all equipment has undergone statutory checking procedures prior to use.
b) Ensures patients receive treatments using the appropriate medical device.
c) Ensures that patients are monitored and evaluated whilst using medical devices.
d) Ensures that devices that are no longer in use are stored safely.

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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<p>Outcome 12</p> <p>Support Patients' Spirituality, Faith and Related Pastoral Care Needs</p>
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Statement 12.1 Does the newly qualified adult branch nurse, of whom you are the clinical preceptor, assess the religious, spiritual and cultural needs of patients? This means, for example, that she:

Descriptors
a) Ensures that the patients' needs in relation to spirituality are met as a component of holistic care.
b) Enables patients to maintain their religious, spiritual and cultural beliefs and have access to spiritual and related pastoral care.
c) Ensures that patients make best sense of their circumstances during periods of illness and hospitalization.

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Outcome 13
Support Patients During Specific Treatment and Therapeutic Programmes

Statement 13.1 Does the newly qualified adult branch nurse, of whom you are the clinical preceptor, contribute to the support of patients during a range of treatment and therapeutic activities? This means, for example, that she:

Descriptors
a) Supports patients during treatment and therapeutic activities.
b) Prepares appropriate equipment and materials for use in treatment and therapeutic activities.
c) Assists appropriate healthcare and other professionals.

Circle One

<i>Very Low Fitness</i>	<i>Very High Fitness</i>
0	10

Multi-disciplinary Working

Statement 13.2 Does the newly qualified adult branch nurse, of whom you are the clinical preceptor, enable multi-disciplinary working? This means, for example, that she:

Descriptors
a) Enables patients to benefit from multi-disciplinary team working, including other agencies, by contributing to shared multi-disciplinary team patient notes/records.
b) Enables patients to benefit from the co-ordination of multi-disciplinary team discharge planning.
c) Enables patients to benefit from multi-disciplinary setting of standards and the writing of shared protocols for care.

Circle One

<i>Very Low Fitness</i>	<i>Very High Fitness</i>
0	10

Statement 13.3 Does the newly qualified adult branch nurse, of whom you are the clinical preceptor, enable inter-disciplinary teams to deliver individualized programmes of care to patients? This means, for example, that she:

Descriptors
a) Enables patients to benefit from the assessment, planning and identification of their needs by utilizing the inter disciplinary team.
b) Enables patients to benefit from the evaluation and review of individualized care.

Circle One

<i>Very Low Fitness</i>	<i>Very High Fitness</i>
0	10

Statement 13.4 Does the newly qualified adult branch nurse, of whom you are the clinical preceptor, contribute to the development of the knowledge and practice of others within an effective team? This means, for example, that she:

Descriptors
a) Develops effective team practice.
b) Maintains effective working relationships within the team.
c) Enables colleagues to learn and benefit from their own experience within and outside of a team.

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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<p>Outcome 14</p> <p>Contribute to the Management of Resources, Information and Quality</p>

Manage Resources

Statement 14.1 Does the newly qualified adult branch nurse, of whom you are the clinical preceptor, use resources efficiently? This means, for example, that she:

Descriptors
a) Enables the utilization of all resources efficiently within her sphere of control.
b) Controls resources efficiently within her sphere of control.

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Statement 14.2 Does the newly qualified adult branch nurse, of whom you are the clinical preceptor, welcome and facilitate access of visitors to services and facilities? This means, for example, that she:

Descriptors
a) Ensures that visitors are received and welcomed.
b) Enables visitors to access services and facilities.
c) Ensures that situations involving potentially disruptive visitors are appropriately managed.

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Manage Information

Statement 14.3 Does the newly qualified adult branch nurse, of whom you are the clinical preceptor, manage information for activity? This means, for example, that she:

Descriptors
a) Ensures that required information is gathered.
b) Ensures others are informed of available information.
c) Ensures appropriate response to formal requests for information from organizations inside and outside the NHS.

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Statement 14.4 Does the newly qualified adult branch nurse, of whom you are the clinical preceptor, use information technology in clinical settings? This means, for example, that she:

Descriptors
a) Ensures patient care is informed by the appropriate use of computerized data.
b) Ensures that local computerized databases are accessed regularly.
c) Ensures that where appropriate, electronic communications are used to transmit data.

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Manage Quality

Statement 14.5 Does the newly qualified adult branch nurse, of whom you are the clinical preceptor, promote the organisations approach to quality? This means, for example, that she:

Descriptors
a) Ensures that the organization's strategy on quality is promoted.
b) Ensures that the organization's principles of quality are incorporated into personal professional practice

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Statement 14.6 Does the newly qualified adult branch nurse, of whom you are the clinical preceptor, support the development and implementation of quality audit systems? This means, for example, that she:

Descriptors	
a)	Ensures that appropriate measurement systems are developed.
b)	Ensures that information is collected and documented appropriately.

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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<p>Outcome 15</p> <p>Practise and Promote Continuing Professional Development (CPD)</p>

Statement 15.1 Does the newly qualified adult branch nurse, of whom you are the clinical preceptor, practise within the recognized scope and limitations of current nursing practice? This means, for example, that she:

Descriptors	
a)	Ensures that her practice is within the current limits and scope of nursing practice.
b)	Ensures her scope of practice takes account of the variety of issues, which underpin, inform and impact upon it.
c)	Ensures that her registered nurse status is the beginning of the continuum of lifelong learning by engaging in continuing professional development.

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Statement 15.2 Does the newly qualified adult branch nurse, of whom you are the clinical preceptor, demonstrate responsibility for her personal and professional learning and development within available resources? This means, for example, that she:

Descriptors	
a)	Ensures personal and professional development through an ongoing professional portfolio.
b)	Ensures personal lifelong learning through the maintenance and enhancement of knowledge and skills.
c)	Ensures continued development of self and the profession through enhancement of research and evaluation skills.

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Estimate of Relative Importance of Performance Outcomes

Having identified your 'fitness for purpose' level in respect of each of the 15 learning outcomes please now estimate the relative importance of each of the 15 outcomes for ALL newly qualified adult branch staff nurses. Do this by allocating a total of 150 points to the outcome sections in the table below. Allocate the points in any way which you feel appropriate e.g. allocate 120 points to the first outcome, 30 points to the second outcome and none to the rest, or, 20 points to first seven outcomes and 10 points to outcome ten etc. Please use only whole numbers.

Performance Outcome Sections	Points Score
1 Enable patients and groups to optimize their health and social well being	
2 Demonstrate and apply knowledge and understanding of issues that affect nursing practice	
3 Maintain and develop patient identity and relationships	
4 Enable effective communication with patients	
5 Contribute to the welfare of patients	
6 Enable patients to attain maximum independence in situations of dependency	
7 Enable patients to maintain personal independence	
8 Deliver nursing care in response to patients needs	
9 Understand the need for nursing practice to be research based	
10 Respond appropriately to changing demands	
11 Maintain a safe workplace environment	
12 Support patients' spirituality, faith and related pastoral care needs	
13 Support patients during specific treatment and therapeutic programmes	
14 Contribute to the management of resources, information and quality	
15 Practise and promote continuing professional development (CPD)	
Total	150

ANNEX 2

Perceived 'Fitness for Purpose' Questionnaire Newly Qualified Physiotherapists

<p style="text-align: center;">Outcome A Enable Individuals and Groups to Optimize their Health and Social Well Being</p>

Statement A.1 Do you promote good health and the use of preventative approaches, using interventions that are within the scope of professional practice? This means, for example, that you:

- | |
|--|
| <ul style="list-style-type: none">• Biological Sciences
possess knowledge of the normal anatomy and physiology of the living body for those systems that are commonly encountered in physiotherapy practice• Health Promotion
realize that the promotion of good health and the use of preventative approaches are key aspects of your practice• Human Ability and Potential
take account of the biological, pathological, social and psychological dimensions as they may all affect the health status of the individual |
|--|

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Statement A.2 Do you teach and advise individuals, carers and others in order to optimize their health and social well being? This means, for example, that you:

- | |
|---|
| <ul style="list-style-type: none">• Health Promotion
teach and advise individuals and groups about optimizing their health and social well being |
|---|

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Statement A.3 Do you advise individuals, groups and health care professionals on the scope of physiotherapy practice?: skills, skills in practice and the context of physiotherapy practice.

Statement A.3a) Physiotherapy Skills. This theme relates to the practical aspect of physiotherapy its process and dynamics. This means, for example, that you:

<ul style="list-style-type: none"> • Clinical Sciences possess knowledge of the pathological changes and related clinical features of conditions most commonly encountered in physiotherapy practice
<ul style="list-style-type: none"> • Physiotherapy Skills advise on those core practical skills and knowledge which distinguish physiotherapy from other health care professions and on operational skills* which enable physiotherapists to practice effectively
<ul style="list-style-type: none"> • Communication communicate* effectively which is vital to the successful functioning of the physiotherapist

Circle One

<i>Very</i>								<i>Very</i>		
<i>Low Fitness</i>								<i>High Fitness</i>		
0	1	2	3	4	5	6	7	8	9	10

Statement A.3b) Physiotherapy Skills in Practice. This theme relates to the application of physiotherapy skills in practice. This means, for example, that you

<ul style="list-style-type: none"> • Physical Sciences have an understanding of the physical sciences* as applied to the specific therapeutic techniques and procedures of practice, which inform knowledge of the scientific concepts and principles that underpin the practical skills of the physiotherapist
<ul style="list-style-type: none"> • Clinical Sciences have an understanding of clinical sciences that are essential for accuracy in clinical diagnosis and the selection and safe effective application of physiotherapy treatments
<ul style="list-style-type: none"> • Physiotherapy Skills in Practice take account of the needs of individuals, the relationship between them and the service environment

Circle One

<i>Very</i>								<i>Very</i>		
<i>Low Fitness</i>								<i>High Fitness</i>		
0	1	2	3	4	5	6	7	8	9	10

Statement A.3c) The Context of Physiotherapy Practice. This theme relates to the variety of contextual areas, which underpin, inform and impact on physiotherapy practice. This means, for example, that you:

- | |
|---|
| <ul style="list-style-type: none"> • Behavioural, Cultural and Social Factors
take account of behavioural, cultural and social factors,* their impact on individuals' health status which should inform your treatment approach |
| <ul style="list-style-type: none"> • Human Ability and Potential
have an understanding of individual variations in human ability and their potential for change |
| <ul style="list-style-type: none"> • Models of Intervention
are aware of the broader issues relating to the varying environments of care in which you practise |

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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<p>Outcome B</p> <p>Respond Appropriately to Changing Demands</p>

Statement B.1 Do you demonstrate the ability to transfer skills and knowledge to a variety of settings? This means, for example, that you:

- | |
|--|
| <ul style="list-style-type: none"> • Organizational Factors
whilst working in changing and increasingly diverse settings* appreciate the implications that different organizational models have on care delivery and patterns of working |
| <ul style="list-style-type: none"> • Treatment Planning
apply interpretation, problem solving and clinical reasoning skills to your assessment findings in order to prioritize and implement an appropriate treatment programme |
| <ul style="list-style-type: none"> • Equality for All
have an awareness of the implications of different organizational settings* for the delivery of care |

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Statement B.2 Do you recognize the need to adapt physiotherapy practice to meet varying unpredictable circumstances? This means, for example, that you:

- | |
|---|
| <ul style="list-style-type: none"> • Organizational Factors
have the appropriate skills of self and practice management to adapt your treatment approach to different care environments |
| <ul style="list-style-type: none"> • Partnership in Practice
recognize that the response of an individual to physiotherapy may vary according to the relationship that is established between the individual and yourself |
| <ul style="list-style-type: none"> • Models of Intervention
have an awareness of the broader issues relating to the varying environments of care in which you now practise |

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Statement B.3 Do you ensure that response to change does not compromise your duty of care to individuals? This means, for example, that you:

- | |
|---|
| <ul style="list-style-type: none"> • Organizational Factors
have an awareness of organizational issues which should enable you to contribute to the effective delivery of physiotherapy services and to initiate as well as respond to change |
| <ul style="list-style-type: none"> • Health and Social Policy Issues
understand how political and social policies impinge on practice and necessitate change |
| <ul style="list-style-type: none"> • Continuing Professional Development
maintain and enhance your knowledge and skills through identifying and meeting personal learning needs |

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Outcome C
Deliver Physiotherapy in Response to Individuals' Needs

Statement C.1 Do you negotiate with individuals or carers to establish co-operation with a physiotherapy programme? This means, for example, that you:

- **Treatment Planning**
facilitate negotiation and partnership with individuals in the planning and implementation of physiotherapy care
- **Partnership in Practice**
consider the response of an individual to physiotherapy may vary according to the relationship established between the individual and yourself

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Statement C.2 Do you assess the individual to identify need? This means, for example, that you:

- **Assessment**
possess the appropriate skills to carry out an holistic assessment* of any individual in order to establish the nature and extent of their physiotherapy needs
- **Clinical Sciences**
possess knowledge of pathological changes and related clinical features required to recognize malfunction of systems through assessment procedures
- **Biological Sciences**
possess sufficient depth of understanding of the structure and function of the body required to recognize malfunction of systems through assessment procedures

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Statement C.3 Do you recognize the range of possible physiotherapeutic and/or medical interventions? This means, for example, that you:

- **Therapeutic Exercise**
recognize a range of therapeutic exercise
- **Manual Therapy**
recognize a range of manual therapy interventions: mobilisations, manipulations and massage.
- **Electrophysical Modalities**
recognize a range of electrophysical modalities: electrical, thermal, light, sound and magnetic energy.

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Statement C.3a) Therapeutic Exercise. This means, for example, that you:

- **Therapeutic Exercise**
recognize and analyze normal and abnormal human movement based upon a range of measuring (and) analytical techniques (in order) to facilitate an individual's maximum functional ability

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Statement C.3b) Manual Therapy. This means, for example, that you:

- **Manual Therapy**
through the use of: mobilisations, manipulations and massage, facilitate and restore movement and function

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Statement C.3c) Electrophysical. This means, for example, that you:

- **Electrophysical**
through the application of physical sciences utilize electrical, thermal, light, sound and magnetic energy in order to bring about physiological and therapeutic effects aimed at restoring function

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Statement C.4 Do you plan an appropriate physiotherapy programme? This means, for example, that you:

- | Descriptors |
|---|
| <ul style="list-style-type: none"> • Treatment Planning
communicate assessment findings to the individual in order to facilitate negotiation and partnership in the planning and implementation of physiotherapy care |
| <ul style="list-style-type: none"> • Human Ability and Potential
take into consideration individual variations in human ability and potential for change |

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Statement C.5 Do you implement physiotherapy programmes safely, effectively and efficiently? This means, for example, that you:

- | |
|---|
| <ul style="list-style-type: none"> • Therapeutic Exercise
implement therapeutic exercise based upon an understanding of sciences* which you have integrated in order to apply techniques safely and effectively |
| <ul style="list-style-type: none"> • Electrophysical
implement electrophysical modalities based upon an understanding of sciences* in order to apply these techniques safely and effectively |
| <ul style="list-style-type: none"> • Treatment Planning
effectively apply your skills in order to bring about the desired outcome |

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Statement C.6 Do you evaluate the effectiveness of your physiotherapy programme and revise goals if necessary? This means, for example, that you:

- | |
|--|
| <ul style="list-style-type: none"> • Research and Evaluation
select, justify and review appropriate treatment interventions |
| <ul style="list-style-type: none"> • Treatment Planning
apply interpretation, problem solving and clinical reasoning skills to your assessment findings |
| <ul style="list-style-type: none"> • Biological Sciences
have sufficient depth of understanding of the structure and function of the body to enable you to plan and evaluate interventions which will optimize functional recovery |

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Statement C.7 Do you record all aspects of the physiotherapy programme in accordance with medico-legal and patient management requirements? This means, for example, that you:

- | |
|--|
| <ul style="list-style-type: none"> • Use of Information Technology
apply information in clinical practice and management along with legal and ethical considerations of data collection and access |
| <ul style="list-style-type: none"> • Legal, Ethical and Professional Issues
demonstrate a sound knowledge and understanding of the ethical, legal and professional issues that inform and shape physiotherapy practice* thereby enabling professional behaviour in all circumstances |

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Statements C.8 Do you refer the individual to other members of the health care team or other care agencies if appropriate? This means, for example, that you:

- | |
|--|
| <ul style="list-style-type: none"> • Interprofessional Care
should be aware of how your practice contributes to the broader provision of care, acknowledge the limitations of your scope of practice and work collaboratively with other members of the health care team |
| <ul style="list-style-type: none"> • Legal, Ethical and Professional Issues
demonstrate a sound knowledge and understanding of the ethical, legal and professional issues that inform and shape physiotherapy practice* thereby enabling professional behaviour in all circumstances |

Circle One

Very Very
Low Fitness High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Statements C.9 Do you determine and agree the most appropriate time to terminate the physiotherapy programme? This means, for example, that you:

- | |
|---|
| <ul style="list-style-type: none"> • Partnership in Practice
have an appreciation of the concepts of partnership and negotiation in the planning and implementation of physiotherapy care |
| <ul style="list-style-type: none"> • Management
demonstrate people management skills |

Circle One

Very Very
Low Fitness High Fitness

0	1	2	3	4	5	6	7	8	9	10
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<p>Outcome D</p> <p>Demonstrate and Apply Knowledge and Understanding of Issues that Affect Physiotherapy Practice</p>
--

Statement D.1 Do you recognize the scope and limitations of current physiotherapy practice? This means, for example, that you:

- | |
|---|
| <ul style="list-style-type: none"> • Practical Skills
critically evaluate current and future technologies |
| <ul style="list-style-type: none"> • Clinical Sciences
recognize that the total management of the patient should be central and focus on the specific contribution that physiotherapy can make |
| <ul style="list-style-type: none"> • Physiotherapy Practice
understand the variety of contextual areas which underpin, inform and impact on physiotherapy practice and demonstrate an awareness of how the wider context of practice relates to your treatment of individuals |

Circle One

Very Very
Low Fitness High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Statement D.2 Do you recognize the effect of resource limitation on physiotherapy interventions? This means, for example, that you:

- | |
|--|
| <ul style="list-style-type: none"> • Treatment Planning
plan, prioritize, and implement appropriate treatment programmes which take account of available resources |
| <ul style="list-style-type: none"> • Organizational Factors
have an awareness of current health economics including purchaser/ provider divide, service contracts and rationing of resources |

Circle One

<i>Very</i>											<i>Very</i>
<i>Low Fitness</i>											<i>High Fitness</i>
0	1	2	3	4	5	6	7	8	9	10	

Statement D.3 Do you demonstrate and apply knowledge and understanding of the ethical and professional framework of physiotherapy practice? This means, for example, that you:

- | |
|--|
| <ul style="list-style-type: none"> • Legal, Ethical and Professional Issues
demonstrate a sound knowledge and understanding of the ethical, legal and professional issues that inform and shape physiotherapy practice* |
| <ul style="list-style-type: none"> • Legal, Ethical and Professional Issues
have an understanding of the ethics of health care and the professional rules and policies having implications for practice thereby ensuring that you act legally, ethically and professionally in all circumstances |
| <ul style="list-style-type: none"> • Health and Social Policy Issues
possess knowledge of health and social factors both within and beyond the profession that influence the organization, provision and delivery of health care |

Circle One

<i>Very</i>											<i>Very</i>
<i>Low Fitness</i>											<i>High Fitness</i>
0	1	2	3	4	5	6	7	8	9	10	

Statement D.4 Do you demonstrate and apply knowledge and understanding of health and social policies? This means, for example, that you:

- | |
|--|
| <ul style="list-style-type: none"> • Organizational Factors
are aware of how current health and social policy influences the organization where you work |
| <ul style="list-style-type: none"> • Partnership in Practice
understand health and social policy issues that inform partnership and negotiation. |
| <ul style="list-style-type: none"> • Management
understand how health and social policy underpin the management of services |

Circle One

<i>Very</i>											<i>Very</i>
<i>Low Fitness</i>											<i>High Fitness</i>
0	1	2	3	4	5	6	7	8	9	10	

Statement D.5 Do you demonstrate and apply knowledge and understanding of legislation that is relevant to physiotherapy practice? This means, for example, that you:

- | |
|--|
| <ul style="list-style-type: none"> • Partnership in Practice
have an understanding of legal, and health and safety issues that inform partnership and negotiation |
| <ul style="list-style-type: none"> • Legal, Ethical and Professional Issues
possess a sound knowledge and understanding of: social, medical, and health and safety legislation, that relate to health care provision |
| <ul style="list-style-type: none"> • Management
have an understanding of the legal issues which underpin the management of services |

Circle One

<i>Very</i>										<i>Very</i>
<i>Low Fitness</i>										<i>High Fitness</i>
0	1	2	3	4	5	6	7	8	9	10

<p>Outcome E</p> <p>Research and Evaluate Physiotherapy Practice</p>
--

Statement E.1 Do you demonstrate skills in research and critical evaluation in order to optimize clinical effectiveness and reflective practice? This means, for example, that you:

- | |
|---|
| <ul style="list-style-type: none"> • Research and Evaluation
appreciate that research and evaluation should underpin and inform all your physiotherapy practice and (that) you must use your skills of enquiry, analysis and research for optimizing and improving clinical effectiveness |
| <ul style="list-style-type: none"> • Assessment
are equipped with the appropriate skills to carry out an holistic assessment* of any individual, in order to establish the nature and extent of their physiotherapy needs |
| <ul style="list-style-type: none"> • Research and Evaluation
demonstrate a research perspective in promoting evidence based practice |

Circle One

<i>Very</i>										<i>Very</i>
<i>Low Fitness</i>										<i>High Fitness</i>
0	1	2	3	4	5	6	7	8	9	10

Statement E.2 Do you evaluate the outcomes of physiotherapy interventions? This means, for example, that you:

- | |
|--|
| <ul style="list-style-type: none"> • Research and Evaluation
critically evaluate (practice) in terms of outcomes |
| <ul style="list-style-type: none"> • Treatment Planning
effectively apply your practical skills to bring about the desired outcomes |
| <ul style="list-style-type: none"> • Research and Evaluation
have a knowledge and understanding of, and abilities to use, outcome measurements |

Circle One

Very

Low Fitness

*Very
High Fitness*

0	1	2	3	4	5	6	7	8	9	10
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Statement E.3 Do you critically appraise research evidence and apply findings where appropriate? This means, for example, that you:

- | |
|---|
| <ul style="list-style-type: none"> • Research and Evaluation
evaluate critically published research and apply the findings where appropriate |
| <ul style="list-style-type: none"> • Use of Information Technology
understand the role and use of information technology as a tool for research and evaluation activity |
| <ul style="list-style-type: none"> • Research and Evaluation
make links between research and audit and subsequently incorporate (these) into your practice |

Circle One

Very

Low Fitness

*Very
High Fitness*

0	1	2	3	4	5	6	7	8	9	10
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Statement E.4 Do you recognize the importance of providing cost effective physiotherapy programmes? This means, for example, that you:

- | |
|--|
| <ul style="list-style-type: none"> • Treatment Planning)
plan, prioritize and implement appropriate treatment programmes which responds to an individual's specific needs and takes account of available resources |
|--|

Circle One

Very

Low Fitness

*Very
High Fitness*

0	1	2	3	4	5	6	7	8	9	10
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Outcome F
Practise and Promote Continuing Professional Development (CPD)

Statement F.1 Do you recognize the importance of undertaking CPD? This means, for example, that you:

- **The Development of Physiotherapy Skills - Research and Evaluation**
recognize that research and evaluation skills are important for the continued development of the individual and the profession
- **Core Knowledge - Legal, Ethical and Professional Issues**
have an understanding of the medico-legal, health and safety obligations, ethics of health care and professional rules and policies that have implications for your practice

Circle One

<i>Very Low Fitness</i>	<i>Very High Fitness</i>
0	10

Statement F.2 Do you take responsibility for personal and professional learning and development? This means, for example, that you:

- **Continuing Professional Development**
understand the necessity and responsibility for life-long learning through the maintenance and enhancement of (your) knowledge and skills

Circle One

<i>Very Low Fitness</i>	<i>Very High Fitness</i>
0	10

Statement F.3 Do you enhance, update and develop appropriate knowledge and skills, balancing own needs with available resources? This means, for example, that you:

- **Continuing Professional Development**
possess the capacity and motivation for life-long learning and maintain and enhance your knowledge and skills through identifying and meeting personal learning needs
- **Research and Evaluation**
have the necessary knowledge and skills to undertake research as part of clinical evaluation or research projects

Circle One

<i>Very Low Fitness</i>	<i>Very High Fitness</i>
0	10

Statement F.4 Do you share and disseminate knowledge and skills gained to colleagues, individuals and carers? This means, for example, that you:

- **Research and Evaluation**
collaborate with physiotherapists, other health care professionals in respect of research and evaluation

Circle One

Very Low Fitness *Very High Fitness*

0	1	2	3	4	5	6	7	8	9	10
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Outcome G
Promote Equality to all Individuals in Physiotherapy Practice

Statement G.1 Do you implement non-discriminatory practice? This means, for example, that you:

- **Equality for All**
practise in a non-discriminatory way, respect the dignity of the individual, and demonstrate that the notion of equality is fundamental to your treatment of individuals and your management of practice within your scope of control

- **Legal, Ethical and Professional Issues**
have an understanding of the medico-legal, ethics of health care and the professional rules and policies that have implications for your practice and ensures that you act legally, ethically and professionally in all circumstances

- **Modes of Intervention**
respect the individual in all circumstances

Circle One

Very Low Fitness *Very High Fitness*

0	1	2	3	4	5	6	7	8	9	10
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Statement G.2 Do you ensure the confidentiality and security of information acquired in a professional capacity? This means, for example, that you:

- **Equality for All**
ensure the confidentiality of information and (obtain) informed consent

- **Legal, Ethical and Professional Issues**
have an understanding of the medico-legal, health and safety obligations, ethics of health care and the professional rules and policies that have implications for your practice

Circle One

Very Low Fitness *Very High Fitness*

0	1	2	3	4	5	6	7	8	9	10
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Statement G.3 Do you promote and support individuals' rights and choices within service delivery? This means, for example, that you:

- **Partnership in Practice**
ensure that individuals are provided with information regarding possible options for treatment, so that informed consent can be obtained

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Statement G.4 Do you respect the individuals' personal beliefs and identity? This means, for example, that you:

- **Equality for All**
respect the dignity of the individual
- **Management**
cope humanely and respectfully with the beliefs of others
- **Communication**
take into account cultural and behavioural differences across all sectors of society

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Statement G.5 Do you effectively communicate? This means, for example, that you:

- **Communication**
demonstrate effective communication skills* on a one to one basis or group setting both informally and formally

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Outcome H
Manage Oneself and Work with Others to Optimize Results

Statement H.1 Do you manage your time? This means, for example, that you:

- **Management**
in order to function effectively, possess the skill of time management

Circle One

*Very
Low Fitness*

*Very
High Fitness*

0	1	2	3	4	5	6	7	8	9	10
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Statement H.2 Do you recognize and manage your personal emotions and stress? This means, for example, that you:

- **Management**
cope humanely and respectfully with the beliefs and emotions of others and manage your own
- **Behavioural Sciences**
appreciate how psychology and sociology can contribute towards an understanding of health and illness, and that psychological and social factors can influence an individuals ability to manage both health and illness

Circle One

*Very
Low Fitness*

*Very
High Fitness*

0	1	2	3	4	5	6	7	8	9	10
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Statement H.3 Do you promote a safe and healthy work environment? This means, for example, that you:

- **Physiotherapy Skills**
for each practical skill, posses an understanding of the dangers, precautions and contra-indications of each modality and technique (spanning) therapeutic exercise, manual therapy and electrophysical modalities
- **Legal, Ethical and Professional Issues**
possess a sound knowledge and understanding of health and safety legislation that relate to health care provision

Circle One

*Very
Low Fitness*

*Very
High Fitness*

0	1	2	3	4	5	6	7	8	9	10
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Statement H.4 Do you evaluate your work against set objectives? This means, for example, that you:

- | |
|---|
| <ul style="list-style-type: none"> • Research and Evaluation
evaluate* your assessment, treatment plan, physiotherapy intervention and interaction with an individual |
| <ul style="list-style-type: none"> • Treatment Planning
plan, prioritize, and implement an appropriate treatment programme which responds to an individuals' specific needs |
| <ul style="list-style-type: none"> • Assessment
possess the appropriate skills to carry out an holistic assessment* of any individual, in order to establish the nature and extent of their physiotherapy needs |

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Statement H.5 Do you show sensitivity to the needs of other people? This means, for example, that you:

- | |
|--|
| <ul style="list-style-type: none"> • Management
cope humanely and respectfully with the beliefs and emotions of others as well as managing your own |
| <ul style="list-style-type: none"> • Models of Intervention
possess a familiarity with wider client groups focusing on conditions,* systems,* and age groups,* in order to work effectively in a range of areas |
| <ul style="list-style-type: none"> • Human Ability and Potential
understand, respect and address human structure and function, individual variations in human ability, and the relationship between human growth and development, and changing social environments |

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Statement H.6 Do you secure the commitment of other people? This means, for example, that you:

- | |
|---|
| <ul style="list-style-type: none"> • Partnership in Practice
recognize (that) the response of an individual to physiotherapy may vary according to the relationship between the individual and yourself, yet individuals, carers and other health care professionals should be enabled to participate actively in treatment programme |
|---|

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Statement H.7 Do you present yourself and the physiotherapy profession positively to other people? This means, for example, that you:

- | |
|---|
| <ul style="list-style-type: none"> • Communication
are equipped for varying levels of interaction with a wide range of individuals |
| <ul style="list-style-type: none"> • Treatment Planning
communicate effectively your assessment findings to the individual, in order to facilitate negotiation and partnership in the planning and implementation of physiotherapy care |
| <ul style="list-style-type: none"> • Continuing Professional Development
possess the capacity and motivation for life-long learning |

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Statement H.8 Do you recognize the goals and priorities of other members of the health care team? This means, for example, that you:

- | |
|--|
| <ul style="list-style-type: none"> • Interprofessional Care
have a strong awareness of the roles of other health care professionals |
| <ul style="list-style-type: none"> • Clinical Sciences
have an appreciation of the role of other professionals within health care delivery |

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Statement H.9 Do you in the interests and with the consent of individuals, communicate and co-operate with professional staff and carers? This means, for example, that you:

- | |
|---|
| <ul style="list-style-type: none"> • Communication
communicate effectively* with a wide range of individuals on a one to one basis or group setting, both informally and formally |
|---|

Circle One

Very

Low Fitness

Very

High Fitness

0	1	2	3	4	5	6	7	8	9	10
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Estimate of Relative Importance of Performance Outcomes

Having identified your 'fitness for purpose' level in respect of each of the 8 outcomes please now estimate the relative importance of each of the 8 outcomes for ALL newly qualified physiotherapists. Do this by allocating a total of 80 points to the outcome sections in the box below. Allocate the points in any way you feel appropriate e.g. allocate 60 points to the first outcome, 20 points to the second outcome and none to the rest, or, 12 points to the first four outcomes and 13 points to the next two outcomes and 3 points to the last two etc. Please use only whole numbers.

Outcome Sections	Points Score
A. Enable individuals and groups to optimize their health and social well being	
B. Respond appropriately to changing demands	
C. Deliver physiotherapy in response to individuals' needs	
D. Demonstrate and apply knowledge and understanding of issues that affect physiotherapy practice	
E. Research and evaluate practice	
F. Practise and promote continuing professional development (CPD)	
G. Promote equality to all individuals in physiotherapy practice	
H. Manage oneself and work with others to optimize results	
	Total 80

Perceived 'Fitness for Purpose' Observations and Comments

It may be that you wish to make observations and comments either about the experience of being a newly qualified physiotherapist or the undergraduate course you undertook designed to produce 'fit for purpose' physiotherapists. Please make any observations and comments in the space below.