THE UNIVERSITY OF HULL

THE DESIGN, DEVELOPMENT, IMPLEMENTATION AND EVALUATION OF THE UNITED KINGDOMS FIRST DEGREE PATHWAY FOR NON-MEDICAL ENDOSCOPISTS

being a Thesis submitted for the Degree of Doctor of Philosophy

in the University of Hull

by

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DECLARATION

The research described in this thesis has been carried out by myself within the Academic Surgical Unit, Castle Hill Hospital and the Department of Applied Health Studies, Faculty of Health and Social Care.

The text has been composed by myself and all sources of information have been appropriately acknowledged.

None of this work has been the subject of any previous application for a degree.

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PREFACE

Non-medical endoscopy has grown over the last thirty years since the first descriptions provided by Spencer and Ready (1977). Nurse endoscopy in the United Kingdom was first described by Duthie et al (1998) and since the mid 1990's, over 300 nurses have been trained to undertake gastrointestinal endoscopy (Duthie, 2007). Endoscopy services have been subject to review and modernisation in light of perceived inadequacies of service provision and delivery in the respect of both physical environments and those undertaking procedures.

This thesis provides an illustration of the work undertaken in the design, development and implementation of the UK's first curriculum for non-medical endoscopy to provide a suitable training and education package in which to train unqualified individuals to undertake flexible sigmoidoscopy. The work has been undertaken in collaboration with the East Yorkshire School of endoscopy and is supported by the results obtained from nine students enrolled onto the programme. Ethical approval for the study was sought and approved by the Post Graduate Medical Institute Ethics Committee within the University of Hull.

I would like to thank my supervisor, Mr Graeme Duthie for his constant support and encouragement throughout the duration of my studies for without his support and initial insight, this project and the wider aspect of non-medical endoscopy would not have been possible. I also send grateful thanks to the nine students who have maintained the courage and willingness to continue in their sometimes difficult pursuit of a challenging goal, and to Mark Hughes for supporting students, myself and the programme throughout our journey.

To this end I would also like to thank my family for their unfailing understanding and support as without them the work would not have been possible.

SYNOPSIS

Pressures on endoscopy units are increasing as a result of the Global Rating Scheme, the 2 and 18 week rules and introduction of bowel cancer screening. Nurse endoscopy has evolved over the last decade with many nurse endoscopists extending practice from flexible sigmoidoscopy to colonoscopy, which may leave service gaps leaving routine flexible sigmoidoscopy at risk. To fill this gap, a pilot study was undertaken to assess the suitability of training unqualified individuals to undertake flexible sigmoidoscopy.

An Inter-professional, flexible entry training programme was developed - BSc (Gastroenterology). Nine individuals were enrolled onto the programme, with achievements of the students being closely followed over two years. Academic components of the training included FS theory and practice, professional practice, anatomy and physiology and coloproctology. Practical hands-on endoscopy training was regularly provided at an endoscopy training centre in conjunction with the students base Trust. Summative assessment was undertaken for practical skill and theoretical knowledge and understanding.

At the end of year 2, 5 students (56%) had progressed to full procedures under direct supervision within 15 months of commencing the programme. 3 of the students moved onto undertaking procedures under proximal supervision by month 16. Of the remaining 4, 2 commenced proximally supervised procedures at 22 months. In respect of academic achievement, the rate of successful completion at first attempt was 93%. At the end of year 2, all 9 students progressed onto the optional third and final year of the BSc prgramme.

The results included within this thesis illustrate the suitability of the curriculum to develop endoscopic practitioners who are safe, competent and effective within flexible sigmoidoscopy. The curriculum provides a realistic opportunity to develop alternative individuals to undertake flexible sigmoidoscopy, providing a realistic option to contribute to service provision and delivery within endoscopy and gastroenterology without undermining nursing and medical staffing.

LIST OF ABBREVIATIONS

A&E	Accident and Emergency
ASGE	American Society for Gastrointestinal Endoscopy
BSc	Bachelor of Science
BSG	British Society of Gastroenterology
CD	Curriculum Development
CS	Clinical Supervisor
CWP	Changing Workforce Programme
DfEE	Department for Education and Employment
DfES	Department for Education and Science
Dip HE	Diploma in Higher Education
DoH	Department of Health
DOPS	Direct Observation of Procedural Skill
ECP	Emergency Care Practitioner
EMT	Endoscopy Modernisation Team
ENB	English National Board
EWTD	European Working Time Directive
FHEQ	Framework for Higher Education Qualifications
FOB	Faecal Occult Blood
FS	Flexible Sigmoidoscopy
GI	Gastro-intestinal
GMC	General Medical Council
GP	General Practitioner
GRS	Global Rating Scale
HE	Higher Education
HEA	Higher Education Academy
HEI	Higher Education Institution
HPC	Health Professions Council
ILT	Institute for Learning and Teaching
IT	Information Technology
JAG	Joint Accreditation Group for Gastrointestinal Endoscopy

LO	Learning Outcome
LTSN	Learning and Teaching Support Network
MA	Modernisation Agency
MCP	Medical Care Practitioner
MCQ	Multiple Choice Question
MMC	Modernising Medical Careers
NE	Nurse Endoscopy
NEP	National Endoscopy Programme
NHS	National Health Service
NPP	National Practitioner Programme
NVQ	National Vocational Qualification
ODP	Operating Department Practitioner
OSCE	Objective Structured Clinical Examination
PCT	Primary Care Trust
POP	Peri-operative Practitioner
QA	Quality Assurance
QAA	Quality Assurance Agency
QC	Quality Control
SCP	Surgical Care Practitioner
SHA	Strategic Health Authority
UK	United Kingdom
US	United States
UKCC	United Kingdom Central Council
VLE	Virtual Learning Environment

1 Introduction

The development of the non-medically qualified endoscopist has grown over the last thirty years since the first descriptions provided by Spencer and Ready (1977). Nurse endoscopy in the United Kingdom was first described by Duthie et al (1998) and since the mid 1990's, over 300 nurses have been trained to undertake gastrointestinal endoscopy (Duthie, 2007). Endoscopy services were subject to review and modernisation in light of the perceived inadequacies of service provision and delivery in the respect of both physical environments and those undertaking procedures.

As pressure on endoscopic services increased due to target driven care and the National Bowel Cancer Screening programme, the Changing Workforce Programme commissioned a pilot study in 2003 to evaluate the potential of training non-traditional individuals to undertake flexible sigmoidoscopy. It included a science graduate, basic grade nurse and non-clinical member of staff. As a result of the success of the initial pilot, a second pilot scheme was introduced whereby nine unqualified individuals were to receive education and training to undertake flexible sigmoidoscopy. The author, the science graduate trained to undertake FS in the first pilot, was charged with the design and development of a curriculum framework in which to train unqualified individuals.

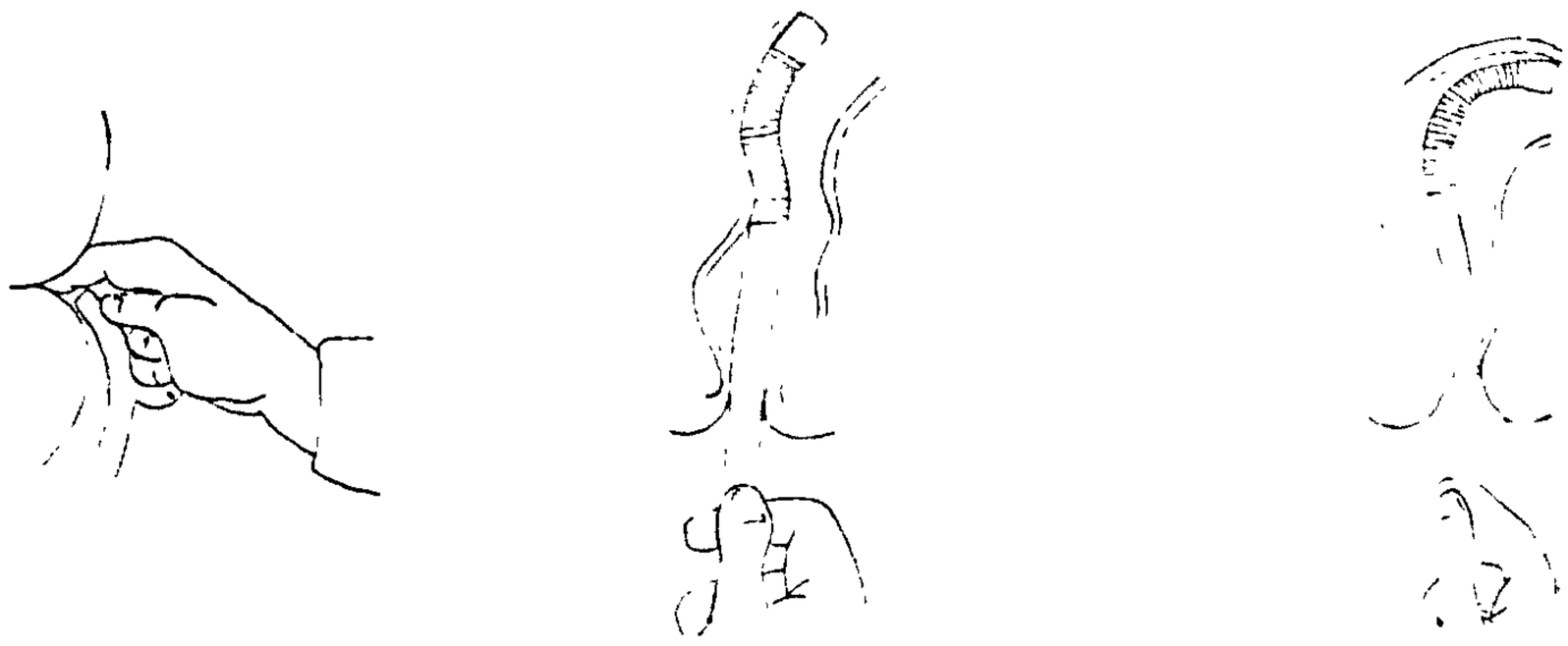
With a vision to create an endoscopic practitioner both safe and competent to undertake flexible sigmoidoscopy, the author set about creating a curriculum which would be fit for purpose both academically and practically and is described within this thesis. At the time of submission of this thesis, the nine students enrolled onto the programme are undertaking a final third year of study to the level of BSc. This thesis provides the results from the first two years of the programme in line with the initial requirements outlined by the Changing Workforce Programme. The option to progress onto a third year to study towards a BSc was available to the students as part of pre-existing provisions, however evaluation of the third year does not feature within the remit of this work given its optional nature.

The aim of this thesis is to demonstrate the results obtained by students undertaking the curriculum designed and developed by the author in terms of academic and practical achievement and to identify the suitability of the curriculum to prepare unqualified individuals to undertake flexible sigmoidoscopy. Chapters 2 and 3 provide a theoretical underpinning in the context of educational theory and curriculum design and development

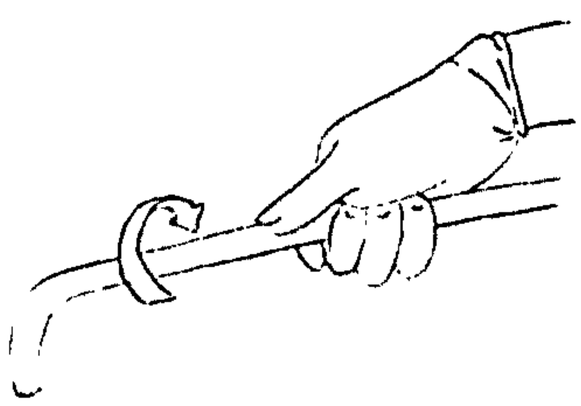
respectively to provide a basis for the methods followed and adopted. Chapter 4 explores endoscopy modernisation, with issues relating to the blurring of professional boundaries are discussed in chapter 5 whilst chapter 6 describes the design and development of the curriculum.

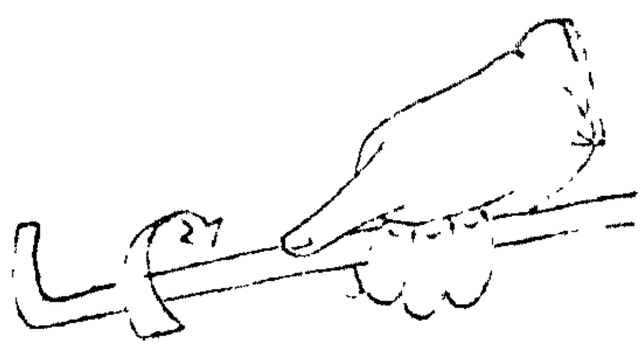
The results which depict the suitability of the academic aspects of the programme are presented and discussed in chapter 7. The students enrolled onto the programme have been closely monitored in terms of procedural activity throughout the programme and of which, chapter 8 illustrates the practical development of the nine individuals. Chapter 9 describes the results obtained from clinical supervisor evaluations, whilst chapter 10 draws a focus on career progression and workforce development. It includes suggested job descriptions for endoscopy trainees at years one and two of the training programme in addition to the skills of such individuals at the various stages of the academic programme. Chapter 11 concludes the work and explores the future developments of the programme in light of the knowledge gained during this work.

For the purpose of this thesis, FS is described as an investigation which enables direct visualisation of colonic mucosa through the insertion of a fibreoptic instrument which has a diameter of approximately 1.5cm. The instrument is inserted into the rectum via the anal canal and passed as far as the splenic flexure or transverse colon. The procedure is undertaken on a prepared bowel either through administration of a self administered enema or full oral preparation – should the bowel contain faecal matter it may result in the procedure being abandoned since diagnostic yield is reduced and hence the benefit of continuing with the procedure becomes questionable.

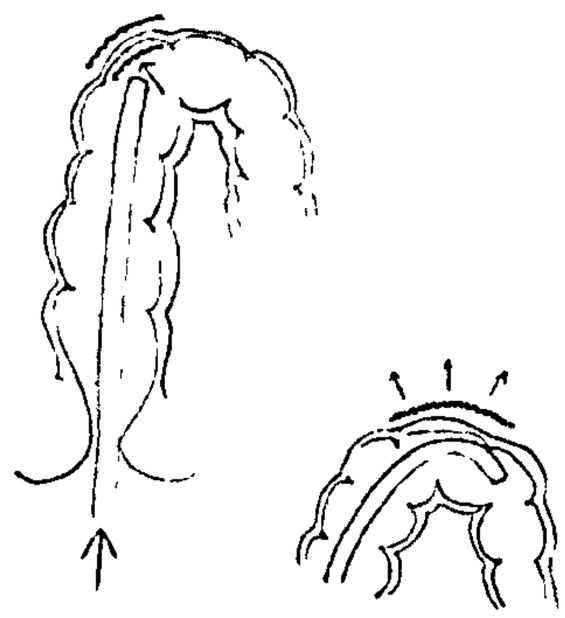


In order to obtain clear views and achieve maximal safety when negotiating the instrument through the bowel, air is used to inflate the lumen enabling clear views of luminal direction hence minimising the risk of perforation. The use of torque steering (ie. using a system of rotating the endoscope manually) is utilised to negotiate the colon and provides the most effective means of advancing the endoscope compared with relying the use of wheels which manipulate the tip of the endoscope (see following images of left and right torque respectively). FS also provides the opportunity to obtain tissue samples for histological analysis used in the diagnosis of diseases of the colon. It can also be utilised for screening and surveillance of the left side of the colon following polyp removal or surgical intervention.





The undertaking of FS requires significant hand eye coordination and manual dexterity in addition to a skills base which provides a safe, effective and efficient examination. The ability to ensure maximal patient and practitioner safety throughout the procedure is essential as is an ability to ensure patients experience minimal pain and discomfort, providing a high standard of patient. The nature of the anatomy of the left of the colon in particular makes the procedure challenging as a result of the need for negotiation of anatomical bends which can be worsen through surgery. The ability to pre-empt such difficulties and hence warn the patient of potential discomfort can aid the patient in overcoming what can be a sometimes uncomfortable procedure in addition to avoiding some of the key areas which are more likely to result in perforation. The following illustration identifies the pressure points within the left side of the colon in the sigmoid area which are more susceptible to perforation.



Whilst negotiation of the colon is an essential element, the need to be able to identify pathology or abnormality is essential in order to gain maximal diagnostic yield during the procedure and hence critical knowledge, awareness and understanding of colonic pathology is essential as is what steps need to be taken in such instances. The FS procedure in itself is not without risk to the patient. Such risks include bleeding or perforation (of which both can be immediate or post procedure), vaso-vagal episode or indeed missed pathology. Patients may also experience side effects such as abdominal pain and bloating due to air insufflation.

2 Education theory

Education is an essential aspect of an individual's development through impartation of knowledge, skill and understanding within the civilised world. For many it provides a passport to greater opportunities personally and professionally, although such luxury is not always accessible to all (Halsey, Lauder, Brown & Wells, 2002). Education has been described as encompassing the teaching and learning of specific skills, closely linked to process and product (Kelly, 2004). A fundamental goal of education is the transfer of knowledge, insight and wisdom from generation to generation whereby the acquisition of knowledge takes various forms as a consequence of individuality. Many hypotheses exist which have been applied to the field of education which have been described in an attempt to explain how and why individuals learn in addition to the identification of potential barriers to learning. A number of learning theories have been described, with the main classifications being behaviourism, constructivism, humanism and social learning (Curzon, 2003).

Behaviourism was initially described in the early 20th century by Watson (1924). A number of different terms are often used interchangeably with behaviourism, such as stimulus response, association and contiguity theories. Within education, the principles adopted when following a behavioural ideology are that of directed, often dictatorial instruction with emphasis on the teacher rather than the student (Gagne, 1973). Instruction focuses on specific aspects as apposed to the associations and relationships to other elements of the subject whole, suppressing the potential for students to explore other issues associated with the subject. Snowman and Biehler (2003) suggest such methods are more befitting to the delivery of elementary principles to lower level learners whereby the students role is essentially passive, requiring little reasoning and evaluation. It would appear that such strategies facilitate surface level learning, since the exploration of individual thoughts and ideas and hence personal development and growth is limited. Proponents of the behaviourist school argue however that advanced levels of learning can be achieved through the application of a stimulus response model (Curzon, 2003).

Stimulus – response learning as a behaviourist construct was described by Pavlov (1849 – 1936) whereby stimulus provoked response as a result of learning. Early studies involved observation of a dogs' response to a specific noise offered synchronously with food and feeding. Becoming accustomed to the routine, the dog salivated in anticipation of imminent

feeding as a result of hearing the specific noise, without visualisation or aroma of food. This learning approach has also been described as conditioning – being trained to behave in a certain way as a result of specific stimulus, and may be subdivided into classical and behavioural / operant conditioning.

A major proponent of classical conditioning, John Watson (1878 – 1958) also undertook animal experimentation. In extending the work of Pavlov, he determined that observation of behaviour yielded more objective data which was reproducible. Watson summarised that;

- observation of feeling and mental state were of little worth in psychology
- behavioural observation provides much more evidence which was reproducible
- most behavioural responses are as a result of a particular reaction to a particular stimuli

Watsons' (1924) studies led to "conditioning" a nine month-old infant, whereby various forms of stimuli were introduced to the infant. The child was un-phased by introduction of various stimuli including a rat, with the only exception being a loud bang. When the child advanced towards the rat, the loud bang was introduced and since the child was frightened by the loud bang, the child began to move away from the rat. The process was repeated until the child automatically moved away from the rat as soon as it was observed. This was also found to occur when the child observed other furry animals. Watson described the process as classical conditioning, where as a result of stimulus, an automatic response is elicited. An extension of classical conditioning is contiguity, which describes an almost simultaneous behaviour response to stimulus as a result of learning.

Contiguity theory as proposed by Guthrie (1930) identified the link between stimuli and a specific associated movement, and how such movements will tend to be reproduced on re-introduction of the stimulus. Learning thus occurs as a consequence of associations between specific stimulus and response. Guthrie went further to suggest that when a specific response is forgotten, it is likely due to interference or disturbance as apposed to absentmindedness or omission, perhaps indicating loss of concentration rather than memory. Further proposals included that unwanted or outdated responses can be replaced or modified through the inclusion of constraining actions. Kelly (2004) argues that

contiguity theory is unsuitable for both compulsory and post-compulsory education as a result of the potential for indoctrination however there appears to be some merit in its application to early childhood development and nurturing.

Whilst reward and punishment were not features of the contiguity theory, a further theory linked to behaviouristic approaches to learning was described by Thorndike (1911). The "law of effect" was evaluated in animal studies to assess the relationships between behaviour, learning and reward. The study described a cat being placed within a box, with successful exit resulting in availability of food. As the cat developed its method of determining exit from the box, a reduction in time taken for the cat to open the box was observed along with the number of attempts to isolate the opening door. The law of effect described by Thorndike proposed that where behaviour was rewarded, it was more likely to be repeated. As a result of this discovery, he went on to describe the law of exercise which highlights the need for an identifiable result to encourage a particular behaviour to be exhibited. He concluded that introduction of reward acts as a positive reinforcement for a response as a result of stimuli, with pleasurable experiences tending towards repeated responses. This has clear affinity with contiguity theory, possessing attributes of a method applicable to early childhood development. Whilst modelling theories may not be considered suitable to apply to all learning situations, they may yield potential benefits for groups of individuals with little or no aspiration for education and self development. Similar approaches have been described as methods utilised in the rehabilitation of young offenders over recent years (Halsey et al, 2002).

Reinforcement within learning can take various forms. Skinner (1938) described positive and negative reinforcement, punishment and omission of reinforcement as the underpinning elements of "operant conditioning". The theory was proposed following observation of behavioural patterns of a pigeon following the application of reward. The pigeon was placed in a box, in similar conditions to the cat used in Thorndikes' studies. The box had a single illuminated side where upon pecking a food pellet would be released. The pigeon initially pecked randomly within the box until it pecked the illuminated panel. The pigeon was seen to gradually reduce random pecking over a number of trials, finally ceasing with the pigeon immediately identifying the source of food on entry to the box. Skinner used this observation to explain the theory that voluntary responses could be strengthened or

weakened by consequences which followed. The baseline assumption was that strengthening occurs with re-enforcement, and weakening with punishment or disregard, suggesting subjects can learn new behaviours and "un-learn" selected pre-existing behaviours. Operant conditioning indicates subjects learn to "operate" in their environment to either obtain or avoid a particular consequence. Skinner, along with Tolman and Gagne were considered "neo-behaviourists", offering perspectives based upon human nature, where they considered the mind to be selective as apposed to being responsive to stimuli alone (Reece & Walker, 2004).

Skinner suggested operant conditioning differed from classical conditioning since it related to spontaneous behaviour whereas classical conditioning related to behavioural responses to stimulus (Skinner, 1979). It appears however that both require primary stimulus and subsequent reward to provoke the desired behaviour / action. Whilst the theory described by Skinner is entirely acceptable, it could be argued that the rate determining step is the baseline knowledge possessed by the individual, which contributes to the shaping of behaviour. The undertaking of specific tasks is dependent upon capability and competence which is acquired through education and training.

Operant conditioning also has inextricable links with reinforcement whereby the application of reinforcement can be used to shape behaviour. Positive reinforcement involves reward following particular response with increased likelihood of the response being repeated to yield reward. Negative reinforcement is associated with unpleasant outcomes following a particular response whereby such response is more likely to be avoided to evade unpleasant outcomes. The introduction of punishment following particular responses should result in gradual reduction of the response which resulted in punishment. The omission of reinforcement is likely to reduce the frequency, perhaps to the extent of cessation of the behaviour (Snowman & Biehler, 2003). The application of reinforcement can be utilised in many learning theories and is generally used as a tool of encouragement, for example goal / target achievement, academic reward, promotion etc. Reinforcement can also be employed to manage behavioural patterns of young children but requires consistency in implementation and monitoring to achieve desired outcomes.

It has been proposed that operant conditioning can be applied to higher levels of learning where specific skills are integral to the students' development, where reinforcement has a specific function in learning (Curzon, 2003). A variety of techniques have been described by Reece and Walker (2004) in the application of behaviouristic approaches to learning and teaching. Reinforcement can be used to encourage specific behaviour with the inclusion of feedback at staged intervals providing necessary information to direct energies.

Reinforcement and feedback may also encourage and engender motivation essential in the continual development of individuals, with clear articulation of the potential reward for an individual's contribution, work and subsequent achievements also propagating motivation. Within the context of higher education (HE), financial reward is a frequent motivator within vocational education through promotion prospects, future employment potential or career changes. What is crucial however is the careful application of reinforcement. The potential benefits and challenges of the inclusion of reinforcement must be considered so as not to create a troublesome environment for the student and teacher. The application of reinforcement may furnish the student with an additional burden of failure and may result in emotional and psychological anguish. However conversely, it may equip the more challenged student with the necessary drive to succeed. What is important to recognise is that students possess individual traits and tendencies and it is necessary for educators to hone into such differences at an early stage to support and enhance the learning process.

As previously discussed, classical conditioning is considered more befitting to lower levels of learning, however other groups of learners may also benefit from this approach (Snowman & Biehler, 2003). Groups returning to learning following a break or change of career may benefit from classical conditioning in addition perhaps to those who have had difficult experiences in previous learning. This is of particular significance in government initiatives towards "mass" HE. A major driver with aims of raising HE participation in the 18-30 year age range was Widening Participation. The initiative saw HE as essential in the development of individuals in a society, as identified in the "education, education, education" agenda (Hodge, 2002). This posed clear benefits and challenges for students and educators. The development of individualised learning packs could meet student needs, providing flexible platforms to develop knowledge and understanding in specific areas in a way personally selected. However, the net result may pose challenges for educators in

terms of the practicality of providing individualised support to students requiring additional supervision. It is considered the method may be more likely to achieve success, providing achievement and fulfilment for students and educators.

However, it is not always feasible nor practical for educators to provide such intensive, individualised support for students without the potential for inequity across student groups. Whilst the widening participation initiative provides significant opportunity for those who may not otherwise have the opportunity to partake in HE, there remains many unanswered questions with regard to the integration of "non-traditional" students into the HE community. Changes to structures of higher education institutions (HEI's), increased market competition for students and reductions in funding allocations all impact the fundamental workings of the HEI and as a consequence may affect delivery of educational programmes.

In contrast to behaviourism, the Gestalt school proposed that learning occurs as a result of exposure to the whole picture as apposed to individual theoretical elements. Gestalt is derived from German for pattern or structure, proposing the whole is greater than the sum of individual aspects and defined interrelated patterns and relationships of individual aspects as crucial in the learning process (Reece and Walker, 2004). Gestaltist's described insight, a stage of learning reached where learners are able to highlight the relevance of the learning. Insight is described as sudden appearance of a solution to a problem, with the solution finding process being transferable to other situations. Gestalt theory was illustrated by Kohler, through observation of chimpanzees undertaking activities involving the solving of problems of which he referred to as insight learning (Kohler, 1925).

Chaplin (1978) provided a further explanation of the relationship between thinking and student learning, built upon Wertheimers description of "productive thinking" (Wertheimer, 1959), affording a description of six key principles;

1. productive thinking may occur when the learner is faced with a problem they are unable to solve using traditional means
2. thinking surrounding a new problem involves staged transformation of thought processes, leading to more specific attempts at solution finding

3. the thinking process involves perception of the gaps in the possible solution and subsequent filling of them
4. readiness to solve the problem relates to perception of the situation, motivation and previous learning
5. the resulting solution is achieved through sudden jumps between solutions which is a reflection of the individual being capable of transforming their perceptions
6. where the individual has achieved solutions, there is a high likelihood of the said learner being able to transfer such skills in solution finding to other situations

Questions have been raised regarding Gestalt theory due to a lack of empirical evidence supporting the claims made (Reece and Walker, 2004). In the absence of substantiating evidence, the proposition of insight seems legitimate in that a "flash" of inspiration can be observed during the teaching of adults and children. Such inspiration can be observed as realisation dawns for an individual, with the resulting thought process initiating the conjoining of individual aspects of the jigsaw. Children for example, solving mathematical problems or considering why and how the food chain exists, develop and retain conceptual knowledge once underpinning knowledge has been understood and translated. In the case of adult learners, insight can often be linked to self-realisation of consequences of actions.

Within medicine and health, many actions may impact service delivery and provision, professional relationships and most importantly patient care and management. It is proposed that once students are capable of perceiving hidden aspects of practice which yield significant moral, legal and ethical dilemma's, their personal demeanour becomes modified as the role of a more experienced, advanced professional develops. Appreciation of hidden aspects of practice appear to develop with continuing exposure to real situations, through observation of skilled, experienced and competent role models within the working environment. Whilst in isolation the Gestalt theory does not provide an answer as to why and how individuals learn, it does provide sound reasoning behind the collective gathering and subsequent application of knowledge acquired through the learning journey.

In contrast to the more teacher centred focus of the behaviouristic school, the theory of constructivism is associated with student focused learning. Proponents of constructivism depict meaningful learning as the process of individuals attempting to make sense of

events, through the construction of explanations for what happened and why. A number of scholars promoted the theory of constructivism, notably Bruner, Dewey, Vygotsky and Piaget (Curzon, 2003), proposing learning results from the review of information and ideas, applying pre-existing knowledge and experience to form concepts, rules, associations and theories. Constructivism centres on the principle that learning is an ongoing spiral whereby knowledge and understanding constantly undergoes revision and update. Bruner (1977) proposed that for learning to occur, knowledge and understanding must exist at one level prior to successfully proceeding to the next, representational of a spiral continuum. Without continual updating of knowledge, skill and understanding, learning would not occur.

Within the constructivist theory, three domains contributing to human education exist, cognitive, affective and psychomotor. Each domain possesses a responsibility for the building or construction of knowledge, skill and understanding and when combined with reflection and experiential learning, exhibit classical forms of constructivist learning. The cognitive domain is the basis of knowledge, understanding and thinking and is often gained from experiential learning, where individuals reflect upon pre-existing knowledge acquired through experiential accumulation. Bloom (1956) was a leading proponent of the cognitive theory and described a classification of cognitive learning. He described a hierarchical system of objectives commencing at a basic level of knowledge, progressing through comprehension, application, analysis and synthesis, concluding with evaluation. Bloom postulated that for students to progress onto higher skills levels, competency at each individual level must be demonstrated prior to progression. To achieve comprehension, students must be equipped with and recognise all key underpinning elements of the subject. For students to be capable of applying the knowledge and understanding they acquire, understanding of the fundamental principles of the subject is crucial and leads to intellectual growth.

Such developmental cycles are pertinent in all aspects of education, both compulsory and post-compulsory. One key issue identified by the government over recent years has been the apparent de-valuing of the "three R's" within primary education, which has manifested in secondary education to the extent where children do not possess the necessary foundation skills in which to underpin all future learning (Halsey et al, 2002). It is proposed that such foundation skills equip learners with the necessary attributes in which to problem

solve within mathematics and science disciplines, research and evaluate information and possess literary ability. If not addressed from an early stage, the ability to acquire and develop such skills may become increasingly difficult into adulthood.

Whilst the cognitive domain relates to knowledge and understanding, the affective domain is based upon personal qualities such as attitude, emotion, feelings and values (Krathwoal, 1964). Since most aspects are in-built characteristics of a person requiring nurturing, it is often seen as difficult to teach directly. One approach linking the affective domain with instruction is the exposure of students to role models and is often utilised within the healthcare environment (Palmer and Kaur, 2003). The identification of role models within medicine and health provides students with opportunities to observe and work alongside individuals exhibiting exceptional professional qualities and expertise in specific areas of practice. The modelling of students through exposure to exemplary practices facilitates the acquisition and development of such qualities in their own practice. Cognitive apprenticeship (Collins, Brown and Holum, 1991) is a model whereby students are encouraged to aspire to senior and expert professionals with the aim of students developing knowledge, skills and attitudes akin to the experts in the field.

Instruction within the affective domain requires facilitation and encouragement of the development of individuals capable of responding and acting in a mature, non-judgemental, sympathetic and understanding manner, each an essential attribute for practice within the caring professions. This can be facilitated through exploration of individual ideologies, beliefs and values, which underpin personal values, attributes, skills and attitudes. Such qualities should encourage regular self-appraisal and evaluation crucial for academic and personal development – of particular significance within healthcare.

Krathwoal (1964) proposed a classification for the affective domain commencing with the receiving of information, progressed through responding, valuing and organising and concluded with characterisation. At the highest level, individuals exhibit exemplary systems of personal values and attributes in addition to possessing the necessary skills and attitudes to identify the need for re-evaluation of their performance. The practice of critical self awareness may pose a challenge for some individuals – it is argued that such attributes are not ingrained in all individuals. The requirement to look within ones-self and modify

practices accordingly can create dread for some, whilst others may choose to avoid such situations. Avoidance may be as a result of fear and poor confidence or indeed ignorance.

Whilst the possession of knowledge and understanding within the chosen field is a necessity, practical skill acquisition is also essential, particularly within healthcare and the sciences. The psychomotor domain describes the ability of individuals to learn manual / practical skills. This ability to understand, remember and replicate a specific skill can then be translated and subsequently integrated with other component elements of a specific skill towards competency (Reece and Walker, 2004). Skill acquisition is essential in many areas of learning and can be facilitated through instruction, demonstration and in some cases observation.

Harrow described a psychomotor classification which commenced with imitation, progressed through manipulation, precision and articulation, concluding with naturalisation (Harrow, 1972). At each level, individuals develop skill ability – with initial copying or imitation through to unaided performance of the skill. Further skill development facilitates accurate performance without prompting until the student is capable of performing the skill with ease.

In the context of healthcare education, skill development through observation, basic training and supervised practice through to expertise is fundamental in the development of a highly skilled workforce. The practical skills required within nursing for example are extensive, as described by Simpson (1972) with further classification of the psychomotor domain with nurse education in mind. The provision and assessment of practical skills within the healthcare environment has evolved over recent years through frameworks such as the National Vocational Qualification (NVQ) scheme and has, in many health disciplines been accompanied by National Occupational Standards, in addition to competency frameworks (Skills for Health, 2003). The frameworks identify distinct elements related to a particular skill where individuals are required to demonstrate competence.

The suitability of competency frameworks to determine competence to undertake specific skills was questioned by Benner (1982), who described competence as subjective, with competency statements often broad ranging and hence open to interpretation. Proponents

and opponents to competence based assessment exist, each individually providing sound reasoning of their stance. Whilst there is a place for competence based assessment, it is essential that transparency is maintained and judgement regarding an individuals' right to practice not based on competency alone. As previously discussed, the ability to demonstrate cognitive, psychomotor and affective proficiency is central to individual progression and as such, assessment frameworks should be used which demonstrate ability in these aspects.

Whilst technical competence is an essential element of practice, it is suggested that it should not be considered in isolation. To meet the holistic requirements of today's healthcare provisions, all round ability should be developed and assessed utilising various means of assessment to enable the student to encounter different situations / scenarios. Whilst it is recognised that not all individuals are comfortable with certain aspects of academia, there still remains the requirement for individuals to demonstrate their knowledge, understanding and skill in order to achieve desired learning outcomes or objectives. The whole notion of self regulation rests on an individual's suitability to practice within their chosen field which must be assessed to meet the requirements of the individual regulator, essential in protecting the employer, the patient and the public.

Possessing some fundamental similarities to behaviourism, the humanistic approach to learning has also been classified as possessing a person centred focus (Maslow 1954, Rogers 1951). It describes a process of self actualisation with individuals learning from experience through self evaluation of strengths and weaknesses. The resultant identification of personal needs facilitates the determination of direction necessary to achieve a goal.

Within the context of the humanistic approach to learning, students are encouraged to explore and share personal ideas and values. The role of the teacher within this context differs since they act as a facilitator for learning in contrast to providing directed instruction or information. This has been shown to encourage the development of key skills such as communication, group working and problem solving enabling individuals to search for answers through enquiry and critical thinking (Reece and Walker, 2004).

Humanism postulates that learning and achieving come from within and is dependant upon desire. Rogers (1969, 1983) highlighted the teacher as a facilitator within the learning process, by providing support and guidance, and concluded that providing appropriate

support was given, learning would occur in the absence of directed teaching. As with the affective domain, this is particularly relevant in healthcare education since practitioners develop through personal experience and observation of others with the impetus to provide evidence based care and follow best practice.

An early proponent of the humanistic approach, Maslow (1954) described a process of self-actualisation whereby subjects learn from experience. Continual personal evaluation identifies strengths and weaknesses hence highlighting individual needs for achievement of goals. Entirely person-centred, it identifies the inner self as the driver for learning and achieving, whereby success is dependant upon inner strength and aspiration. The direction taken is determined by individual aspiration, with the end point being achievement of the desired outcome. In consideration it could be suggested that the humanistic theory of learning is predominantly suited to adult learners capable of identifying individual needs and ambitions through personal and professional experience. The desire to succeed is often the focus of an individuals yearning for knowledge which could be attributable to a need for self worth.

Rogers (1980) similarly described a theory depicting the application of learner centred education. In this approach, learning is directed by the student with the teacher acting as facilitator within the learning process, providing support and guidance. The theory was derived from his pioneering psychotherapy studies of client centred therapy whereby clients were encouraged to explore and develop their own strategies for coping. He postulated that in a similar manner, students would benefit from learner centred education, where teachers acted in a similar manner to client centred therapists. Such conditions are apparent in experiential learning where individuals learn from experience, good or bad, resulting in the shaping of individual practice. Similar models are applied to healthcare, often referred to as reflective practice, and are considered key components of the evaluation of experience, occurring during or after an event (Schon, 1983).

Humanism is also reflected within the concept of Andragogy (Knowles, 1990), the difference between how adults and children learn. There is heavy focus on autonomous approaches to learning with responsibility for personal direction and achievement residing

with the student. The concept of andragogy proposes six aspects considered responsible for the differences in learning;

1. the need to know
2. self concept
3. experience
4. readiness to learn
5. orientation to learning
6. motivation

Each aspect is an attribute required in the quest to learn and develop oneself, whereby dependence on the teacher relates to facilitation rather than direction, with life experience contributing to certain aspects of the learning journey. However, not all students are capable of self directed learning in initial stages of learning perhaps as a result of past experience or immaturity. In such instances, the teacher must appraise the student in terms of learning style and ability and employ appropriate strategies. Challenges exist for the teacher where students find it difficult to interact and be open with others and hence different strategies promoting interaction must be initiated. One such strategy which may be suitable to apply in this context is social learning.

Social learning theory highlights the importance of learning through individual modelling of behaviours, attitudes and emotional responses which ensue as a consequence of social interaction, suggesting integration of certain aspects of theories described previously. Bandura (1977) first proposed social learning theory, later renaming it Social Cognitive Theory (Bandura, 1986). Whilst possessing some traits of behaviourism, it proposed learning was a consequence of observing somebody doing something, dependant upon the individual and environment. It outlined the principle that learning can be explained through self-regulatory and motivational qualities of individuals which contribute to behavioural characteristics / tendencies. Bandura described behavioural patterns as a consequence of observation of others and the subsequent imitation of what has been observed. The likelihood of adopting behaviour is dependant upon the individual's perception of the observed action and assessment of appropriateness and suitability, along with relative attractiveness.

The work undertaken by Bandura also relates to social theories proposed by Vygotsky and Lave. Vygotsky described the social development theory, outlining how social interaction is a key component in an individual's development as a result of two interrelated assumptions (Curzon, 2003). Firstly, in situations which relate to social interaction and secondly, where values are internalised as a consequence of the initial social interaction. One example relates to pointing a finger – the initial action has little meaning to some individuals, however greater observation of the reactions of others towards the action generates meaning. The key principles behind social development theory are that development of knowledge is limited to ranges of certain age groups, and full understanding and appreciation of the knowledge requires exposure to social interaction. This provides an explanation of how observed behaviours are developed from childhood through increasing exposure to different situations resulting in more adept management of a variety of instances (Curzon, 2003).

Lave (1988) described the theory of situated learning by identifying the importance of ensuring knowledge to be gained is transferred in the most appropriate and meaningful manner, enabling individuals to understand the importance of the need for such knowledge and understanding. The acquisition of knowledge can become challenging when individuals find the environment and / or context of the situation inappropriate. Such aspects are key precursors to learning through social interaction since they facilitate the sharing of information, discussion and debate. In order to develop valuable and meaningful learning situations, the environment, context and setting must be suitable for learners to make sense of and apply to individual situations through the exploration of relevant issues with experts in the specific field (Lave & Wenger, 1990).

Behaviourists articulate that in order to determine that learning has occurred there should be a demonstrable modification of behaviour / performance. In contrast however to the behaviouristic theory, proponents of social learning argue that learning is not always observable in ones performance since it may not always result in a change of behaviour – an individual's evaluation of a particular behaviour may highlight particular issues of their own practice which they feel are superior to that observed. Such an instance would not result in modified practice, however learning has occurred through the comparison of techniques whereby suitability and appropriateness are evaluated. The cognitive element of

learning plays an important role in the modelling of behaviour where perceived outcome influences the adoption or otherwise of a particular behaviour. Bandura (1986) identified four key aspects of the modelling process for learning to occur;

1. Attention; observation of a particular technique / practice; an individual must pay attention to particular behaviour in order to learn – competing elements exist including environment, interest and motivation, capability of individual observed, internal and external distractions.
2. Retention; when individuals are influenced they must remember the observed activity through association or imagery which may aid in recall of the skill
3. Reproduction; undertaking activities through recall of associations or images identified during observations – competent performance depends upon appropriate organisation of procedural steps with further refining through practice
4. Motivation; the individual can see the reason why it is appropriate to the task, this may be as a result of apparent incentive or award following successful completion - behaviours linked with incentives reinforce, whilst deterrents discourage behaviour

Bandura (1991) further proposed individuals are able to control behaviour through self regulation, a process described as comprising three distinct stages; self observation - individuals observe and monitor their own behaviours and traits; judgement - individuals compare own behaviours and traits to standards identified by society, governing bodies or individuals themselves; self response – following evaluation and comparison behaviour / trait, the net result will be one of reward or punishment administered by the individual.
It is argued however that individuals need to be capable of making insightful decisions surrounding behavioural tendencies and subsequently identify aspects of their inner self requiring modification. It appears some individuals possess an air of arrogance, preventing modifications from being made which may be as a result of environmental factors, inner emotional strength and / or weakness, upbringing or sheer ambition and drive. Where this is an observable characteristic within occupational environments, perhaps with influential members of an organisation, the drive towards multi-disciplinary teambuilding and working should be cultivated and fostered to lessen certain traits. This practice, whilst often challenging at the outset, can facilitate the sharing of skills and practices towards the vision of improving working practices. From experience, this model appears to be gaining popularity within the healthcare environment although has not been without its challenges.

It appears there is variable acceptance of some groups of healthcare professionals in terms of the perceived value they engender outside their prescribed roles and responsibilities. The healthcare environment is abundant with knowledge, skills and attitudes which can contribute to contemporary, effective and reliable provisions of health and health related services, capable of meeting the demands of a progressive health service.

Within the context of healthcare education, for students to gain effective knowledge and skill it is essential students are linked with individuals displaying high levels of skill and expertise, as well as confidence and status within the discipline. It is essential that clinical practice placements furnish students with instruction and supervision from suitably qualified and experienced practitioners exhibiting enthusiasm, high levels of knowledge and a keenness to teach, providing students the necessary drive and willingness to learn.

This chapter has outlined the main theories and constructs associated with learning. It is unlikely that individuals display tendencies of a single style – more a combination of two or more depending upon their academic level in addition to the environment they are exposed. When considering the design of an educational programme, it is essential to enable individuals to learn and express themselves in a manner they find comfortable, which requires flexibility and openness for learning within the programme. The diverse methods students adopt to achieve learning should not be discouraged but enabled and embraced to allow for personal and academic development in order to achieve the desired goal.

What is evident is that whilst different learning styles and theories have been described, vast differences exist in how individuals learn and develop, frequently referred to as individual differences. Individual students exhibit diverse abilities and strategies related to study, time management, self discipline, basic educational skills and experiential attributes. It is essential those providing instruction and facilitating learning are mindful of their responsibility to students to provide effective and stimulating environments to develop their knowledge and understanding. Whilst this can be challenging for the educator, it is proposed that commitment, motivation, respect and creativity are key requisites of the educator to bring about successful academic development of students - the primary aim of HE.

3 Curriculum Design and Development

Post–compulsory education has been subject to significant review over recent decades resulting in multiple re-organisations and curriculum review, with the Dearing Report (Dearing, 1997) having the highest impact to date. Presenting the results of the National Committee Inquiry into HE, the report made recommendations regarding the provision and delivery of HE. The recommendations included the development of a framework for development and maintenance of a "quality agenda" along with regulation of teachers through professional bodies. Following the Dearing report, "Higher education for the 21st Century" (DfEE, 1998) recommended the introduction of the ILT (Institute for Learning and Teaching) and the LTSN (Learning and Teaching Support Network).

The ILT's remit was accreditation of individuals and academic programmes ensuring proficiency within specific subject areas. The Institute also commissioned research and development of effective methods of teaching and learning, identifying specific aspects to improve education (ILT, 1999). As the name suggested the LTSN offered a networking facility providing advice and support to educators, enhancing quality and delivery of education through conferences, websites and journals (Fry, Ketteridge and Marshall, 2003). Further reorganisation led to the ILT and LTSN being replaced in 2004/5 by the Higher Education Academy (HEA) with a remit covering previous roles of the ILT and LTSN. Whilst teacher support was provided through the LTSN, the need for monitoring of quality standards was also identified. The Quality Assurance Agency (QAA) was launched promoting quality within education, with responsibility for independent audit and assessment of educational programmes and institutions (QAA, 1999).

Providing indicators of academic skill and achievement, the Framework for Higher Education Qualifications (FHEQ) described by the QAA (2001a) provides employers, students and stakeholders with descriptions for each level of academic study. Statements exist for each undergraduate level, with one each at masters and doctorate levels. Providing clear guidance to educational providers in terms of expected student achievement, it provides a structured approach to planning and delivery of educational content. The FHEQ benchmark statements provide indicators of academic ability along with levels of skill and achievement in a variety of aspects within subject specific disciplines. Designed to identify knowledge, understanding and skills attributes for subjects within a particular subject speciality, they exist to ensure equity in the levels of achievement attained by students,

regardless of subject discipline. Each level possesses reference points enabling the determination of suitability of learning outcomes for the intended level of study (Fry, Ketteridge and Marshall, 2003).

Audit by the QAA includes assessment of policy and procedural accomplishment described by individual institutions in addition to teaching practices and subject provision. Subject review covers six main aspects and provides opportunities to draw guidance on curriculum development (CD) ensuring quality standards are achieved. When considering quality within HE, an area of significant impact for provision and delivery provision of HE is the design, development, implementation and review of programme specifications. The QAA make recommendations providing guidance on the preparation and presentation of programme specifications, described as being an essential part of the strategy to improve the explicit nature of learning outcomes, subsequently enabling programmes and awards to be related to relevant qualification frameworks (QAA, 1999). The guidance also includes structured advice on the articulation of learning outcomes, learning, teaching and assessment methods and curriculum mapping to the FHEQ. Whilst initial development and mapping exercises can appear tedious and labour intensive, it is a vital component in the preparation of transparent, accurate and meaningful documentation which upholds the quality process. There is a clear need for such explicit documentation in order to provide the student, mentor and future employer with information relating to the expected achievement of individuals upon successful completion of their studies.

Within the context of curricula, two main models of classification exist to which curricula can be assigned, process and product. The product model provides a formal basis in which learning is assessed in a detailed manner in contrast to the process model which employs little or no formal assessment of learning (Tyler 1949, cited Kelly, 2004). Within the process model, students are not assessed against achievement of learning outcomes (LO's) and hence generally do not tender academic credit. Conversely, the focal point of the product model is achievement of identified learning outcomes and hence leads to award of academic credit (Tanner & Tanner, 1980). The process model follows the principle that students should be able to do as instructed by the teacher. Placing tremendous dependence on the teacher, students rely solely on the ability of the teacher, and hence outcomes are related to teacher quality and instruction received (Biggs, 2002).

The design and development of curriculum is a vital element in the provision of quality educational provisions. There are a number of key questions which must be answered prior to planning a curricula;

- Who is the programme aimed at
- What is the required outcome
- Why is there a need for development of the programme
- How can the programme be developed and delivered
- Where will it be delivered
- When is it required

Once such questions have been answered, the challenge of producing quality documentation commences. The construction of quality programme specifications requires careful consideration and appreciation of student needs in terms of personal commitment, learning outcomes, personal study and assessment criteria, in addition to indicative content and recommended texts.

As part of the requirements to ensure the preparation of documentation to a high standard, meeting the needs of the QAA, it is essential to map educational content to relevant subject areas, demonstrating suitability of the programme under development (QAA, 2001b). Presentation of clearly structured, unambiguous documentation is essential to provide clear insight into the curriculum (Kelly, 2004). Documentation must be explicit with clear references made to all aspects of the student journey from application to completion. The curriculum should provide relevant information describing the programme in its entirety – it should be detailed but understandable and relieved from jargon (QAA, 2002). The inclusion of choice and flexibility may enhance the student experience whilst undertaking the course, consistent with a student centred approach to learning (Carr, 1995).

An essential part of the documentation is the programme specification. Outlining the essential aspects of the programme of study, programme specifications should provide concise and unambiguous information with appropriately constructed and presented learning outcomes detailing the necessary knowledge, understanding, skills and other

attributes to be gained upon completion. Learning and teaching methods adopted should also be identified, along with assessment strategies applied (Fry, Ketteridge and Marshall, 2003). Such practices afford the individual designing a programme of study the opportunity to consider all aspects of the learning experience, as apposed to distinct sections thus enabling constructive alignment of the planned programme.

The application of constructive alignment in the preparation of curriculum documentation provides a structured framework for the production of quality documentation, meeting standards prescribed by the QAA. Biggs (1999) describes a model of constructive alignment, recommending that all elements of educational programmes relate to intended learning outcomes, providing a basis for all elements of a curriculum to be drawn together and logically arranged, outlining the intended purpose of the curriculum. Since successful completion of a programme of study is based upon demonstrable achievement of prescribed learning outcomes, it is vital that evidence is provided throughout documentation outlining how the overall programme dovetails with the intended learning outcomes. This should include relationships with modules of study within a programme (where appropriate), assessment strategies and indicative content (LTSN, 2004a). The preparation of quality programme documentation should focus around explicit information. Mapping to internal and external reference points allows for identification of relationships to other educational programmes, subject benchmarks or professional body requirements.

The facilitation of constructive alignment provides explicit articulation of the student journey, essential in the presentation of well planned and constructed educational programmes (LTSN, 2004a). The programme aims should provide the starting point of CD and afford shape and direction to the planned curriculum (Davies, 1971), illustrating the intentions of the programme as well as the requirements of those providing instruction (First Words, 2004). The aims should provide an explanation of the programme goals and overview of subjects included within the programme (Davies, 1971). In addition to expression of clear aims, learning outcomes (LO) should be appropriately phrased to provide clear indications of expected attainment, i.e. knowledge and skill base upon successful completion (Bower, Glenister, Gotaas, Houghton, 2003). MacDonald (1999), contextualising learning outcomes quotes;

> "The clearer the learning outcomes the easier it is to plan delivery and assessment. The easier it is to identify assessment criteria. Also if learning outcomes are clear and these are made transparent to the learner then the easier it is for them in terms of managing their learning and assessment and general being in the know of what is happening" (MacDonald, 1999 p14)

LO's should be appropriate for the academic level they are intended, should align to programme LO's where applicable (Neary, 2000) and be achievable and assessable for all students (Bower et al, 2003). LO's should be presented in an understandable, legible and explicit manner, utilising appropriate descriptors, identifying expected attributes of individuals through observable and measurable behaviour (Quinn, 2001). A variety of descriptors have been utilised to describe outcomes in the domains of learning - a key series being Blooms Taxonomy (Bloom 1956, cited in Fowler, 2004). The use of appropriate level descriptors allows for the generation of quality LO's, providing predictions of what students will know and be capable of doing upon successful completion of the programme (LTSN, 2004a).

In the preparation of documentation for HE, clear alignment between LO's, indicative content and assessment is essential (Reece & Walker, 2004). The inclusion of clearly identifiable LO's and indicative content should form the basis of clear documentation, with evidence being informative to students and employers enabling identification of the suitability of the programme (QAA, 2002). Some curricula utilise the term objective as apposed to outcome. The term objective is defined as "something towards which efforts are directed; a goal" whereas outcome is defined as "a result or consequence" (Penguin English dictionary, 2001). It is suggested that the two definitions are markedly different in that "objective" identifies a direction the student should aim without describing nor inferring an end result. It is argued that the term "outcome" should not be used interchangeably with "objective" as a consequence of the different meanings and hence inferred result, with objective carrying a less powerful bearing than that denoted by outcome.

Articulation of student support is also a key feature of documentation. Evidence of the mechanisms implemented to provide academic and personal support and supervision for the duration of their studies should be included. Information regarding other sources of support,

such as local support groups, disability services and student services should be expressed (Minton, 2001).

Students demonstrate a variety of learning styles, thus curricula design should facilitate engagement with and embracement of variations in style, allowing for a cross section of learning to be experienced by students (Curzon, 2003). Learning occurs at different rates, requiring continual underpinning to facilitate progression to the next level. Programmes of study should reflect the implementation of a variety of assessment strategies to avoid the potential for the discrimination of some groups of students.

Within healthcare, practical skills are of central importance – the psychomotor domain describes the development of skills practical in nature and should form part of the learning experience. The ability to observe a practical skill and subsequently translate into the development of skilled practice through to expertise is fundamental in the development of a highly skilled workforce. The ability to perform practical skills to a high level is essential to achieve high quality care and treatment, and hence development of curricula may also benefit from inclusion of a behaviouristic model (Skinner, 1979). When considering the inclusion of practical skills within a curriculum, behaviouristic models can be applied where specific processes must be followed. Such skills may include infection control or undertaking of diagnostic investigations where specific steps must be followed. In order to develop curricula which are fit for purpose (in that it meets the needs of students and employers), careful integration of instructional methods is essential to allow for practical skill development. Psychomotor and behaviourist models appear to provide the most suitable frameworks to develop procedural skill and competence, bringing together direct instruction and skill development which can combine to develop skilled and competent practitioners.

The observation and reflection of expert practice can reinforce theoretical underpinnings of subject themes, however challenges exist in the development of curricula requiring practical and theoretical underpinnings in that coherent links between the theory and practical elements are crucial. The programme design must provide students with sufficient exposure to clinical practice to a consistently high standard, providing the opportunity for students to gain valuable experience in a variety of disciplines.

As previously discussed, constructivism describes learning as an ongoing spiral, where knowledge and understanding is constantly undergoing revision and update (Bruner, 1977). For learning to occur, the student must possess understanding at a level before they proceed to the higher level - without the continual updating of knowledge, skill and understanding, learning will not occur.

Along with practical skill, the skilled healthcare professional must possess sound knowledge and understanding of the specialist area which has potential for development from novice to expert as described by Benner (1982). It is suggested that with the shift towards competency based practice and extended roles, the spiral curriculum provides an ideal framework to develop individuals through non-traditional routes as described in chapter 2. Within constructivism, three domains relating to human education exist, cognitive, affective and psychomotor, with each by nature being responsible for the "building" of knowledge, skill and understanding (Mezirow, 1991). Skills of reflection and experiential learning are classical forms of constructivist learning, and are recognised as an attribute of highly skilled and knowledgeable practitioners, who continually reflect upon and update their knowledge and understanding. It is essential during the stages of curriculum design and development to include the facility to allow students to explore and reflect upon their practice, hence allowing underpinning of theoretical principles affecting practice.

Practice within healthcare centres around experiential and evidence based "best" practice, through sharing and updating of knowledge. It is essential that students within healthcare education have opportunities to acquire the necessary skills to evaluate practice through audit, requiring students to be in possession of not only knowledge and understanding to facilitate evaluation but also personal attributes to facilitate self appraisal. As previously discussed in chapter 2, humanism embraces student centred learning (Rogers, 1969, 1983) encouraging students to explore and share ideas and values, encouraging development of key skills such as communication, group working and problem solving.

"Working together – learning together" (DoH, 2001) outlined a framework for lifelong learning within the NHS, whereby staff are equipped with skills to change and improve patient care, by taking advantage of career opportunities to realise potential. Describing a

five year plan of initiatives to be addressed in the delivery of effective lifelong learning opportunities, it placed considerable impetus on the curriculum developer in terms of identifying and meeting needs of the workforce and healthcare providers. Thus programmes of study must enable students to gain exposure to a range of theoretical and practical constructs to introduce, develop and systematically underpin developing knowledge and skill. It is argued however that frequent shifts in healthcare policy can make planning of curricula extremely challenging, particularly when many service providers are unsure of future needs despite the construction of local delivery plans designed to identify gaps in service provision and delivery. The reality of the situation is that curricula, particularly within emerging professions often lacks long term planning and strategic development, thus programmes are often required "yesterday", placing significant burden on the curriculum developer in terms of target achievement and production of quality documentation.

Within the context of healthcare education, requirements regarding the provision and delivery of education are constantly under review, routinely having a significant impact on the healthcare professional regarding the identification of relevant personal education and training needs. Awareness of current policy direction within healthcare is essential when planning curricula, as is knowledge of nationally prescribed curricula and occupational standards to ensure provisions meet the necessary requirements and standards.

One key consideration when planning healthcare education relates to difficulties in the release of individuals from their duties to study. The current financial climate of the NHS means healthcare professionals find it increasingly difficult to obtain time for study and academic development (The Chartered Society of Physiotherapy, 2006). It is argued that whilst release from the workplace may result in depletion of staff, this is frequently a short term challenge for long term investment. Where students encounter barriers for release, it is suggested that increased strain is placed on individual's which may result in the student abandoning their studies. This can potentially have a knock on effect for employers in that students may be required to re-take part or all the academic programme of study and hence depleting staffing once more.

As the NHS moves towards a competency based workforce with lifelong learning and continuing professional development at its heart, it appears few considerations have been

made regarding how the workplace can sustain activity whilst individuals are undertaking study. It is suggested that greater attention to succession planning and skills mix is paid prior to sending individuals on educational courses in order to minimise disruption to services and additional burden to students.

4 Endoscopy Modernisation

The changing face of the NHS since election of the Labour government has focussed around a requirement to provide "patient centred" care available to all, as and when needed. Policies such as "The New NHS: Modern, Dependable" (DoH, 1997), "A First Class Service" (DoH, 1998a) and "The New NHS – Working Together" (DoH, 1998b) specified aims and objectives of service improvement. A key area of focus was "modernisation" of healthcare services within the United Kingdom (UK) in which existing practices were evaluated and recommendations for service improvement made.

The drive towards reform was led by the Modernisation Agency (MA), a subsidiary of the Department of Health (DoH) formed in 2003, with its mission quoted as;

"*The critical challenge of the NHS Plan is to create a service designed around patients. The NHS Plan is challenging but realistic. It has demanding targets, but is backed up by resources to meet them. The Modernisation Agency will be pivotal in securing that change by bringing together expertise, rewarding good practice and offering support to improve poor performance*" (Crisp, 2000).

Identifying key strategic areas, the MA targeted service redesign with workforce development being a priority through the Changing Workforce Programme (CWP). The CWP aimed to identify gaps in the workforce, whereby training could be introduced to meet service needs. In principle the benefits of workforce redesign were substantial, providing the opportunity to fill skills gaps, improve productivity, hence meeting capacity and demand. Some of the plans described by the CWP were met with opposition from various areas of the healthcare environment. This appeared in part to be as a consequence of the blurring of professional boundaries, in particular those of medicine and nursing. The development of surgical care practitioners provides one such example, where medics voiced opposition to the role, arguing that patient care and junior medical training would suffer (McDermott, 2004). A further example is non-medical endoscopy, and is the focus of this thesis. Nurse endoscopy in the UK commenced in the 1990's and gained acceptance from the medical professions, however extending the role to other individuals caused significant dis-arrest, particularly with nursing colleagues who questioned the suitability of "others" to undertake such procedures (Chapman, 2004).

There is clear need for the revision of healthcare provision in the context of working differently but together. Whilst it is appreciated there are a variety of specialities within healthcare providing patient care, the current climate of the NHS requires substantial

role extension and team working to meet the ever increasing centrally imposed targets, such as the eighteen week rule from initial GP referral to commencement of treatment (DoH, 2004a). Statements have been made demanding the attention of politicians to review healthcare recruitment and retention within endoscopy (Chapman, 2005). Whilst recognising, acknowledging and accepting the comments made, it is argued that the NHS finds itself in a situation requiring modernisation – and should not just be seen as justification to employ more staff as apposed to investing in the workforce. It should not be forgotten that substantial additional investment was made to the NHS following the Wanless review, addressing under funding by previous governments (Wanless, 2002). As with any major investment, impact and value of the additional funding must be measurable, particularly when provided from public monies.

Workforce development proffers potential benefits in the development of a competent, safe, able and willing workforce capable of undertaking new skills perhaps traditionally performed by higher level staff. Whilst described as cheap labour (Armitage, 2005), advancing technology provides safer, more effective opportunities to train individuals to perform routine procedures through for example, patient and procedural simulators (Kneebone, Nestel, Taylor, 2003), (Testoni, Sultan, Baillie, 2004), (Kneebone, Nestel, Moorthy, Taylor, Bann, Munz, Darzi, 2003). However, a significant challenge for role redesign is resistance to change, a key issue frequently observed in relation to the development of new roles. It is proposed that the acquisition of new skills within an individuals practice base can provide renewed motivation and encouragement essential for personal occupational and academic development, which can further enhance job satisfaction, crucial for improving productivity and service.

As with many other areas of the NHS, endoscopic services have been under review. Endoscopy has been described as a "Cinderella" service, deprived of attention and resource allocation for various reasons, one of which stems from the lack of National Service Frameworks for Gastroenterological services (Price, 2002). As a consequence, Endoscopy has not featured within government targets and hence has not received additional investment for the services provided (Modernisation Agency, 2004a). An additional factor is that gastroenterology does not feature as an incentive within the new GP contracts, thus inhibiting Primary Care Trust (PCT) investment into gastroenterology services (Manning, 2006).

Provision and delivery of endoscopic services was considered variable throughout the UK in that management streams differed from one Trust to another, as did the environment investigations were undertaken. A lack of consistency enabled endoscopy services to progress in an often ad hoc manner in the absence of structured management or guidance. Personal observation has identified how management systems vary considerably in terms of divisional placement, which appears to create significant variance in the way services are prioritised, managed and funded.

In addition to variability in management structures, lack of formal accreditation of endoscopy units existed in which to drive towards compatibility and consistency between units across the country. There has also been a lack of empirical evidence due to audit inconsistencies in which to support and disseminate best and evidence based practice. It appears such variability in services provided little motivation to improve service provision and delivery. A lack of investment within endoscopic provisions for service improvement also served to reduce motivation and hence endoscopy units continued to practice as they always had (Modernisation Agency, 2004b). Whilst it was recognised there were units around the country providing high quality services, it was also perceived there were units potentially providing sub-standard services. Such a claim was however difficult to legitimately quantify due to a lack of national standards or guidance (Price, 2002).

As a result of service inconsistencies a clear need for change existed within endoscopic services. Within endoscopy there was a number of influencing factors, or "drivers for change", prompting the need for redesign. The planned introduction of a bowel cancer screening programme and cancer waiting times outlined in the NHS Cancer Plan (DoH, 2001) provided impetus, with increasing focus towards patient centred care. Patient choice, booking targets and waiting times as described in the NHS Plan (DoH, 2000) also posed significant challenges to existing service provisions and delivery. In terms of procedural undertaking, colonoscopy audit identified poor procedural completion whereby 90% completion rate was not being achieved, and in addition, training in colonoscopy was often inadequate. This, combined with endoscopy accreditation becoming a requirement for consultant appointments, intensified the need and urgency for endoscopy modernisation (Bowles, Leicester, Romaya, Swarbrick, Williams and Epstein, 2004).

The re-development of endoscopic services commenced in 2003 under the direction of the "Endoscopy Modernisation" team (EMT). Key areas of priority considered pivotal in the development of services able to cope with the increasing demands placed on endoscopy were defined (Modernisation Agency, 2003). The EMT targeted areas which could contribute to improved efficiency, quality and output. Pilot sites were recruited to audit and evaluate current working, identifying practices which could be undertaken differently and more efficiently, working towards better services. Issues appertaining to the quality of training and procedural outcomes were highlighted, however challenges related to service development should arguably have been identified much earlier, since inefficiency and spiralling waiting times should not be difficult to identify within contemporary healthcare. It is suggested that closer monitoring of struggling services would enable problems to be acknowledged much sooner, providing greater opportunities to instigate remedial measures to prevent further decline.

The NHS Cancer Plan (DoH, 2001) placed a further focus of attention onto endoscopy services, outlining targets and staged milestones from 2000 to 2005, to tackle the variability in waiting times for cancer patients. The Plan described the introduction of a 31 day patient wait from diagnosis to treatment for all cancers, and a maximum 62 day wait from urgent GP referral to treatment for all cancers (DoH, 2001). This drove endoscopy down the modernisation pathway under the "diagnostics" umbrella since it is a key component in a number of patient pathways, being a fundamental component in the diagnosis of many significant diseases (Modernisation Agency, 2005).

The National Endoscopy Project (NEP) was launched in 2000 on the basis of the need for reduced waiting times and increased efficiency. The responsibility of the NEP was to support redesign of endoscopic services and increase the number of endoscopists whilst tackling variations in the training of endoscopists (Modernisation Agency, 2004b). Initial stages of the project highlighted key issues common to many endoscopy services including strategic and clinical direction, complex referral routes and un-projected increases in demand. Variable and often unacceptable patient waits, inability to meet service demands and overall inadequacy and quality in endoscopy training were also recurrent features.

The NEP developed a "toolkit" which focussed on various factors affecting service provision and delivery, with each factor identified as a "key challenge". The toolkit

design facilitated straightforward implementation within endoscopy units, with each challenge comprising a series of action points. The action points provided guidance enabling the identification of areas of existing good working practices in addition to those requiring improvement (Modernisation Agency, 2004a). The toolkit was evaluated regarding reliability, efficiency and user friendliness and once deemed fit for purpose, rolled out to twelve pilot sites.

Review of the pilot sites highlighted the toolkit as beneficial in targeting improvements in endoscopic waiting times (Modernisation Agency, 2004b). Following the encouraging results, the toolkit was made available for all endoscopy units and hence featured as practical tool to aid service improvement. Service redesign through a structured approach is an exciting development however change does not occur overnight, and often requires change of mindset for many. Whilst this may create initial chaos, challenges should resolve with subsequent calm. From personal experience, the changes which emerge are frequently due to strength in leadership and change management, as well as investment in staffing, IT and staff development.

Whilst service redesign was high on the list of priorities, challenges in endoscopy training remained. The inclusion of structured, recognised training for endoscopic practice has been a fairly recent development in the quest to improve endoscopic provisions through assessment and accreditation of endoscopists (JAG, 2004). Pre 2003, formal training frameworks did not exist, with much of the training received by novices being in the form of see one, do one and teach one. Fortunately, this has become unacceptable practice in practical skills training (Vozenilek, Huff, Reznek, Gordon, 2004), since there was potential for acquisition and subsequent transfer of dated and perhaps inappropriate skills. Furthermore, endoscopists providing practical skill instruction were not assessed nor accredited, leaving significant variability in the reliability and quality of training delivered.

"National Endoscopy Training" (DoH, 2004b) provided reasoning behind the need for change to provisions of education and training within endoscopy, and outlined the introduction of the National Endoscopy Training Programme (NETP). Drawing a budget of £8.2 million, the aim of the training programme was to support endoscopy training within England for the period of 2003 – 2006. The key objective of the programme was

to provide structured and accredited training within endoscopy, through the funding of three National and seven regional training centres.

In addition to training centres, Strategic Health Authority (SHA) Leads for Endoscopy were identified in addition to local Trust endoscopy leads to provide a structured framework for the transmission and sharing of information. The infrastructure was developed to promote best practice and provide guidance on issues relating to endoscopy, in effect supporting the roles of the National and Regional Training centres. Training centres were charged with providing training of the highest quality, based upon the best current evidence, whereby "*The aim of the training strategy is to have every endoscopy unit in the country providing high quality training for its permanent staff and trainees*" (Modernisation Agency, 2004a p2).

The statement provides encouragement towards unification of endoscopic service provision across the country however practicalities of policing such a target remain an issue. The identification of SHA leads for endoscopy goes some way to oversee continuity however the leads were appointed part time to the role, making regular visits to the assigned patch challenging, particularly in larger areas. The introduction of the Global Rating Scale (GRS) has also been aimed at the promotion of excellence in practice. An evaluation tool used to review key areas within the endoscopic environment, the GRS enables units to identify and prioritise areas which require attention to improve standards. Identifying twelve areas, the tool includes consent and patient information; quality, comfort and safety of the procedure; appropriateness, timeliness, choice and aftercare; result communication, privacy and dignity and also the opportunity for patients to comment on the service received (www.grs.nhs.uk). There have been some early informal suggestions indicating the tool provides a useful strategy in which to enhance services however currently no empirical evidence is available to support the claim.

In terms of provisions for hands on endoscopic training, the three National Training centres provided support for educators within endoscopy in addition to "hands-on" practice courses. The responsibility to impart current best and evidence based practice in which to underpin GI endoscopic procedures remained with the national training centre, in addition to engagement with research and development in the discovery and implementation of new techniques and strategies (Palmer and Morris, 2004). Regional

training centre responsibility lay within the provision and delivery of "hands-on" endoscopic training courses and educational support of trainees attending the centre. A key requirement of the training centres was to provide "multidisciplinary" training courses, working closely with local endoscopy leads to continually monitor and improve services. The NETP provided a solid foundation to base and extend the future of endoscopy training, it is a concern however that funding of the NETP ceases mid 2007 with future plans remaining uncertain and undisclosed at the time of completion of this work.

Whilst additional resources have enhanced the situation regarding exposure of individuals to formalised training, the development of structured frameworks for the practice of GI endoscopy have been under design and development since 1994. The Joint Advisory Group for Gastrointestinal Endoscopy (JAG) was formed following combined consensus on endoscopic training being reached between the Royal Colleges (Palmer and Morris, 2004). In 1999 JAG published its first document outlining recommendations for training in gastrointestinal endoscopy (JAG, 1999). Re-written three years later, it went further to reflect the need for achievements of competencies and targets in contrast to procedural exposure and quantity. It is also interesting to note that trainees were to be trained to equivalent standards despite their background, be it medical, surgical or non-medical, inferring increasing acceptance of "other" disciplines undertaking gastrointestinal endoscopy (JAG, 2002). This was further reflected by the JAG, outlining that "for JAG all endoscopists are equal, whether they are (a) physician, surgeon, radiologist, nurse or other allied health professional. The training, appraisal and responsibilities of endoscopists are the same, irrespective of their seed and JAG recommendations apply to all" (JAG, 2005).

A key to successful service provision and delivery is the quality of procedural undertaking. One significant area which featured predominantly in the evaluation of endoscopic provision was the poor completion / success rates of procedures. In particular for lower gastrointestinal procedures, colonoscopy was articulated as possessing poor completion rates which was however identified as the assessment of choice in the national bowel cancer screening programme following positive FOB test (Modernisation Agency, 2005). Colonoscopy is an invasive procedure which may even lead to death as a consequence of potential complications which may arise peri or post procedurally, with some patients presenting up to 24 days post procedure (Bowles et al,

2004). With this in mind, it is worthwhile considering that 65% of all colonic lesions can be reached via a 60cm flexible sigmoidoscope (Atkin, Cuzick, Northover and Whynes, 1993; Davies, Button and Foster, 1998) and hence the potential inclusion of flexible sigmoidoscopy as the primary screen for colorectal cancer is the subject of frequent discussion and ongoing feasibility audit (Atkin, 2003).

With the planned introduction of bowel cancer screening, it was estimated there would be an increase of 300 colonoscopies per year per 0.5 million population. This was expected to rise to 600 per year after three years due to surveillance colonoscopy following the detection of pathology. With increased demand for colonoscopic investigations, it was also suggested there would be increased requirements for therapeutic interventions (Modernisation Agency, 2005). The screen colonoscopy was to be undertaken by highly skilled and experienced endoscopists who have successfully completed the colonoscopy driving test (Manning, 2006). This has in itself raised questions surrounding the development of a two-tier endoscopy service, whereby top slicing of endoscopists would occur. Currently however there is little evidence to substantiate the claim since the true effects of the bowel cancer screening have yet to be observed.

The increased demands placed upon endoscopy from 2 week waits, 31 and 62 day targets, eighteen week diagnostic initiatives and the bowel cancer screening programme requires significant planning and workforce development to meet the increasing demands. Extension of the endoscopists skill base is one option, whereby nurses previously trained in flexible sigmoidoscopy are extending their skills to undertake colonoscopy. Where highly skilled and experienced colonoscopists are required to undertake higher order therapeutic interventions and screen colonoscopies, it is considered that they will be unable to maintain routine colonoscopic practice.

As many nurse endoscopists extend practice into colonoscopy, there is a potential for depletion of flexible sigmoidoscopy provisions since flexible sigmoidoscopy is frequently provided by nurse endoscopists. Before progressing to the next practical level, it is essential that such moves do not compromise the existing service, with succession planning being made a priority. It is apparent that practice extension and subsequent progression leads to the development of "holes" which require filling (Duthie, 2007).

Workforce development has been an area of health service modernisation under careful consideration. The NHS employs 1.3 Million countrywide in a miscellany of roles offering a variety services (NHS Careers, 2004). The CWP was assigned the task of reviewing and revising existing roles in an attempt to identify services which were restricted as a result of insufficient manpower and skills mix. The responsibility of the CWP was to develop, implement and mainstream role design within the NHS through education, regulation, prescribing rights and the development of competencies in order to revolutionise many of the traditional boundaries which exist within the healthcare environment (MA, 2004b). Many areas have been reviewed and revised to include emergency care services, anaesthetics, surgery and radiography however the focus of this thesis will remain within endoscopy and its standing within role redesign.

5 Breaking with Tradition

There has been significant debate over recent years regarding the apparent blurring of professional boundaries within healthcare, predominantly as a consequence of extended roles within nursing. However, what can be considered tradition and how such inferences arose remains unclear, particularly when considering medicine and healthcare. Tradition has been defined as;

1. the handing down of information, beliefs and customs by word of mouth or by example from one generation to another;
2. an inherited pattern of thought of action;
3. a convention or set of conventions associated with or representative of an individual, group or period;
4. cultural continuity in social attitudes and institutions

(Allen, 2002).

As the definitions suggest, tradition is handed down over time, hence many beliefs and practices have remained over generations thus it has often been difficult to challenge tradition, particularly within healthcare (Ham, 2004). At early stages of a career inexperienced individuals seek guidance, support and instruction from knowledgeable, perhaps expert professionals in the field and attempt to mimic and exhibit the observed practices. This may result in beliefs that such practices are mandatory and handed on to others in the future. Where there is a lack of transparency, control or monitoring of the passing of tradition there can be little hope of challenging ideas and practices and hence opportunity for change is minimal.

Within medicine the more formal practices date back from as early as the thirteenth century where three types of doctor were recognised - physicians, barber-surgeons and apothecaries. Of the three, physicians received academic instruction and training within universities and hence were considered the more select. The training of barber-surgeons was facilitated through apprenticeships, whilst apothecaries (the predecessor to general practitioners) had origins as shopkeepers who provided basic medical care and administered drugs (Ham, 2004). The College of Physicians of London was formed in 1518 to control the practice of physicians through licensing and examinations. It was some considerable time later that surgeons detached from the barbers forming the London Company of Surgeons in 1745, latterly becoming the College of Surgeons in 1800,

providing similar frameworks to the College of Physicians. Porter (1997) describes the introduction of the Society of Apothecaries, stating the societies effectiveness of general practitioner regulation in London was questionable.

Medical education and training has progressed immensely since the eighteenth century. During the 1700's there was variability in the quality and content of medical education, with some doctors practicing without formal qualifications. The importance of licensing, education and discipline for doctors became paramount with the inception of the Medical Act, superseded by the General Medical Council, which introduced a register of qualified medical practitioners (Ham, 2004). The register was aimed at public protection however also served to protect qualified doctors from unqualified individuals, protecting income and exclusive position. As medical education developed through university frameworks, doctors were considered to be of higher social standing, regarded as knowing best, enjoying the respect of society. It could be suggested such respect was acquired since university education was primarily open to those individuals of privileged backgrounds, the higher social classes. It is further suggested this has been the situation until only recent times, with patients now encouraged to question their doctors and ask for second opinions, making more use of their rights (DoH, 1991).

Whilst doctors provided treatment for those suffering from illness, care of the sick has traditionally been undertaken by women, either family members or local women renowned for their ability to heal or aid the sick or who possessed midwifery skills (Warren, 2003). The methods employed were often handed down through generations and as with medicine, no framework identifying who was qualified to undertake such duties or otherwise existed. As a result, the better the reputation, the more likely a living could be made through healing, caring or midwifery. The profession of nursing was open to anyone, indeed anyone could call themselves a nurse until the General Nursing Council introduced a register of nurses in 1923 (Royal College of Nursing, 2005). The traditional role of the nurse was to aid individuals in their personal care when unable to do so for themselves as a result of illness. Still a significant aspect of today's role, there has however been a greater shift towards nurses undertaking tasks traditionally undertaken by medical colleagues (Royal College of Nursing, 2004). One has to consider why this may have evolved over time. One such reason may be due to significant advances in technology, in that as technology

advances, the ability to diagnose increases and hence more individuals require medical care. Increasing the burden on the medical profession, this results in situations where patients wait longer for routine care or interventions making it necessary to train additional individuals to undertake specific procedures, for example venopuncture, administration of medication and measurement of vital signs. Modern society does not expect such practices to be undertaken by a doctor, and it has become routine practice for nurses to undertake such procedures. However the transition of practice does not appear to be documented.

Nursing roles within the UK have expanded significantly, nurses now undertake invasive procedures within endoscopy and cardiology, prescribe medication, administer conscious sedation and more recently surgical intervention (Vance, 2003). The catalyst facilitating role expansion was the Scope of Professional Practice, which encouraged nursing professionals to extend and expand their roles (UKCC, 1992 & 2005). Making a Difference (DoH, 1999) also provided impetus encouraging partnership working between medical and nursing professionals to deliver clinical care at the point of need, in an attempt to minimise the effects of reductions in junior doctors hours predicted to place significant burden on the NHS (NHS Management Executive, 1991).

The introduction of Clinical Nurse Specialists provided nurses with reward and recognition for advanced practice, bringing aspects of traditional medical activities into nursing (Vance, 2003). Role expansion was met with controversy in many areas, with medical colleagues raising concerns regarding potential inadequacies of clinical decision making, the lack of underpinning medical knowledge and understanding and the management of complex and difficult situations. Concerns were also raised relating to potential sacrifices and shortfalls within medical training for future doctors, as a result of time and investment being directed towards the training of nurses (Redondo-Cerezo E, Garcia-Cano J, 2004). It has been well publicised in the media over recent years that reductions in the availability of medical training has emerged, and hence it is not surprising that any potential threats to the already perceived diminishing facilities will be met with disquiet (McDermott, 2004).

Questions surrounding the availability of training for junior medical staff in light of training requirements for new roles have been raised. Many traditionalists fear the introduction of new ways of working, suggesting clear boundaries should be retained within healthcare

(Newman, 2005). This contradicts "Fitness for Practice" (GMC, 1993) which recognised that other healthcare professionals could extend their roles providing adequate training needs and competencies were achieved, and support provided by a medical practitioner. It is contended that whilst justifiable claims exist relating to the provision of training for junior doctors, there remains the need to address the more broader aspects of skill shortages in order to improve efficiency and quality within the NHS. It could be argued that stability and sustainability within the NHS are of paramount importance in order to facilitate progression. It remains unclear however as to the most appropriate means to achieve this, be it through improved training for junior doctors, through the training of "others" for routine practices or a combination of the two.

As previously discussed in chapter 4, the CWP was introduced to review working practices within the NHS, identifying key areas which would benefit from service modernisation and redesign, with role redesign featuring heavily. Role redesign was undertaken in those requiring significant improvements in service provision and delivery but lacked the option of employing additional staff, either medical or nursing. In such instances pre-existing staff were developed through education and training. As commonly observed within the media, the acute setting within the NHS is constantly under fire for struggling to meet centrally imposed targets. Conversely however, it is also publicised that significant proportions of accident and emergency attendances are not necessary, and could be managed within the home environment or community unit offering non-emergency medical services (Walley, 2003). As a result of the challenges faced, the CWP piloted the Emergency Care Practitioner role (ECP), which utilised pre-existing skills of ambulance paramedics and nurse practitioners with accident and emergency experience (DoH, 2004d).

The proposed role of the ECP was to provide unscheduled care within the community, for non life-threatening conditions and minor ailments, undertaking minor medical procedures such as suturing, administer a number of medications and also refer on to appropriate services as necessary. The introduction of the ECP has provided significant benefits for patients, service and staff. Patients were treated by appropriately trained and competent individuals, frequently in their own home, improving patient experience by avoiding long waits within the A&E department and / or admissions into hospital. In terms of service improvement, the Essex Ambulance Service identified a reduction of upto 50% in A&E

attendances in addition to contributing to out of hour's services delivered by GP's (DoH, 2004d).

In contrast to providing unscheduled emergency care, Medical Care Practitioners (MCP) provided services within general practice / medicine, aligned with the medical model providing holistic care and treatment under medical supervision (DoH, 2006a). MCP's contributed to managing primary care demand as GP practices continued to extend services in an attempt to reduce specialist referrals to secondary care. MCP's undertook consultations (with assistance available) enabling GP's to see additional patients within general or specialist interest clinics increasing practice efficiency and throughput.

Whilst there are recognisable needs for service improvement within primary care, secondary care was also battling against gaps in service provision and delivery due to workforce shortages in medicine and nursing (DoH, 2006a). The CWP developed pilot programmes aimed at secondary care to include anaesthetics, critical care and surgery (Modernisation Agency, nd). The anaesthetic practitioner programme commenced in 2005, training individuals to undertake duties within anaesthesia pre, intra and post-operatively under the supervision of a medically qualified anaesthetist. The post aims to assist anaesthesia teams within secondary care, helping reduce challenges faced by anaesthetics as a result of the European Working Time Directive (EWTD) and reductions in junior doctors hours which pose significant challenges for anaesthetic services (Royal College of Anaesthetists, 2006). The initial pilot programme ends in 2007 and will be followed by an evaluation of safety and efficacy of the role and its contribution to service provision and delivery.

A further challenge faced by secondary care was within surgery. The CWP recommended the introduction of peri-operative (POP) and surgical care practitioners (SCP) to help meet demands (DoH, 2006), however the SCP was met with significant antagonism, particularly from the medical profession (Wafer, 2005; McDermott, 2004). Biggins (2005) argued that study leave, holidays, shift rotas, on-call requirements and specified training time, placed increased risks of surgical lists being cancelled due to a lack of appropriately skilled and qualified individuals. Biggins went further to suggest that the introduction of SCP's was intended to provide safe, competent and efficient surgical care under direction of a

consultant surgeon supporting service needs, enabling medical trainees to be exposed to specific training opportunities in elective and emergency settings.

It is essential to maintain perspective when considering all new roles. One should remain mindful of the responsibilities an individual acquires when embarking on a career within healthcare whatever the role. First and foremost, services should remain patient centred, providing medical care at the point of need irrespective of the patients background, in a non-biased, non-judgemental and caring manner. It is suggested that this should also be the case when considering relationships between all levels of healthcare staff, in that whatever the professional level, all staff should be treated fairly and equally, irrespective of background. Individuals who demonstrate motivation and commitment to develop should be given the opportunity to extend their knowledge, understanding and skills within specific disciplines, even where the task is considered to "belong" to another profession.

One area to benefit significantly from extended roles, particularly in the context of advanced nursing practice has been endoscopy services. Spencer and Ready (1977) published the innovative development of nursing roles within endoscopic provisions in the United States (US), in establishing the role of a nurse endoscopist (NE) to perform flexible sigmoidoscopy (FS) for colorectal cancer screening. The NE role within the US saw continuing success and utilisation. Wallace, Kemp, Meyer, Horton, Reffel, Christiansen and Farraye (1999) described an evaluation of colorectal cancer screening with FS by non-physician endoscopists: a nurse practitioner and two physicians assistants. The study concluded that appropriately trained non-physician endoscopists were capable of safely and effectively screening for colorectal cancer through the technique of FS. They suggested that increased application of non-physician endoscopists may increase procedure availability and may result in cost savings. Indeed the American Society for Gastrointestinal Endoscopy published guidelines for non-specialist training in screening FS, providing a framework towards consistency across the US, identifying physician's assistants, clinical nurse specialists and nurse practitioners amongst others as individuals who may undertake FS training (ASGE, 2000).

Within the UK, the role of NE was introduced in the mid 1990's in response to shortages in the medical workforce, in addition to the rising demands for endoscopic screening (Vance,

2003). Initial practices of NE's included diagnostic gastroscopy and FS to assist in prevention and early diagnosis of gastrointestinal cancer (BSG, 1994). The development of educational provisions to provide the academic underpinning of endoscopic practice contributed to acceptance of the role within the endoscopy setting in the UK (Duthie, Drew, Hughes, Farouk, Hodson, Wedgwood, Monson 1998). Further role expansion has more recently led to nurses undertaking more advanced endoscopic practices including colonoscopy and therapeutic interventions, thus making significant contributions to service provision and delivery within endoscopy (Vance, 2003).

There are clear benefits to the increasing involvement of nurses undertaking advanced practice within endoscopy. Increased numbers of competent endoscopists can contribute to increased patient throughput assisting with achievement of central targets, through increased opportunities to backfill a wider range of lists. As nurses expand into colonoscopy, the opportunity exists for more experienced endoscopists (namely consultant specialists) to undertake increased numbers of higher order therapeutic interventions. One such example is endo-mucosal resection, used in the management of colonic polyps which may negate the need for surgical intervention for those diagnosed at an early stage (Hurlstone DP, Fujii T, Lobo AJ, 2002). The shift in practice of the endoscopist within the endoscopy community provides significant benefits to service and patients alike. The theoretical benefits include reductions in waiting times and more effective and timely management of cancer patients, with the need for surgery and potential impacts which ensue being minimised through therapeutic endoscopy. As the practice base of the endoscopist continues to extend, there are however further challenges relating to the provision of more "routine" investigations, namely FS.

As previously discussed, the initial practice focus of the NE was gastroscopy and FS. As NE expands and consequently nurses strive to undertake colonoscopy, challenges regarding the provision of FS arise. Whilst not all NE's may want to develop their skills base to include colonoscopy, where nurses do progress the need to provide routine FS remains. Similarly, bowel cancer screening will place further burden upon the endoscopy community. The potential impacts of bowel cancer screening have been discussed previously, in that screen colonoscopies for positive FOB's in addition to potential increases in therapeutic intervention and surveillance may ensue. This will ultimately

render highly skilled and experienced endoscopists unavailable for routine colonoscopy, and to avoid a return to high waiting times for routine colonoscopy, it is essential that activity levels should not be affected. Part of the need for increased activity could be achieved by NE's, however it is suggested that it is uneconomical to invest time and money training individuals to undertake colonoscopy, subsequently expecting FS to become the central aspect of their practice, hence creating a potential gap in FS provisions.

As intimated by Cullum, Spilsbury and Richardson (2005), shortages in the nursing workforce have resulted in many areas empowering healthcare assistants to do tasks previously undertaken by qualified nurses. It was suggested that some of the challenges which existed within endoscopy could be addressed through the development of pre-existing staff to undertake new roles and practices. The CWP, latterly the National Practitioner Programme (NPP) in conjunction with an endoscopy training centre undertook a pilot study to investigate the efficacy and safety of training "new" types of endoscopists, as described within this thesis. As did the introduction of NE, controversy surrounded the development of non-medical endoscopy, particularly when training unqualified staff (Chapman, 2005). Concerns were raised relating to a potential shortfall in medical training, an issue also raised at the inception of NE. Publicly, little angst was declared by the medical profession however it is proposed that justifiable concerns relating to the project were debated between medical colleagues regarding safety, efficacy and also the actual need, albeit away from the national stage. However the same cannot be said for NE, who voiced major concerns regarding the role (Chapman, 2004). The concerns expressed by NE's related to the provision of adequate supervision, the management of complications and emergencies, insufficient in-depth knowledge within gastroenterology and coloproctology and lack of regulation (which will be discussed further in thesis) (Chapman, 2005). NE's further declared unqualified individuals lacked the necessary interpersonal skills possessed by qualified healthcare professionals (Chapman, 2004).

It is suggested however that whilst such concerns were reasonable statements to raise, many of the issues had been thoroughly considered by the development team, with careful measures implemented to ensure minimal risk and maximal safety was afforded to the endoscopy community and its consumers. In terms of supervision and management of complications and emergencies, it was dictated that non-medical endoscopists would

practice under the same controlled manner as NE's in that supervision and assistance must always be available, as directed by the BSG (2004). Clear instructions were provided at the outset that practice must not be undertaken without readily available supervision and guidance from medically qualified consultants.

The issue regarding in-depth gastrointestinal and coloproctological knowledge is debatable, particularly since to date there has been a lack of academic courses providing appropriate underpinning knowledge and understanding within the fields of gastroenterology and coloproctology. Indeed previous English Nursing Board provisions for gastrointestinal endoscopy covered essential elements related to the practice of endoscopy but did not in general extend beyond such reaches. It is suggested that nurses practicing within endoscopy have attained extended knowledge and understanding within the specialist discipline of gastroenterology through experience, self directed study and vocational learning, and not as a result of their pre-existing knowledge as a result of basic nurse training. From experience there appears to be a lack of attention paid to gastroenterology during basic nurse training, which is confirmed by the need for those wishing to specialise in gastroenterology required to undertake extended study.

Experience has identified that many nurses entering into endoscopic training infrequently possess the necessary knowledge and understanding of the discipline and therefore also need to undertake extended study. Similarly, within general nurse training there are no specific clinical skills featured which equip nurses with the necessary knowledge, skill and understanding in which to perform endoscopy and therefore additional training and education is required. For the most part, qualified nurses in possession of a nursing diploma can undertake one year of study in which to prepare for practice within endoscopy. This is in contrast to the non-medical endoscopy trainees who are required to complete a three year degree programme before undertaking similar practices. During such time, trainees undertake education and training in a range of aspects specific to gastroenterology and coloproctology which is further discussed in chapter 6.

The non-medical endoscopists under discussion were exposed to a programme of academic study as described in this thesis in which to equip them with the necessary knowledge, understanding, skills and attitudes in which to undertake FS. Therefore claims related to a

lack of knowledge in the area of FS should be considered unfounded. What it is important to consider is that nurse training furnishes individuals with transferable skill bases which can translate into many aspects of healthcare. In the context of the endoscopy trainee, the range of practice is limited to that of endoscopy and gastroenterology alone through local practice guidelines.

It is proposed that for the most part, society can describe what doctors and nurses are and do. However as the provision of healthcare continues to broaden and develop, so do those providing the so-called shop floor services. From experience, the public appears accepting of "others" providing care as long as they safe, competent and effective within their specific discipline. One questions therefore why it is so challenging for other healthcare professionals to accept new and developing roles if customers themselves are satisfied.

It is understandable that concerns are voiced when considering new roles, particularly when little firm evidence to show such roles are safe and effective exists. Conversely, should it be acceptable to allow newly qualified junior medical staff to consent patients for procedures they have very little knowledge and experience of, to prescribe and administer medication and assist in surgical interventions. What should be recognised when considering new roles is that they have been identified as required and beneficial for service as an additional resource. They should not and must not be viewed as a replacement for medical or nursing professions, but as an adjunct in which to enhance the professions, enabling specialist interventions to be undertaken by highly trained and experienced medical and nursing professionals whilst more routine tasks are undertaken by more junior members of staff.

Medical colleagues undergo considerable education and training in broad-ranging health disciplines during undergraduate studies. This continues through junior doctor training, with the specialist discipline being chosen at higher surgical or medical training prior to becoming a consultant specialist (MMC, 2005). It is accepted that non-medical practitioners have not received general medical training and must not profess to possess the necessary knowledge and understanding required of the medically qualified. However when considering for example the endoscopy practitioner training programme, trainees undertake an educational programme covering all aspects of gastroenterology and endoscopy, permitting them to practice within the said discipline *alone* - should they wish

to practice within other disciplines they must undertake the necessary practical and theoretical education and training to practice within an alternative speciality.

Whilst professional skills are transferable within the healthcare environment, endoscopy trainees cannot transfer specific clinical skills to another discipline. Once trainees are safe and competent in FS, should they wish to extend their practice to other forms of endoscopic investigations, they must undertake appropriate education and training as prescribed by JAG (2004). Interestingly, JAG does not recognise individuals as anything other than "endoscopists", as each endoscopist is judged against the practice of a competent endoscopist despite their background. If accrediting bodies such as JAG are accepting of individuals capable of demonstrating knowledge, understanding and competency despite non-traditional backgrounds, why then is it challenging for some professional groups to do so. As nurses extend their roles and undertake more advanced practices, is it not reasonable to extend routine practices to healthcare assistants such as the monitoring of blood pressure, provided appropriate training is undertaken, assessment documented and competency demonstrated.

Technical skills need to be taught and learnt - no individual is born being capable for example of measuring blood pressure without being shown initially. This issue appears to be commonly forgotten or disregarded. It is accepted it is the ability to identify when something is wrong and possess the knowledge to know what to do in such situations which is crucial. Integration of professionals into multi-disciplinary teams provides opportunities to discuss cases and management plans - it is not possible to be a master of all trades and hence assistance can be sought, as is frequently done by nurse practitioners (Mamode, 2005). This should be the accepted practice for non-medical practitioners within the NHS, and not provide an excuse for their non-inclusion within clinical practice.

As previously discussed tradition is handed down through generations, the handing down of information, customs and conventions. This is none more so apparent than within healthcare. It is clear it is not appropriate for certain practices to be undertaken by individuals not medically qualified, such as complex surgical interventions, clinically complex decision making and complex medical cases. However, certain aspects of the patient journey can be facilitated through multi-disciplinary working, whereby teams led by consultant specialists are responsible for the care of individuals referred for assessment and

potential treatment. Challenging tradition poses significant difficulties, it is suggested that it is such tenets which hinder the development and acceptance of new roles, hence increasing pressure on medical and nursing professions as a result of increasing caseloads. Where new roles have been implemented, many examples of service improvement and increased cost effectiveness have been proven (DoH, 2004d), which contributes to the strength of the argument for more widespread implementation.

In an ideal world, healthcare would not be susceptible to financial constraints, workforce shortages and political interference, each adding to the burden of providing a service to meet consumer needs. What remains clear during current times is the world is far from ideal and hence steps must be taken to improve the situation with the resources currently available. If this signifies changes to "traditional" practices within the NHS, this should be undertaken whilst patients remain the central focus as apposed to retaining and strengthening professional boundaries.

The unfortunate reality of the NHS and its current financial state means it is necessary to work differently in order to maximise the services offered and delivered. Chapman (2004) emphasises the need for additional funding to employ additional nurses, particularly within endoscopic services. However, additional investment has been fed into the NHS from public funds as a result of the Wanless review (Wanless, 2002) and therefore outcomes linked to additional investment must be demonstrable. It could be argued however that the NHS has suffered from significant under-funding for a number of years and the additional investment may only provide the NHS the opportunity to pull back some of the previous deficits experienced by NHS Trusts. What is clear however is that in situations where there is a lack of additional income, organisations must manage with existing resources which may mean working in a more efficient, effective manner. It is suggested that through changes in practice as outlined by the CWP, such objectives can be realised through workforce redesign and development, even if it does mean breaking from tradition in the process.

6 A Curriculum for Non-Medical Endoscopy

As previously discussed, requirements regarding provision and delivery of education within healthcare are constantly under review, and hence educational programmes should be reviewed regularly to identify the need for modifications which reflect revised policies and directives (Kelly, 2004). In addition to considerations regarding academic provisions, attention must also be directed towards potential consumers. Whilst essential to attract staff back into the NHS, current financial constraints have more recently led to reductions in staffing. Predominantly achieved through natural wastage, some NHS Trusts have however been required to make compulsory redundancies in order to balance the books (Carvel, 2006). There are many issues which arise as a consequence of the financial troubles of the NHS, however it is neither the aim nor the intention to evaluate them within the context of this thesis. During such challenging times the NHS is driving towards the re-skilling of current staff, by introducing ways of working differently as previously discussed. Whilst it is recognised that nurses play a significant role within the provision of healthcare, it is suggested that many duties could be undertaken by others, including unqualified staff.

When considering the educational needs of unqualified staff, many aspects require attention. Appropriately articulated entry criteria enables students to assess their suitability to enrol onto educational programmes. When considering the unqualified workforce, some individuals may be disadvantaged in terms of previous experience both educationally and professionally, thus limiting the opportunity to access some courses. Careful consideration must be given to the potential diverse range of applicants when planning curricula. Statements identifying entry requirements should be informative and transparent to students and employers, and offer advice on how such requirements can be achieved. Some applicants may benefit from pre-programme study to prepare them for their educational journey within HE, since some students may not have been exposed to the educational environment since schooling, and hence may require additional support and supervision. These issues require consideration when planning curricula to ensure the course is fit for purpose whilst being responsive to the widening participation agenda.

Whilst expansion of the workforce is to be applauded, consistent entry criteria must be adhered to to achieve educational quality as apposed to quantity. It is important to provide all individuals the opportunity to access HE as described in the widening participation agenda (DFeS, 2003b). However, one should remain mindful that as a consequence of prior

educational experience, some individuals may not possess the necessary basic skills which provide a foundation for learning. Strict entry criteria may assist in reducing inappropriate admissions, thus providing a more seamless transition into HE for those students who may benefit from pre-course study.

In the context of the non-medical endoscopy pilot, careful consideration was made to entry requirements as the target group prescribed by the MA was unqualified individuals. Such requirements can pose challenges for curriculum design and development. Where academic programmes should enable access for to all, the quality and provision of education must not be diluted to satisfy the push towards widening participation. In the context of practitioner roles, the HEI also provided a programme for Operating Department Practitioners (ODP). Whilst not a new role, educational programmes for ODP's have developed some less-than traditional approaches to admissions deviating from customary requirements of HE. After consultation with the ODP team and the admissions tutor, it was deemed appropriate to prescribe equivalent entry criteria for the endoscopy programme as that of the ODP. When considering the backgrounds of individuals admitted to the ODP programme there are many similarities, particularly in the respect of non-qualified individuals. It appears that many ODP students were previously employed as healthcare assistants and through education have progressed to qualified ODP's, possessing similarities with the planned endoscopy programme.

Experience of the ODP team showed that unqualified students were capable of achieving the required academic standard, however it was identified that some required additional support in the initial year to develop academic and study skills. Student support is an essential feature of any academic provision irrespective of level, since each academic level brings new challenges ranging from simple study skills to critical evaluation and analysis.

As previously discussed, Working together – learning together (DoH, 2001) outlined a framework for lifelong learning within the NHS to equip staff with the skills required to change and improve patient care, take advantage of career opportunities and "realise their potential". When considering endoscopy modernisation, the work of the CWP provided frameworks for endoscopy units to modernise services provided. One aspect of service redesign related to the need for additional endoscopists. Faced with recruitment challenges,

a pilot study was undertaken where a science graduate, basic grade nurse and administrative assistant were trained to undertake FS. The rationale for the individuals selected provided the opportunity to identify groups of workers within existing NHS structures who could be trained to undertake FS, highlighting the drive to re-skill existing staff.

Whilst personally pleased the pilot study took place, offering personal opportunity, it is considered that the site chosen to host the pilot possessed significant experience training non-traditional individuals to perform endoscopy. Thus there was significant likelihood the pilot would prove successful which could be considered to dilute the significance of the outcome. Whilst the pilot was further extended to nine other sites, it could be proffered that the CWP specifically chose the site so as to minimise the risk of the pilot being unsuccessful. It is suggested that whilst making sense to go in a direction likely to succeed, perhaps increased acceptance and improved publicity would have been afforded had other sites been included at the outset. It is further suggested that where acceptance from others within the profession is obtained, the chance of failure is less likely, reducing the potential for adverse publicity regarding the development as described by Chapman (2004). Had parties dismissing the idea been involved at the outset, perhaps increased acceptance and collaboration with other centres would have ensued. In contrast however the need to "start somewhere" is recognised and credit is paid to the CWP for seeking an area providing the likelihood to succeed.

Given the concern raised by a number of individuals, careful consideration was paid to the need for a robust framework, not only in relation to educational content, but also students' individual differences, learning styles and motivation to succeed. Experience suggests barriers can and do develop within the practice setting from colleagues as momentum increases surrounding new roles and working differently. Such momentum can leave junior qualified staff envious of individuals undertaking new roles, particularly when they feel attention and investment is focussed around the new role. Such situations require careful attention and handling to avoid disharmony within the clinical area. Students may face challenges from those who disagree with the fundamental principles of the new roles. It is proposed that such situations are one of the single most challenging aspects of a new role which remain until mindsets change and acceptance increases. It is essential therefore the design of the curriculum affords the opportunity for students to explore difficulties which

may arise, hence ensuring the students remain mindful of their role and are in possession of the necessary attributes to deal with such challenges in a professional manner.

As a result of the peaks and troughs experienced by students in both the workplace and HE, the provision for both academic and personal supervision for endoscopic practitioners is critical. Student support is an essential element to guide students academically and professionally and therefore must be included within the programme of study. However challenges arise when students are at remote locations, which is frequently the case for many specialised programmes of study. The provision of academic "face to face" tutorials are seen as essential when supporting students through their academic studies (Curzon, 2003). However when time spent within the HEI is limited, careful timetable planning enabling tutorial facilitation requires almost military precision to accommodate student needs and programme delivery.

An alternative means of providing support to students at remote locations is through online provision. As part of a pilot, online "E-tutorials" were planned and conducted. The tutorials were facilitated through the HEI virtual learning environment, an electronic platform supporting learning and teaching. The inclusion of E-tutorials was extremely well evaluated, despite a few challenges related technology in the initial stages as apposed to the actual online tutorial process. In the early stages, some students found receiving messages challenging due to time delays which varied on account of computer specifications. With experience students transformed the delay into advantage, generating separate "strings" or discussions which resulted in more frequent postings and hence increased discussions. As students developed strategies of E-communication they found the process beneficial and rewarding. It is proposed that such activities are an essential element of the student journey which is facilitated through E-learning. As a consequence, the provision of E-tutorials became common practice throughout the gastroenterology provisions.

When considering the academic requirements for the non-medical endoscopy programme, careful attention was paid to the basic skills an individual requires to perform within the endoscopy setting. In the initial draft, the curriculum was designed to fit the educational needs of the administrative assistant who took part in the initial pilot. Knowledge gaps relating to endoscopy were identified during the pilot and incorporated within the curricula.

Whilst technical ability to undertake FS was essential, there were many other facets required to fully integrate into a working department. This included skills supporting the provision of endoscopy, interpersonal and professional skills and team working. It was considered crucial for non-medical endoscopists to develop skills enabling them to work professionally, as part of a team, enabling integration within the department. From personal experience, this is an essential attribute of the student and must not be undervalued.

Similarly, generic and specific anatomy and physiology was considered essential, providing underpinning knowledge of the systems of the human body and gastrointestinal tract and the consequence of disease and disorders. In reality once qualified, endoscopists are unlikely to undertake eight or ten FS lists a week, partly due to service provision and partly due to the repetitive nature of the procedure, with the endoscopy pilot offering no exception. Whilst the main focus of the pilot was to train individuals to undertake FS, it is suggested an element of reality was missing at the outset. Hence attention was directed towards other potential areas which may benefit from endoscopic practitioners. Whilst this deviated from the initial pilot in terms of training an individual to undertaken FS alone, it is argued that there are elements within gastroenterology and coloproctology which could be supported by non-medically qualified individuals and hence were included within the curriculum.

It is considered that should the curriculum framework have been restricted to the practice of FS alone, there would be little opportunity for endoscopic practitioners to offer continuity of care. It is also considered that where academia was restricted to endoscopic practice, the development of a "technician" discounted by some (Chapman, 2004) would result, as would an inability to engage with others on a professional level within the discipline. Furthermore, where there was little or no understanding of disease within the context of gastroenterology and coloproctology, potential limitation existed in the services offered to patients and colleagues. Tables 6.1 and 6.2 indicate the modular structure of the level 4 and level 5 academic provisions respectively, with each module possessing a tariff of 20 credits.

Table 6.1 Indicating developed Level 4 academic provisions for Gastroenterology (flexible sigmoidoscopy) pathway

Semester 1	Semester 2	Semester 3
Basic skills in endoscopy	Introduction to diagnostic flexi sigmoidoscopy	Introduction basic Gastroenterology
Introduction to anatomy & Physiology	Basic practice in diagnostic Flexi sigmoidoscopy	Preparation for professional practice

Table 6.2 Indicating developed Level 5 academic provisions for Gastroenterology (flexible sigmoidoscopy) pathway

Semester 1	Semester 2	Semester 3
Anatomy & Physiology of GI Tract	Gastroenterology and disease	Extending skills for professional practice
The practice of diagnostic flexible sigmoidoscopy	Developing experiential portfolio	
Further skills in diagnostic flexible sigmoidoscopy		

During development of the curriculum, further consideration relating to individuals who may wish to undertake academic study within gastroenterology but without endoscopic practice was made. The specialism of gastroenterology extends far beyond the reaches of endoscopic practice, possessing clear links to surgery and medicine. As a result, a specific pathway (Care) aimed at those who wish to avoid the practice of endoscopy was also developed. By including diverse topic areas within the curriculum, it was perceived that individuals completing the programme of study would offer more diverse skills and hence strengthen service provision and delivery not only within endoscopy, but gastroenterology and coloproctology. Tables 6.3 and 6.4 indicate the modular structure of the level 4 and level 5 academic provisions without endoscopy respectively, with each module possessing a tariff of 20 credits.

Table 6.3 Indicating developed Level 4 academic provisions for Gastroenterology (Care) pathway

Semester 1	Semester 2	Semester 3
Basic skills in endoscopy	Practice of technical roles within endoscopy	Introduction basic Gastroenterology
Introduction to anatomy & Physiology	Technical roles within the endoscopy department	Preparation for professional practice

Table 6.4 Indicating developed Level 5 academic provisions for Gastroenterology (Care) pathway

Semester 1	Semester 2	Semester 3
Anatomy & Physiology of GI Tract	Gastroenterology and disease	Extending skills for professional practice
The Care of patients within gastroenterology	Developing experiential portfolio	
The Practice of care of patients within gastroenterology		

Within the context of FS, not only is it essential for students to understand what it is they are doing, but why and how this translates to the practical skills required to undertake safe, competent and effective FS. The provision of hands-on tuition was designed to be managed separately from the theory delivered to the students. The base HEI had experience of practical and academic NE training since 1996, with previous intakes of nurse endoscopists being exposed to combined theory and practice activities during their visits which were at best ad hoc. It is proposed that where practical hands on tuition is required, particularly within endoscopy, that it is both unrealistic and inappropriate to expose students and patients to situations of increased pressure due to the need for students to get exposure to hands on practice.

Within the context of endoscopy training, there is significant pressure on the student as a result of inexperience, and concerns relating to the potential to cause discomfort or harm to the patient. There is also increased anxiety for the patient who has consented to the

procedure being undertaken by a student. Therefore should practical instruction be planned whilst a large group is in attendance, significant challenges arise, particularly if student numbers are higher than the number of potential patients. In addition, patients may not consent to a trainee undertaking the procedure, which may be the one opportunity the student has to receive hands on tuition with a recognised trainer. There are also issues related to the risk additional numbers of individuals brings to the endoscopy department, therefore placing additional burden on the endoscopy manager to ensure safety, service provision and delivery is not affected by the influx of students for hands-on practical training.

As a result of the issues described, hands-on training was therefore arranged for separate visits, with students receiving individualised tuition with JAG accredited trainers. Practice visits are offered to students over the academic year, covering 2 days per visit. Table 6.5 highlights the timing of the endoscopy trainee visits and the practical aspects facilitated during the visits. This approach facilitates peer evaluation and critique and to do date has been well received and has been adopted as routine practice.

Table 6.5 Indicating practical visits over the academic year along with the aspects of practice undertaken at the visits

VISIT	TIME OF VISIT	DURATION OF VISIT	PRACTICAL ASPECT OF INSTRUCTION
1	YEAR 1 Semester 3 (June – August)	2 days	Scope handling Simulator & Model work
2	YEAR 2 Semester 1 (Sept - Dec)	2 days Plus 2 days [2 Visits]	Simulator & Model work Endoscopic withdrawal
3	YEAR 2 Semester 2 (Jan – May)	2 days Plus 2 days [2 Visits]	Endoscopic withdrawal * full procedure
3	YEAR 2 Semester 3 (June – August)	2 days	Full procedure *[full procedure +/- biopsy]
4	YEAR 2 Assessment period (semester 3) – Sept.	1 day	OSCE assessments

* The undertaking of the highlighted elements of practice will be determined by the progress and capability of the student on an individual basis.

To date there is no gold standard applied to the assessment of individuals undertaking FS however other areas of endoscopy are now being assigned practical skills assessment. The practice of colonoscopy is one such area being assessed through the newly developed Colonoscopy Driving Licence. This however is currently only being applied to those wishing to undertake colorectal cancer screening and forms part of the accrediting process (Manning, 2006). In the absence of standards for assessment in FS, a framework was developed with students required to record practical undertakings in addition to completion of a clinical practice document. The document contained competencies appropriate to the practice of FS, and was utilised within the 2004 / 05 academic year. An outline of the competency framework is included within Appendix 1.

The initial series of clinical competencies were developed in the absence of any centrally prescribed competencies. Skills for health developed a series of endoscopy competencies in 2005 (Skills for Health, 2005) and therefore the 2005 / 06 NE intake were provided with a modified competency document, reflecting the competencies prescribed by skills for health. An outline of the revised clinical competency document is included within Appendix 2. It is suggested the initial competency framework developed and utilised in the 2004 / 05 academic year provided a more comprehensive framework in which to assess individuals undertaking FS. Providing an increased focus to the elemental stages of procedural competence, it is proposed that such competences are of greater significance when undertaking FS training.

In contrast, the skills for health framework includes significant overlap and repetition, and does not identify specific individual competences required during training in FS. The framework appears more suited to application to the practicing endoscopist as apposed to the trainee, linking to annual performance and appraisal. It is further suggested the skills for health framework does not offer significant guidance on application of the framework and hence may be open to interpretation. As a result, whilst incorporating the skills for health framework, the introduction of compulsory completion of reflective statements in addition to recognition of achievement for each prescribed competence was added. This required students to reflect on achievement of the competency, extending the academic requirements beyond that of signed off evidence which could be open to bias. An example of the reflective statement utilised within the competency document is outlined in Appendix 3.

As previously discussed, the HEI had pre-existing provisions for NE training and therefore seemed practical to build existing provisions into the new framework, providing seamless progression from level 4 to level 6. Previous provisions within the HEI enabled nurses to gain either 60 or 80 credits at level 6 (degree level) and obtain English Nursing Board (ENB) accreditation, namely the ENB D03 (FS) and A87 (Upper GI Endoscopy). Hence students were required to obtain a further 60 or 40 credits respectively before being eligible for the award of BSc. This was considered uneconomical for the HEI and students, since a significant number of students did not continue with the host HEI. In order to qualify for the award of BSc, students were required to undertake two or three additional modules generic in nature and hence were less attractive. Many students simply did not continue or

found more relevant educational provision elsewhere. Existing provisions were therefore reviewed and gaps identified which could be filled through module reorganisation and integration within the newly developed endoscopy programmes. Table 6.6 identifies the pre-existing provisions offered by the HEI, whilst figures 6.1-3 identify how previous provisions have been integrated within the newly developed pathways.

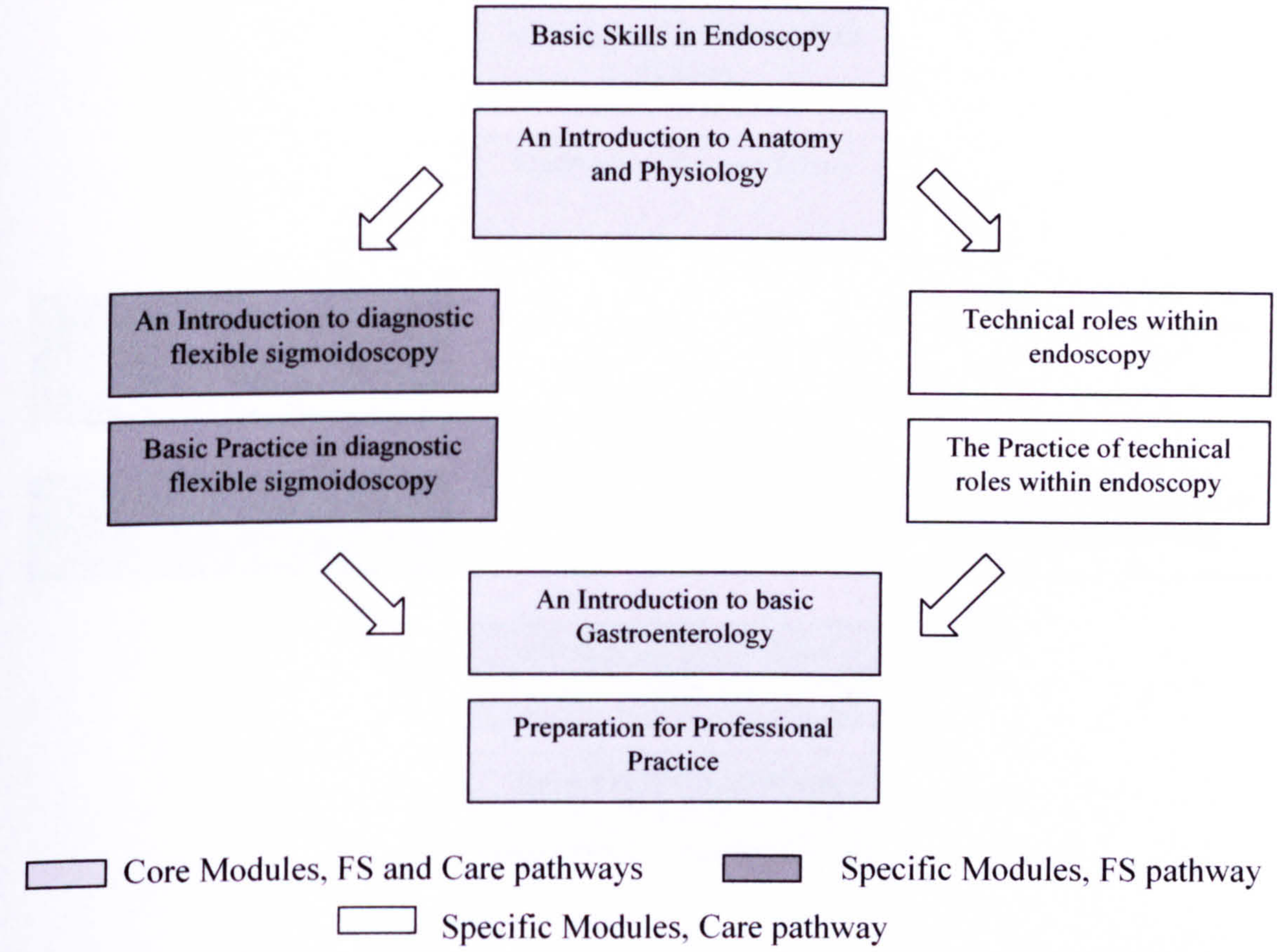
Table 6.6 Indicating previous Level 6 academic provisions for Nurse Endoscopy.

Flexible Sigmoidoscopy Pathway			
Conscious Sedation for nurses	Developing and Updating Nursing Practice	Colorectal Techniques by Endoscopy for nurses	Colorectal techniques by Endoscopy in practice (P)
15 / 20 credits*	15 / 20 credits*	15 / 20 credits*	15 / 20 credits*
Upper GI Pathway			
Conscious Sedation for nurses	Developing and Updating Nursing Practice	Upper GI Techniques by Endoscopy for nurses	Upper GI techniques by Endoscopy in practice (P)
15 / 20 credits*	15 / 20 credits*	15 / 20 credits*	15 / 20 credits*

*the number of credits awarded was dependant upon student choice in addition to academic suitability.

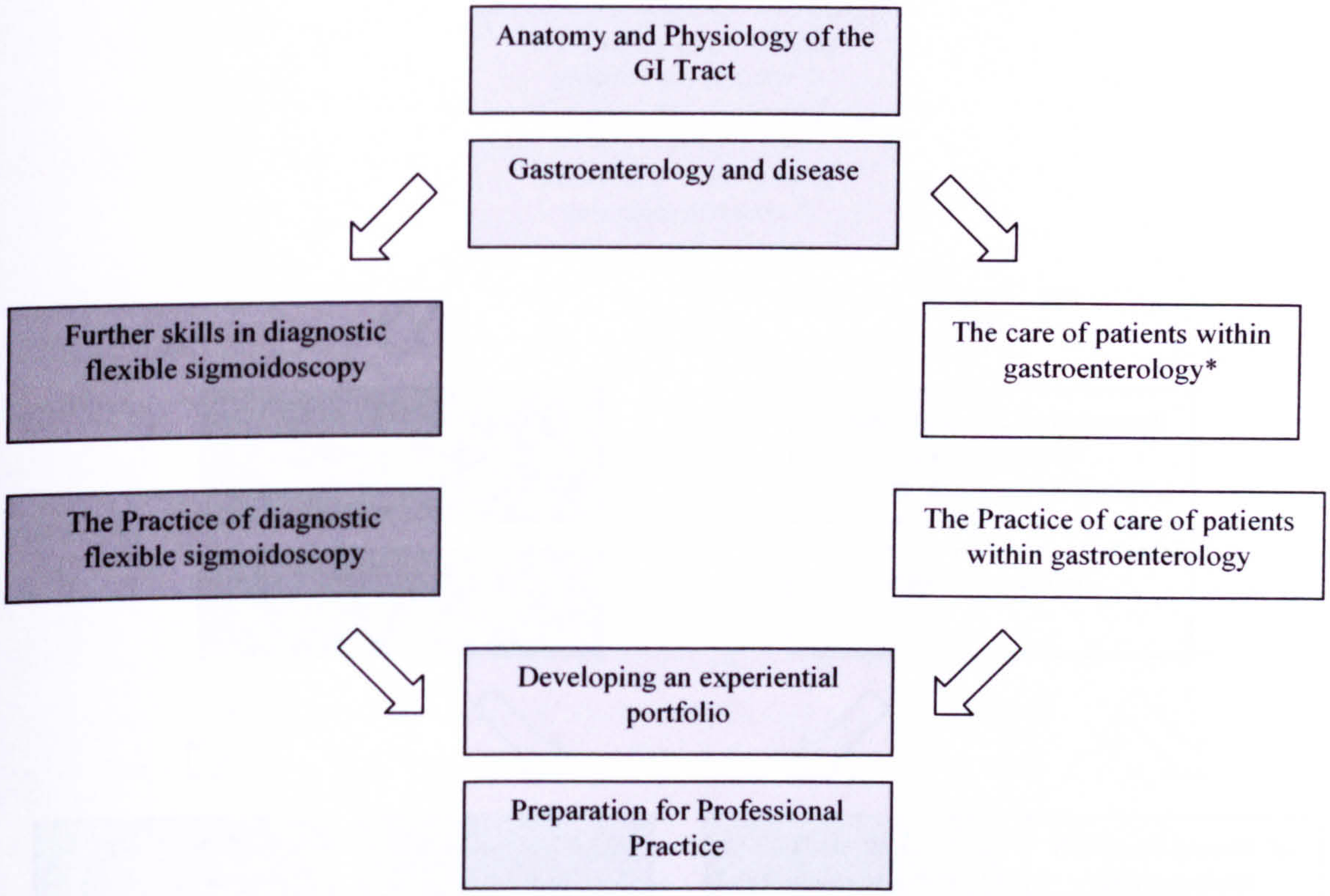
In addition to the degree level programmes, the HEI also offered a diploma level module directed towards nurses working within the endoscopy environment, previously carrying an ENB accreditation, the ENB 906. The diploma level module was also integrated into the newly developed programme suite, further enabling professionals within gastroenterology and / or endoscopy to extend knowledge and skills within the discipline. The integration of the diploma level module within the care pathway can be seen in figure 6.2.

Figure 6.1 Indicating academic provisions at level 4 for gastroenterology (Flexible Sigmoidoscopy) and (Care) pathways



NB. each module has 20 academic credits assigned

Figure 6.2 Indicating academic provisions at level 5 for gastroenterology (Flexible Sigmoidoscopy) and (Care) pathways



* Denotes pre-existing provisions which have been modified and subsequently integrated into the newly developed programmes

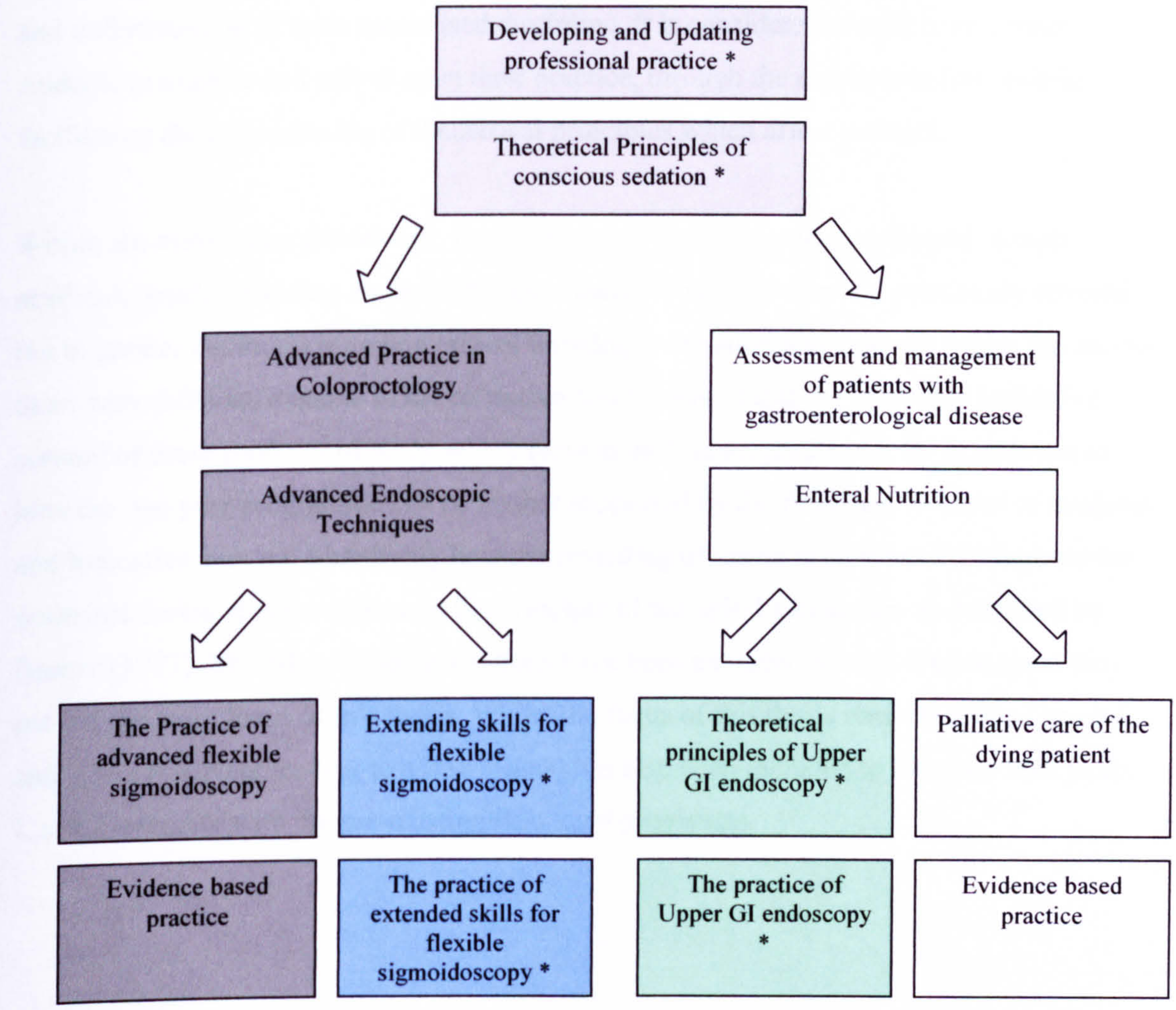
Core Modules, FS and Care pathways

Specific Modules, FS pathway

Specific Modules, Care pathway

NB. each module has 20 academic credits assigned

Figure 6.3 Indicating how newly developed academic provisions at level 6 for each gastroenterology (Flexible Sigmoidoscopy) and (Care) pathways integrate with pre-existing provisions



* Denotes pre-existing provisions which have been modified and subsequently integrated into the newly developed programmes

Core Modules, all pathways

Specific Modules, Nurse Endos. (FS pathway)

Specific Modules, FS pathway

Specific Modules, Care pathway

Specific Modules, Nurse Endos. Upper GI pathway

NB. each module has 20 academic credits assigned

As previously described, skills of reflection and experiential learning are classical forms of constructivist learning. They are a recognised attribute of highly skilled and knowledgeable practitioners within healthcare, who continually reflect upon and up date their knowledge and understanding of their specialised discipline. It is considered crucial to empower students to explore and reflect upon their practice, through the curriculum framework, facilitating the underpinning of theoretical principles which affect practice.

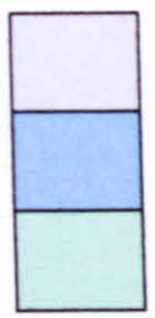
Within the curriculum framework, the revisiting of topic areas was replicated at each academic level, providing students the opportunity to return to aspects previously covered but to greater depth, encouraging critical thinking, evaluation and analysis whilst furnishing them with skills attributable to the reflective practitioner. Table 6.7 identifies indicative content of those modules of study which recur at each undergraduate level in addition to how the two year programme can be further supported by the final year in terms of modules and indicative content. Identifying how the revisiting of topics is continued throughout the academic levels, it is based around the principle of the spiral curriculum as described by Bruner (1977). The NE and care provisions have been excluded from this table since they are not the main focus of this thesis. Whilst the focus of this thesis remains around years 1 and 2, the final year leading to a BSc (Hons) has also been included to illustrate how years 1 and 2 integrate with the pre-existing BSc level provisions.

Table 6.7 Indicating indicative content for modules within the Gastroenterology (FS) pathway

LEVEL 4	LEVEL 5	LEVEL 6
An Introduction to Anatomy & Physiology of the Human Body Cellular nature of life; cell components; chromosomes; genes; mitosis; tissues / organs; homeostasis Intro to; muscular skeletal system; digestive system; nervous system; cardiovascular system; renal system; Microbiology & infection control	**Anatomy & Physiology of the GI Tract** Structure of digestive system; Digestive organs; Surface markings; Eating & swallowing; Striated & smooth muscle; Control of smooth muscle; Digestive secretions; Digestion & absorption; Liver & gall bladder; Microbiology; Ano-rectal & Colonic function and defaecation	**Evidence Based Practice** Concept clarification; Use of critical incident and models for reflection; Nature and generation of knowledge; Research paradigms; Searching the literature; Identification of the research question; Methods of enquiry; Project management
An introduction to basic gastroenterology Basic structure and function of GI tract; Basic motility; Simple ano-rectal function; Introduction to accessory organs; An introduction to pharmacology; An intro to abnormal pathology of the GI Tract; Polyps; GI cancer; Diverticular disease; Inflammatory bowel disease	**Gastroenterology and Disease** Anorexia & bulimia; GI bleeding; Oesophageal disorders; Dysphagia; Dyspepsia; Dysmotility; Disorders of the stomach; Disorders of the small intestine; Disorders of the accessory organs; Disorders of the large bowel; Intro GI pharmacology	**Advanced Practice in Coloproctology** Genetics GI diseases & cancer; Radiotherapy & chemotherapy; Radiology GI tract; GI Pharmacology; Polyps; Colorectal cancer; One stop diag. service clinic; Diverticular disease; Inflammatory bowel disease; Anaemia; Irritable bowel syndrome; Rectal prolapse; Fissure, fistula & haemorrhoids; Functional bowel disorders – assessment & treatment; Coeliac disease; Interpret. lab results
Basic Practice in diagnostic Flexible Sigmoidoscopy Informed consent; Complications of GI endoscopy; Introduction to simulators; Simulated intubation and endoscope manipulation; Simulator practice; Withdrawal of endoscope; Supervised endoscope practice; Bowel preparation	**Developing and Experiential portfolio** Developing a portfolio; Reflective practice & reflective tools; Learning contracts	**Theoretical Principles of Conscious Sedation** Conscious Sedation overview; Complications of Conscious Sedation; Pharmacology, Drug Absorption and Secretion; I.V. Cannulation; Case Scenarios; Administration of Medicines; Patient Group Directions; Sedation Effects; Oxygen Saturation/Monitoring; Respiratory Physiology; Pathways and Physiology of Pain; Basic Life Support; Cardiac Monitoring
Basic Endoscopic Skills History endoscopy; Endoscopy today; Endoscope design & function ; Cleaning & disinfection endoscopes; Set-up & take down endoscopes; Endoscope manipulation & handling; Troubleshooting	**The Practice of Diagnostic Flexible Sigmoidoscopy** Colorectal screening; Biopsy & polypectomy; Endoscope retroflexion; Effective communication; Preparing the patient for the procedure – the initial interview; Making the procedure easier to understand – practical hints and tips; Reporting the procedure; Data management; Accurate dissemination of results	**The Practice of Advanced flexible Sigmoidoscopy** Informed consent; Antibiotic prophylaxis; Anticoagulation therapy and endoscopy; Diabetes and endoscopy; Screening and surveillance; Policies and endoscopy modernisation; The Endoscopic Practitioner Management of the endoscopy unit; Endoscopic follow-up guidelines

Table 6.7 Indicating indicative content for modules within the Gastroenterology (FS) pathway

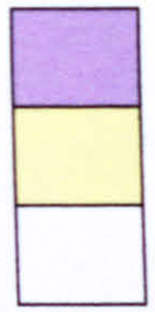
An Introduction to diagnostic Flexible Sigmoidoscopy Informed consent; Complications of gastrointestinal endoscopy; Running the endoscopy unit; Introduction to simulators; Simulated intubation and scope manipulation; Simulator practice; endoscope withdrawal; Supervised endoscope practice; Bowel preparation; Theory of interventional endoscopy; Antibiotics, coagulation and diabetes (theory)	**Further Skills in Diagnostic Flexible Sigmoidoscopy** One stop rectal bleed clinic; Colorectal screening Indications, contraindications of biopsy & polypectomy; bowel preparation; Antibiotics, anticoagulation & diabetes; Follow-up guidelines and strategies; Colorectal cancer screening; Extended theories of legal and ethical principles	**Advanced Endoscopic Techniques** Indications, Contraindications and complications; Informed consent; Antibiotic prophylaxis, Anticoagulation therapy and therapeutic techniques; Diabetes and endoscopy; Screening and surveillance; Endo-mucosal resection; Argon beam coagulation; Hot biopsy and polypectomy; Dye spraying techniques; Policies and endoscopy modernisation; The Endoscopic Practitioner; Management of the endoscopy unit; Endoscopic follow-up guidelines
Preparation for Professional Practice NHS Modernisation; Role of the endoscopists; Multidisciplinary team working; Inter-professional learning; Professional prejudices and stereotyping; QC & QA; Clinical audit; Reflective practice; Introduction to evidence based practice; Clinical supervision; Introduction to protocols; Communication skills; Legal and ethical issues	**Extending skills for Professional Practice** Communication skills; Multidisciplinary team working; Clinical audit; Clinical supervision; Clinical governance; English Law and healthcare; Personal attitudes, beliefs and values; Policy and healthcare delivery	**Developing & Updating Professional Practice** Scope of Professional Practice; Codes of Conduct & Professional Accountability; Guidelines for Practice & Models of Care; Clinical Effectiveness/ Evidence Based Care; Informed Consent; Standards for Record Keeping and Documentation; Professional Judgement and Clinical Decision Making; Legal Aspects of Care; The Research process; Reflective practice & reflective diaries; Clinical Supervision; Health Promotion; The Role of the specialist Practitioner; Presentation Skills; Lifelong Learning



Professional Practice Theme

Anatomy & Physiology Theme

Endoscopic Practice Theme



Gastroenterology / Coloproctology Theme

Endoscopic Theory Theme

Out-with theme

It is essential when designing curricula to return to subjects delivered at elementary levels, enabling students to review and reflect on knowledge and understanding, individual beliefs and values, prior to advancing to the next academic level. Where this has been included within the programme thus far, students have intimated understanding has been extended and consolidated. When combined with experience obtained within the workplace, students have described increasing awareness of links to practice and hence are able to apply many theories to situations they have experienced, thus enhancing learning.

Given the changing face of healthcare and the challenges faced by the NHS, it is maintained that curricula directed specifically at healthcare should remain dynamic. It is essential that those involved with design and development of curricula maintain up to date knowledge of issues impacting service, thus facilitating changes to the curriculum. Whilst it is imperative to meet the needs of consumers, the dilution of quality must be avoided, which could occur if the vision is diverted by a willingness to appease policy makers. It is proffered that there is a fine line between design of curricula which is fit for purpose, and political drivers which impact healthcare and consequently HE.

In the context of the non-medical endoscopy curriculum, curricula design and development focussed around knowledge deficits of individuals from the initial pilot study. Appendix 4 provides an illustration of key aspects of the programme specification developed for the programme along with an example of a theoretically based and practice based module specification. The full curriculum documentation has not be included within this thesis however is available on request. Appendix 4 also includes the learning outcomes for each module within the two year programme, with the examples of module specifications providing an illustration of how learning outcomes are constructively aligned within the documentation.

The approach taken to curriculum design enabled realistic decisions to be made regarding what was required, as apposed to guessing. As an example, the initial directive for the endoscopy practitioner programme was to design a course to teach individuals to undertake FS. It is argued that such requirements are unrealistic, in that there is little to gain from a "technician" who can negotiate an endoscope around the GI tract. It is the knowledge and understanding of the aspects of the whole patient journey, from initial referral to

management and discharge which are key elements of the care episode. Without the skills base to provide aspects of the care episode, there is little opportunity to impact service provision and delivery and hence the need for such a role becomes questionable.

7 Results: Academic achievement and Quality Assurance

Assessment is a crucial aspect of academia, with various methods which can be applied to the assessment of health related provisions. As previously discussed, it is essential that students are assessed in a manner which facilitates demonstration of knowledge and understanding, skill and attitudes. It is suggested that in reality, many traditional academic frameworks struggle to incorporate each domain of cognitive, psychomotor and affective within assessment strategies. When considering healthcare education, it is essential for students to demonstrate proficiency in each learning domain to be safe, competent and effective professionals, capable of working under pressure in ever changing environments. The diverse spectrum of service users also requires healthcare professionals to possess excellent interpersonal and communication skills and adept at managing difficult situations.

In the context of the non-medical endoscopy programme, the need to develop a robust assessment strategy enabling students to demonstrate knowledge and understanding in addition to procedural competence was paramount. The utilisation of assignments / essays to assess knowledge and understanding can be straightforward in many disciplines with endoscopy offering little exception. What is more complex however is assessment of procedural competence, an area deliberated over by the National Endoscopy Programme for some time (Valori, 2006). Currently the only means of assessment of endoscopic competence for the majority of endoscopists is Direct Observation of Procedural Skill (DOPS), forming part of the practical courses available through recognised training centres. The issue of procedural undertaking within the context of this thesis is explored within chapter 8.

Mindful of the need to develop safe, effective and competent practitioners and gain increased acceptance for the role of the non-medical endoscopist, the need for transparent assessment was essential. This was of utmost importance for future regulation and registration and convince sceptics (Chapman, 2004), and must prove students completing the programme were safe, competent and effective, and in possession of knowledge and understanding within gastroenterology and coloproctology to support other areas practice. Table 7.1 identifies the nature of assessment for the modules undertaken in years one and two of the programme, along with the related learning domains for each assessment.

Table 7.1 Indicating assessment strategies applied to modules undertaken in years 1 & 2

YEAR 1		
(SEMESTER) & MODULE TITLE	**MODE OF ASSESSMENT**	**RELATED LEARNING DOMAIN**
(1) Basic Skills in Endoscopy	OSCE; Recorded Practice; Clinical competency document	Psychomotor
(1) An Introduction to Anatomy & Physiology of the Human Body	Multi-choice exam System structure / labelling exam	Cognitive
(2) An Introduction to diagnostic flexible sigmoidoscopy	Written assignment	Cognitive
(2) An Introduction to basic gastroenterology	Case Study	Cognitive
(2) Basic Practice in diagnostic flexible sigmoidoscopy*	OSCE; Recorded Practice; Clinical competency document	Psychomotor Affective
(3) Preparation for professional practice	Written assignment	Cognitive
YEAR 2		
(SEMESTER) & MODULE TITLE	**MODE OF ASSESSMENT**	**RELATED LEARNING DOMAIN**
(1) Further skills in diagnostic flexible sigmoidoscopy	Written assignment	Cognitive
(1) The practice of diagnostic flexible sigmoidoscopy*	OSCE; Recorded Practice; Clinical competency document	Psychomotor Affective
(1) Anatomy & Physiology of the GI tract	Written exam	Cognitive
(2) Gastroenterology and disease	Case study	Cognitive +/- Affective
(2) Developing a professional experiential portfolio	Portfolio document	Cognitive
(3) Extending skills for professional practice	Written assignment	Cognitive

* module assessed end of Semester 3

As previously discussed, it is essential for students undertaking healthcare related programmes to be equipped with wide ranging cognitive, affective and psychomotor skills which are achieved through the learning journey. Table 6.7 in chapter 6 identifies the indicative content for each module of study whilst assessment type and associated domains of learning are identified in table 7.1.

The following data highlights the academically assessed aspects of each of the nine students over years one and two of the endoscopy pilot programme, with the results of the practical undertakings of the student group being presented within chapter 8. In order to maintain confidentiality, the individual results of students have been placed in a random order throughout.

Figure 7.1 demonstrates results of OSCE's undertaken in the Basic Skills in Endoscopy module for which all students were successful on the first attempt. The OSCE's assess practical ability of the student in general care, maintenance, cleaning and disinfection of endoscopes. Each module assessed via OSCE's requires successful completion of each of 4 aspects, whereby the 4 aspects are further broken down into a series of identifiable skills whereby competence must be demonstrated in each to achieve a successful outcome. The basis of the OSCE assessment and the elemental aspects are identified in Table 7.2.

Figure 7.1 Indicating results of Basic Skills in Endoscopy (Year 1)

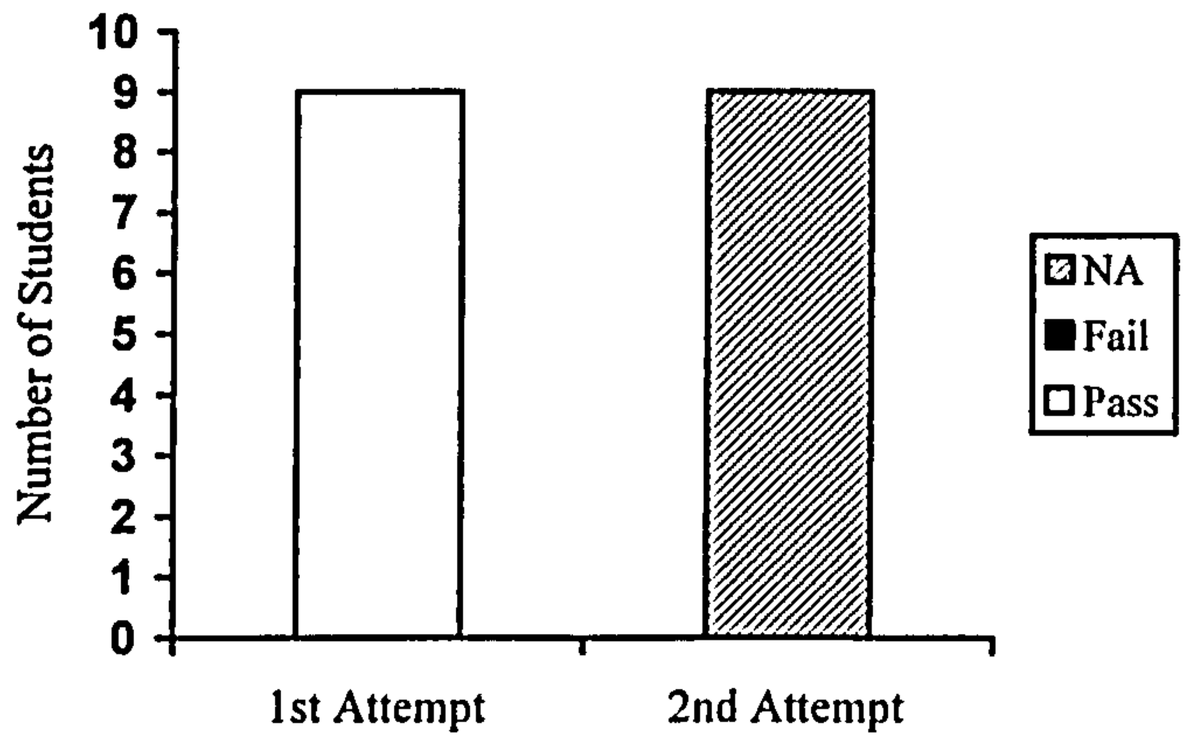


Table 7.2 Indicating basis of OSCE assessment for Basic Skills in Endoscopy

Part 1	Ability to set-up and take down endoscopes	The student demonstrates appropriate handling of the endoscope during transit and placement prior to set-up
		The student demonstrates an efficient, systematic approach to the preparation of the endoscope for use
		The student demonstrates the ability to connect the endoscope correctly for use
		The student checks that the scope is working correctly and is ready for use
		The student performs the initial cleaning steps prior to take down following local guidance
		The student is able to disconnect the scope carefully and efficiently
		The student demonstrates appropriate handling of the endoscope during transit to the cleaning suite
Part 2	Ability to clean and disinfect endoscopes	The student demonstrates immediate post investigation cleaning of the endoscope
		The student uses an appropriate method of leak testing
		The student identifies the need for and carries out ultrasonic cleaning of endoscope accessories
		The student demonstrates an efficient, systematic approach to the cleaning of the endoscope
		The student is able to place the endoscope within the disinfection bath to allow for disinfection
		The student demonstrates appropriate handling of the endoscope following the cleaning & disinfection process
Part 3	Ability to perform troubleshooting of endoscopes	The student demonstrates systematic assessment of the endoscope
		The student efficiently and correctly identifies the source (s) of the fault (s)
		The student demonstrates appropriate actions in dealing with the fault (s)
		The student successfully rectifies the fault (s)
		The student performs a full assessment of the endoscopes' function to ensure correct working order
Part 4	Knowledge of disinfection guidelines	Why is manual cleaning important
		Why is an ultrasonic bath used for accessories
		Why do we leak test endoscopes
		Why do we need proof that the endoscope has been through the automated cleaner (with receipt)
		When should the endoscope be cleaned
		What happens to the endoscope at the beginning of the day
		Put the points for scope cleaning in the correct order

Figure 7.2 demonstrates the results of the OSCE's undertaken in the practice module Basic Practice in Diagnostic Flexible Sigmoidoscopy. The OSCE's assess the practical ability of the student in the acquisition of informed consent, the pre-procedural interview, risk assessment and pathology recognition as identified in Table 7.3. As within the Basic Skills in Endoscopy module, assessment is via OSCE's and requires successful completion of the 4 assessment branches. Each branch is broken down further into seven identifiable skills of which competence must be demonstrated in each to achieve a successful outcome. Each of the 4 aspects must be successfully achieved in order to pass the assessment. All students undertaking the module Basic Practice in Diagnostic Flexible Sigmoidoscopy were successful in their first attempt as illustrated within figure 7.2.

Figure 7.2 Indicating results of Basic Practice in diagnostic FS (Year 1)

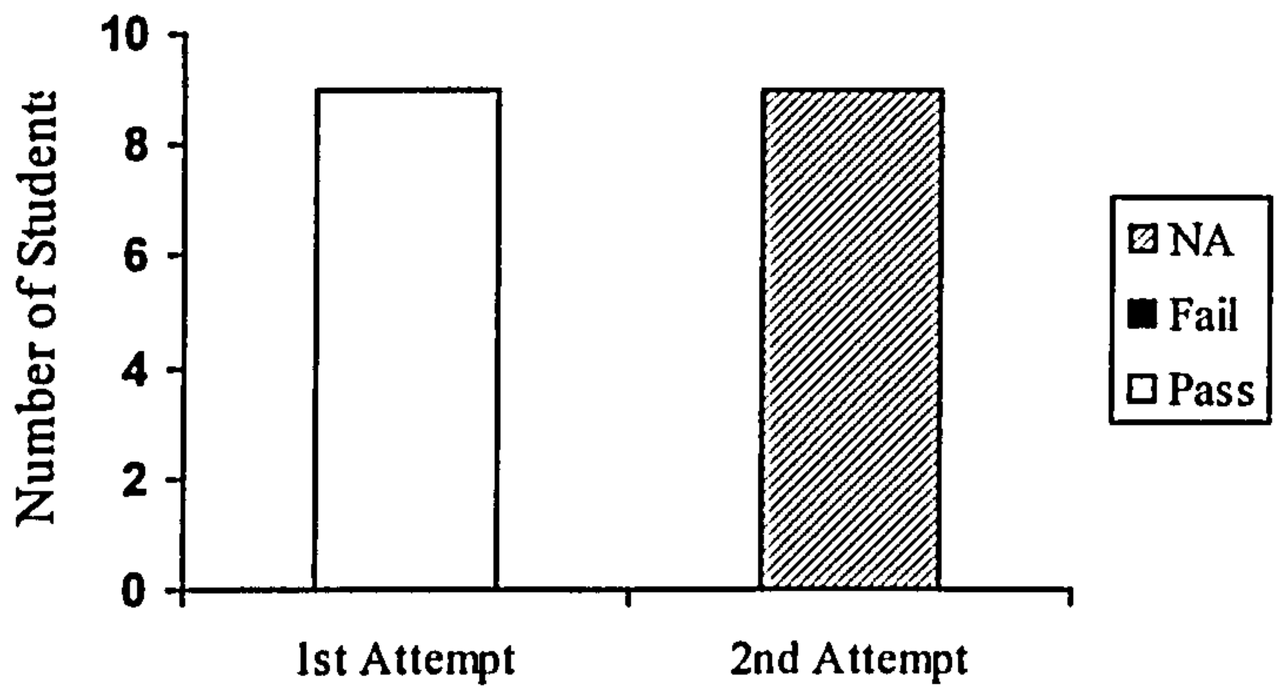


Table 7.3 Indicating the basis of OSCE assessment for Basic Skills in diagnostic FS

Part 1	Effective communication regarding flexible sigmoidoscopy	The student introduces him/herself appropriately and demonstrates strategies to help reduce the anxieties of the patient
		The student demonstrates advocacy in relation to the patients rights, wishes and protection
		The student discusses the patients symptoms, previous & present
		The student demonstrates strategies to assess suitability of the procedure and identify any potential risks.
		The student describes the procedure fully to the patient (to include risks and benefits) and utilizes methods which determine the patients understanding of the procedure
		The student is able to answer questions from the patient and family about the proposed examination to their satisfaction
Part 2	Appropriate and accurate consenting methods relating to flexible sigmoidoscopy	The student can identify and describe the main components of the consent process
		The student demonstrates an understanding of current legislation, recommendations, guidelines and good practice in relation to consent and the process of consent
		The student demonstrates advocacy in relation to the patients rights, wishes and protection
		The student is able to gain the cooperation of the patient and obtain consent according to current legislation, recommendations and guidance (local and national)
		The student is able to answer questions from the patient and family about the proposed examination and consent to their satisfaction
		The student is able to clearly, concisely and legibly document the consent process
Part 3	Recognition of abnormal pathology	IMAGE A
		IMAGE B
		IMAGE C
		IMAGE D
		IMAGE E
		IMAGE F
Part 4	Knowledge and application of risk assessment	The student is able to describe the importance of risk assessment and its application within endoscopy
		The student is able to describe the process of risk assessment
		The student can identify potential risks to the safety of the patient attending for flexible sigmoidoscopy examination
		The student is able to describe appropriate actions in the event of the identification of a potential risk
		The student is able to plan actions in collaboration with the endoscopy team with respect to risks identified
		The student describes the evaluation of such actions through the monitoring of outcomes

Figure 7.3 demonstrates results of the four part assessment undertaken in An Introduction to Human Anatomy and Physiology. Successful completion of each aspect of the four part assessment was required pass the module, including MCQ examination and labeling of three anatomical diagrams. On initial assessment, all but one student was successful but on subsequent re-sit was successful.

Figure 7.3 Results of An Intro. to Anatomy and Physiology of the Human Body (Yr 1)

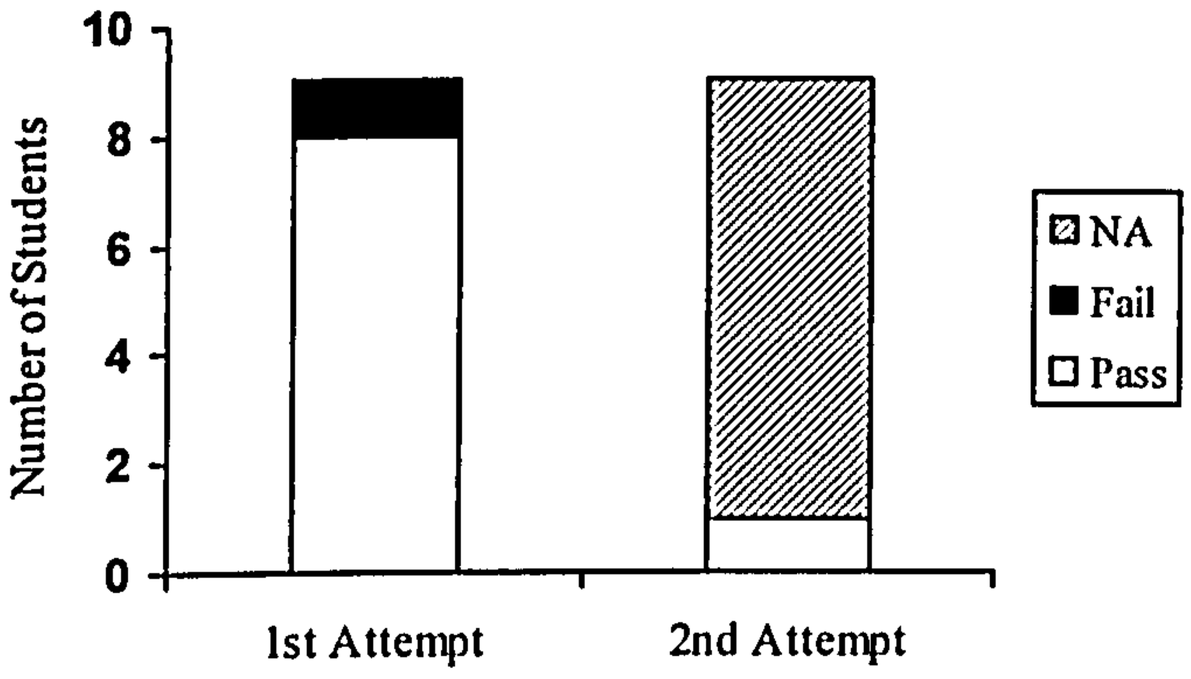


Figure 7.4 identifies the spread of results obtained for each theory module undertaken within the two year programme, with the Y axis demonstrating the % mark awarded and the horizontal line identifying the pass mark required by the HEI.

As seen within figure 7.4, all students undertaking An Introduction to Diagnostic Flexible Sigmoidoscopy were successful at the first attempt. Students were assessed via a written assignment which assessed knowledge and understanding of the indications and contraindications of flexible sigmoidoscopy, patient preparation, informed consent and the pre-procedure interview. The spread of marks is outlined within the figure, ranging from 43% to 60% as identified within Table 7.4, with the required pass mark of 40% being illustrated by the solid horizontal line.

Figure 7.4 Indicating results obtained for each theory module within years one and two of the programme

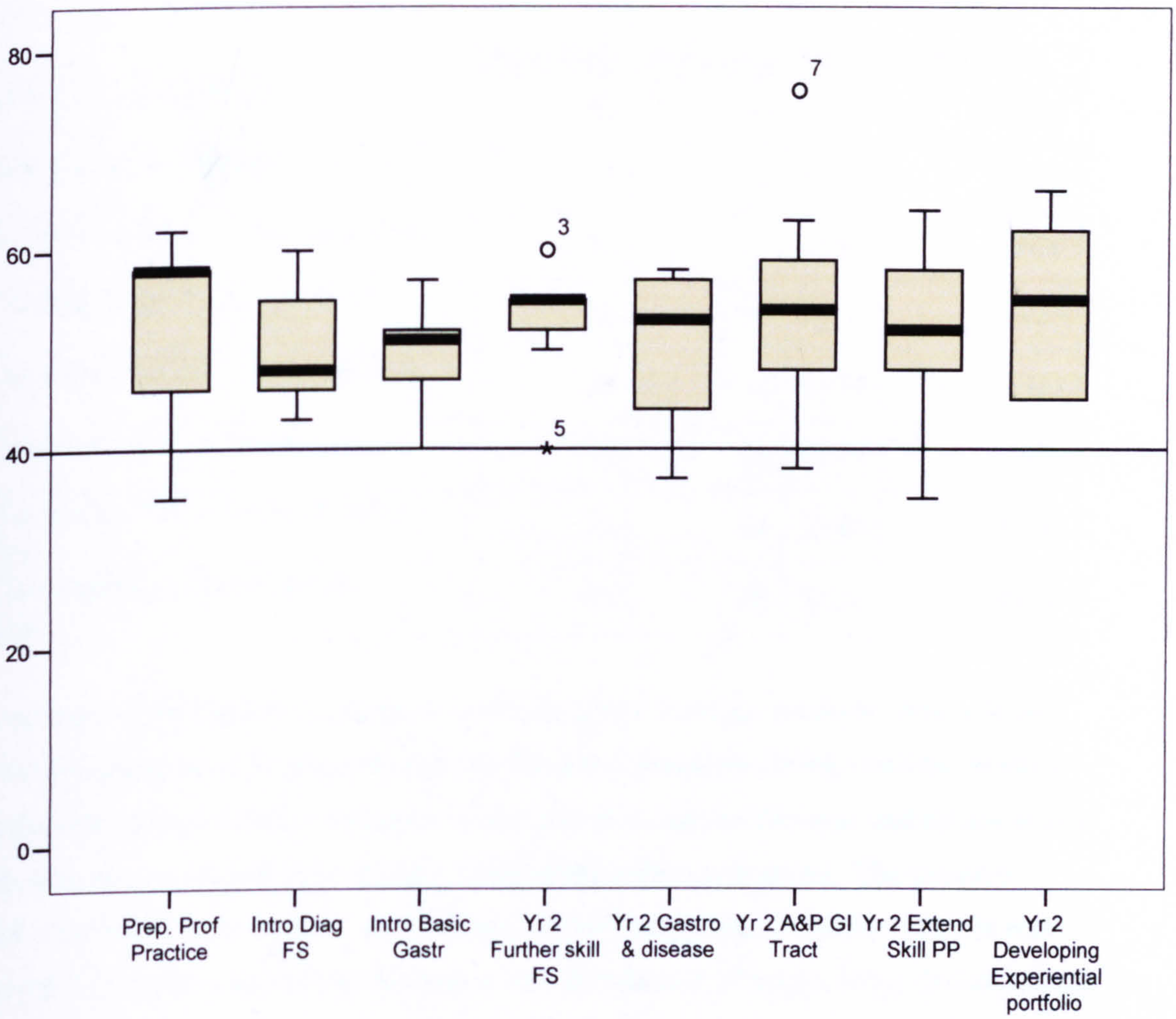


Table 7.4 Identifying distribution, mean and standard deviation of the results obtained in years 1 and 2 of the programme

	Minimum	Maximum	Mean	Std. Deviation
Introduction to Diagnostic FS	43	60	50.00	6.225
Preparation for Professional Practice	35	62	52.44	9.002
Introduction to Basic Gastroenterology	40	57	50.00	5.000
Yr 2 Further skills in diagnostic FS	40	60	53.56	6.023
Yr 2 Anatomy &Physiology of the GI Tract	38	76	53.78	11.333
Yr 2 Gastroenterology & disease	37	58	49.78	7.870
Yr 2 Extending Skills for Professional Practice	35	64	52.44	8.748
Yr 2 Developing an Experiential portfolio	45	66	54.56	8.676

In the respect of the module Preparation for Professional Practice, students were assessed via a written assignment which examined professional issues which informed the practice of the healthcare professional. Students were required to discuss the legal and ethical issues surrounding new roles within healthcare, particularly within endoscopy. The spread of marks is outlined within Figure 7.4 and Table 7.4, indicating that all but one student was successful in the initial attempt with a reasonable distribution of marks being demonstrated, with a range of 35% to 63%. The one student referred in the assessment was offered feedback and support in the pursuit of successful outcome and subsequently passed on re-submission.

An introduction to Basic Gastroenterology provided an overview of the diseases and disorder affecting the GI tract to a basic level, providing students with a foundation of knowledge and understanding of commonly presenting conditions they were likely to be exposed to within the context of endoscopic practice. The basis of the assessment was through a case study, enabling students to explore the diseases and disorders and further consider how they translated into practice at a basic level. The inclusion of a case study was their first experience of considering how the theory delivered linked to practice and encouraged students to explore an area they had developed an interest in. Figure 7.4

indicates that all students were successful on their first attempt, with a spread of marks of 40% to 57% as identified in Table 7.4.

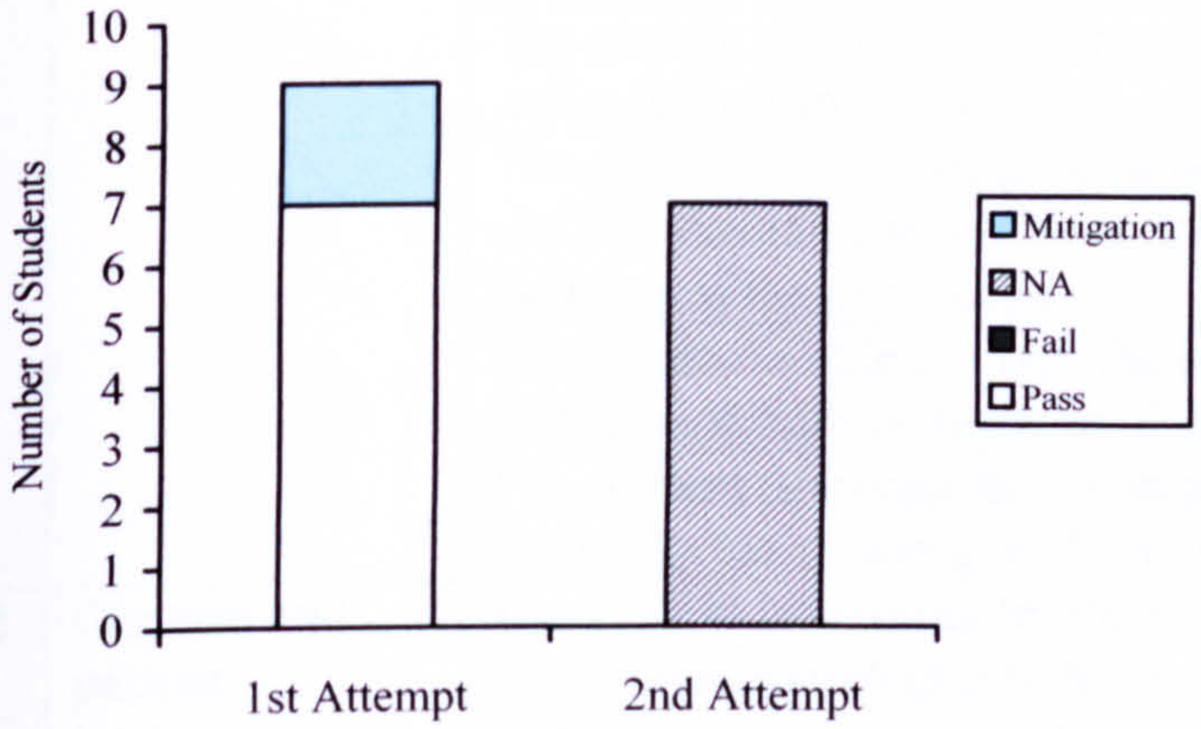
As previously discussed the design of the curriculum followed the model of a spiral curriculum as described by Bruner (1977), where students return to the theoretical elements presented to them during year one of the programme and are encouraged to extend existing knowledge and understanding within the second year. As identified within table 6.7 (chapter 6), there is a revisiting of aspects of theory delivered in An Introduction to Diagnostic FS in addition to introduction of new concepts which require understanding of basic principles to facilitate extended awareness and understanding of such new concepts. For example, for students to understand the importance of adequate bowel preparation they need to be in possession of knowledge and understanding surrounding the need for bowel preparation, as well as the potential complications which may occur as a result. This was facilitated through both theory related to the provision of FS as well as basic principles of gastroenterology delivered in the module An Introduction to Basic Gastroenterology. The basic gastroenterology module included GI motility, ano-rectal function in addition to an introduction to GI pharmacology which furnished students with the basic principles of GI function, and how such function can be affected through disease and disorders. It was considered essential for students to be in possession of the basic principles of GI science to enable them to understand the significance of aspects of theory being delivered to them within the FS theory modules.

As a continuum from year one, anatomy and physiology took on a more discipline specific approach, focusing on the gastrointestinal tract. Students extended their basic understanding of general anatomy and physiology and applied concepts to the GI tract. The module was assessed through an unseen written examination lasting for 2 hours which covered both pure and applied anatomy and physiology, of which eight students were successful in their first attempt as indicated in figure 7.4 and table 7.4. The student unsuccessful in the first attempt was successful upon re-sit of a modified paper.

Figure 7.5 indicates the results of the module The Practice of Diagnostic Flexible Sigmoidoscopy, whereby the basis of the OSCE assessment and related elemental aspects are identified in Table 7.5. As seen within figure 7.5, seven students undertaking the

module were successful in their first attempt, with two students being awarded mitigating circumstances on account of a lack of regular exposure to hands on practice. The two outstanding students will undertake the OSCE assessments during the early stages of the following academic year as agreed by the mitigating circumstances board of the HEI and programme team.

Figure 7.5 Indicating results for Practice of diagnostic FS (Year 2)



Following from discipline specific anatomy and physiology, Gastroenterology and Disease required students to apply the concepts of altered states of physiology to the various diseases and disorders affecting the GI tract. The students explored the typical signs and symptoms of diseases and disorders of the GI tract at an intermediate level building on year 1 which introduced gastroenterology at an elementary level, along with assessment and basic principles of patient management. Assessed via case study, students were encouraged to further develop skills of analysis and evaluation, and consider how assessment and management can be applied to GI diseases and disorders. Case scenarios featured heavily in the module to furnish students with an understanding of the practical significance of the theoretical knowledge bases they were developing. Of the nine students, eight were successful in the first attempt with the remaining student being successful on resubmission.

Table 7.5 Indicating the basis of OSCE assessment for Practice in diagnostic FS

Part 1	Set-up, take down, cleaning & disinfection of endoscopes	The student demonstrates appropriate handling of the endoscope during transit and placement prior to set-up, and demonstrates an efficient, systematic approach to the preparation of the endoscope for use
		The student demonstrates the ability to connect the endoscope correctly for use, and checks that the scope is working correctly and is ready for use
		The student performs the initial cleaning steps prior to take down following local guidance and is able to disconnect the scope carefully and efficiently
		The student demonstrates appropriate handling of the endoscope during transit to the cleaning suite
		The student demonstrates an appropriate method of leak testing and demonstrates an efficient, systematic approach to the cleaning of the endoscope
		The student is able to place the endoscope within the disinfection bath to allow for disinfection
		The student demonstrates appropriate handling of the endoscope following the cleaning & disinfection process
Part 2	Consent and patient interview prior to flexible sigmoidoscopy	The student introduces him/herself appropriately and demonstrates strategies to help reduce the anxieties of the patient and demonstrates advocacy in relation to the patients rights, wishes and protection
		The student discusses the patient's symptoms, previous & present and demonstrates strategies to assess suitability of the procedure and identify any potential risks. The student is able to answer questions from the patient and family about the proposed examination and consent to their satisfaction
		The student describes the procedure fully to the patient (to include risks and benefits) and utilizes methods which determine the patients understanding of the procedure
		The student is able to gain the cooperation of the patient and obtain consent according to current legislation, recommendations and guidance (local and national)
		The student demonstrates an understanding of current legislation, recommendations, guidelines and good practice in relation to consent and the process of consent
		The student is able to clearly, concisely and legibly document the consent process
Part 3	Correct and safe completion of the flexible sigmoidoscopy procedure with retroflexion	The student communicates effectively with the patient & endoscopy staff to facilitate safe endoscopic examination & positions the patient correctly & safely prior to endoscopic examination
		The student safely performs inspection & per rectal examination prior to flexible sigmoidoscopy & is able to identify strategies & actions to deal with findings on PR which would contraindicate flexible sigmoidoscopy

		The student successfully intubates the anus & rectum with minimal discomfort to the patient & quickly adopts correct & appropriate handling of the endoscope attaining a good endoluminal view of the rectum before proceeding & throughout the remainder of the investigation
		The student demonstrates good eye-hand coordination using controls, air / suction buttons and torquing techniques to facilitate safe intubation of the rectum and colon maintaining good endoluminal views
		The student frequently & critically appraises endoscope position (tip & shaft) & predicts manoeuvres that the patient may find uncomfortable for a short time, & performs & adapts safe, effective manoeuvres & strategies to reduce discomfort to the patient, & demonstrates safe & retroflexion
		The student identifies & implements correct procedures & strategies to deal with untoward events according to guidelines & protocols & produces an accurate & concise record of the examination, results & any planned follow-up
Part 4	Recognition, sampling and management of abnormal findings	The student is able to identify normal and abnormal pathology and recommends appropriate management based on findings and patient history
		The student demonstrates knowledge and understanding of the principles of endoscopic (cold) biopsy
		The student is able to assess polyp suitability for removal and recommends appropriate strategies for removal / non-removal
		The student is able to demonstrate safe and correct use of tissue retrieval accessories appropriate to colorectal polyp removal
		The student utilises a risk assessment framework to reduce potential complications from flexible sigmoidoscopy and can critically utilise information gained at assessment to optimise patient care and safety, should an adverse event occur
		The student demonstrates understanding of the appropriate preparation of the tissue sample (s) and preparation for transit

Extending Skills for Professional Practice was designed as an extension from the year one module Preparation for Professional Practice, whereby students were encouraged to develop greater understanding and awareness of the issues which affect practice within the healthcare environment, with a particular emphasis on new roles. When embarking on a new career path it is essential for individuals to have awareness of the requirements of the post, particularly when the post includes clinical practice. This was considered of high significance for the endoscopy pilot trainees since the role was new and for some was contentious (Chapman, 2004, 2005). There are many legal and ethical issues which require

careful consideration and students must be critically aware of such issues hence the continuation of the theme of professional practice from year one. Self-awareness regarding practice limitations is an essential quality of a healthcare professional and of which played a significant part of the learning experience, whereby many situations were explored within the context of limitations of practice. As indicated within figure 7.4, eight of the nine students were successful in the first attempt, with table 7.4 providing the spread, mean and standard deviation of marks awarded. The remaining student was successful on resubmission following feedback and further academic supervision.

The nature of the pilot programme brought together nine individuals, each in possession of varying degrees of experience within the healthcare environment. Each student was an existing employee of the NHS albeit in different capacities. They each possessed different backgrounds and whilst some similarities in their previous appointments existed, each brought with them very different life experiences. Experience plays an important role in learning, as identified by Kolb (1984). Learning is facilitated through doing, as apposed to listening or reading alone. It is essential for active student involvement in an environment which is student focused, facilitating interaction, flexibility and autonomy in situations relevant to the learning journey (Quinn, 2001). In order for the students to recognise and understand the significant of their previous experiences in the context of their future roles, the Developing and Experiential Portfolio module was included within the curriculum which required students to evaluate their previous learning and apply it within their new role. The identification of previously acquired skills and how such skills informed their practice was required, along with the identification of knowledge and skills gaps which could be addressed through continuing professional development planning. It is suggested that such a module enables individuals to explore and engage with life experience as apposed to ignore and discount it since as described by Kolb, experience plays an important role in learning. As identified in figure 7.4, all nine students were successful in their first attempt, with a range of marks of 45% to 66% as identified in table 7.5.

In addition to student achievement, the need for high standards of quality is essential to allow for continual monitoring and review of programmes. Throughout the programme each student has been encouraged to participate in evaluations of which the results are as in the following figures. Quality measures of the programme are undertaken through

anonymised evaluation forms, as part of the continual Quality Enhancement Review process within the HEI. The evaluations assess overall quality of the module / programme, in addition to specific information relating to module content, delivery and organisation and extra-modular support. Appendix 5 provides an example of a programme evaluation form completed by students at the end of the 2004 / 05 academic year. Figure 7.6 outlines the summary evaluation of year 1 of the programme, with each aspect indicated in the adjoining key.

Figure 7.6 Indicating the summary evaluation of year 1 of the endoscopy programme

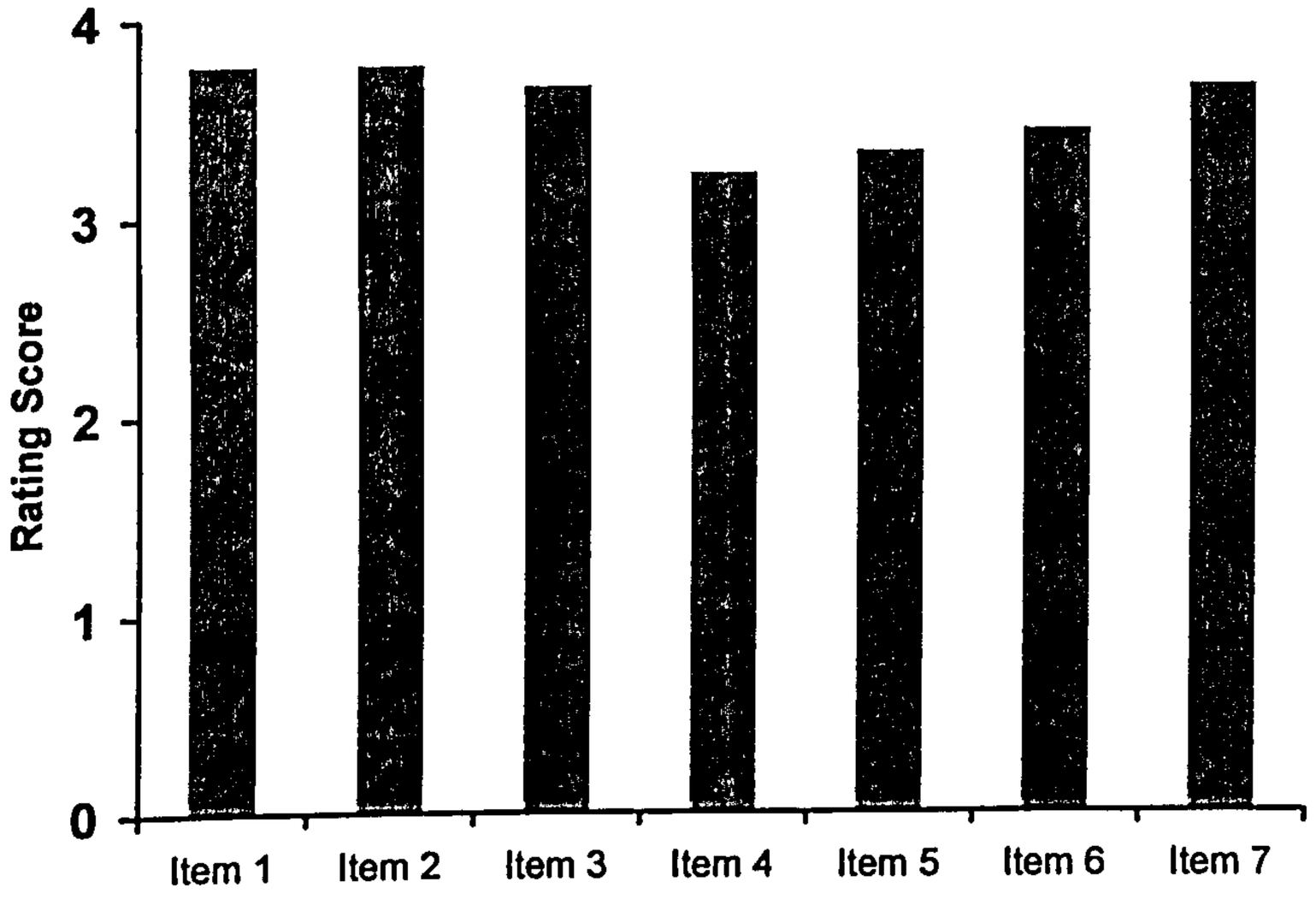


Table Key

Rating Score:

1: Poor

2: Fair / Satisfactory

3: Good

4: Excellent

Items:

1: Achieve learning outcomes (LO's)

2: Assessment appropriateness

3: Appropriate assessments for LO achievement

4: Opportunity for reflection

5: Opportunity prepare for assignments

6: Programme planning quality

7: Overall programme quality

The overall rating encouraging, the mean value obtained was 3.55 with a range of 3.2 – 3.7, indicating good to excellent. Evaluations were completed anonymously and gathered at the end of the module to minimise bias. Comments made suggesting improvements are logged for future module planning and development. In general, the overall quality of the programme, encompassing all 6 modules delivered has been evaluation to a good standard, which has been reflected in the 100% evaluation return rate. It is recognised that this has been the initial delivery of the programme and that it is essential for the monitoring of future deliveries to be maintained in order to provide comparative data.

Each individual module within the programme is also evaluated anonymously by the students. The return rates for the module evaluations ranged between 80% and 100% and

the average outcomes over the 6 modules are as presented in Figure 7.7. Each module is evaluated over a series of 13 aspects as identified in adjoining key. The review covers all aspects ranging from general module quality through to assessment and individual support. On the whole the ratings were to a good standard achieving a score of above 3 in all but 2 instances and were related to the availability of reading materials and provision of reading lists. An example of the module evaluation undertaken is within Appendix 6.

Figure 7.7 Average ratings for year 1 modules, endoscopy programme

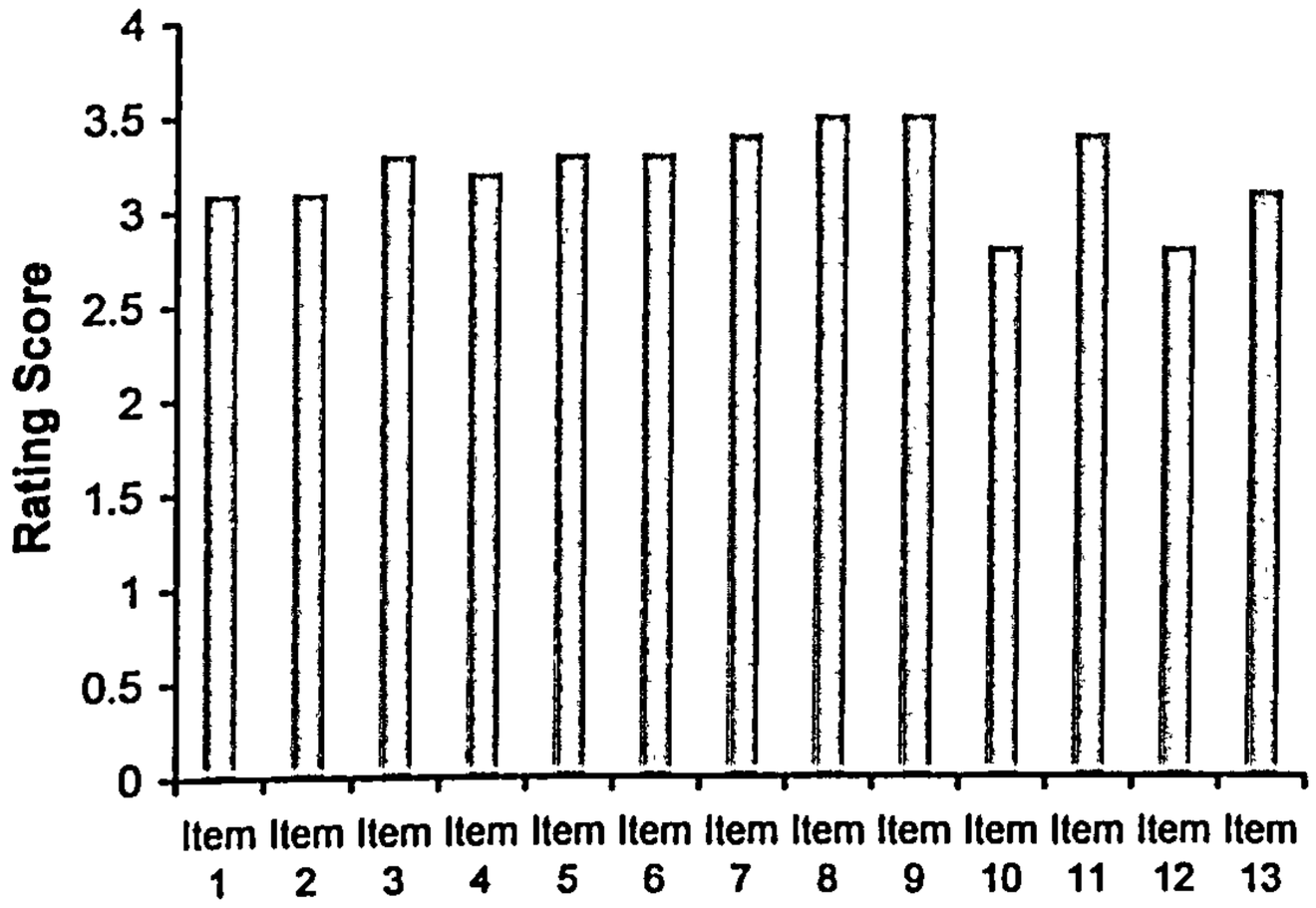


Table Key

Rating Score:

1: Poor

2: Fair / Satisfactory

3: Good

4: Excellent

Items:

1: Quality module information

2: Module Organisation

3: Amount of material covered

4: Level of material covered

5: Relevance of content to module

6: Overall module quality

7: Clarity & delivery of sessions

8: Encouragement to participate

9: Lecturers responsiveness to questions

10: Provision reading lists / material

11: Appropriateness of assessment

12: Reading material availability

13: Availability individual help / follow-up

The issue of reading lists was raised by some students within the group within the first year. Some students felt that they required an extended reading list from the start however it was felt inappropriate by the programme management team. It was a conscious decision of the programme management team not to initially provide extensive reading lists since it was felt that such involved material may serve confuse in the early stages of the students development and orientation, and may detract attention and concentration from the essential "foundation" stones necessary to underpin their studies and future practice. It was therefore considered that such a situation should be avoided and that appropriate reading material would be provided in a timely manner which was in parallel with the theory being delivered.

As students have developed knowledge and understanding, extended reading and material lists have been made available. It was also recognised that as a consequence of the nature of the programme, students relied more heavily on work-based library facilities and interlibrary loans which were often found challenging and may have been reflected in the evaluations. However, the increased integration of the VLE within the programme has provided the facility of group learning, information retrieval and debate.

Figure 7.8 indicates the summary evaluation of the second year of the programme. The format of the evaluation form was modified by the centre of HEI and of which the modified evaluation form for completion is included within Appendix 7. The average rating obtained was 3.18, with a range of 3.14 - 3.29 and whilst 0.4 lower than year 1, remains within the good to excellent range. The rate of return of completed forms was 100% which suggests that the score achieved is an accurate reflection of the student views. Whilst it is recognised that there can be a subjective element to the completion of evaluations forms, in that students may simply write what they feel the educator wants to see, the anonymity assured through the system utilised by the HEI provides little incentive to over rate the programme and hence experience. Whilst there are only nine students enrolled onto the programme it is considered that it is difficult to identify individual students through completed evaluation forms unless they wish to be identifiable, through inclusion of names or identifying some key issues pertinent to them alone. The nature of the programme has provided a firm supporting network between students and educators alike which has encouraged honesty and openness throughout the two years.

Figure 7.8 Indicating summary evaluation of year 2 endoscopy programme

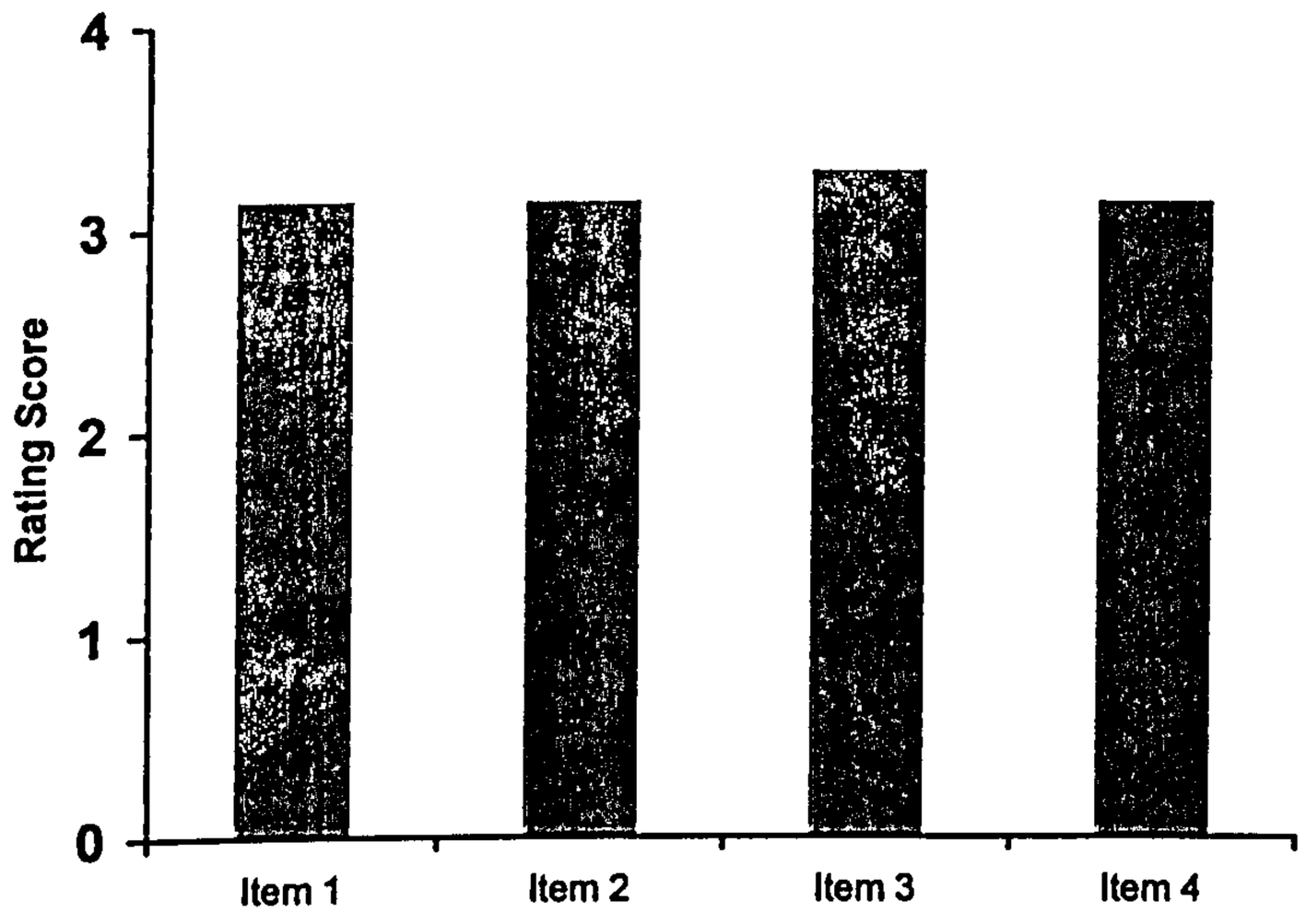


Table Key

Rating Score:

1: Poor

2: Fair / Satisfactory

3: Good

4: Excellent

Items:

1: acquired the necessary theoretical knowledge to assume the roles & responsibilities of chosen profession

2: programme provided necessary practical skills "to be fit for practice"

3: programme has helped personal development

4: programme handbook provided sufficient information to know what was expected

Figure 7.9 indicates the average rating of each of the 13 aspects of modular evaluation, of which the overall average rating score was 3.63, with a range of 3.46 – 3.79, again falling within the good to excellent range. The return rate was between 89 – 100% over the 6 modules indicating a true reflection of student views of each of the 13 aspects of evaluation.

The ratings obtained overall suggest that the educational provisions meet the needs of students in all aspects of the educational journey. It could be argued that students may not be equipped with the necessary knowledge and understanding to make decisions regarding the suitability of the education they receive, particularly when they are starting out in a new area. Therefore it was felt appropriate to include clinical supervisor evaluations to provide an indication of the suitability of the programme to meet the needs of the student and the role, of which the results are presented in chapter 9 of this thesis.

Figure 7.9 Average ratings for year 2 modules, endoscopy programme

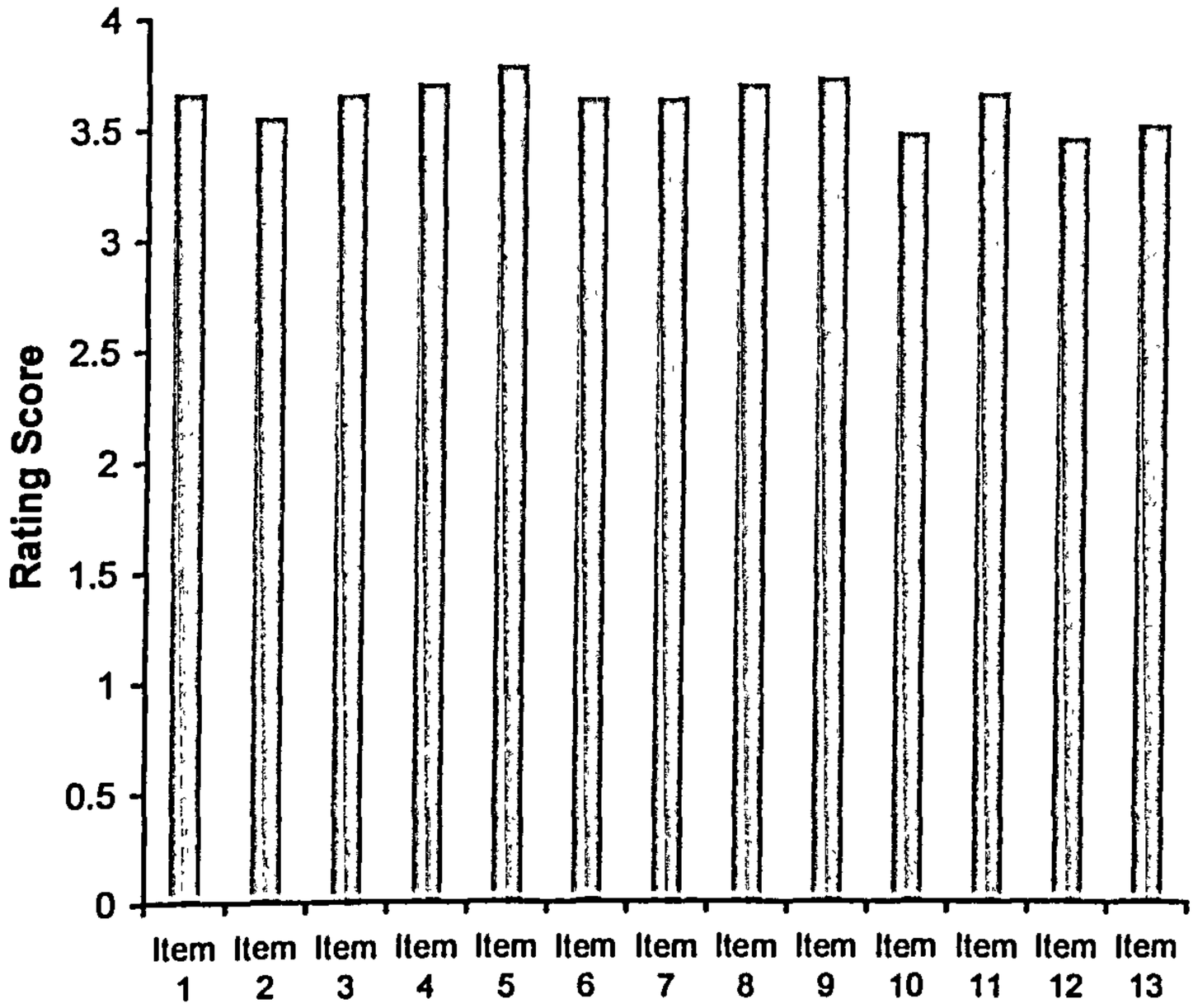


Table Key

Rating Score:

1: Poor

2: Fair / Satisfactory

3: Good

4: Excellent

Items:

1: Quality module information

2: Module Organisation

3: Amount of material covered

4: Level of material covered

5: Relevance of content to module

6: Overall module quality

7: Clarity & delivery of sessions

8: Encouragement to participate

9: Lecturers responsiveness to questions

10: Provision reading lists / material

11: Appropriateness of assessment

12: Reading material availability

13: Availability individual help / follow-

The results presented identify that all students have to date been successful in their pursuit of the academic requirements of the programme. Across the twelve modules, there have been five instances of students being referred in their initial attempt, and have subsequently achieved a pass in their second attempt. In total there have been nine students undertake the twelve modules, and the success rate at first attempt has been 93% (ie. 101 successes from a possible 108), and all students have progressed onto the third year of study. The results show a high success rate, along with measures of good quality in all areas of the programme.

The results of the evaluations identify that in general, the overall quality of the modules is good, with students indicating that all aspects relating to the provision of learning, teaching and assessment have been achieved to a high standard.

8 Results: Procedural undertakings

When designing academic provisions which include practical skills, the inclusion of explicit, transparent means of assessing student safety, competency and effectiveness is crucial (Neary, 2000). This is none so more essential in the context of healthcare education. There is a limited range of assessment methods which have been applied within the clinical setting. These include Observed Structured Clinical Examination (OSCE), Direct Observation of Procedural Skills (DOP's), patient simulation and role play. It is argued however that such situations expose only a snapshot of time and may not reflect the true practical ability of an individual and hence may lead to inappropriate decisions being made regarding suitability to practice. As a consequence, during the developmental stages of the endoscopy practitioner programme, the need to ensure students were assessed in the most reliable and robust manner was essential in addition to the recording of data appertaining to procedural undertakings.

The aim of this chapter is to demonstrate how various elements of continual assessment have been implemented within the assessment framework to contribute to the identification of students' suitability to practice. Data recorded by the students throughout the two years will be presented with the ambition that the data will demonstrate and reflect development and progress of the endoscopy trainees. As previously quoted, the assessment of procedural competence is an area the National Endoscopy Programme have deliberated over for some time (Valori, 2006). Whilst chapter 7 explores and evaluates the elements of the theoretical aspects of the programme credit through summative assessment, this chapter aims to explore and evaluate the practical skills and achievements of the students in terms of their fitness and suitability for practice.

In order to gain acceptance of the role of the endoscopic practitioner, it is essential that capability and suitability to practice is assessed. The demonstration of individual students ability and competency as previously mentioned has been observed and assessed directly through the provision of OSCE's. However an isolated, one off assessment should not form the basis of determining an individuals fitness to practice. Through experience gained on the initial pilot, it was recognised that students require frequent, regular access to hands on training. Designated training lists are preferred, however it was also recognised that due to service pressures the provision of training lists may be an unrealistic option and mainstream lists would need to be utilised. Whilst this is not an ideal situation, the essence of the

endoscopy practitioner pilot was to identify real challenges which may impact the success of the role, thus enabling future centres planning on developing endoscopic practitioners to be aware of the challenges and take steps to minimise them.

As part of monitoring, access to training and hence skills acquisition and development was recorded with students being requested to maintain and supply weekly activity logs. This practice enables identification of students who are struggling with access to regular training and may be at risk of not completing the programme. Thus providing the opportunity to put into place additional measures to ensure that students undertaking the programme are given sufficient exposure in order to achieve competence and hence complete the academic programme.

Students enrolled onto the programme were required to undertake practice and be subsequently assessed in a diverse range of procedural activity. Table 8.1 identifies the elements of practice to be undertaken and an estimated timeframe for completion, whilst Table 8.2 indicates the nature and minimum number of procedures to be undertaken over the duration of the programme. Students were also required to be assessed in a variety of competencies during training as discussed in chapter 6. Initial training in basic skills included duties which support the endoscopy department, to include the set-up and take down of endoscopes along with care, cleaning and disinfection. The acquisition and development of supporting skills was considered by the author essential in order to enable the students to fully integrate into the new environment and their new role. It is proposed that integration and subsequent acceptance of the student into the work area is crucial to the future of the endoscopic practitioner, and will be discussed further in this thesis.

Table 8.1 Indicating elements of practice prescribed for the two year programme

Year of Programme	Semester	Related practice module*	Guidance for expected completion endoscopic practice
1	1	Basic Endoscopic skills	Set-up & take down endoscopes Cleaning & disinfection endoscopes
1	2	An introduction to Basic FS	Observation Simulated practice FS
1	3	An introduction to Basic FS	Simulated practice FS [Withdrawals]
2	1	The Practice of Diagnostic FS	Withdrawals [Full procedures]
2	2	The Practice of Diagnostic FS	Full procedures [Std biopsy]
2	3	The Practice of Diagnostic FS	Full procedures Std biopsy

* for information regarding indicative content and format of assessment please refer to table 6.7 (chapter 6) and tables 7.2, 7.3 and 7.5 (chapter 7) respectively

Table 8.2 Indicating elements of practice and the minimum number required

Recorded practice of:	Minimum number to be completed
Set-up & take down of endoscopy stack	25
Cleaning & disinfection of endoscopes	25
Observed procedures	25
Simulated procedures	10
Endoscopic withdrawal	50
Completed procedures under direct supervision (diagnostic only)	50
Completed procedures with proximal supervision (diagnostic only)	50
Conventional biopsy (under direct supervision)	25
Therapeutics – polypectomy, hot & cold (under direct supervision)	25

Following the acquisition of supporting skills, students undertook initial skills training through observation of FS. Students were required to observe a minimum of 25 procedures, completing a record of each observed procedure. Whilst some aspects of the FS procedure may have been new and potentially confusing to the student (particularly in the early stages), it is argued that the requirement to complete data logs provides students with the opportunity to reflect on what has been observed. It could be argued that whilst students are at an early stage in their training, the information they document may be of variable quality and value. It is proposed however that exposure to such practice enhances learning opportunities. From an early stage students are encouraged to identify key information which informs the final report provided by the endoscopist. The generation of a precise, accurate and explicit report is a crucial element of the patient's journey which may determine their future management and hence should be a feature of endoscopic training from the earliest opportunity. Substandard documentation leads to poor service quality and delivery and may be partly responsible for the requirement to repeat procedures. Further, the preparation of accurate, precise and clearly presented documentation is a fundamental aspect of clinical practice which should be exhibited within all disciplines and at all levels within the healthcare organisation.

Following procedural observation, students were required to undertake simulated procedures on both plastic models and virtual reality patient simulators. The training centre possesses both forms of simulators and therefore a proportion of the training was undertaken at the training centre under supervision. As part of the National pilot, base trusts were also provided with funds to purchase plastic models which would provide a further opportunity for simulated training outside of the training centre. As a guide, students were required to record a minimum of 10 simulated procedures prior to progressing onto endoscope withdrawal from the splenic flexure. In terms of endoscope withdrawal, students were required to record a minimum 50 procedures under direct supervision. The inclusion of a prescribed minimum is a variation on that of the previous provisions offered within the HEI. Previously students were required to undertake 50 endoscope withdrawals before they were able to progress onto full procedures.

It is suggested that the prescription of a required number is inappropriate since individuals' progress at different speeds, depending upon their ability. Whilst it may be justifiable for

one individual to proceed onto full procedures following 50 withdrawals, it may take another significantly longer and / or have increased procedural exposure to achieve competence. Therefore, it is proposed that a minimum number should be defined. Furthermore, supporting documentation for practical training should reflect that students should only progress to the next stage (full procedures in this instance) when they are deemed competent by their supervisor and their need for assistance demonstrably reduces. An evaluation of the reduction in the need for assistance for this group of students will be discussed further within this chapter.

Following achievement of competency in endoscope withdrawal, students progress onto full procedures under direct supervision. As with the practice of endoscope withdrawal, minimum numbers of procedures were prescribed, in that students were required to undertake a minimum of 50 supervised full procedures prior to embarking on proximally supervised practice. As previously discussed, it is recognised this may not reflect the ability or competency of the student and is hence quoted as a minimum. Students are expected to continue with endoscope withdrawal until competency has been demonstrated.

In the context of tissue retrieval, purely diagnostic procedures may prove counterproductive in that where pathology is suggested, a repeat examination would be necessary in order to facilitate tissue retrieval. It is argued that unless the FS is combined with a barium enema (as part of a one stop diagnostic service), the option for tissue retrieval should be available, particularly since a significant advantage of FS over radiological investigation is that tissue samples can be taken (Cotton and Williams, 2003). Through discussion with clinical colleagues, the conclusion was drawn that the recording and subsequent assessment of competency for tissue retrieval should be restricted to that of cold biopsy techniques, since this would be a minimum requirement for suspected pathology on FS. This decision reflected the potential for variability within individual Trusts, in that not all base hospitals (information was obtained verbally during site visits) were allowing endoscopy practitioners (which included nurse endoscopists) to undertake hot biopsy and polypectomy as part of their role. Therefore should students be required to demonstrate competency in an element of practice they are unable to gain experience in due to a lack of exposure in practice, they would automatically fail that aspect of practice and potentially the programme of study.

Where hot biopsy and polypectomy were acknowledged as part of their role, students were encouraged to record their activity within the weekly procedural log. For trusts keen to include interventional techniques within the role of their endoscopists, competency frameworks were made available along with training logs. However, the HEI would not accept responsibility for such undertakings by a current or past student since the students were not subject to planned, formalised assessment of that area of practice.

The following data and figures identify the aspects of practice undertaken by the students during the two year programme. The figures demonstrate both collective and individual data in an attempt to demonstrate how the monitoring of practice through data acquisition can identify student progress and skills development.

Section One: Group data

This section provides an overview of procedural undertakings of each student in addition to the need for assistance throughout the two year period. Section two follows the activity of three students selected from the cohort, providing an indication of how exposure affects practice and skill development. The three students reflect an average level of exposure, increased exposure and limited exposure and correspond to students 1, 5 and 8 respectively in table 8.2 and are discussed within section 2. Table 8.3 provides an overview of endoscopic withdrawal and full procedures relating to commencement and completion of both aspects, indicating the time taken to completion where appropriate.

As indicated within Table 8.3, the duration of training for eight of the nine students has been included – the student not included within the table is the original pilot student and hence the individuals' data is not representative of the endoscopy pilot programme, since training was undertaken in isolation and did not follow the same route as the pilot. It is therefore considered that the inclusion of such data would not provide true representation of the actual journey of a student following the programme in its entirety. All nine students have been included within charting of procedural activity / skill development since the acquisition of procedural skill remains unchanged between individuals.

Table 8.3 Identifying commencement and completion of endoscope withdrawal and full procedures in months

Student	Endoscope withdrawal			Full procedure – direct supervision			Full procedure – proximal supervision
	Start	End	Duration	Start	End	Duration	Start
1	4	9	5	6	19	13	19
2	4	9	5	11	*	NA	NA
3	3	8	5	8	*	NA	NA
4	3	8	5	8	22	14	22
5	3	7	4	4	9	5	9
6	3	8	5	8	16	8	16
7	6	9	3	6	*	NA	NA
8	4	14	10	13	*	NA	NA

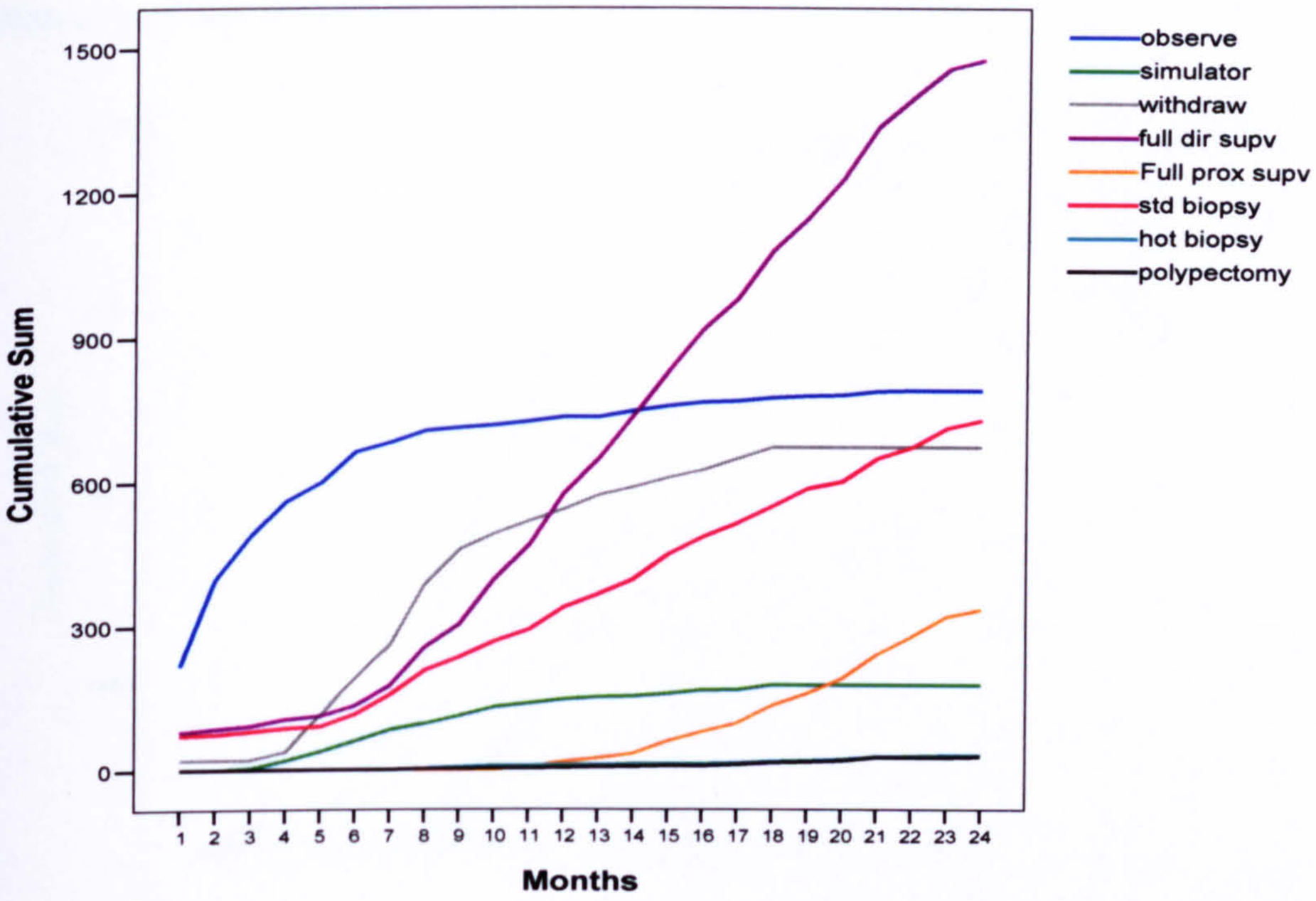
* indicating that the student has not progressed onto proximally supervised procedures

From the table it is seen that the majority of students take 5 months to complete endoscope withdrawal, with one student taking 10 months to complete and another taking just 3 – the mean time to completion of endoscope withdrawal was 5.25 months. In terms of commencing onto full procedures under direct supervision, the mean was 8 months with a range of 4 to 13 months. Of the eight students, 4 students progressed onto proximally supervised procedures before the end of the second year of which one had successfully progressed before the end of the first year. Clearly there is variability in progression which is linked to procedural exposure which is further examined within section two of this chapter.

Figure 8.1 identifies the various stages at which aspects of practice commenced and were completed. As illustrated, the initial aspects of practice undertaken in the early stages of the programme reach a plateau once numbers and / or competency have been achieved. Upon completion of observations, there is an apparent rise in the number of withdrawals undertaken which commences 4 months following the commencement of the programme. Exposure to simulated procedures rises before reaching a steady state at a time consistent with the start of semester 2 in the 2004/ 05 academic year, this may reflect delay's some centres experienced in taking delivery of simulators. Two centres were in possession of a simulator which may account for the initial increase and subsequent reduction between months 3 and 6 until simulators had been received. The more significant rise in the number of full procedures under direct supervision can be observed around completion of the majority of withdrawals – there is a cross over around month 11 and 500 procedures at which point the rise in full procedures rose exponentially whilst endoscope withdrawal gradually reached a plateau.

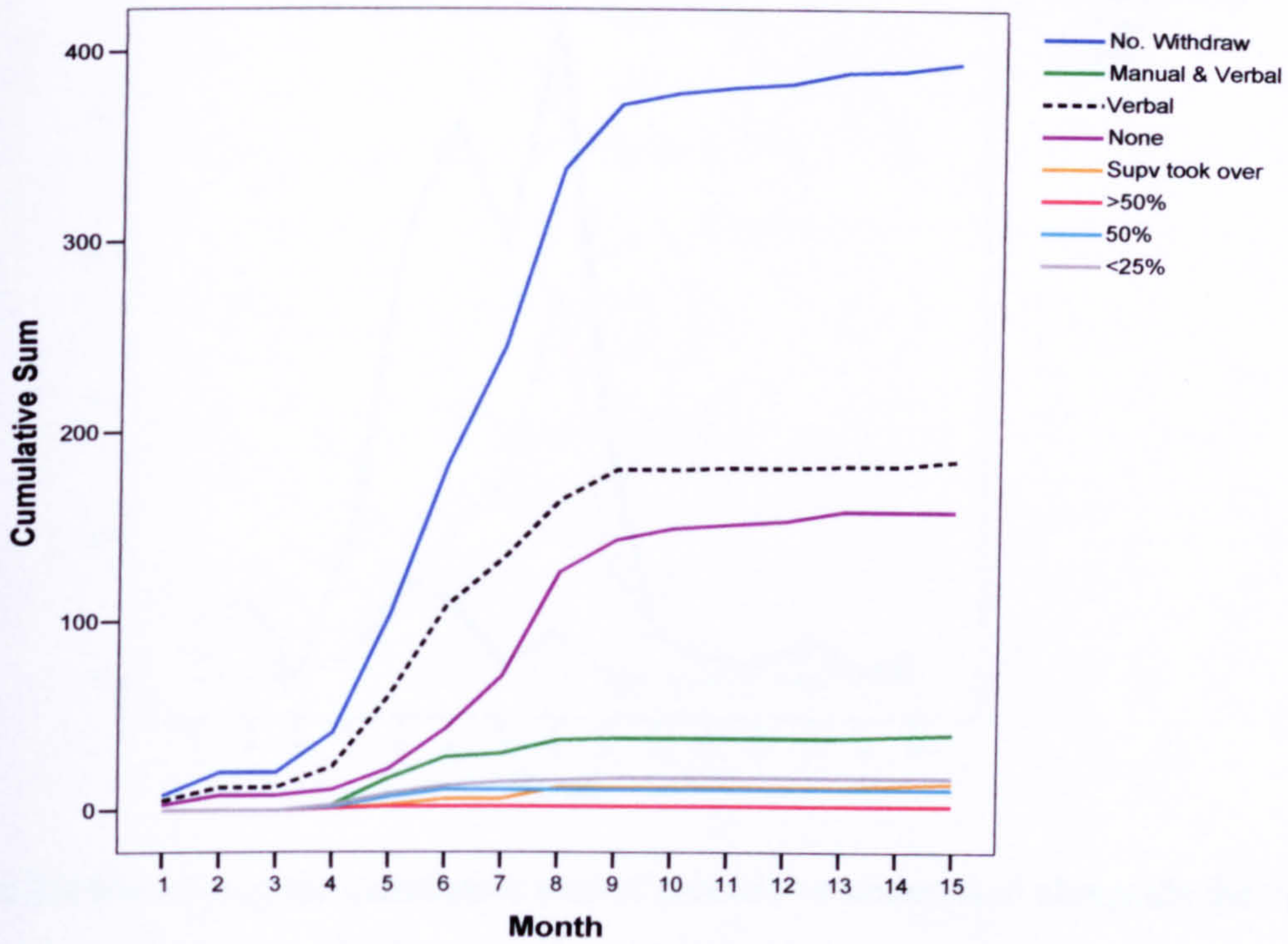
The grey line in figure 8.1 identifies endoscope withdrawal. Month 4 relates to the point at which withdrawal commences with the sharpest rise – this is consistent with the start of second semester, where students have previously completed their observed practice and basic skills in endoscopy. This correlates with progression onto the module Basic Practice in Diagnostic Flexible Sigmoidoscopy, as illustrated in figure 6.1 and table 6.7 (chapter 6). Some students completed endoscope withdrawal at an earlier stage than their colleagues (as indicated within table 8.2) which is consistent with the observable steadier rate of activity until a plateau is reached, indicating the majority of withdrawals have been completed.

Figure 8.1 Indicating cumulative sum of overall procedural activity per month



Month 7 illustrates the point of sharpest increase for full procedures under direct supervision with month 14 corresponding to an increase in the number of proximally supervised procedures being undertaken. For 2 individuals the opportunity to commence full procedures under proximal supervision was significantly earlier than the remainder of the group. It is suggested there are 2 significant reasons for this. One of the students was part of the initial pilot and was therefore ahead procedurally of the group and hence progressed onto full procedures and subsequently proximal supervision at an earlier stage. Secondly, the other student was consistently exposed to FS lists and was therefore able to develop practical skill at an increased rate in comparison to their colleagues.

Figure 8.2 Identifying cumulative sum of endoscope withdrawals and elements of assistance required per month



As identified in Figure 8.2, the main activity of endoscope withdrawal took place during months 3 to 10 with a small number continuing following the 13 month mark. This is linked to reduced procedural exposure which is further discussed in section two of this chapter. It is observed within figure 8.2 that the requirement for assistance lies predominantly with Verbal aid until month 6 which coincides with a drop in activity. Month 7 sees a further rise in activity which is mirrored by either a Verbal or no assistance requirement. It is suggested that this resumption in endoscope withdrawal may be as a consequence of increased numbers being performed by students who have struggled with exposure to practice and as a result are some months behind. Figures 8.8-10 in section 2 of this chapter identify the variance between the three students selected from the cohort which relate to average, above average and below average exposure to practice.

Figure 8.3 illustrates the variation in assistance required over the duration endoscope withdrawal. The figure demonstrates the progressive decrease in the need for assistance (verbal and manual and verbal) against increasing numbers of withdrawals.

Figure 8.3 Variation in assistance during endoscope withdrawal per month

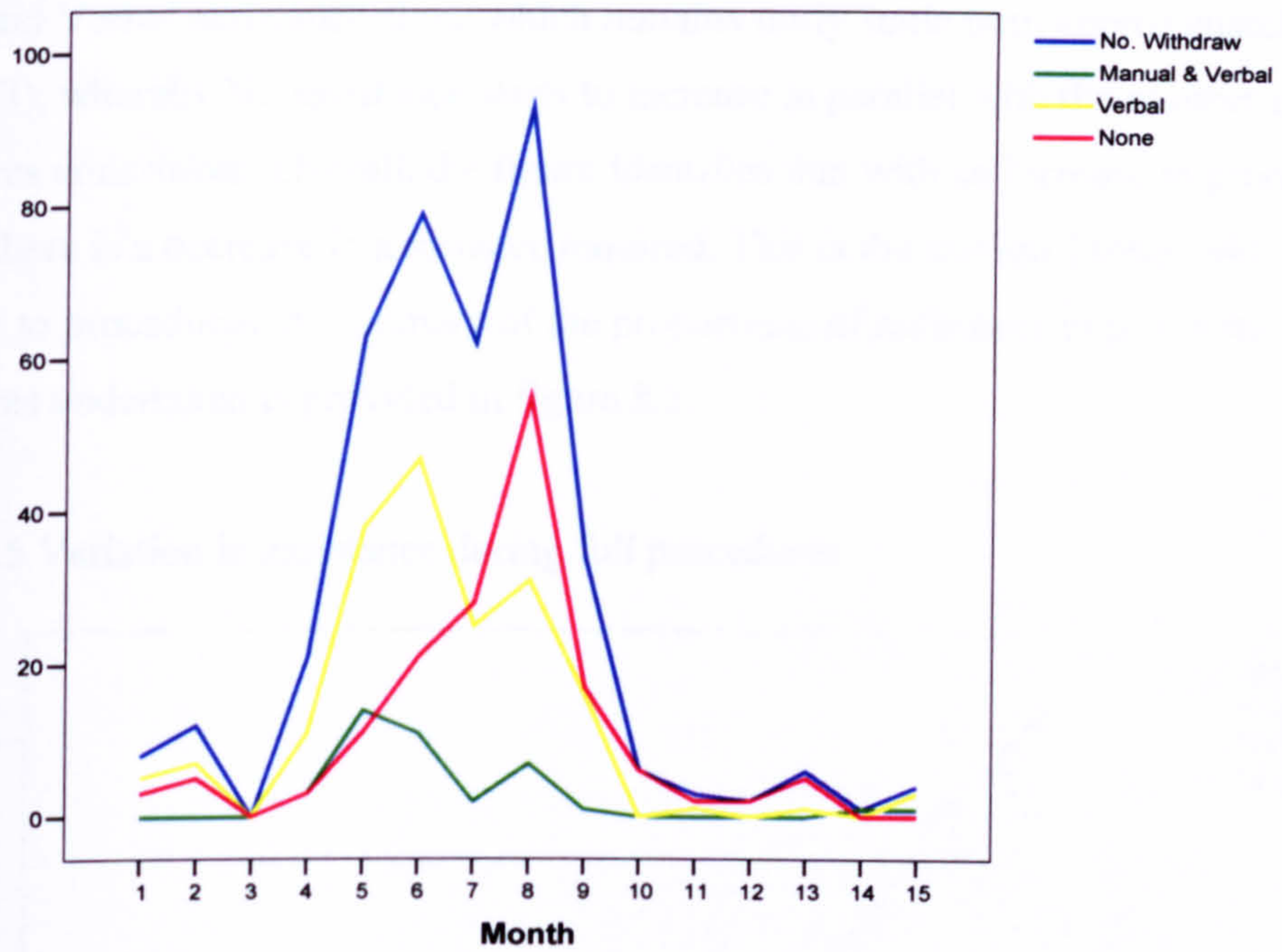
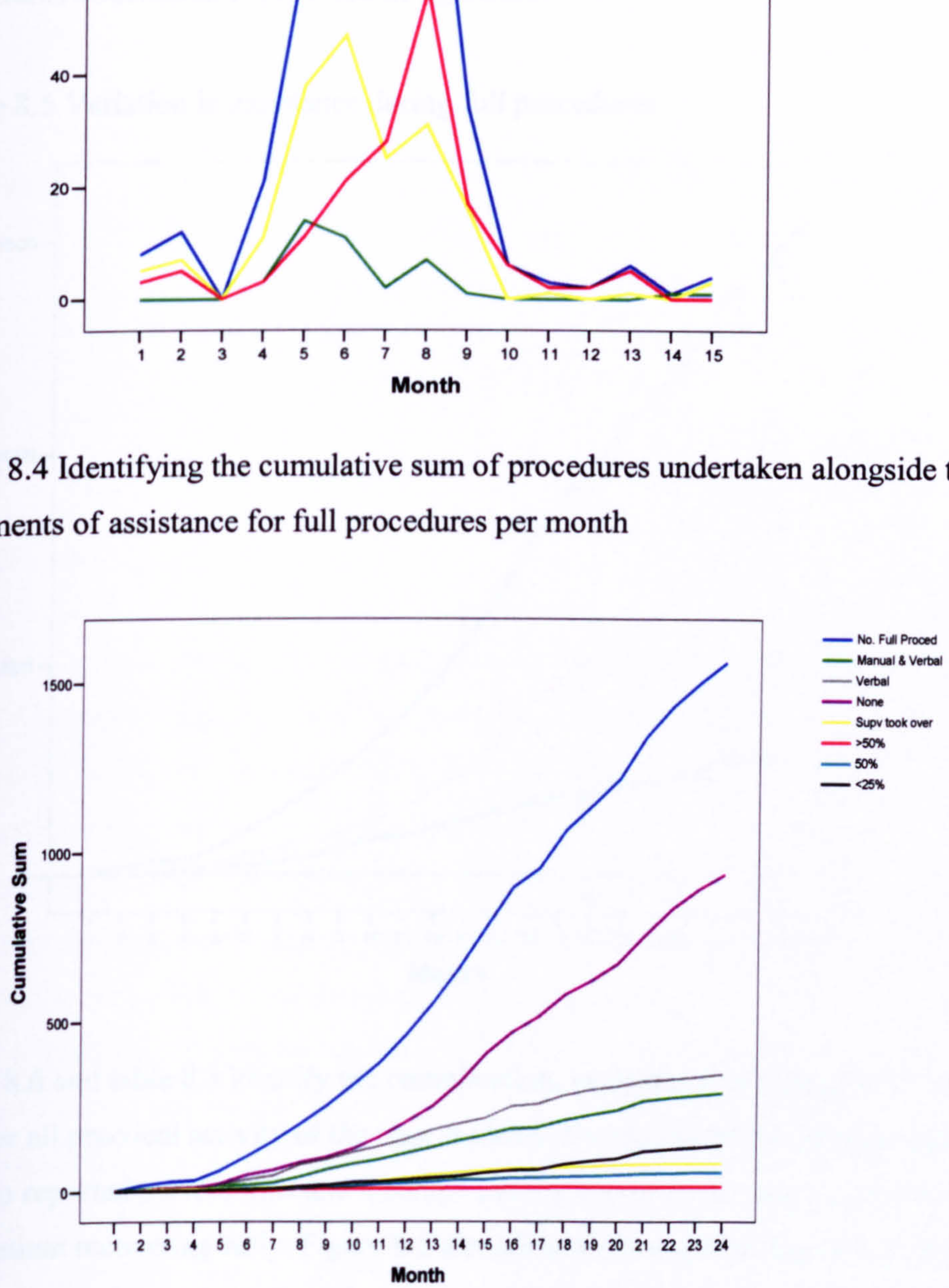


Figure 8.4 Identifying the cumulative sum of procedures undertaken alongside the variance in elements of assistance for full procedures per month



As identified within Figure 8.4, the requirement for assistance is initially Manual and Verbal and Verbal assistance alone which remains fairly static until approximately month 9 (quarter 3), whereby No assistance starts to increase in parallel with the number of procedures undertaken. Overall, the figure identifies that with an increase in procedural activity there is a decrease in assistance required. This is the expected trend with increasing exposure to procedures. A summary of the proportions of assistance required for all full procedures undertaken is provided in figure 8.5.

Figure 8.5 Variation in assistance during full procedures

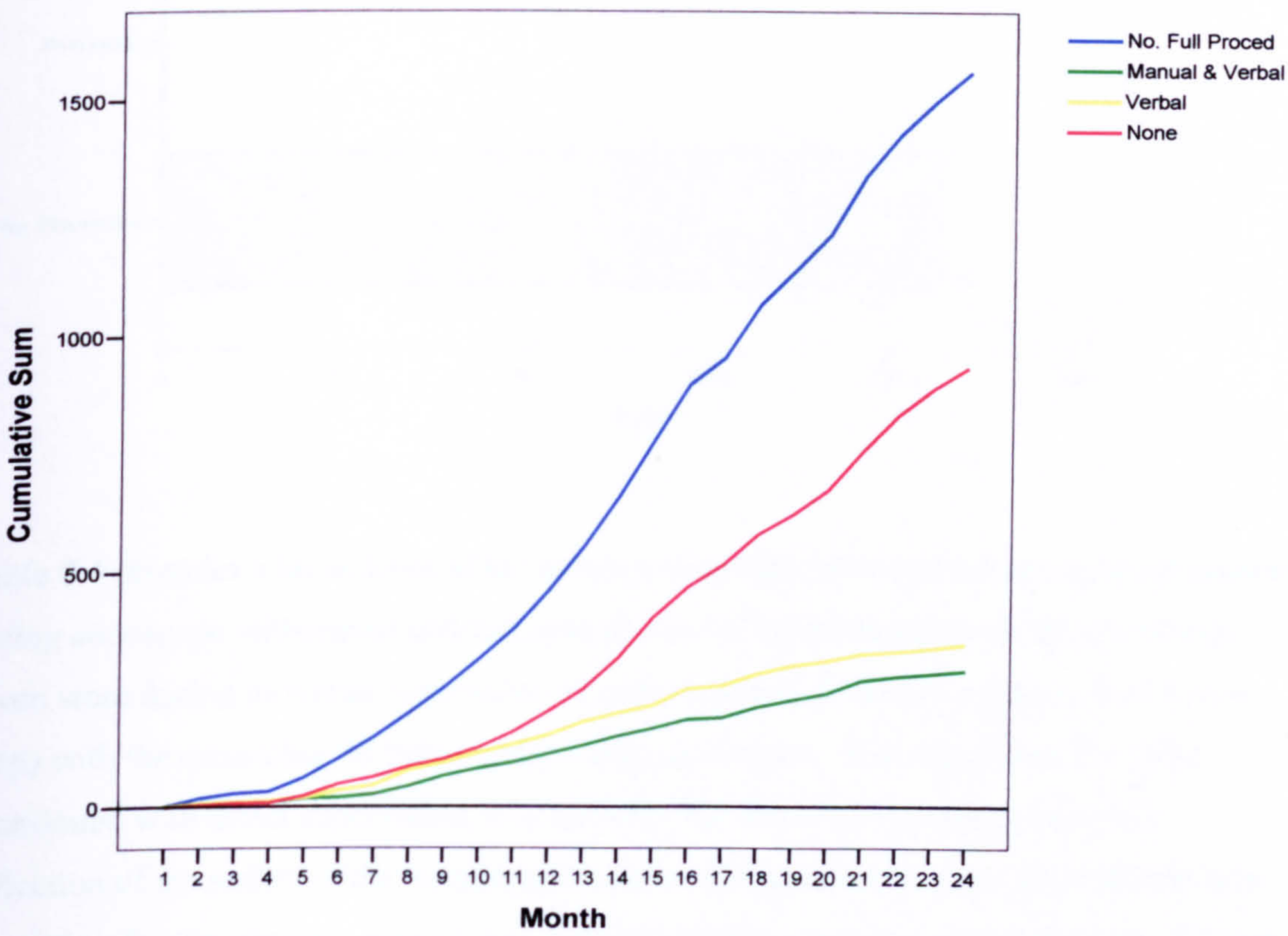


Figure 8.6 and table 8.3 identify the complication, perforation and abandoned procedure rates for all practical activity of the nine students. During the two year programme there were no reported perforations and 4 complications, recorded as vasovagal episodes with each patient recovering fully. Figure 8.6 identifies the low rate of abandoned procedures in comparison to the total number of procedures undertaken, with figure 8.7 providing a breakdown of the reason for the procedure to be abandoned.

Figure 8.6 Indicating perforation / complication / abandoned for all procedures against the total number of procedures undertaken

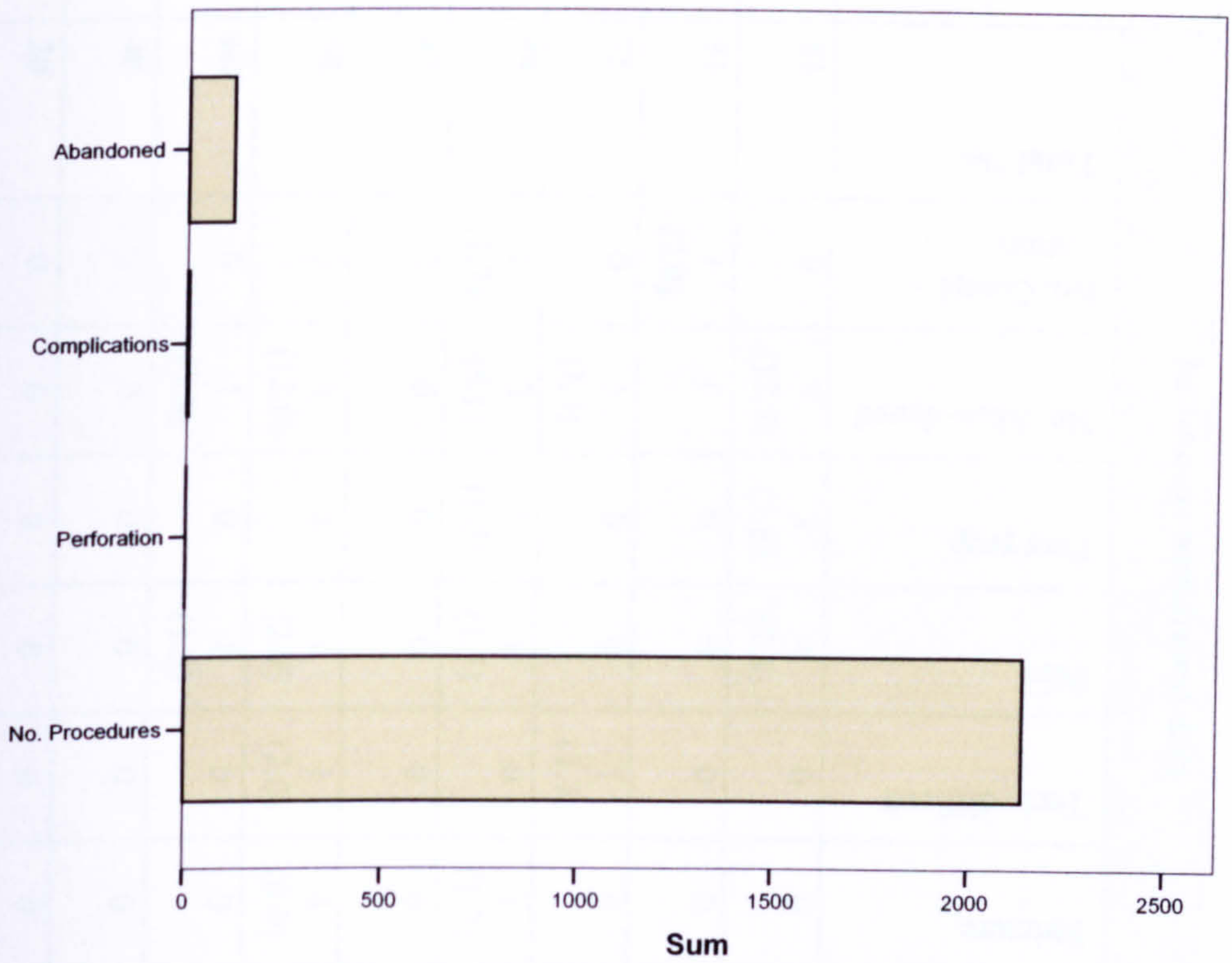
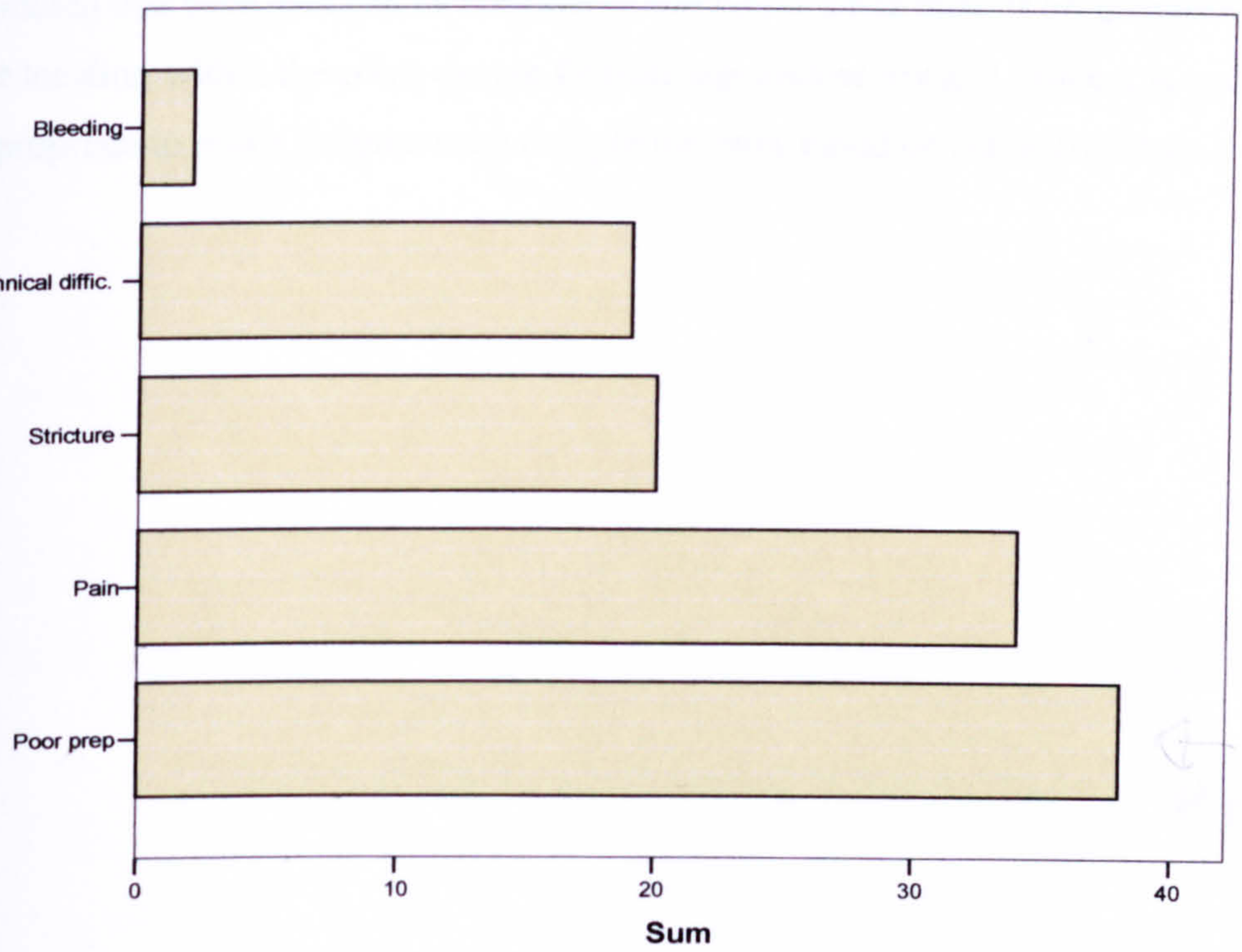


Table 8.4 provides a breakdown of the number of complications and abandoned procedures during endoscope withdrawal and full procedures. Of the 95 abandoned full procedures, seven were during proximal supervision (5 pain, 1 severe diverticular disease and 1 poor prep) with the remaining 88 being under direct supervision. It is argued that for those abandoned with direct supervision, it is unlikely that the abandoned procedure is a reflection of the ability of the student since advice and assistance would be available with the option for the clinical supervisor to continue with the procedure to completion. Of those abandoned during proximal supervision, it is difficult to determine from the data as to the nature of the pain and whether or not consent was withdrawn by the patient. Severe diverticular disease and poor prep are however justifiable reasons to abandon a procedure due to increased risks, and hence the students were able to identify situations which deem the procedure either unsafe or of poor diagnostic yield due to poor preparation which is consistent with the theory delivered throughout the programme.

Table 8.4 Indicating number and (rate %) complications and abandoned procedures for each student

Student	Endoscope withdrawal data								Full procedure data							
	Total No.	No. Compl – ication	No. Aban-doned	Poor prep	Pain	Tech. difficult	Stricture	Bleeding	**Total No.**	No. Compl – ication	No. Aban-doned	Poor prep	Pain	Tech. difficult	Stricture	Bleeding
1	**51**	0	7 **(13.7)**	3 (5.8)	4 (7.8)	0	0	0	**176**	0	21 **(11.9)**	5 (2.8)	7 (3.9)	4 (2.3)	5 (2.8)	0
2	**51**	1 **(2.0)**	0	0	0	0	0	0	**110**	2 **(1.8)**	17 **(15.4)**	9 (8.1)	5 (4.5)	3 (2.7)	0	0
3	**75**	0	1 **(1.3)**	0	0	1 (1.3)	0	0	**172**	0	2 **(1.2)**	0	0	1 (0.6)	1 (0.6)	0
4	**59**	1 **(1.7)**	3 **(5.1)**	1 (1.7)	1 (1.7)	0	1 (1.7)	0	**107**	0	16 **(14.9)**	2 (1.9)	2 (1.9)	6 (5.6)	4 (3.7)	2 (1.9)
5	**47**	0	0	0	0	0	0	0	**346**	0	0	0	0	0	0	0
6	**50**	0	6 **(12.0)**	0	1 (2.0)	1 (2.0)	4 (8.0)	0	**144**	0	19 **(13.2)**	6 (4.2)	9 (6.3)	1 (0.7)	3 (2.1)	0
7	**68**	0	1 **(1.5)**	0	1 (1.5)	0	0	0	**209**	0	19 **(9.1)**	10 (6.9)	4 (1.9)	4 (1.9)	1 (0.70)	0
8	**48**	0	0	0	0	0	0	0	**108**	0	0	0	0	0	0	0
9	**20**	0	0	0	0	0	0	0	**297**	0	1 **(0.3)**	1 (0.3)	0	0	0	0
Totals	**469**	2 **(0.4)**	18 **(3.8)**	4 (0.8)	7 (1.5)	2 (0.4)	5 (1.1)	0	**1669**	2 **(0.1)**	95 **(5.6)**	33 (2.0)	27 (1.6)	19 (1.1)	14 (0.8)	2 (0.1)

Figure 8.7 Indicating proportion of reasons for abandoned procedures (where N= 113)



The totals column indicates the number and rate of complications and abandoned procedures (both endoscope withdrawal and full procedures) along with rates of the reason for abandoning the procedure. The rate of complications for withdrawal and full procedures is 0.4% and 0.1% respectively, with abandoned procedures at 3.8% and 5.6% respectively. The poor prep rate increases by 1.2% for full procedures to 2.0%, whilst the rate of pain is consistent for both withdrawal and full procedures, and the rate of stricture yielding a 0.3% variation (0.8 – 1.1%).

For those students with elevated rates of abandoned procedures (ie. 9.1% and above), 4 of the 5 students reported that poor prep and pain were the commonest reasons for abandoning a procedure. One student had an elevated rate of technical difficulty, standing at 5.6% of their full procedures. This particular student had undertaken the least number of procedures of the nine students however the nature of the data did not allow for any further evidence to link to the nature of the technical difficulty, nor whether it was a reflection of the student or the types of patient who were being assessed.

Data regarding completion rates / depth of insertion have been gathered however it is considered that such data can be considered subjective since there is no guarantee as to the exact location within the colon during flexible sigmoidoscopy and hence it is considered inappropriate to make judgments on completion rates based on subjective data.

Section Two: Individual student data

In terms of individual student data, results depicting the outcome of students who have been exposed to varying degrees of procedural exposure are presented in order to demonstrate the impact of the level of exposure on student development. [Student 1 received average exposure, student 2 above average and student 3 limited exposure].

Figure 8.8 Students 1-3 comparison of cumulative number endoscope withdrawals

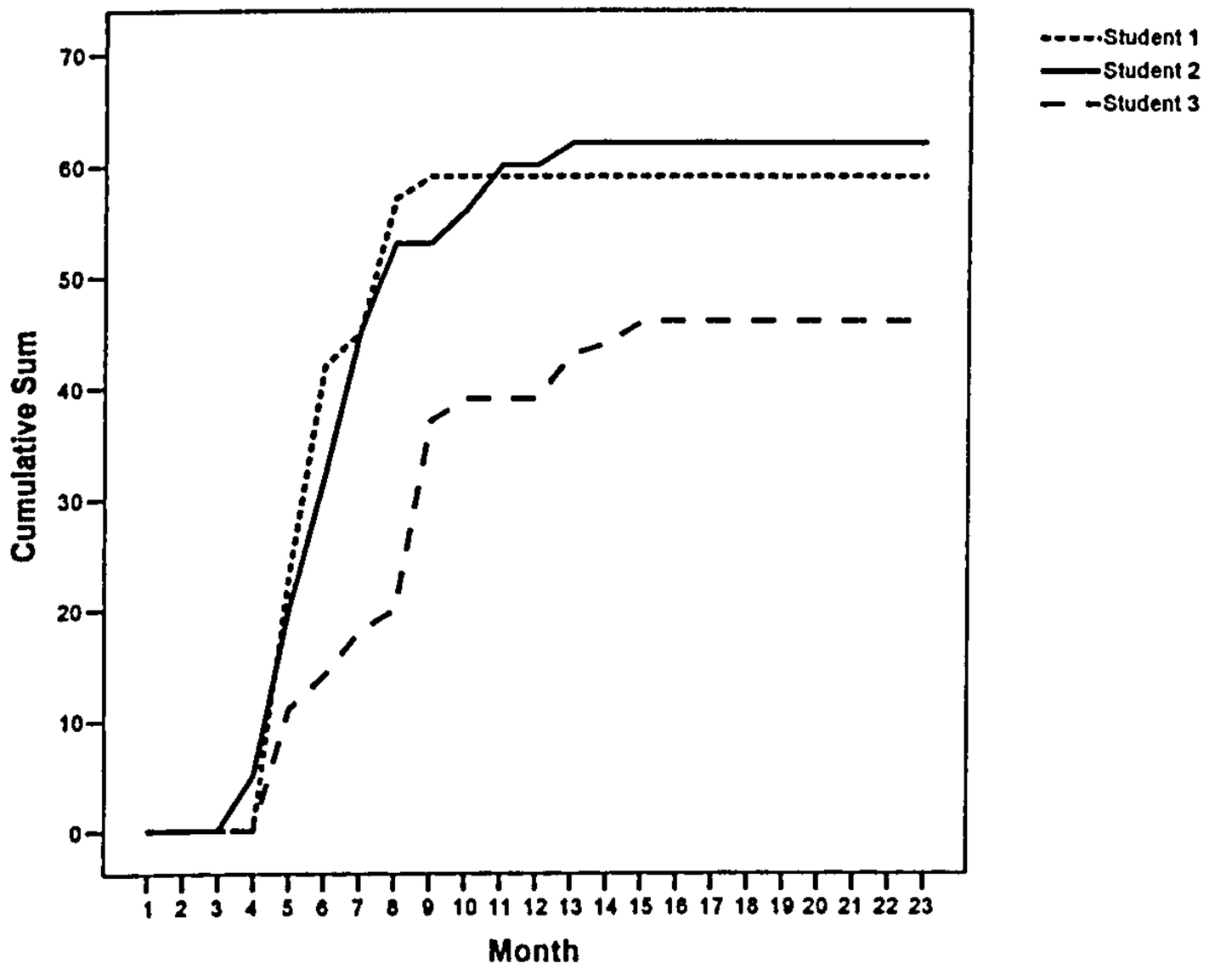
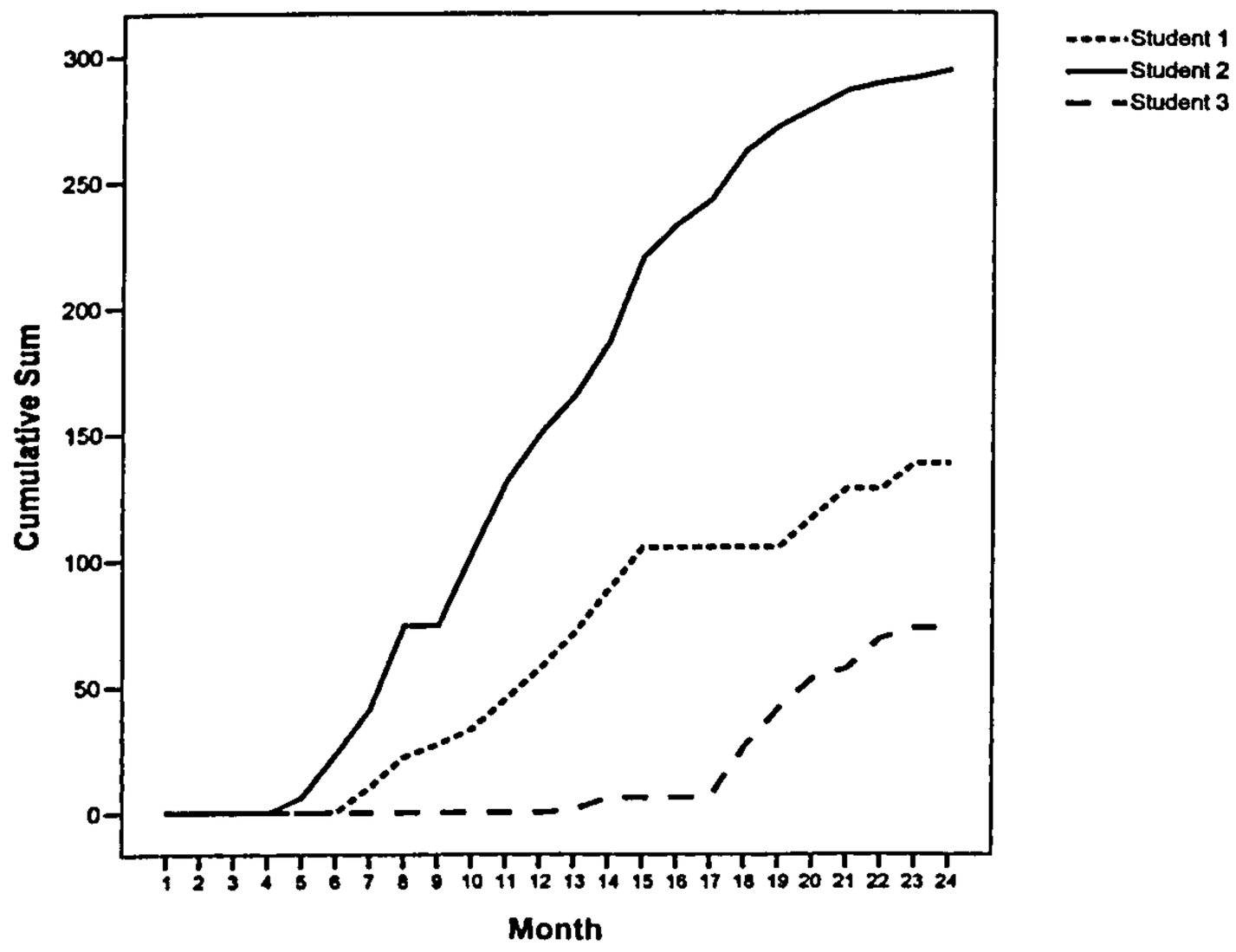


Figure 8.9 Students 1-3 comparison cumulative sum of full procedures (direct supervision)



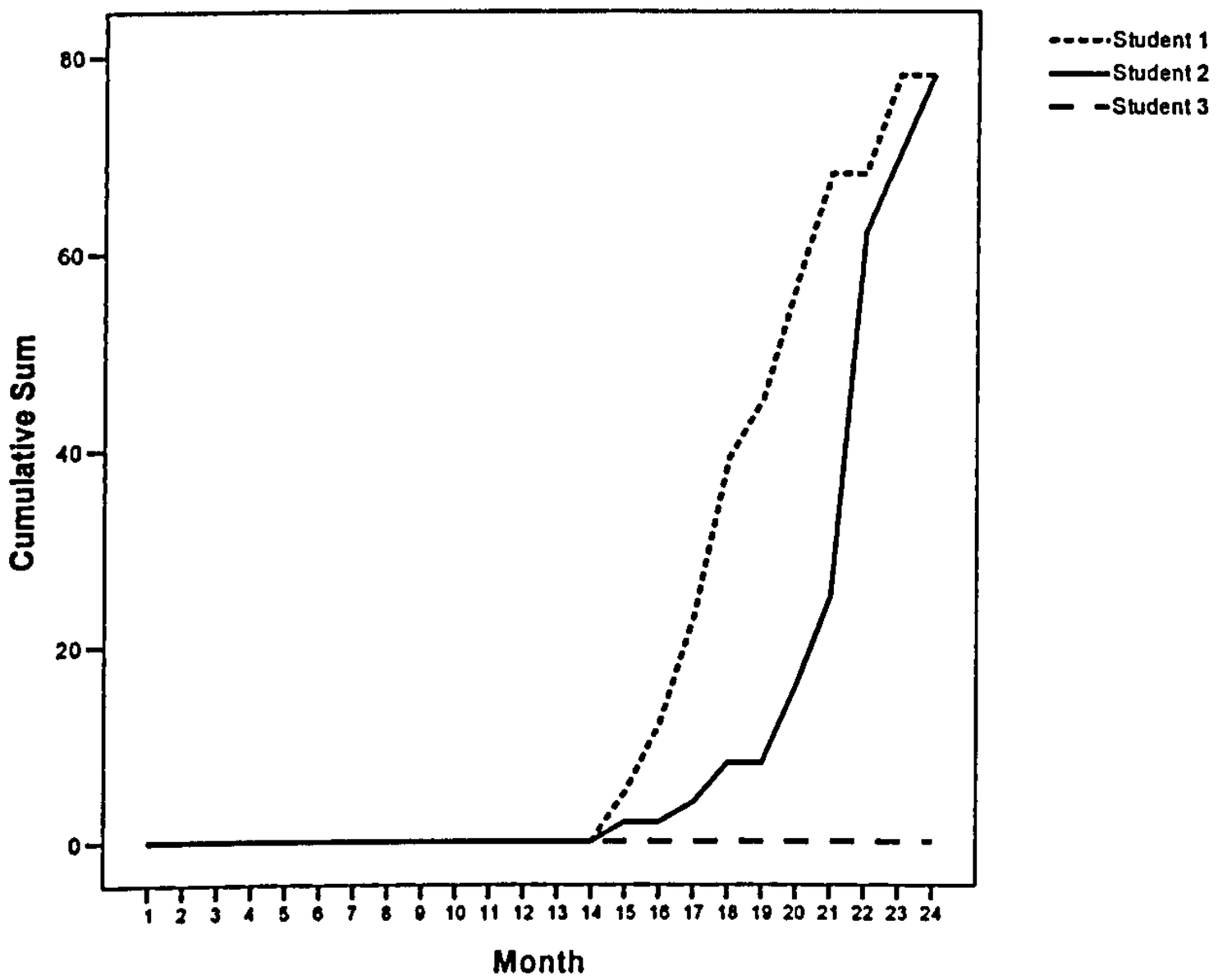
All 3 students commenced endoscopic withdrawals between months 3 and 4 as identified in table 8.2, with the time to completion of withdrawals 5, 4 and 10 months for students 1 – 3 respectively. Whilst there is little variance in the time to completion for average and above average exposure, the time to completion for below average exposure is significantly delayed. The potential issues this raises are discussed in chapter 10.

In terms of full procedures, student 2 commenced full procedures from month 4, whilst student 1 commenced full procedures at the 6 month stage. The start of full procedures for student 3 is delayed until month 13 once the majority of their withdrawal practice is complete. The transition over to full procedures for student 2 occurs at a much earlier stage than students 1 and 3 prior to the recommended minimum number of withdrawals being completed. The decision to progress onto full procedures is taken by the clinical supervisor within the base trust once they feel the student is competent to progress. It is argued however that the charts relating to student 2 indicate there is clear evidence of the students capability based upon the data received (please see figures 8.16-20) and hence the decision to proceed in this instance was justified.

This data suggests that for students who receive significant exposure and support, the time taken to commence full procedures is 4 months, whereas average exposure (as based on this particular cohort of students) takes 6 – 8 months to progress onto full procedures. Those students who struggle to gain access and hence exposure to practice takes significantly longer at 13 months.

In the context of proximal supervision, student 2 commenced lists at the 9 month stage thereby taking 6 months to reach a stage where student and clinical supervisor were confident of the students capability to commence onto proximally supervise practice in addition to the availability of list space. Student 1 commenced proximally supervised procedures from month 19 taking 13 months from the start of full procedures. At the time of completing the data collection, student 3 had not progressed onto proximally supervised procedures.

Figure 8.10 Students 1-3 comparison of cumulative sum of full procedures (proximal supervision)



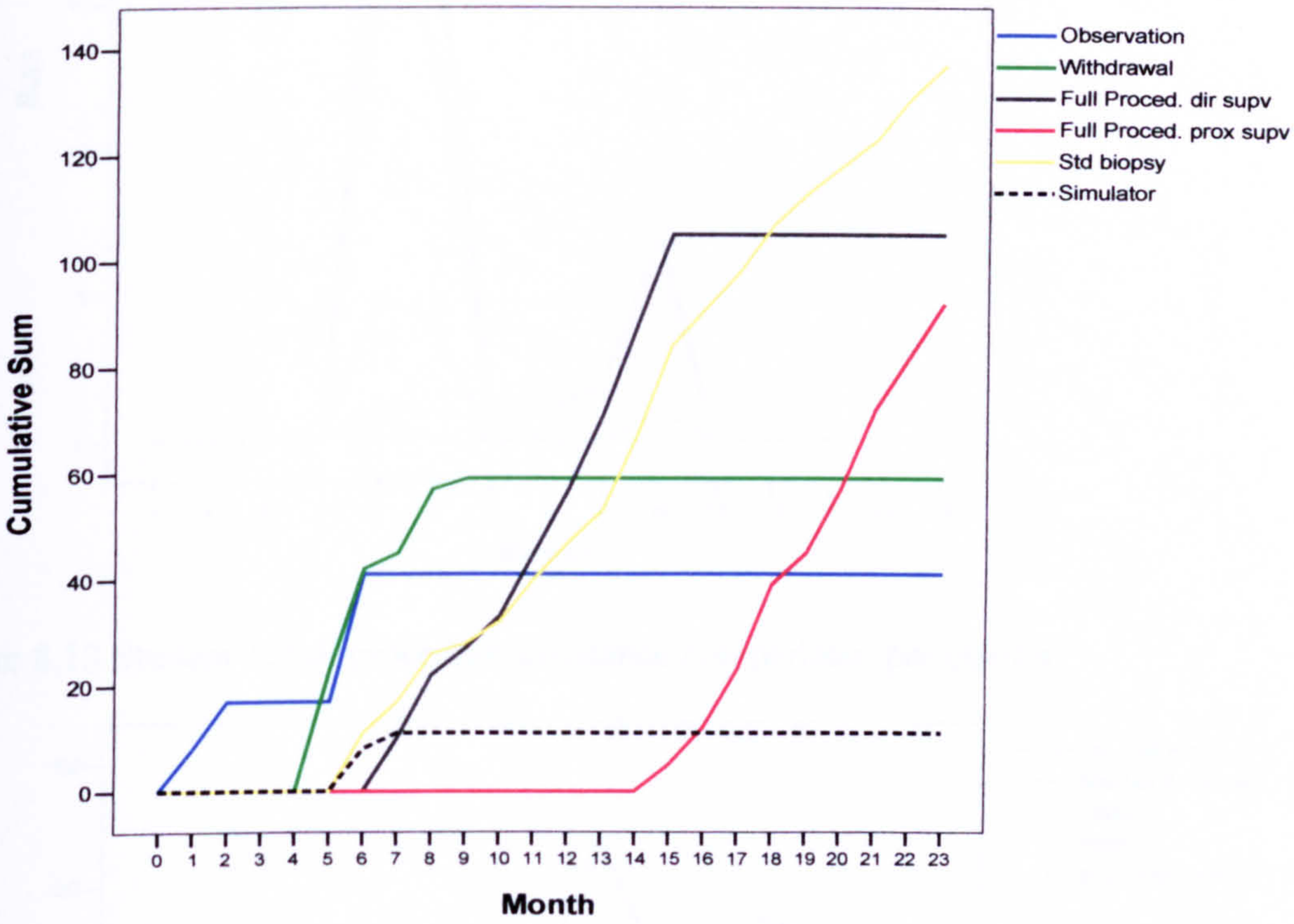
The following data corresponds to the individual practice recorded by students 1, 2 and 3 and includes cumulative sum of all procedural activity, comparison of assistance required during endoscope withdrawal and full procedures. The requirement for assistance is presented as a sum and also as a proportion of activity.

The first chart for each student series indicates the cumulative sum of practice undertaken over the duration of the two years, and is then followed by two charts which demonstrate the sum and variance in assistance for endoscope withdrawals and full procedures, along for comparison of how assistance varies with time. The two bar charts which follow provide an indication of the proportions of assistance provided.

STUDENT 1

Figure 8.11 indicates the cumulative sum of procedural activity for student 1. Simulated procedures were completed by month 7, with endoscope withdrawals complete at month 9. The rate of standard biopsy remains consistent throughout the duration of the training.

Figure 8.11 Student 1: cumulative sum of practice per month



As indicated in figure 8.12, the majority of assistance required during endoscope withdrawal is verbal, which occurs at a rate consistent with the procedural undertaking. In terms of full procedures, figure 8.13 indicates the requirement for assistance. A breakdown of the need for assistance during endoscope withdrawal is further illustrated in figure 8.14, with the breakdown for full procedures being illustrated in figure 8.15. In the early stages of practice, assistance takes the form of manual and verbal, and verbal assistance which gradually decreases to the point of minimal assistance being required.

Figure 8.12 Student 1: Endoscope withdrawal assistance comparisons, per month

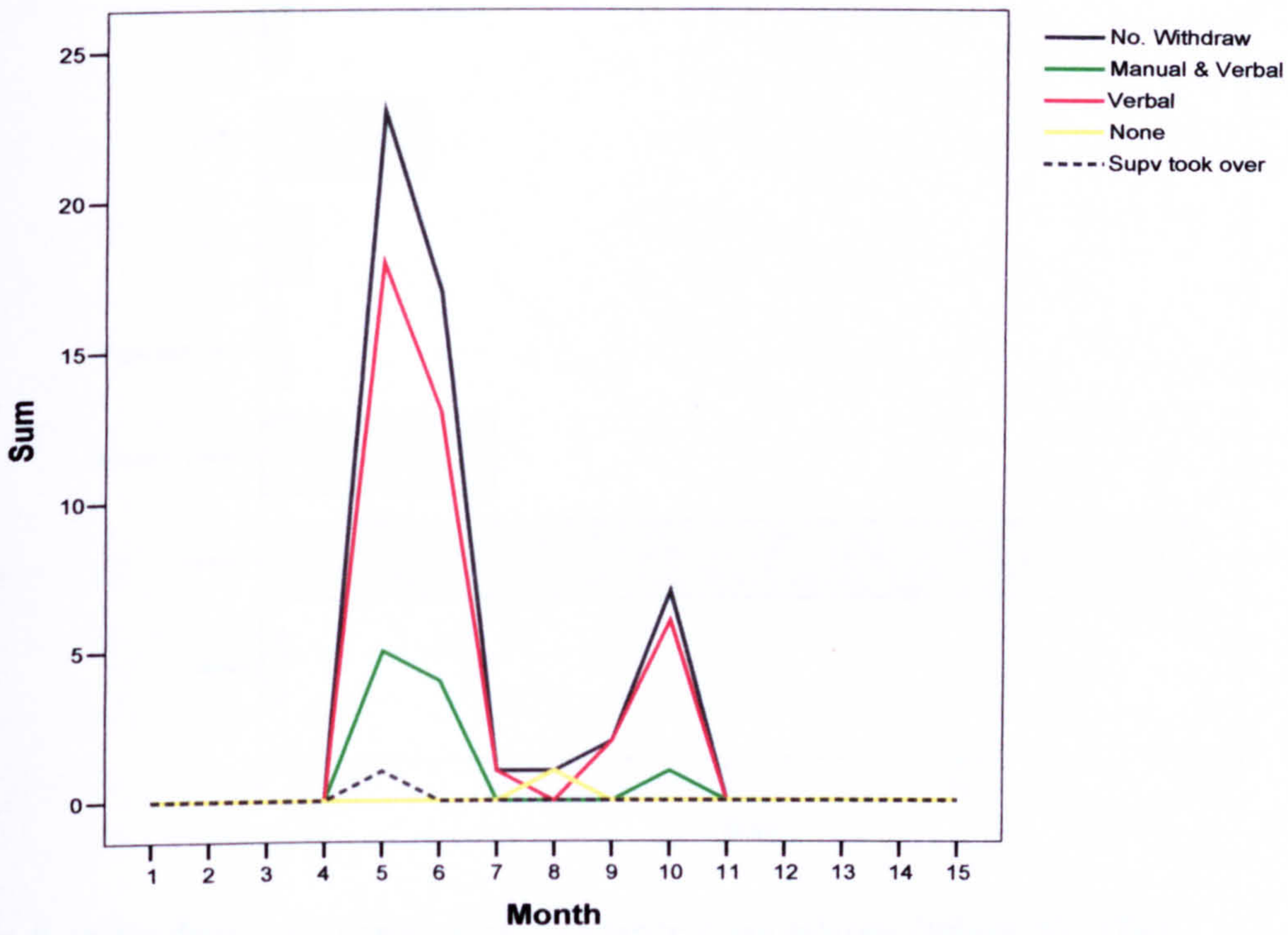


Figure 8.13 Student 1: full procedure assistance comparison, per quarter

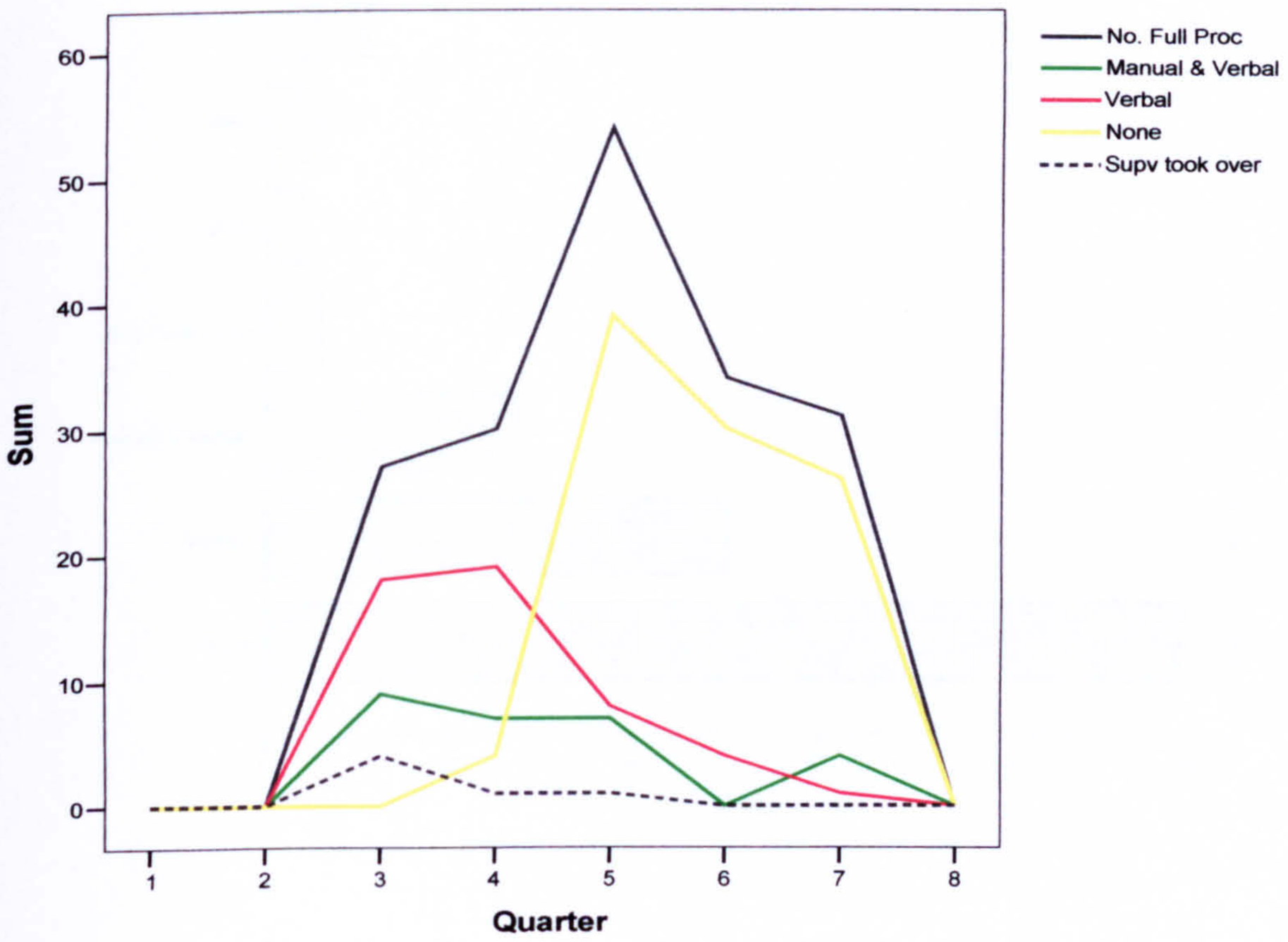


Figure 8.14 Student 1: variance in assistance endoscope withdrawal (where N= 51)

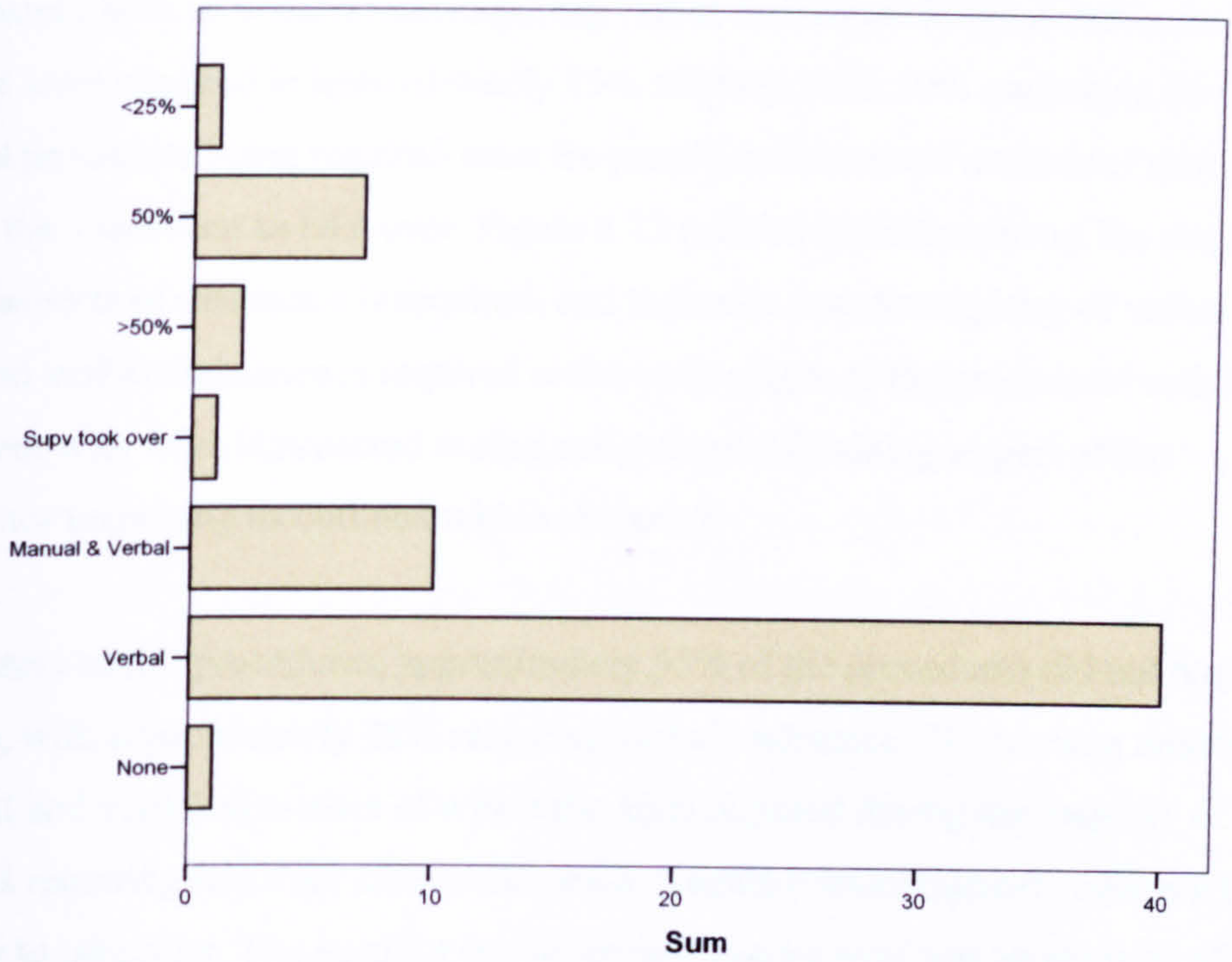
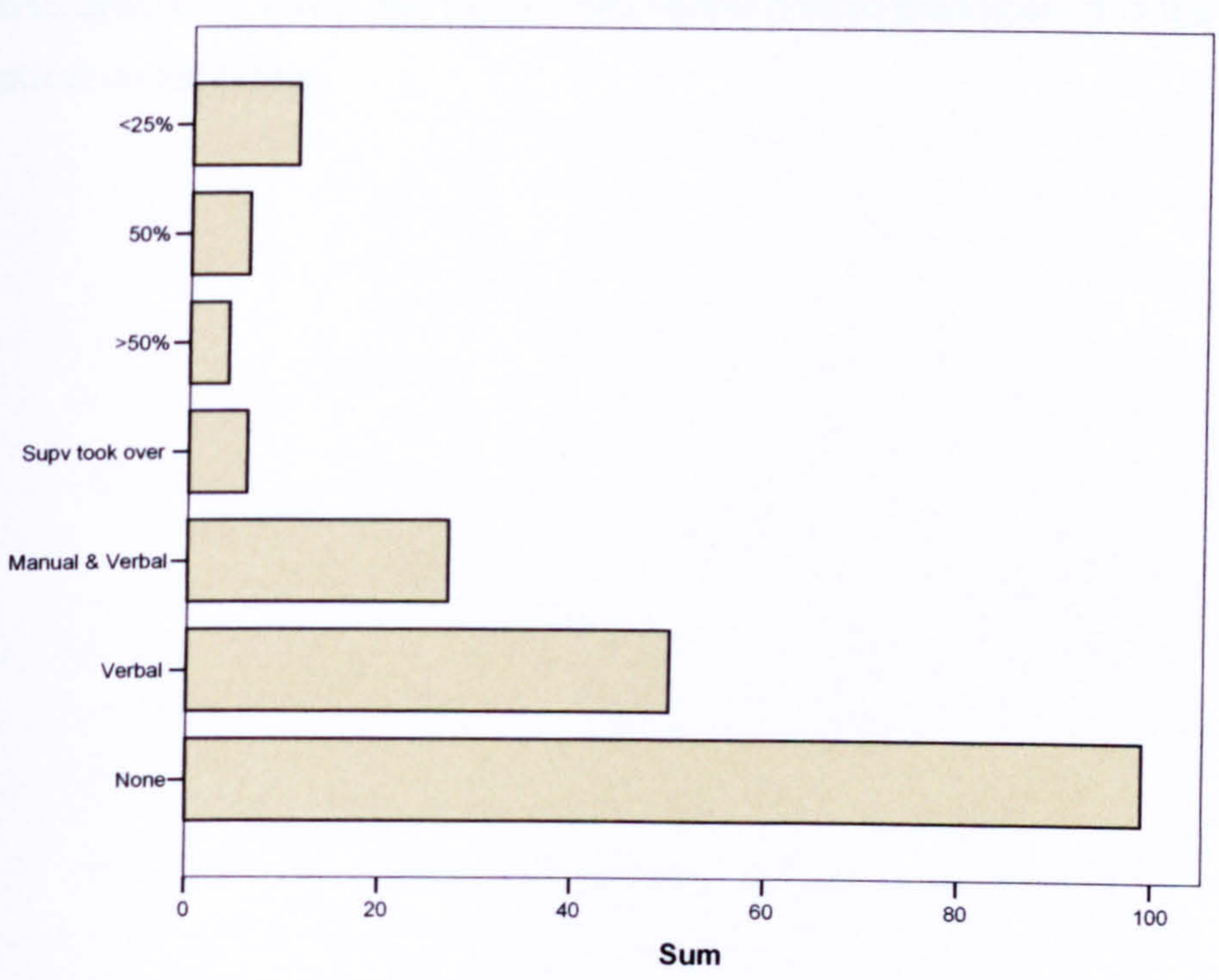


Figure 8.15 Student 1: full procedure assistance comparisons (where N= 176)



As indicated in figure 8.14, the majority of assistance is related to verbal assistance with approximately 80% of withdrawals requiring verbal assistance. Manual and verbal assistance were required in approximately 15% of cases, with 50% assistance during the individual procedure being required most frequently, with a small number of procedures requiring the supervisor to take over. Figure 8.12 enables identification of the stages where differing aspects of assistance is required, and indicates that the majority of verbal and manual and verbal assistance is required in the early stages of the procedural activity. This is consistent with what is expected during early stages of training as part of the psychomotor taxonomy as outlined within chapter 2.

In the context of full procedures, approximately 55% of the procedures did not require any assistance, with approximately 28% requiring verbal assistance. There was a minimal need for manual and verbal assistance of which the level required during the majority of such procedures requiring less than 25% assistance and again a small number requiring the supervisor to take over. The need for the supervisor to take over was an element of the early stages of practice as indicated in figure 8.13. Consistent with endoscope withdrawal, the need for assistance both verbal and manual and verbal is most predominant in the first half of the practical undertakings.

STUDENT 2

Figure 8.16 indicates the cumulative sum of procedural activity for student 2. The completion of simulated procedures was particularly slow for student 2 which was due to late delivery of the model to the base trust. Endoscope withdrawals were complete by quarter 4, whilst the rate of standard biopsy was slow. As indicated in figure 8.17, the need for assistance during endoscope withdrawal was predominantly verbal, occurring at a rate consistent with procedural undertaking. The need for assistance is further illustrated in figure 8.19. In terms of full procedures, figure 8.18 indicates the requirement for assistance. There is an equivalent requirement for verbal and no assistance in the early stages of practice which is latterly displaced predominantly with no assistance required.

As with student 1, figure 8.17 illustrates that the majority of assistance required during endoscope withdrawal was verbal. The requirement for manual and verbal assistance (approximately 10% of the procedures) was for approximately 50% of the duration of the procedure. There was not a requirement for the supervisor to take over in any of the withdrawals.

Figure 8.16 Student 2: cumulative sum of practice per month

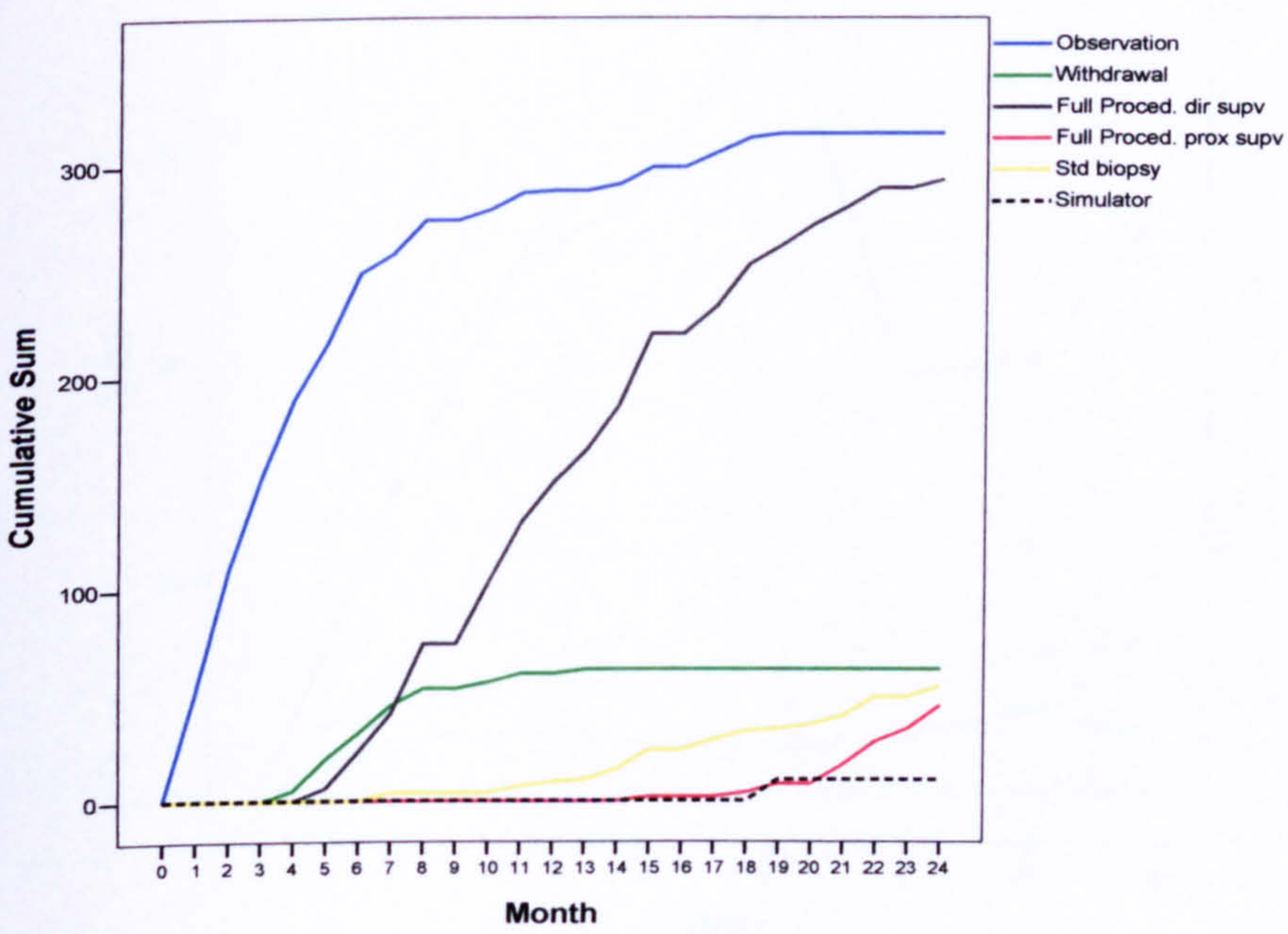


Figure 8.17 Student 2: endoscope withdrawal assistance comparison, per month

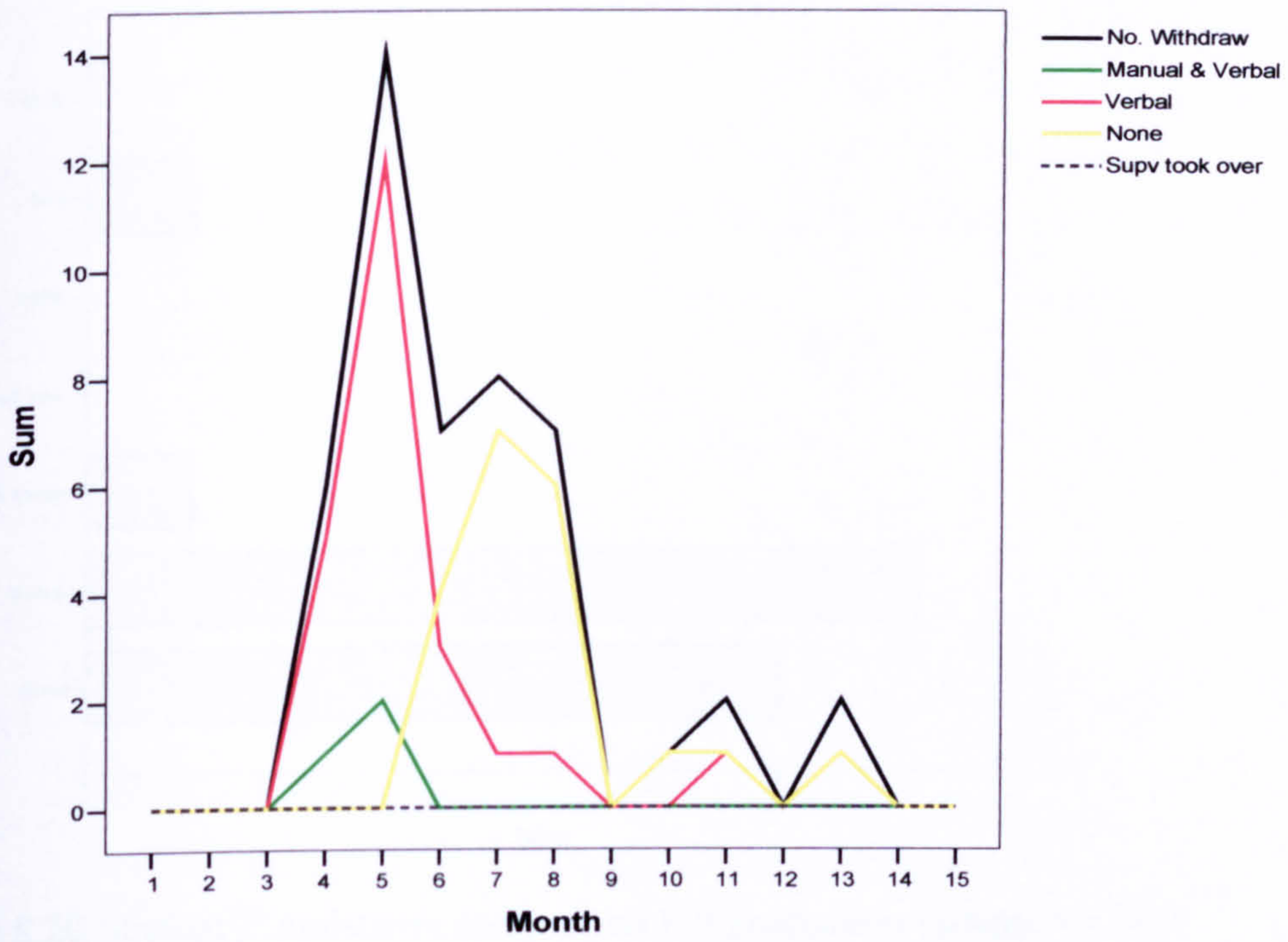


Figure 8.18 Student 2: full procedure assist comparison, per quarter

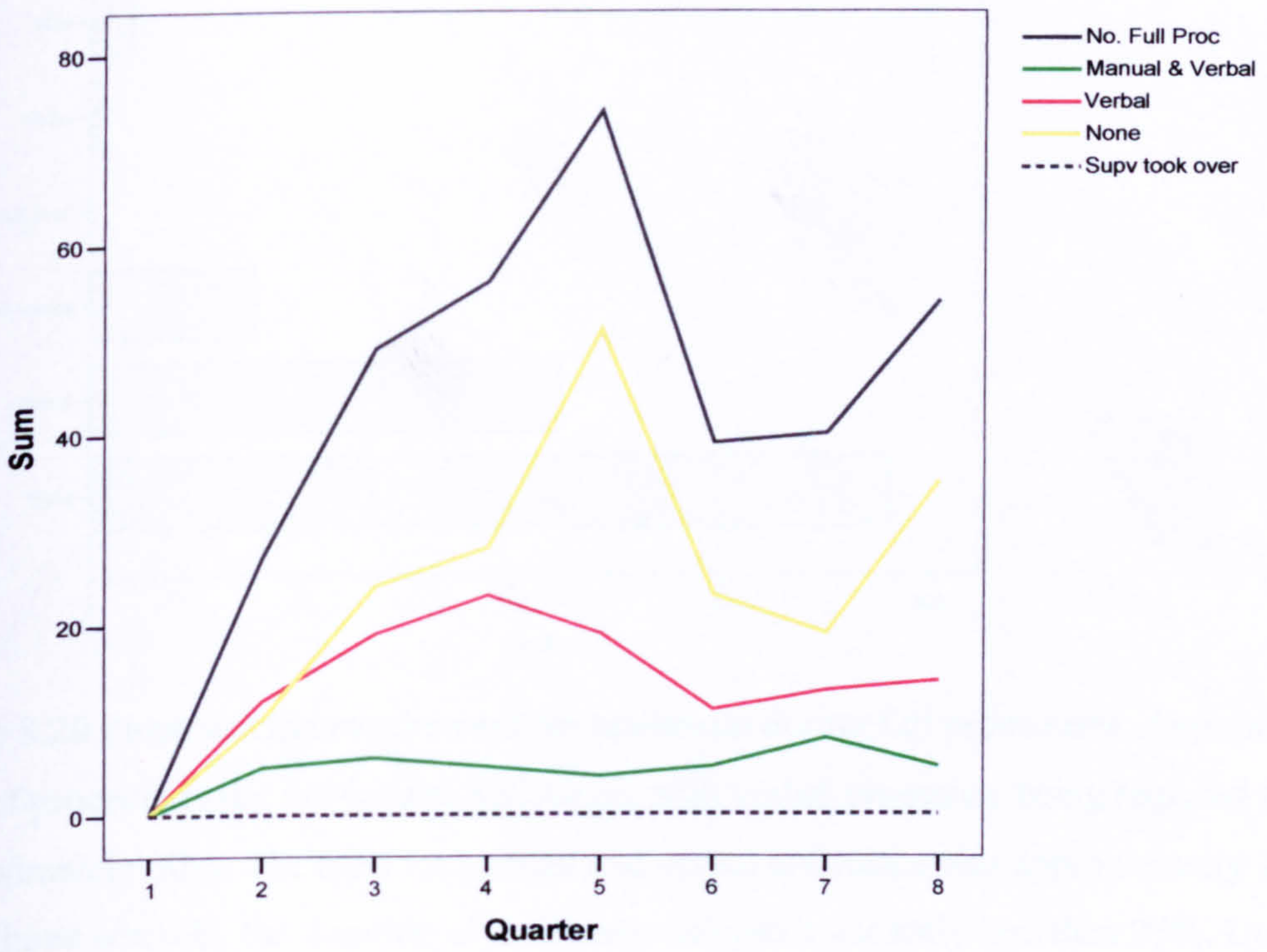


Figure 8.19 Student 2: comparison assistance endoscope withdrawal (where N= 47)

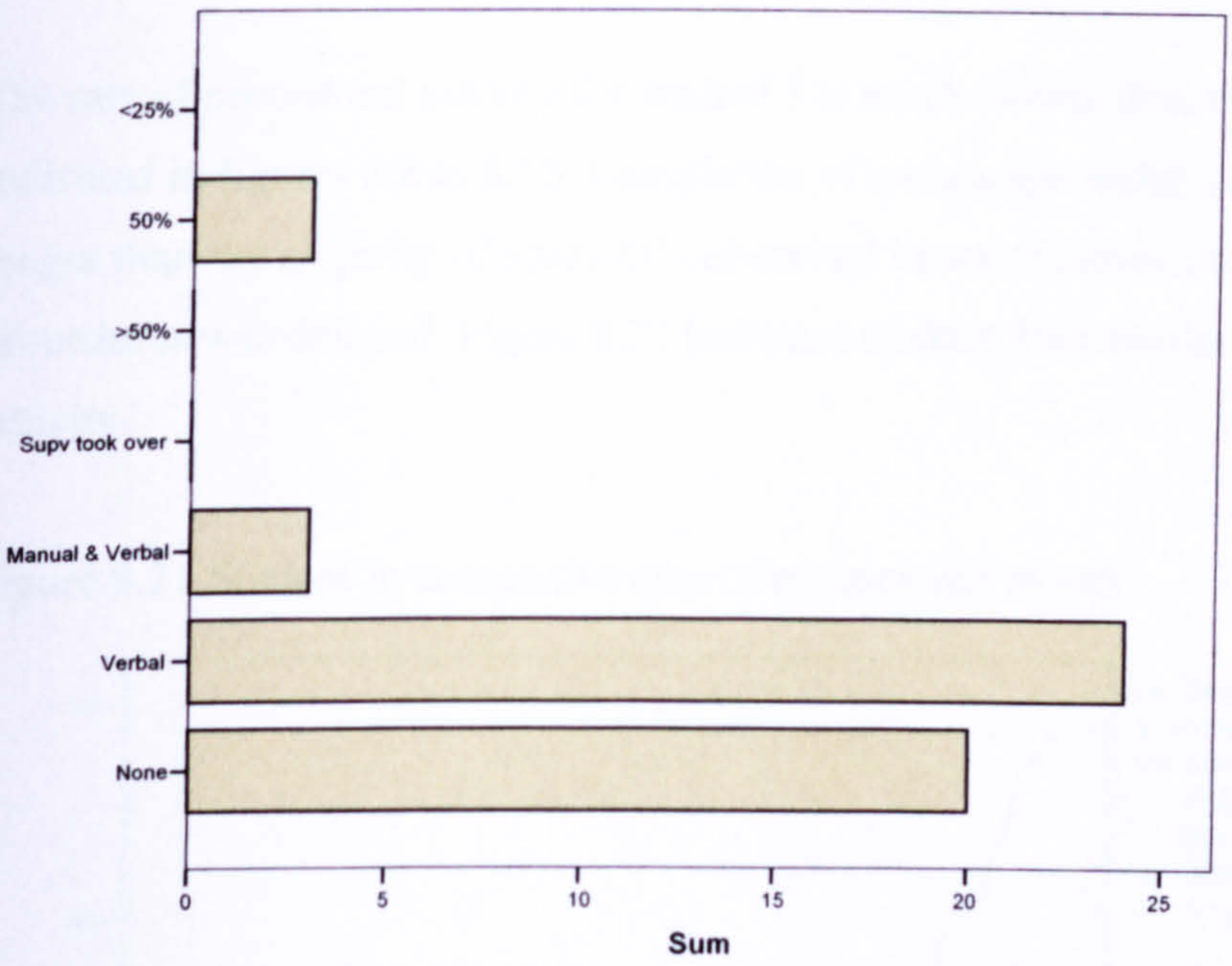


Figure 8.20 Student 2: assistance comparison full procedures (where N= 346)

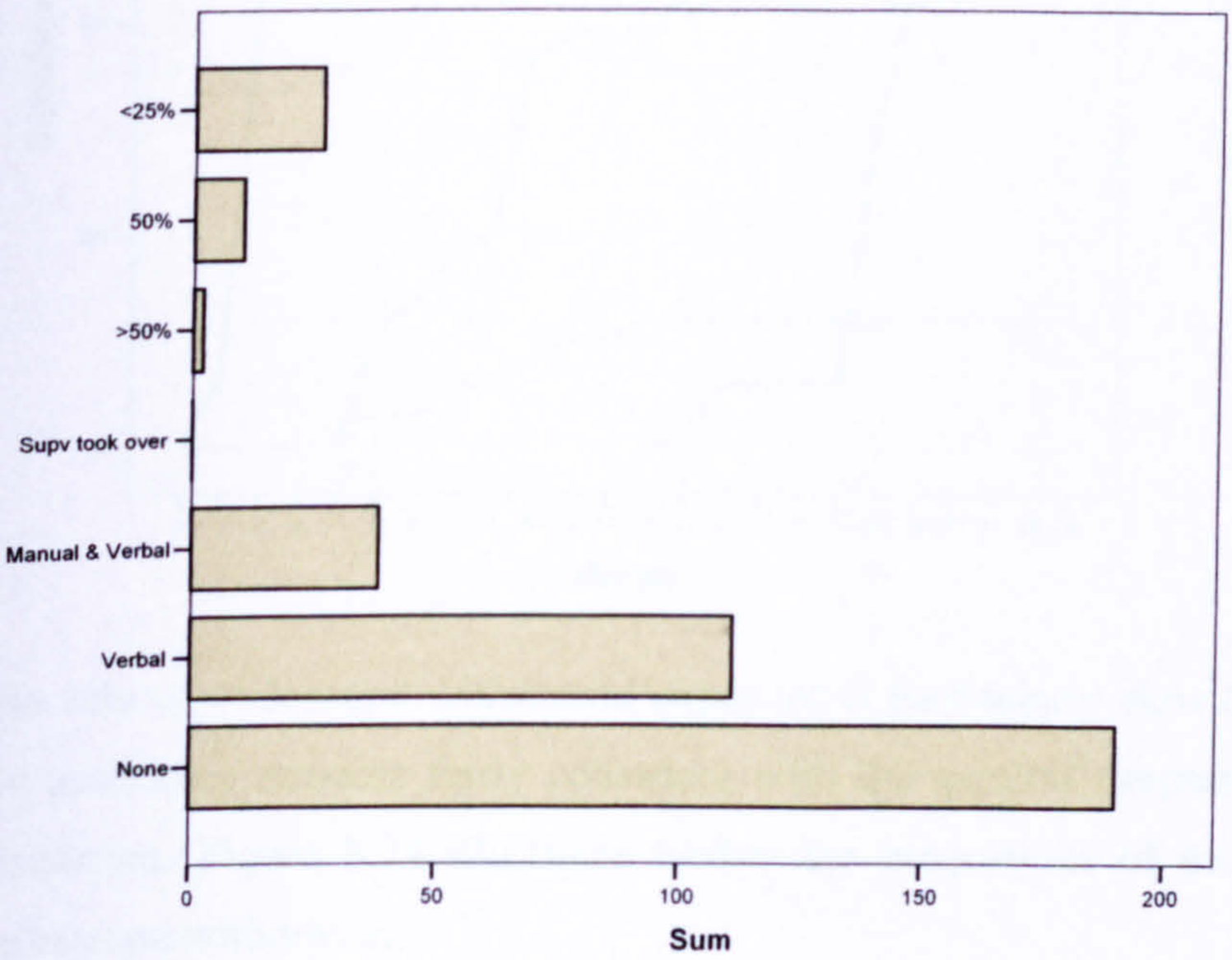
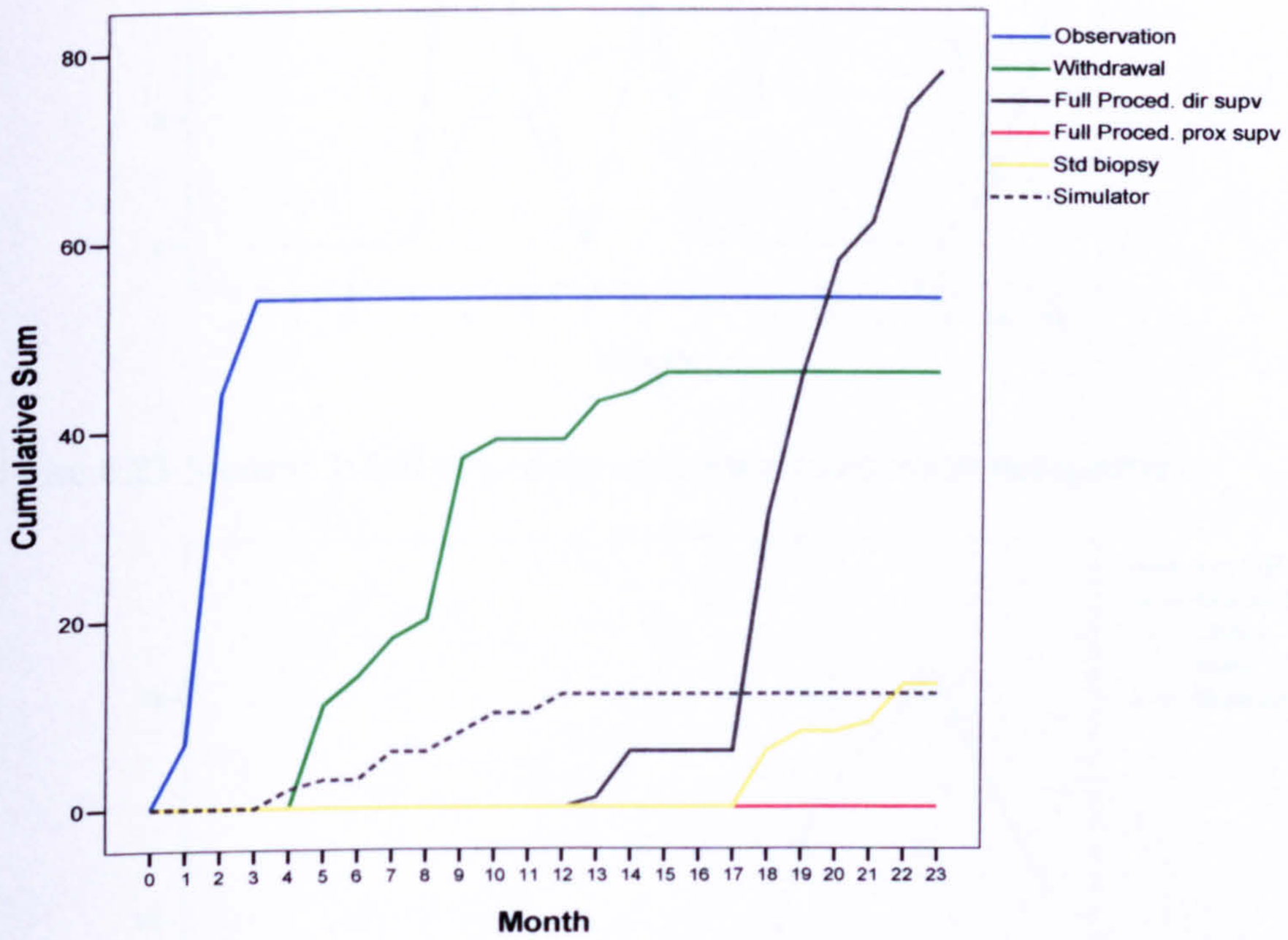


Figure 8.20 illustrates the requirement for assistance during full procedures. Approximately 55% of procedures did not require assistance, with verbal assistance being required in approximately 30%. The need for manual and verbal assistance was approximately 10% of procedures whereby the duration of assistance was predominantly less than 25%. During full procedures there was not a requirement for the supervisor to take over.

STUDENT 3

The rate of procedural activity for student 3 is much slower than that of students 1 and 2 as indicated in figures 8.8 to 8.10. Completion of endoscope withdrawal took significantly longer than the majority of students' cohort and hence the commencement of full procedures was delayed. Figure 8.21 indicates student 3's cumulative sum of procedural activity.

Figure 8.21 Student 3: cumulative sum of practice per month



The rate of endoscope withdrawal exposure is particularly slow however the requirement for assistance remains fairly consistent with the greatest proportion being that of verbal assistance. Figure 8.24 illustrates further the proportions of assistance provided during endoscope withdrawal.

Figure 8.22 Student 3: endoscope withdrawal comparison per month

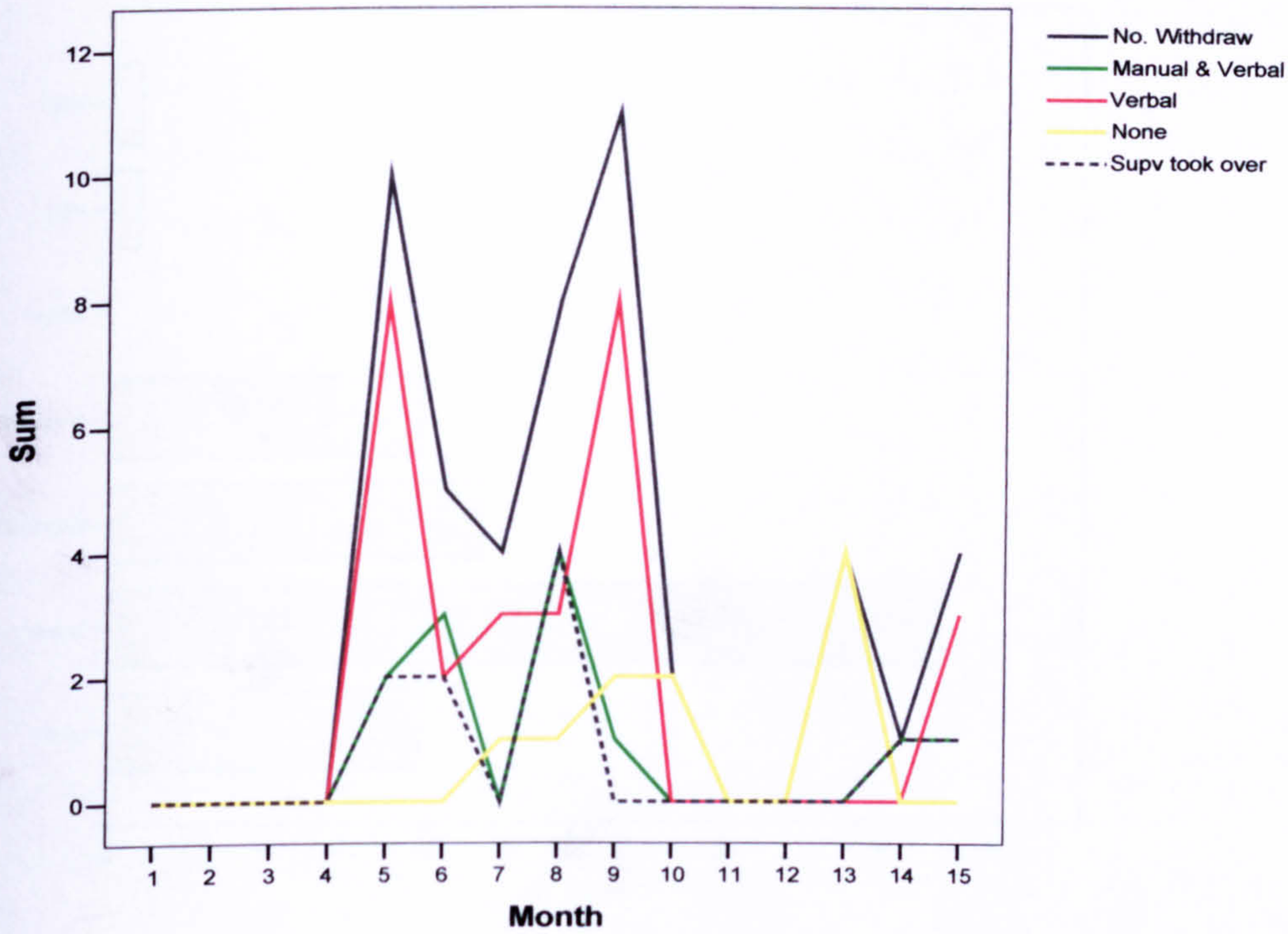


Figure 8.23 Student 3: full procedure assistance comparison per quarter

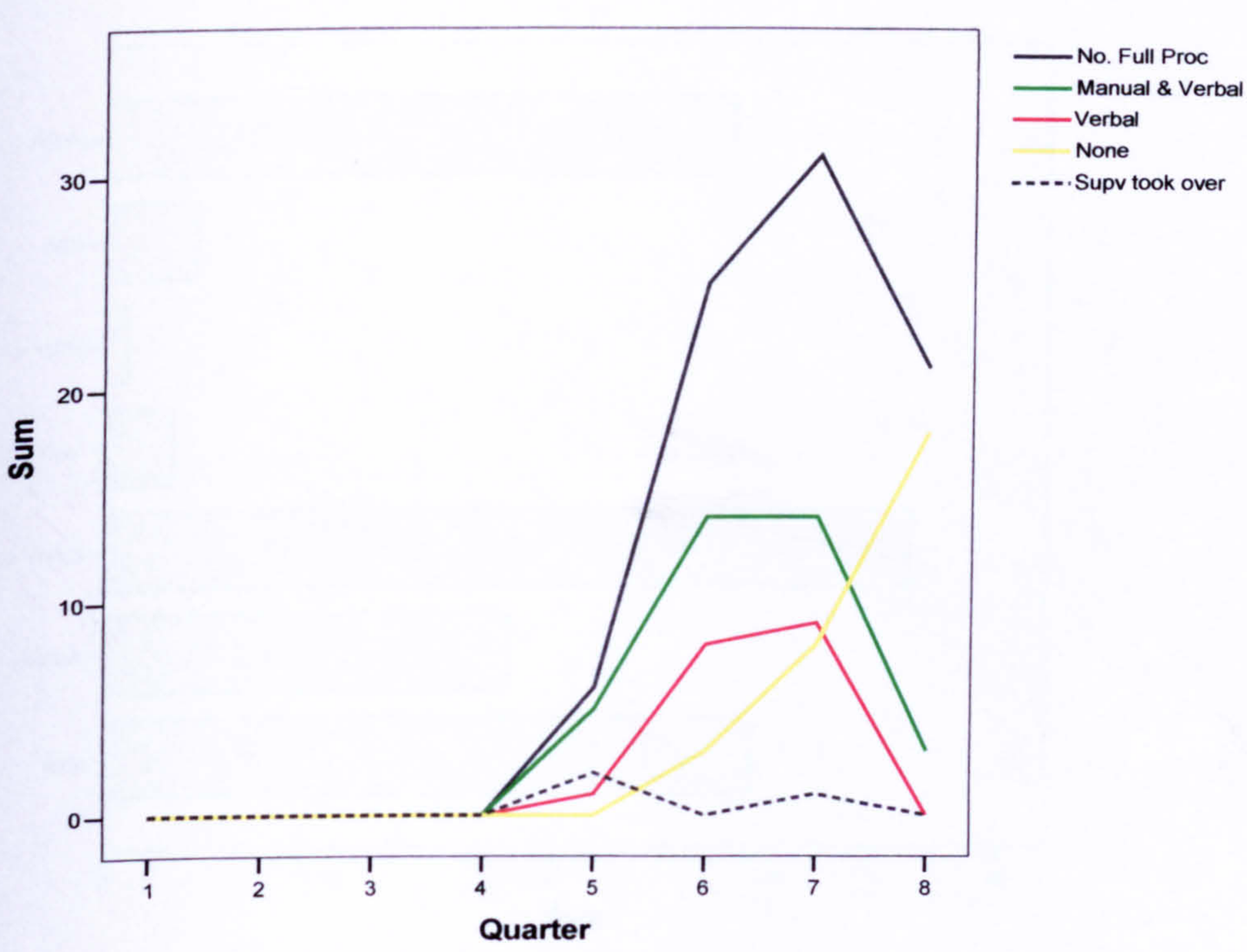


Figure 8.24 Student 3: comparison endoscope withdrawal (where N= 48)

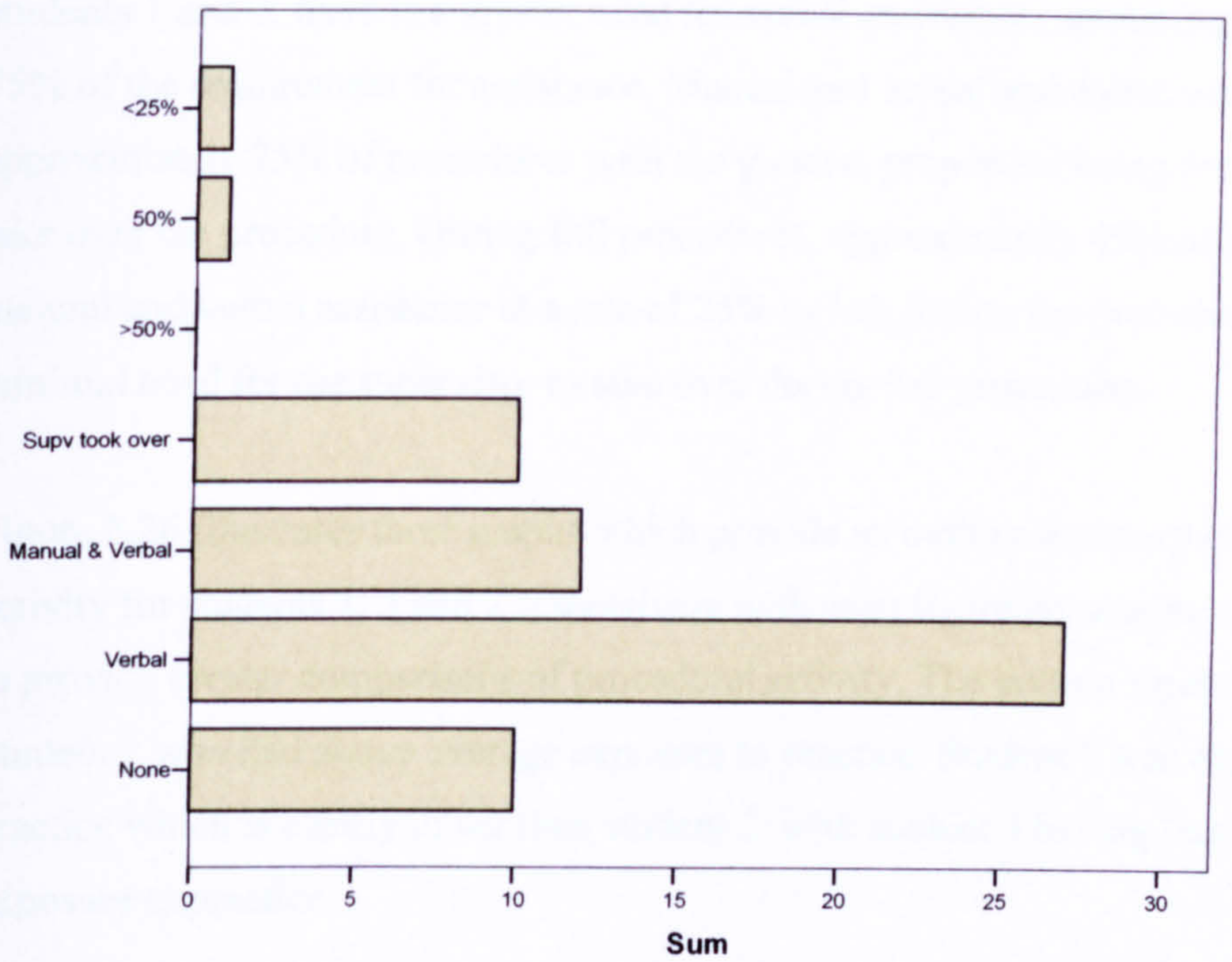


Figure 8.25 Student 3: comparison assistance full procedures (where N= 83)

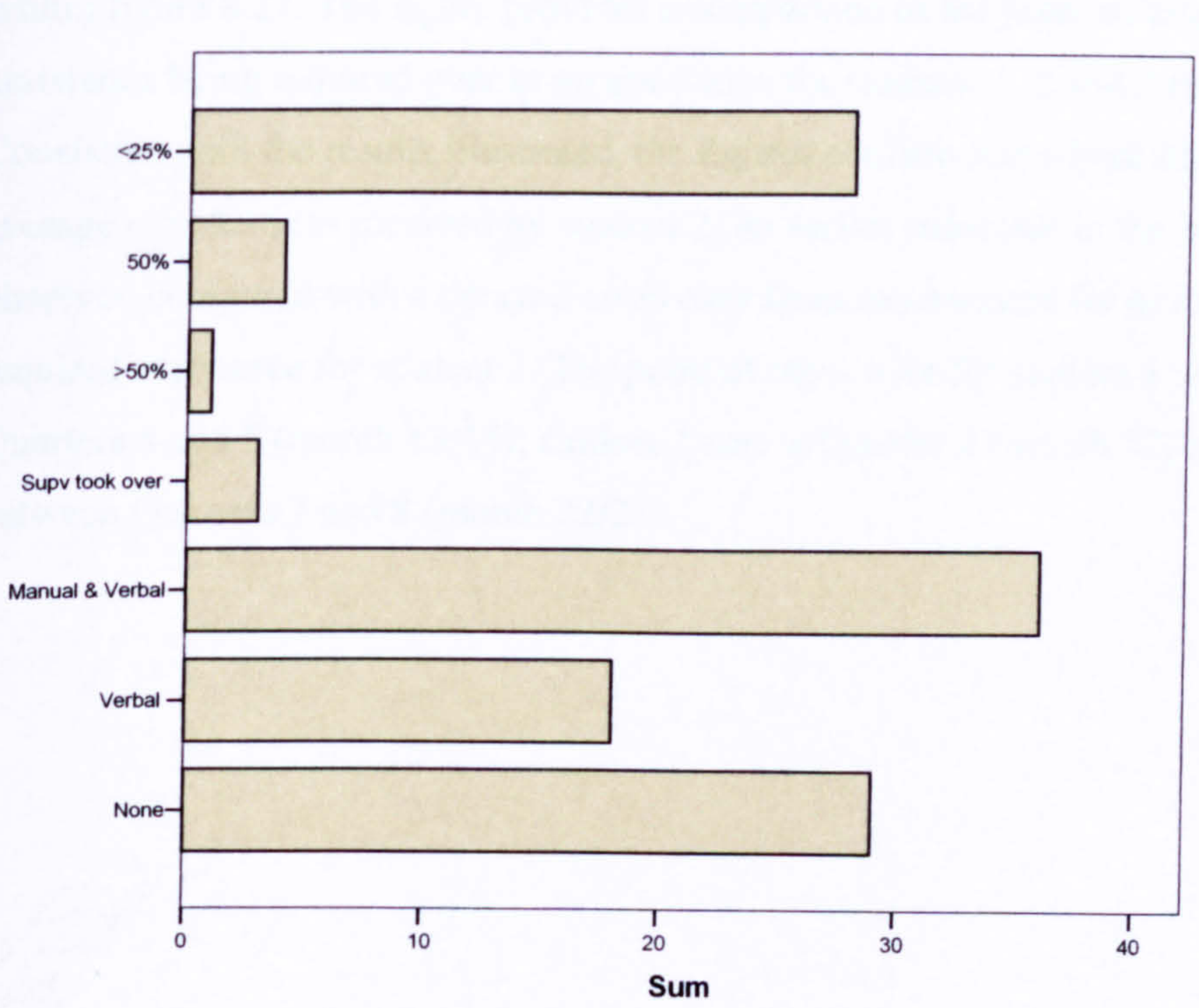
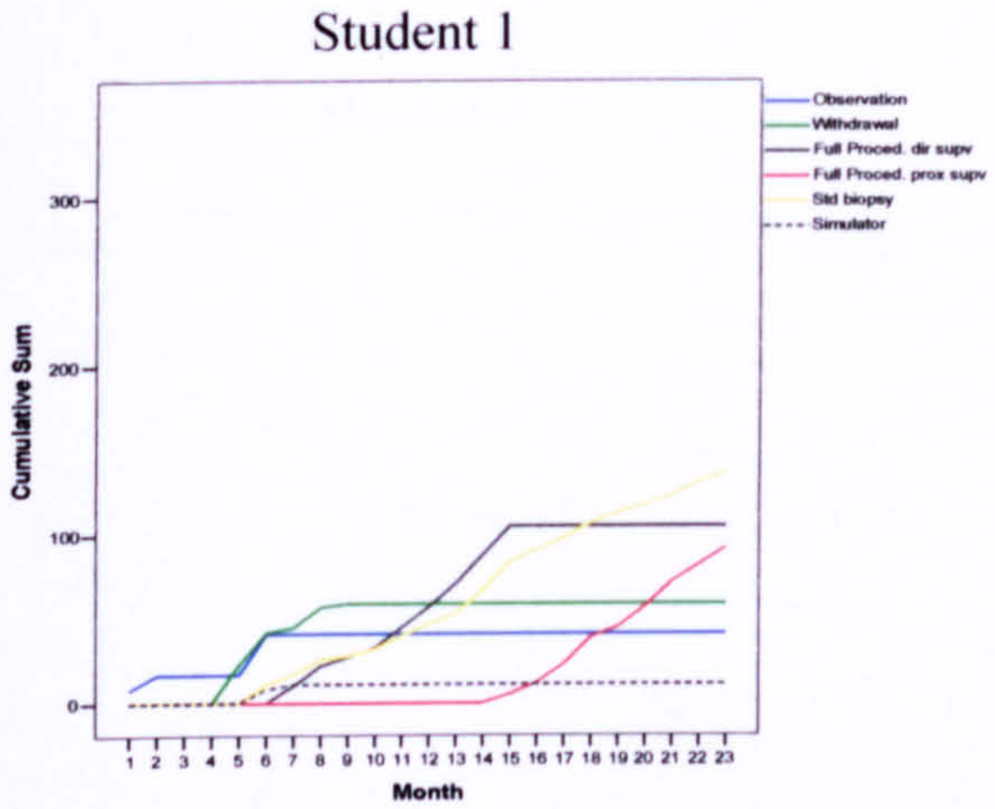


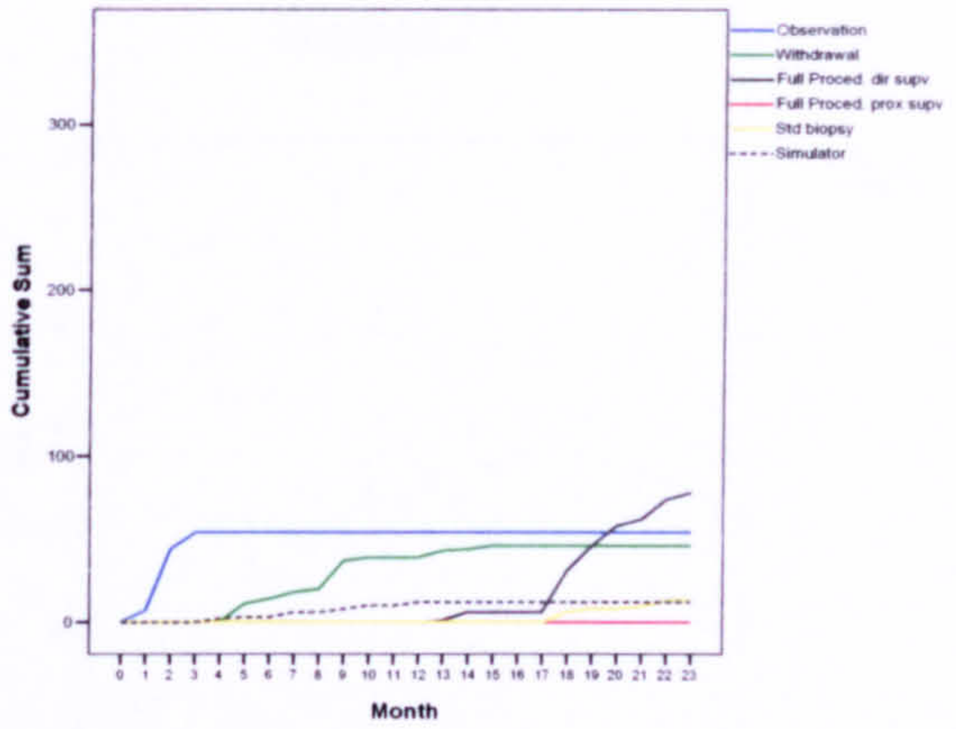
Figure 8.24 illustrates the breakdown of assistance during endoscope withdrawal. As with students 1 and 2, there is a greater need for verbal assistance, amounting to approximately 55% of the requirement for assistance. Manual and verbal assistance was required in approximately 25% of procedures with the greatest proportion being for the supervisor to take over the procedure. During full procedures, approximately 45% of procedures required manual and verbal assistance at a rate of 25% or less during the procedure. There was a minimal need for the supervisor to take over during full procedures.

Figure 8.26 illustrates three graphs which provide an outline summary of procedural activity for students 1, 3 and 2 respectively with each figure possessing an equivalent scale to provide greater comparisons of procedural activity. The bottom figure corresponds to Student 2 who had above average exposure to practice. Student 1 was exposed to average practice which is clearly lower than student 2, with student 3 having less than average exposure to practice.

The point at which students develop sufficient ability to undertake procedures is illustrated within figure 8.27. The figure provides a comparison of the point of cross over from assistance being required over to no assistance for students 1, 2 and 3 respectively. Consistent with the results illustrated, the figures confirm that where students receive above average exposure (as received by student 2) an earlier reduction in the need for assistance is observed compared with a delayed cross over from requirement for assistance to that of no required assistance for student 3. The point of cross over for student 1 was between Quarters 4 and 5 (month 13/14); student 2 was at Quarter 4 (month 12) and student 3 was between Quarters 7 and 8 (month 22/23).

Figure 8.26 Providing an outline summary of procedural activity for students 1, 2 and 3





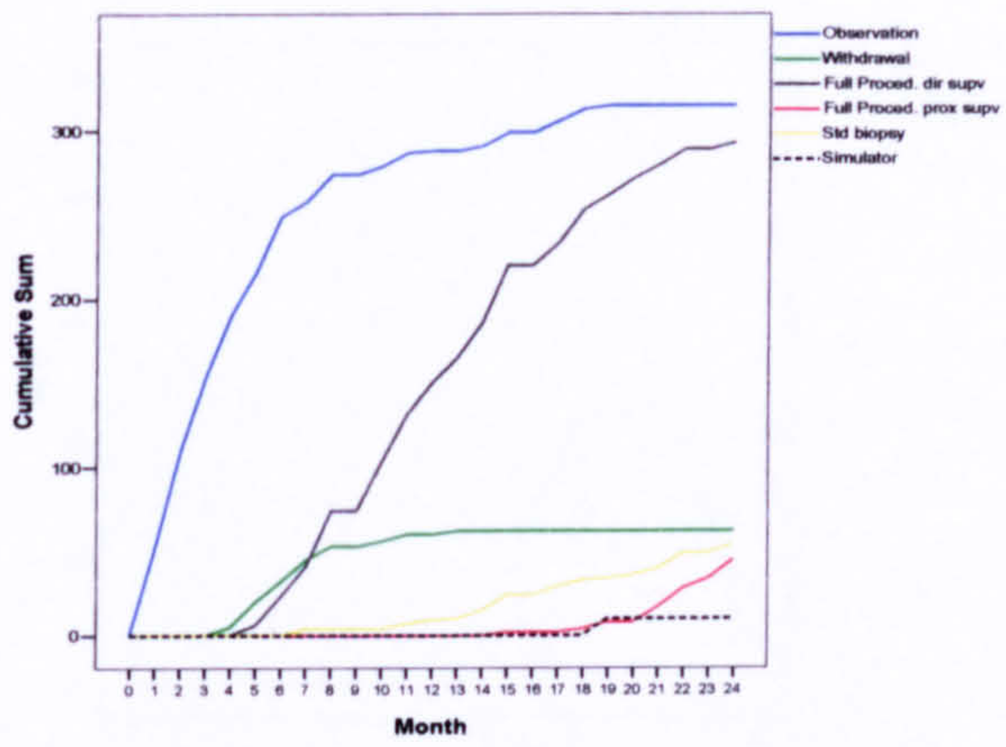
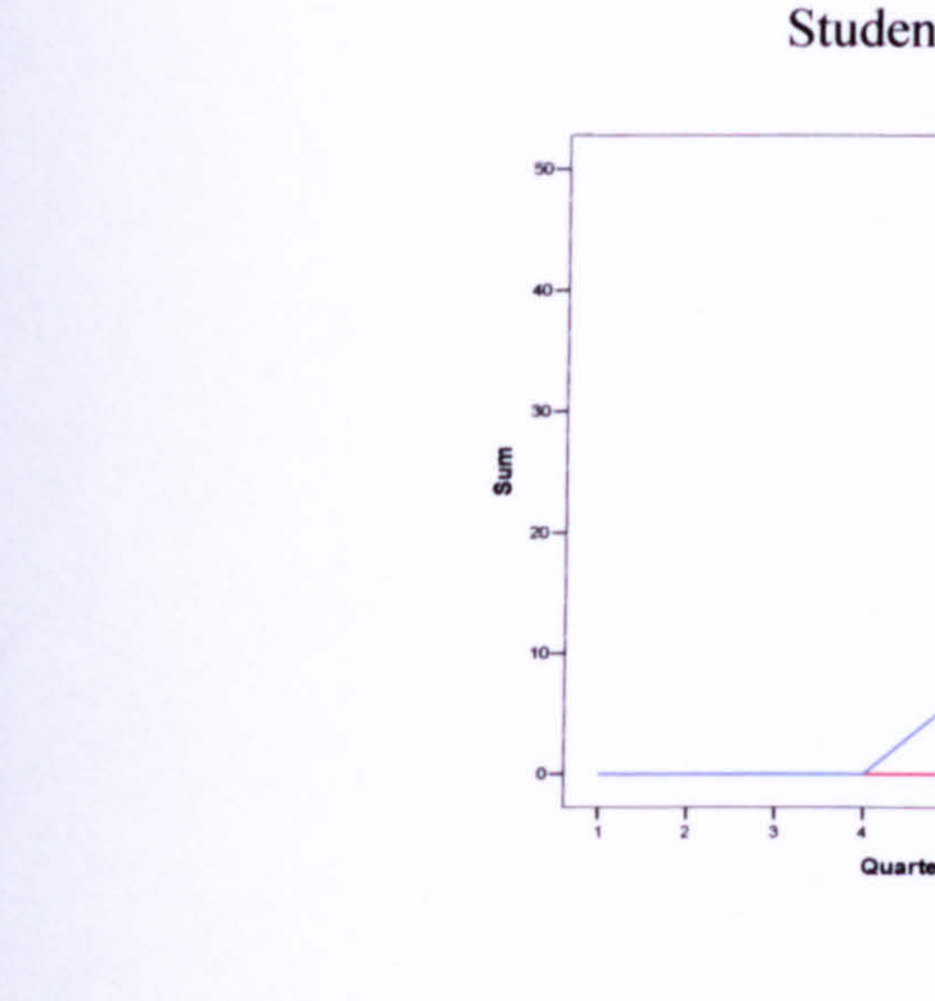
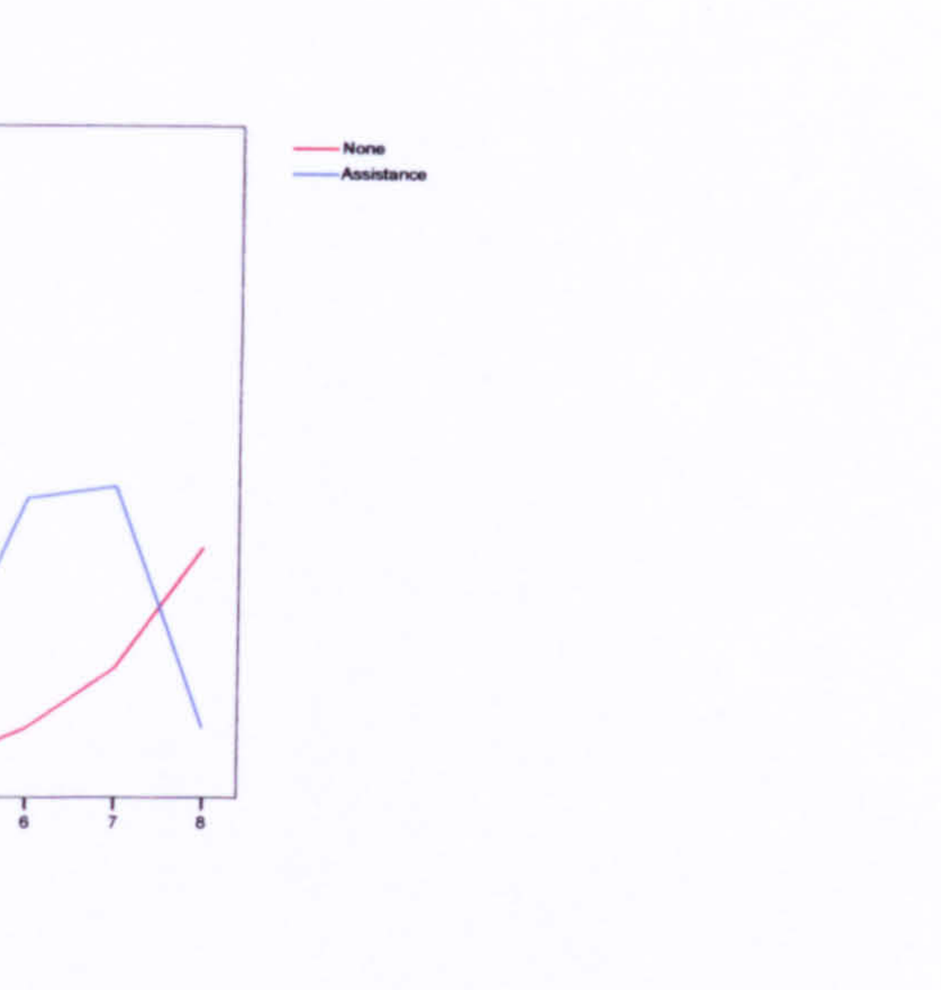


Figure 8.27 Illustrating the point of cross over from assistance required to that of no assistance necessary

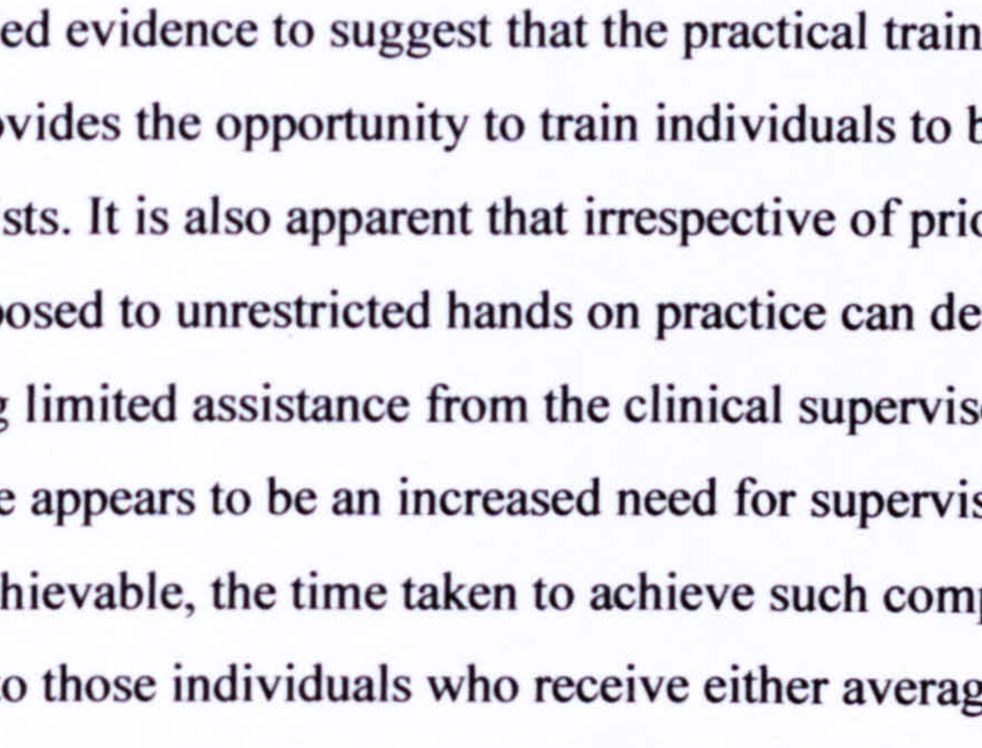
Student 1



Student 2



Student 3



This chapter has provided evidence to suggest that the practical training aspect of the training programme provides the opportunity to train individuals to become competent, safe and effective endoscopists. It is also apparent that irrespective of prior background, individuals who are exposed to unrestricted hands on practice can develop skills at an enhanced rate, requiring limited assistance from the clinical supervisor. Where exposure is limited and erratic, there appears to be an increased need for supervisor assistance and whilst competence is achievable, the time taken to achieve such competency is significantly delayed in comparison to those individuals who receive either average or above average exposure. In the context of complications, the overall rate was 0.25% for all procedural

undertakings, with 0.1% being recorded during full procedures. The rate of abandoned procedures stood at an average of 4.7% for all procedural undertakings, with 5.6% being recorded for full procedures.

It is suggested that when combined with the theoretical aspects of the programme as described in chapters 6 and 7, the practice requirements of the academic programme provide a firm foundation in which to base an individuals practice in addition to developing and extending knowledge, skills and attitudes within the practice of flexible sigmoidoscopy and the wider aspects which are inextricably linked to the endoscopic environment.

9 Clinical Supervisor Evaluations

What has been clear from the outset was that the concept of a non-medically or non-nursing qualified individual was not widely accepted within the endoscopic community. It therefore felt essential to obtain an evaluation of the role from those who were directly linked with the trainees themselves, the clinical supervisors (CS). At the end of the first year of the programme of study, questionnaires were sent out to eight of the pilot sites. It felt inappropriate to include the Castle Hill CS's within the evaluation since clear support and encouragement existed as a result of previous involvement with non-medical endoscopy. The intention of the evaluation was to receive comments from individuals not previously involved with the concept of non-medical endoscopy so as to avoid bias from previous experience.

The individuals providing clinical "hands-on" training were asked to complete an anonymous questionnaire as in appendix 8, whereby all eight sites completed and returned the questionnaires. It is recognised that whilst all questionnaires were returned, eight is a small sample in which to draw robust conclusions from. However given the nature of the training programme, it was not possible to gain further evaluations due to the number of students enrolled onto the programme.

Each CS was asked to provide information regarding their past exposure to endoscopy training and for which groups of individuals they had provided instruction. All CS's had previous experience of providing instruction for Gastrointestinal endoscopy at various levels. Of the eight, two (25%) had previous experience of training NE's with the remaining six possessing experience of medical endoscopy training covering upper and / or lower GI endoscopy, ranging from Consultant level to Senior House Officer training. Interesting to note however was that one of the CS's provided instruction for senior house officers which according to current JAG guidelines for training, should be delayed until trainees reach registrar status (JAG, 2004). What is not clear from the evaluation is how recently the training was provided by the individual and therefore it cannot be ascertained whether or not this complies with current JAG recommendations. It is considered that instruction at such an early stage in a medical career is potentially wasted in that there is no certainty an individual will follow a career which includes endoscopy. The recommendations of JAG are considered to be entirely appropriate since it is felt that it is inappropriate to provide instruction for junior medical staff until firm commitments have

been made regarding their chosen specialist field. Training opportunities should be utilised for more eligible trainees such as specialist registrars, nurses and other individuals keen to pursue careers incorporating endoscopic practice.

The CS view on the introduction of "other" endoscopists was evaluated, with enquiry focussing around NE and other non-medical endoscopists. Of the eight responders, three identified some caution regarding "others", whilst five expressed no concern at either NE or non-medical endoscopy. Of those expressing concern, one individual stated initial caution for both NE and non-medical endoscopy. In the context of NE, concerns were raised over suitability of the role however such concerns were allayed through personal involvement with NE training. In the respect of the non-medically qualified endoscopist, the same individual had no concerns appertaining to practical skill but more related to an expected deficit in underpinning knowledge which supported both medical and nurse education. It was not clear however whether this was the expected outcome or a reflection of the stage of the programme. One individual quoted initial caution over the introduction of NE however their opinions had been changed through involvement with NE, subsequently recognising the skill and capability of NE's. The CS went further to state they did not have any concerns over the role of the non-medical endoscopist, however it was acknowledged that past experience of working with the trainee made them comfortable with the role and that otherwise they may have been cautious. It is suggested in the instance where previous working relationships have developed trust and confidence, acceptance within the local endoscopy community is increased providing an environment conducive to learning.

Within those expressing concern, one respondent stated initial concern over non-medical endoscopy but not NE, with justification based around the lack of regulation for such individuals. This issue will be discussed further within the thesis. Where individuals stated no initial concerns over either roles, one individual quoted they felt the introduction of a non-medical endoscopist was a viable move before commencement of the course, and gave whole hearted support for the development. The comments made by those expressing initial caution at the introduction NE and latterly non-medical endoscopy mirror many of the concerns highlighted by the endoscopy community (Chapman, 2004, 2005). Such concerns are considered justified when faced with blurring boundaries, however for some individuals the process of change can be challenging, with the safety of "comfort zones" providing an

overriding protection for many. It is suggested that whilst this may be appropriate for some aspects of clinical practice, it is the motivation and commitment of change agents that drives contemporary healthcare forward. Without such change agents or champions within healthcare, the advances made within medicine to the current day may not have been possible. The secrets for successful change have been described by Rogers (1983) who describes a model for change management, identifying seven steps which affect implementation and success. It depicts pinpointing need for change and the necessity of developing an "information exchange" relationship where information can be shared, creating a platform enabling problem diagnosis. Further encouragement of intent to change is combined with translation from intention to action where change is systematically implemented. It also advocates the need for stability during the adoption period and avoidance of attempts to prevent or sabotage implementation. The stepwise method of implementing innovation and change will contribute to the achievement of ambitions providing the initial idea was realistic and based upon sound evidence.

For successful change to occur, it is essential for all who have potential involvement in a change of practice or activity to be involved from the outset. This was felt an essential element in the smooth introduction and subsequent development of non-medical endoscopy trainees and hence featured within the CS evaluation. Of the eight respondents, six stated involvement from the applications process, one was partly involved and one stated they had no involvement with the process. They did not however provide any further information regarding the reasoning behind the lack of involvement or personal feelings regarding the matter. The individual partly involved attended the initial launch event but was unable to be on the appointment panel due to annual leave. Of the remaining six, it appears that some planning surrounding the appointment of the trainee took place. However this did appear to be related to how well informed the centres were of the forthcoming opportunity. Some individuals assisted in preparation of the bid and one directly approached the MA directly as a result of publicity surrounding the initial Castle Hill Pilot. Others were instrumental in identification of the trainee whilst the other one was the local strategic Health Authority Clinical Lead for Endoscopy and was in full support for the role and hence was involved from the outset.

From the responses obtained, those CS's instrumental in the development of the bid and identification of the trainee did not express initial concern over either NE or non-medical endoscopy. The involvement of the CS at the early stages was compared to training experience (ie. the individuals they had trained) however there was no observable correlation between the two responses.

One challenge faced by both potential pilot sites and the programme team within the HEI related to the urgency the programme was required and the declaration of interest announced by the MA. Whilst the curriculum framework had been completed to a high standard with the validation event planned for later in the academic year, the recruitment of centres was less than structured. The haste in recruitment of the pilot sites and their respective trainees did pose significant challenges for individual sites in terms of advertising the post, human resources in the respect of appointment processes and the preparation of the trainees and the hospital departments they were to be based.

The CS were asked to consider whether they thought they had received enough initial information, or if they felt they had been dragged along by the process with too little information regarding the expectations and operations of the pilot and academic programme. Of the eight returns, one stated they felt the timescale was too short to plan and implement the pilot effectively, whilst a further respondent felt they received sufficient information but did feel the process was very rapid at the start which did prove challenging at times. This issue has been discussed with the MA who have always maintained that should the pilot not have commenced at that time there would have been little chance of it going ahead at a later date.

The remaining six reported that they were in receipt of sufficient information and guidance relating to the pilot and the academic programme. One did however state they were disappointed with the information received from the HEI during the initial few months of the academic programme, stating that they felt they could not rely on the trainee to provide information regarding the academic studies. It is argued however that the transmission of information regarding the educational programme should be through the student and not an element of the academic leads' role. Lecture notes and reading lists are provided by the academic lead for each individual student and further support is afforded online. At the

close of each period of study within the HEI, back to base sessions were accompanied with handouts and checklists to take back to the base site.

It is maintained that responsibility for learning within the context of HE lies with the individual and where there is an interested party (the employer in this instance), the student should provide information requested by the interested party. It is recognised however that in this situation it can only be assumed that such information has been requested by the employer and not just taken for granted that the student will pass on the information. The student may have little or no experience of adult learning and hence not perceive the transfer of information as being important. One should remain mindful that the students' most recent academic experience may have been within compulsory education, and hence attitudes to study and supporting networks may be disparate with those attributable to adult education.

An important consideration for any academic programme of study is that the programme being delivered is fit for purpose, meeting the needs of students and employers. As part of the ongoing quality review process within the HEI, all students are requested to complete module and programme evaluations which review all aspects of the module or programme. Whilst the routine practice of student evaluations provides the programme team with feedback on the quality of the module of programme, the opportunity to receive feedback from other interested parties does not exist. Thus it was felt appropriate to question the CS's of their views regarding the quality of the programme and to make suggestions for improvement.

The CS's were asked if they felt the training programme was to a high standard, of which seven individuals responded yes, with one not sure. The respondent who felt unsure also felt they did not receive sufficient information from the HEI as previously discussed. It is considered that the response reflects the lack of information provided by the student in that the CS was unaware of the learning taking place, and perhaps not a reflection on the overall quality of the programme. Of the seven who felt the programme was to a high standard, comments were made regarding the very structured nature of the programme and that it was apparent the programme was very precise and comprehensible. One respondent who felt the training was to a high standard, quoted they would prefer more information regarding the

progress of the student. In a similar vane to previous discussions, it is argued that unless an agreement between the base site and the HEI has been entered into, it is the responsibility of the student to transfer information back to the employer regarding their developments and achievements. This is a debate which is ongoing between commissioners and HEI's which to date has not reached a conclusion as to whether HEI's have a responsibility to provide reports to employers regarding student progress.

Currently within the HEI a policy does not exist requiring employers to be kept up to date on student development, progress and achievement. However it is acknowledged that one cannot assume students will inform the employer of their achievement, particularly if they have experienced problems or perhaps been unsuccessful in assessments. It is questionable that where individuals are sponsored by their employers, either financially or through release from duties, whether HEI's have a responsibility to inform employers of attendance and achievement. This is considered to be reasonable practice to follow but would require the implementation of a policy to ensure transparency since there may be implications for students within the workplace. It is contended however that where students are supported by their employer for personal development, they have a personal and professional obligation to complete their studies to the best of their abilities, demonstrating commitment and motivation.

Where students are unable to achieve the desired outcome due to circumstances beyond their control, further time to complete their studies is acceptable. However where students have wasted the opportunity, perhaps in terms of poor attendance, non-submission of assessments or lack of self discipline, other individuals should be given the opportunity to undertake personal development ahead of those lacking motivation and commitment. This is of particular significance within the NHS in the current financial situation. It is not possible to release everyone expressing an interest in further study and hence it is of utmost importance that students released from clinical practice demonstrate the commitment, motivation and drive to succeed in their studies as apposed to wasting the time, money and opportunity bestowed to them.

When an individual or individuals are closely linked with something, it is not always possible for those individuals to recognise areas which require attention. As a result, CS's

were asked to comment on the need for any improvements to the programme. Of the eight returns, four felt some improvements could be made whilst the remaining four felt the programme did not require improving. Of the four who felt some improvements could be made, one individual felt more explicit information regarding each semesters' learning and intended learning outcomes was necessary. This was the same individual who did not receive feedback from their trainee and hence the comment is understandable. Two further respondents quoted similar issues, again relating to the transfer of information between the training centre and base site in terms of student progress which has previously been addressed. Finally, one supervisor felt they would like greater attention paid to anatomy and physiology in the first year. This was an issue identified by the programme management team and is under review.

Given the major aspect of the programme relates to the instruction of individuals to perform flexible sigmoidoscopy, supervisors were asked to comment on their satisfaction of the hands on training provided by the training centre. Of the eight, all were pleased with the quality of the hands-on training, with no further comments being made.

In the current climate of the NHS, constraints relating to the provision of service and delivery frequently impact the exposure to dedicated training opportunities, which is an issue often observed within endoscopy. For many of those providing endoscopic training, endoscopy only forms a proportion of their role and the opportunity to provide fixed training sessions for all interested and deserving parties is challenging with medical, nursing and other professionals all baying for time. In the respect of the CS's involved with the hands-on training of the endoscopy trainees, two individuals felt they were able to devote sufficient time to their trainee, whilst six felt they were not. The individuals who felt they devoted enough time did not make any additional comments. Of the six who did not have sufficient time, two did not make any additional comments. One individual highlighted the challenges faced were attributable to capacity issues. They added that too much time could never be devoted but hopefully issues relating to capacity would be resolved in the future. The remaining three individuals cited that they were experiencing problems with training lists being cut due to target pressures and were "busy" in general.

Whilst significant demands and targets are placed on service delivery, the importance of training should not be overlooked but viewed as an investment for the future of the service. Whilst there is a continued focus towards target driven care, there should be incentives for those departments who invest in training for the future. Surely it is not possible to drive down waiting lists through increased activity if there are gaps in skill mix preventing the opportunity to increase capacity. It is argued that training should be recognised as high priority in the contemporary healthcare environment, and should receive greater recognition that it currently appears to yield.

The central focus of the pilot was to develop individuals who are safe, effective, competent and confident within their specific discipline. CS's were questioned regarding the progress the trainee made over the first year of the programme. What was clear from the responses was that all CS's were pleased with the academic and technical progress. One individual stated they were disappointed with the amount of technical progress made, it was stressed however this was due to service constraints rather than ability or willingness of the trainee. Comments received included the significant development of practical skill relating to FS and that some trainees had progressed onto proximally supervised practice. One respondent quoted they felt the rate of progress seen was greater than that of traditional trainees. The particular CS indicated previous experience of endoscopy training lay within NE. The amount of exposure to medical trainees was unclear hence little can be inferred from such a comment within the context of this evaluation. Also evident from the responses was that trainee confidence was increasing in line with increasing knowledge and understanding. This was further reflected in their role within the endoscopy team, and hence assisted in acceptance of the role.

There are many benefits for the development of new roles within the healthcare environment however without acceptance and recognised, structured plans for the future of such new roles, there appears little point in designing and developing individuals where the existence of such roles is questionable. The issue of perceived future roles for the trainees was explored, with seven respondents stating they felt the role had a future within the base trust. Of the seven, four did not make any additional comments, whilst three indicated there would most certainly be a future for the trainee within endoscopy, and they were essential in enabling the Trust to meet its required provision of lower GI endoscopic procedures. One

individual identified that plans were already in place for the trainee following completion of the training which would significantly benefit trust in the drive towards service improvement.

Where there is a lack of clear progression and employment opportunities it is argued that it is challenging to maintain motivation in students who cannot see beyond the end of the training programme. Peaks and troughs have been observed in most of the nine trainees at various stages. Through student support mechanisms, it has been possible to detect that the lack of identifiable progression has been the single most contributory factor to affect the commitment and motivation of the trainees. As a result, attempts to focus minds onto continued devotion to their academic studies to achieve their goals have been made, since the academic element is essential for their futures. Technical competency to undertake endoscopic practice alone is not sufficient for this particular group of individuals, particularly when considering the potential requirements regulation will demand. Whilst regulation is presently unclear for these individuals, it is anticipated the Health Professions Council (HPC) will have a significant role to play in future regulation.

As previously mentioned, the non-medical endoscopy practitioner has been met with varying degrees of acceptance throughout the endoscopy community. It was therefore deemed imperative to obtain opinions of the CS's on the concept of the non-medical endoscopist since such individuals are "at the coal-face" of the new development, and clearly their perceptions regarding the role could offer an accurate reflection on the future of the role. Of the eight respondents, seven felt the concept of non-medical endoscopy would increase in acceptance whilst one remained pessimistic. The individual expressing caution over the role stated they felt they had been fortunate with their trainee, but it was not possible that the same could always be said. Whilst the CS raised concerns over future trainees, given the specific nature of the field it is proposed that many future applicants would have previous experience of gastroenterology or endoscopy, and hence would possess the necessary drive and motivation in which to undertake practice within the discipline. It is conceded however that when considering potential direct entrants, such individuals should be exposed to the environment prior to making a firm commitment to an academic programme. It is suggested that this situation could be addressed through the

provision of foundation degree programmes which is the future plan for the existing programme and will be discussed later within the thesis.

Of the seven individuals who felt there would be increasing acceptance of the role, it was intimated by one CS that acceptance was inevitable due to the need to streamline both services and costs within the NHS, and that NE was in a similar situation ten years ago but was now widely accepted. NE experienced an up-hill struggle for acceptance and it is doubtless that non-medical endoscopists will have at least the same challenges to face. NE has become widely accepted due to proven safety, effectiveness and value of the service provided. But, this did not happen overnight, and nor will acceptance of non-medical endoscopists and it is therefore essential that practices are monitored and measured, enabling demonstration of the safety and efficacy of the role as was the requirement for NE.

The shift towards competency based practice was considered by one individual to contribute to acceptance of the role. Such a move from traditional methods provides the opportunity for individuals perhaps denied previously, to explore their potential within the healthcare environment and make significant contributions to contemporary healthcare. Clearly there are challenges when considering competency based practice since for the most part, competence is heavily linked to practical skill or ability, defined as the quality or state of being competent, and of which competent being determined as having requisite or adequate ability (Penguin English Dictionary, 2002). As a consequence, it is proposed that where concerns have been raised, particularly in the undertaking of medical / interventional procedures, it is the gap between practical ability and cognition of underpinning principles which causes concern for many. Such concerns are justified, particularly when there is a lack of transparency as to the nature and extent of a new role. This aspect was mirrored in a comment by one respondent who stated there was certainly a future for the role, providing the high academic standards were maintained to ensure consistency in the quality of practitioners completing the programme.

As discussed in chapter 2, individuals learn in different ways and at variable rates and this is a critical consideration in the development of practical skill. Whilst the design and development of an educational programme can estimate an individual's development which is reflected through progression, there are a number of factors which contribute to the

transition from novice to expert as described by Benner (1982). Such factors include the quality of instruction, exposure to practical skills and the ability to translate what is being observed into that of practical skills required to demonstrate competency. It was therefore of significant interest to identify if any of the CS's were surprised of the trainees ability. Of particular interest was whether or not there was evidence of any bias in the CS's comments, given that whilst some had experience of NE training, none had experience of training unqualified, non-registered individuals to undertake an invasive procedure. It was felt that some individuals without experience of non-traditional trainees may be surprised by the ability of the trainees, in that they may possess fixed conceptions of the challenges that lay ahead in terms of practical skill in addition to cognition.

The responses were interesting in that of the eight, four stated they had no surprises whilst of the remaining four, one had mixed responses – ie. yes and no but stated they had always felt their trainee would do well. Where individuals had quoted an element of surprise over the trainees' ability, one CS stated they felt initially cautious as a result of the role change, in that they were initially concerned the trainee would lack the confidence to move forward. Whilst they felt there was an element of this initially, through the inclusion of regular supervision the trainee had developed considerably. One supervisor stated their trainee had clear manual dexterity which required propagation, whilst another quoted that the programme had shown that medical training was not a necessary pre-requisite for endoscopic skill and ability.

Whilst the training centre possessed significant experience of the various developmental stages trainees exhibited in terms of skill development and progress, the base centres did not have the same exposure to different backgrounds of trainees and hence were asked to comment on the achievement of their trainee. Of the eight returns, five felt the trainee had achieved what was expected, two expressed less had been achieved than originally hoped and one felt the trainee had achieved more than initially thought. For those who felt the achievement was as expected, comment was made regarding the enthusiasm and capability of the trainee. They had expected the individual to do well at the start of the programme and had certainly not been disappointed. Of the two who felt the trainee would have achieved more, it was clear from the comments made supporting their opinion that both supervisors felt the rate of development was related to inadequate exposure to endoscopic

practice, and not indicative of the trainees' ability and was raised consistently by the same CS throughout.

Clearly the role of the CS is pivotal in the development of the non-medical endoscopist, particularly where the main emphasis of hands-on practical training lies within the workplace. It is important to recognise the amount of additional work and commitment supervision of the trainee engenders in order to realise their potential and subsequently provide an important function within the environment of endoscopy. If training is sporadic in nature the trainee cannot be expected to build upon their skills base through to the achievement of competency. Whilst ultimately they may achieve competence, they may also be inexperienced which will inevitably lead to the trainee providing a service which may be ineffective and costly in terms of time, since there is a potential need for increased advice and assistance in the more challenging situations which may arise or more worryingly, have higher rates of incomplete procedures or missed pathology. It should be highlighted however that this said could be the same for any individual undertaking training within endoscopic practice, and is not peculiar to non-medical endoscopists. It is suggested that it is such variances which contributed to the poor completion rates and service provisions within the UK as identified by Bowles et al (2004) in a study which evaluated all aspects of endoscopic practice, be it medical or NE.

In order for non-medical endoscopy practitioners to have a beneficial role within the endoscopy community, it is essential that potential supervisors understand the necessary commitment and are prepared to invest time in the shorter term for longer term gains. Each CS was asked to comment on whether they would be interested in having future involvement with similar trainees, since they were acutely aware of the responsibility and time required to develop such individuals as a result of the programme. Of the eight CS's, all expressed willingness to be involved with further trainees. Two individuals stated they would definitely be happy to be involved again, at any level and stage of the programme. One individual was happy to be involved in the future but did comment that time would need to be allocated, which is an issue previously discussed. It was also quoted there had been significant enjoyment and reward working with the trainee, and they would be keen to offer support to all aspects of the programme.

Within the group of CS's evaluated one individual has been consistent in their views. They were extremely pleased with the development of their trainee and they felt successful outcome would be achieved, they did however quote they felt this would not always be the case and they were lucky with their trainee. The same individual expressed they would be interested in future involvement, but maintained their cautious position by quoting they would need to know and consider the background of the trainee prior to commencing training. This is not unrealistic - it is crucial for an individual's background to be considered prior to embarking on a period of significant investment, both financially and in terms of time. As previously mentioned, there are queries over inclusion of direct entrants with no previous experience of healthcare, however it is proposed such queries could be answered through development and integration of a foundation degree programme in which individuals are familiarised with the healthcare environment in addition to endoscopy, in an attempt to minimise attrition. Not all individuals would be comfortable within endoscopy and therefore exposure to the environment with specific training in the supporting roles in the first instance would enable future students to decide upon their career pathway and whether or not that included the undertaking of endoscopic procedures.

On the whole comments received from the CS's have been encouraging, with the main challenges attributable to difficulties in service capacity and demand, with identification of regular training lists proving difficult for some. However, all centres have persevered and for the most part provided hands-on training for the trainee. It is suggested that had there been more time in the initial stages of the pilot for planning and awareness of the planned new role, some of the challenges may have been minimised. However, where limitations existed due to endoscopic activity, such situations could not be resolved without significant financial investment and therefore questions over suitability of the site to offer training should be raised. It should be noted that where units were struggling with capacity and demand in the early stages and have since moved to new departments with increased capacity, many of the challenges relating to exposure to training were resolved. At the time of compiling the thesis the nine students are at the end of the second year of the programme. A second questionnaire has been compiled for completion by the CS's, as in appendix 9 to identify what changes have occurred over the second year which may further inform the programme. As a consequence, the results of the evaluation do not feature within this work but will be used to inform developments of the curriculum in the future.

10 Career progression and workforce development

One of the main purposes of developing an educational framework is to provide a knowledge and skill base to enable individuals to carry out specific tasks within the working world. This is of particular importance within healthcare whereby individuals are required to possess a broad range of knowledge, skills and attitudes. As discussed within chapter 6, the programme developed was designed to equip individuals with such skills within the practice of endoscopy and gastroenterology. Chapters 7 and 8 provide evidence of the achievements of the nine students undertaking the programme from an academic and practical perspective. This chapter aims to draw together the knowledge and skill base developed by the students and relate to;

- Knowledge and skills framework (DoH, 2004d)
- Endoscopic competencies (Skills for Health, 2005)
- Acquisition of transferable skills
- Role and projected banding

Tables 10.1 – 10.6 provide an indication of the themes / learning outcomes / skills base for each stage of the academic year, along with expected level descriptors of related dimensions of the knowledge and skills framework (DoH, 2004d). Those elements which include endoscopy have been mapped to the competencies as determined by Skills for Health (2005) whilst the range of transferable skills acquired and developed at various stages of the programme have also been indicated. Finally the suggested role and projected banding of an individual completing the various stages of the programme has been identified along with proposed outline job descriptions which correspond to the completion of years one and two.

Table 10.1 Indicating themes / learning outcomes / skills base for semester one, year 1 of the programme along with related endoscopic competency, transferable skills acquired and NHS knowledge and skills framework dimension and descriptor.

SEMESTER (& YEAR)	THEMES / LEARNING OUTCOMES / SKILLS BASE	KNOWLEDGE & SKILLS FRAMEWORK*	COMPETENCIES (Skills for Health, 2003)**	TRANSFERABLE SKILLS	ROLE & (PROJECTED BANDING***)
1 (1)	**ENDOSCOPY:** • Care, handling & storage of endoscopes • Basic principles & applications of endoscopy in healthcare practice • Principles of Infection Control & COSHH policies and procedures	Core 1 – 6 (1) HWB 1 & 3 (1) IK 1 (1)	• END_21 • END_06	• Working with others / team working • Health & safety awareness	Senior Healthcare assistant / trainee endoscopy practitioner (3)
1 (1)	**ANATOMY & PHYSIOLOGY:** • Cellular structure & function • Function major systems body • Mechanistic control & function bodily systems • Effect pathology on body systems • Effects altered states of physiology on normal function • Principles & processes infection control	Core 1 – 6 (1) HWB 1 & 3 (1) IK 1 (1)	NA	• Reading skills • Study skills • Managing time • Using information • Computing skills • Interactive skills	Senior Healthcare assistant / trainee endoscopy practitioner (3)

*Please refer to Appendix 10 for dimension and (level descriptor)

**For Endoscopic competencies please refer to Appendix 11

*** Projected banding links with the proposed career framework as illustrated by the Modernisation Agency (2004c)

Table 10.2 Indicating themes / learning outcomes / skills base for semester two, year 1 of the programme along with related endoscopic competency, transferable skills acquired and NHS knowledge and skills framework dimension and descriptor.

SEMESTER (& YEAR)	THEMES / LEARNING OUTCOMES / SKILLS BASE	KNOWLEDGE & SKILLS FRAMEWORK*	COMPETENCIES (Skills for Health, 2003)**	TRANSFERABLE SKILLS	ROLE & (PROJECTED BANDING***)
2 (1)	**ENDOSCOPY Practice:** • Describe main processes consenting for FS • Develop skills in acquisition of consent • Introduced to processes running endoscopy unit • Knowledge & recognition abnormal pathology related FS	Core 1 – 6 (1) HWB 1 & 3 (1) IK 1 (1)	• END_21 • END_06	• Team working • Communication	Senior Healthcare assistant / trainee endoscopy practitioner (3)
2 (1)	**ENDOSCOPY Theory:** • Risk assessment for FS, to include anticoag., antibiotics & diabetes • Legal & ethical issues accountability & duty care • Process & acquisition consent, communic. • Abnormal pathology • Patient risk in endos.	Core 1 – 6 (1) HWB 1 & 3 (1) IK 1 (1)	• END_21 • END_06	• Managing time • Using information • Computing skills • Health & safety awareness	Senior Healthcare assistant / trainee endoscopy practitioner (3)

*Please refer to Appendix 10 for dimension and (level descriptor)

**For Endoscopic competencies please refer to Appendix 11

*** Projected banding links with the proposed career framework as illustrated by the Modernisation Agency (2004c)

Table 10.3 Indicating themes / learning outcomes / skills base for semester three, year 1 of the programme along with related endoscopic competency, transferable skills acquired and NHS knowledge and skills framework dimension and descriptor.

SEMESTER (& YEAR)	THEMES / LEARNING OUTCOMES / SKILLS BASE	KNOWLEDGE & SKILLS FRAMEWORK*	COMPETENCIES (Skills for Health, 2003)**	TRANSFERABLE SKILLS	ROLE & (PROJECTED BANDING***)
3 (1)	**BASIC GASTROENTEROLOGY:** • Application endoscopy to gastro • Apply basic structure & function GI tract to simple disease • Recognition simple pathology related gastroenterology • Basic knowl. patient presentation, clinical assessment & treatment gastro & disease • Basic pharmacology	Core 1 – 6 (1) HWB 1 – 3 (1)	NA	• Group working • Written skills • Oral skills • Information retrieval • Reading skills	Senior Healthcare assistant / trainee endoscopy practitioner (3)
3 (1)	**PROFESSIONAL PRACTICE:** • Devel. & composition NHS • Changing nature health care profs. with emphasis endos. practitioner • Meaning of "Professional practice" & its importance in role HCP • Stereotyping & profess. prejudices & impact inter-professional working • Role of HCP as member of healthcare workforce, barriers affecting personal development	Core 1 – 6 (1)	NA	• Team working • Communication • Interpersonal skills • Self awareness	Senior Healthcare assistant / trainee endoscopy practitioner (3)

*Please refer to Appendix 10 for dimension and (level descriptor)

**For Endoscopic competencies please refer to Appendix 11

*** Projected banding links with the proposed career framework as illustrated by the Modernisation Agency (2004c)

Table 10.4 Indicating themes / learning outcomes / skills base for semester one, year 2 of the programme along with related endoscopic competency, transferable skills acquired and NHS knowledge and skills framework dimension and descriptor.

SEMESTER (& YEAR)	THEMES / LEARNING OUTCOMES / SKILLS BASE	KNOWLEDGE & SKILLS FRAMEWORK*	COMPETENCIES (Skills for Health, 2003)**	TRANSFERABLE SKILLS	ROLE & (PROJECTED BANDING***)
1 (2)	**A&P GI TRACT:** • Consolidate knowl. & understanding structure & function GI tract • Structure & function of large bowel • Extend understanding GI disease • Identify controlling systems GI tract including neural & vascular supply	1-3&6 (2), 4,5 (1/2)	NA	• Group working • Reading & Written skills • Information retrieval	Assistant Endoscopy Practitioner (4)
1 (2)	**ENDOSCOPY Theory:** • Attitudes & values required perform FS under proximal supervision • Indications tissue retrieval during FS • Application follow-up strategies • Link abnormal pathology to assessment & treatment pathways • Effective communication, meeting requirements clinical & patient needs • Legal & ethical issues patient assessment & consent • One-stop rectal bleed clinic	CORE 1-3&6 (2) 4,5 (1/2) HWB 6&7 (2) IK 1&2 (1/2) G2 (1/2)	• END_01 • END_02 • END_07	• Team working • Communication • Interpersonal skills • Self awareness • Written skills • Oral skills	Assistant Endoscopy Practitioner (4)

NB. Endoscopy practice commences Semester one but not assessed until semester 3 and therefore included in Table 10.6

*Please refer to Appendix 10 for dimension and (level descriptor)

**For Endoscopic competencies please refer to Appendix 11

*** Projected banding links with the proposed career framework as illustrated by the Modernisation Agency (2004c)

Table 10.5 Indicating themes / learning outcomes / skills base for semester two, year 2 of the programme along with related endoscopic competency, transferable skills acquired and NHS knowledge and skills framework dimension and descriptor.

SEMESTER (& YEAR)	THEMES / LEARNING OUTCOMES / SKILLS BASE	KNOWLEDGE & SKILLS FRAMEWORK*	COMPETENCIES (Skills for Health, 2003)**	TRANSFERABLE SKILLS	ROLE & (PROJECTED BANDING***)
2 (2)	**GASTRO & DISEASE:** • Extend knowl. & underst. basic gastro & apply alteration GI function • Apply understanding gastro to disease assessment & management • Pathology & clinical assessment • Structure, function & disease accessory organs • Simple disease process & prognosis • Basic patient presentn, clinical assess. & treatment gastro & disease • Basic GI pharmacology	CORE 1-3 & 6 (2), 4,5 (1/2)	NA	• Group working • Oral skills • Information retrieval • Reading skills	Assistant Endoscopy Practitioner (4)
2 (2)	**EXPERIENTIAL PORTFOLIO:** • Validity & applicn. Experi. learning • Examine existing knowl & skills to learn effectively any situation • Analyse current & past practice learning & experiences • Quantify achievements of learning & identify opportunities new learning • Compile portfolio learning achieved & reflect how impact future devel.	CORE 1-3&6 (2), 4,5 (1/2)	NA	• Communication • Interpersonal skills • Self awareness • Organisation • Reflection	Assistant Endoscopy Practitioner (4)

*Please refer to Appendix 10 for dimension and (level descriptor)

**For Endoscopic competencies please refer to Appendix 11

*** Projected banding links with the proposed career framework as illustrated by the Modernisation Agency (2004c)

Table 10.6 Indicating themes / learning outcomes / skills base for semester three, year 2 of the programme along with related endoscopic competency, transferable skills acquired and NHS knowledge and skills framework dimension and descriptor.

SEMESTER (& YEAR)	THEMES / LEARNING OUTCOMES / SKILLS BASE	KNOWLEDGE & SKILLS FRAMEWORK*	COMPETENCIES (Skills for Health, 2005)**	TRANSFERABLE SKILLS	ROLE & (PROJECTED BANDING***)
3 (2)	**PROFESSIONAL PRACTICE:** • English legal system & healthcare • Elements of Law & practice attributed to informed consent • Legal & moral aspects consent • Responsibility & accountability • Clinical audit, clinical governance & clinical supervision - role HCP • Ethical & legal implications	CORE 1-3&6 (2), 4,5 (1/2)	NA	• Group working • Written skills • Oral skills • Communication	Assistant Endoscopy Practitioner (4)
3 (2)	**ENDOSCOPY Practice:** • Perform FS correctly & safely with proximal supervision • Recognise & act indications for tissue retrieval • Clinical applic. follow-up guidelines in endoscopy • Obtain informed consent for FS • Apply knowledge base abnormal pathology to assess. & treat pathways • Deliver effective communication meet clinical & patient requirements	CORE 1-3&6 (2), 4,5 (1/2) HWB 6&7 (2) IK 1&2 (1/2) G2 (1/2)	• END_05 • END_08 • END_12 • END_13 • END_14 • END_18 • END_19	• Team working • Communication • Interpersonal skills • Self awareness	Assistant Endoscopy Practitioner (4)

*Please refer to Appendix 10 for dimension and (level descriptor)

**For Endoscopic competencies please refer to Appendix 11

*** Projected banding links with the proposed career framework as illustrated by the Modernisation Agency (2004c)

As previously discussed in chapter 6, the design of the curriculum followed a spiral model, whereby themes and subject areas were revisited and hence extended. This revisiting of knowledge enables students to develop and extend their understanding thus facilitating role development and hence capacity to undertake additional tasks. Such progression is illustrated within tables 10.1 – 10.6 in respect of the knowledge and skills framework whereby descriptor levels increase in the second year. The curriculum design facilitates acquisition of knowledge and skill not only within endoscopy but also gastroenterology as illustrated in Table 10.7, indicating the endoscopic skill base and "added extras".

Table 10.7 Illustrating endoscopic skill base and "added extras" in relation to timescale based on September commencement

Timescale	Endoscopic skill base	"Added extra" skills base
Decem. Year 1	Endoscope care and maintenance Cleaning & disinfection endoscopes	
April Year 1	Patient positioning	Risk assessment Patient communication
August Year 1	Patient interview Acquisition informed consent FS	Patient information & discharge (simple, eg. diverticular. disease)
Decem. Year 2	Reporting FS procedures Pathology recognition	Clerking patients Bowel prep support - outpatients
April Year 2	Patient preparation Undertake FS direct supervision.	Supporting simulator instruction Train new staff endos related tasks
August Year 2	Undertake FS proximal Supervision Tissue retrieval (cold biopsy)	Patient info. (intermediate eg polyps) Endoscopy pre-assessment clinic

As indicated in Table 10.7, the programme equips students with a range of skills which can contribute to service provision and delivery over and above the undertaking of FS. As illustrated within the "added extras" column, students can start to contribute to the provision of endoscopy from as early as the second phase of the first year in terms of undertaking risk assessment and communicating with patients. From the third phase, students possess basic patient information providing skills in relating to more common findings such as diverticular disease and can offer advice on symptom management. They

are also equipped with communication skills to support patients during the visit to the department thus removing pressure from qualified staff enabling them to undertake more complex activities required within the department. In the context of endoscopic practice, students are trained and assessed in the acquisition of informed consent and the patient interview which can contribute to more efficient use of lists, relieving the endoscopist of a time consuming pre-procedure interview and consenting. It remains essential for the endoscopist to evaluate the case, meet the patient and discuss concerns or queries prior to the procedure. A number of lengthy aspects of the episode will have been completed however hence reducing downtime during lists and increasing efficiency.

The first phase of the second year of the programme extends student knowledge and understanding of the application of bowel preparation and can provide advice to patients undergoing procedures, again removing the burden from qualified staff. In terms of patient interaction, students are capable of clerking patients and providing support and reassurance. Support for bowel preparation is extended during the second phase of year two whereby students can provide inpatient support to staff and patients, an area often generating challenges for endoscopy due to poor preparation and hence abandoned procedures and reductions in efficiency. With increasing competence and confidence students can contribute to the training of other individuals, particularly in the context of cleaning and disinfection and simulator practice. Such practices again offer the opportunity for more senior staff to undertake other duties which are more appropriate to their level of expertise.

The final phase of year 2 equips the student with the skills necessary to undertake FS under proximal supervision, contributing to the delivery of service. There is also a greater opportunity for some aspects of patient care to be provided by the student, to include post procedural care, discharge, health promotion and advice in addition to pre-procedural support and advice as previously highlighted. Increased versatility and broader skills mix affords greater efficiency within the endoscopy department, reducing the potential for cancellation of provisions due to staff absence which is crucial when faced with increasing diagnostic targets. Tables 10.8 and 10.9 provide an example of the typical job description / specification applicable upon completion of years 1 and 2 of the programme respectively.

Table 10.8 Illustration of a suggested job description following completion of year 1

Job title:	Senior Healthcare Assistant / Trainee Endoscopy Practitioner
Department:	Endoscopy
Job statement:	To provide technical support within Endoscopy. The post holder will be required to train to perform flexible sigmoidoscopy investigations within the Endoscopy Department and should also be working towards achieving JAG accreditation in Flexible Sigmoidoscopy (FS).

Knowledge and Skills:

1.) Communication & relationship skills	1. Communicate the nature of investigations to patients and clinical team in an appropriate manner. 2. Assist with development and maintenance of internal and external relationships using effective and proactive communication mechanisms to ensure achievement of the service aims and objectives. 3. Assist with establishment of networks internal and external to the organisation to develop and maintain a quality service. 4. Attend meetings and training courses deemed appropriate by the supervisor and / or line Manager relevant to the updating of skills related to the post.
2.) Knowledge, training & experience	1. Train to undertake FS investigations under direct supervision. 2. *Provide patient information in the context of simple disorders / conditions.* 3. *Provide patient advice regarding bowel preparation.* 4. *Undertake patient interview leading to acquisition informed consent for FS.* 5. *Provide technical assistance during endoscopic procedures.* 6. Demonstrate general computing skills. 7. Ability to demonstrate the range of practical skills required to perform FS and supporting roles within endoscopy. 8. Continue educational development and attend training courses and meetings related to practice as deemed appropriate by supervisor and/or line manager. 9. Attend training courses and seminars as part of the trust IPR system. 10. Maintain clinical and professional development relevant to the post. 11. Set up, take down, clean, maintain and troubleshoot endoscopic

	equipment
3.) Planning & organisational skills	1. Able to prioritise workload with regard to clinical necessity.
4.) Physical skills	1. Possess the necessary hand eye coordination and manual dexterity.
Responsibility:	
1.) Responsibilities for patient / client care	1. Have a responsibility for patient safety during endoscopic procedures. 2. To maintain a high standard of patient care and be guided on such matters by the medical and nursing staff as and when necessary. 3. Cleanliness, sterility and quality control of equipment and procedure areas.
2.) Responsibilities for Policy & Service Development	1. Implement Trust policies to ensure a safe environment for staff and patients that is conducive to the delivery of a high quality service. 2. Contribute to the effective implementation of Trust-wide initiatives.
3.) Responsibilities for information resources	1. Ensure all data containing patient person records are kept secure and remain confidential.
4.) Responsibilities for research and development	1. Assist with research for purposes of audit, statistical analysis and the preparation of data for publication and presentation as part of the research programmes for the department.

Effort & environment:

1.) Mental effort	1. Following assessment of FS practice, work with direct supervision. 2. Advise colleagues of any potentially unusual, difficult or sensitive issues.
2.) Emotional effort	1. Possess the necessary skills for dealing with patients who are distressed and / or anxious and frequently arises during examination of the GI tract. 2. Have the capabilities to deal with difficult situations such as delivering bad news which the role within endoscopy can frequently involve.
3.) Working conditions	1. Variable patterns working with VDU's – dependants wholly on requirement at the time in respect of report writing and presentation planning. 2. There will be contact with hospital sterilising fluids.

Health and safety:

1.) In addition to the Trust's overall responsibility for your health and safety, you also possess personal responsibility. As such you are required to inform your line manager of any safety issues that you identify that could affect you or others in the workplace. You must co-operate with management and colleagues at all times in achieving safer work processes and work places, particularly where it can impact on others.

1.) As a Trust employee you will be trained in the correct use of any equipment provided to improve safety and health within the Trust. You are required to use the equipment when necessary and as instructed which will include checking the equipment is safe to use, prior to its use and must report any defects immediately to your line manager.

This job description is not meant to be exhaustive. It describes the main duties and responsibilities of the post. It may be subject to change in the light of developing organisational and service needs and wherever possible change will follow consultation with the post holder. The job description will be subject to regular review by the post holder and supervisor.

NB. Statements presented in italic relate to skills which may be included within the role depending upon local requirements.

Table 10.9 Illustration of a suggested job description following completion of year 2

Job title:	Assistant Endoscopy Practitioner
Department:	Endoscopy
Job statement:	To provide technical support and undertake flexible sigmoidoscopy (FS) investigations within the Endoscopy Department. The post holder should also be working towards / have achieved JAG accreditation in FS.

Knowledge and Skills:

1.) Communication & relationship skills	1. Communicate the nature of the investigations to patients and clinical team in an appropriate manner. 2. Develop and maintain relationships within and external to the department using effective and proactive communication mechanisms to ensure quality of service provision and delivery. 3. Contribute to the establishment of networks, both internal and external to the organisation to the maintenance and development of a quality service. 4. Attend meetings and training courses deemed appropriate which are relevant to the updating of skills related to the post.
2.) Knowledge, training & experience	1. Undertake FS investigations under proximal supervision. 2. Undertake biopsy sampling where tissue sampling is indicated. 3. *Provide patient information for a variety of disorders / conditions.* 4. *Provide inpatient and outpatient advice regarding bowel preparation.* 5. *Undertake patient interview leading to acquisition informed consent for FS.* 6. *Provide technical assistance during endoscopic procedures.* 7. *Undertake the training of new staff within supporting roles of the endoscopy department.* 8. *Develop and initiate a pre-assessment clinic for FS / colonoscopy.* 9. *Develop and initiate an endoscopy discharge clinic, via telephone or within the outpatient department.* 10. Demonstrate good computing skills. 11. Ability to provide a supporting role within endoscopy. 12. Continue educational development and attend training courses and meetings related to practice as appropriate. 13. Attend training courses and seminars as part of the local trust IPR system.

	14. Maintain clinical and professional development related to the post.
3.) Planning & organisational skills	1. Able to prioritise workload with regard to clinical necessity.
4.) Physical skills	1. Possess the necessary hand eye coordination and manual dexterity.

Responsibility:

1.) Responsibilities for patient / client care	1. Have a responsibility for patient safety and instruction within endoscopy. 2. Maintain a high standard of patient care and be guided on such matters by the medical and nursing staff as and when necessary. 3. Cleanliness, sterility and quality control of equipment and patient areas.
2.) Responsibilities for Policy & Service Development	1. Implement Trust policies to ensure a safe environment for staff and patients that is conducive to the delivery of a high quality service. 2. Involvement with the effective implementation of Trust-wide initiatives.
3.) Responsibilities for information resources	1. Ensure all data containing patient person records are kept secure and remain confidential.
4.) Responsibilities for research and development	1. Undertake research for purposes of audit, statistical analysis and the preparation of data for publication and presentation as part of the research programmes for the department.

Effort & environment:

1.) Mental effort	1. Following JAG accreditation of FS work with proximal supervision. 2. Advise Management Team of any potentially unusual, difficult or sensitive issues.
2.) Emotional effort	1. Possess the necessary skills for dealing with patients who are distressed and / or anxious. 2. Have the capabilities to deal with difficult situations such as delivering bad news as often required within endoscopy.
3.) Working conditions	1. Variable patterns in working with VDU's – this is dependant wholly on particular requirement at the time. This is with respect to report writing, presentation planning and report processing. 2. There will be contact with hospital sterilising fluids.

Health and safety:

1.) In addition to the Trust's overall responsibility for your health and safety, you also possess personal responsibility. As such you are required to inform your line manager of any safety issues that you identify that could affect you or others in the workplace. You must co-operate with management and colleagues at all times in achieving safer work processes and work places, particularly where it can impact on others.
2.) As a Trust employee you will be trained in the correct use of any equipment provided to improve safety and health within the Trust. You are required to use the equipment when necessary and as instructed which will include checking the equipment is safe to use, prior to its use and must report any defects immediately to your line manager.

This job description is not meant to be exhaustive. It describes the main duties and responsibilities of the post. It may be subject to change in the light of developing organisational and service needs and wherever possible change will follow consultation with the post holder. The job description will be subject to regular review by the post holder and supervisor.

NB. Statements presented in italic relate to skills which may be included within the role depending upon local requirements.

This chapter aims to illustrate the skills acquired through the programme and how they link to the knowledge and skills framework (DoH, 2004d) and prescribed endoscopy competencies (Skills for Health, 2005). It also depicts the range of "added extras" which are obtained during the programme which enables students to provide a more versatile function as apposed to FS alone. The roles described above suggest that the curriculum developed can provide a workforce with broad transferable and endoscopic skills base which can reliably contribute to the achievement of centrally imposed targets through new ways of working.

11 Conclusions and future developments

The aim of this thesis was to demonstrate the suitability of an educational programme to equip unqualified individuals with the necessary knowledge, skills and attitudes to undertake FS. It also aimed to examine the academic and practical achievements of the students enrolled onto the programme in order to identify the suitability of the programme in developing competent and safe endoscopic practitioners.

The central focus of the programme was to equip practitioners of the future, irrespective of background, with the necessary knowledge, understanding, skills and attitudes to perform FS safely, effectively and competently. It should be remembered that in contrast to medical and nursing education, individuals completing the programme are only able to practice within endoscopy and gastroenterology as a consequence of the specific nature of the programme. The author suggests that the programme provides a solid foundation on which to base practice and as a consequence of the spiral curriculum model followed, learning through to mastery is enabled as a result of sequential learning.

The national endoscopy practitioner pilot has raised concerns within the endoscopy community from the outset, particularly in the respect of depth of knowledge, communication and interpersonal skills, and lack of professional registration and regulation (Chapman, 2004, 2005). The author considers this to be partly due to the rather hurried introduction of the programme and lack of involvement of the wider endoscopy community. Perhaps had wider connections been instigated from the outset greater acceptance may have been afforded.

The issue of regulation featured significantly over the 2 year programme. The review of regulation (DoH, 2006b) identified endoscopy practitioners as individuals requiring registration and regulation. At the point of submission of this thesis the situation was that there were 9 individuals requiring admission onto a voluntary register which was being explored. The author considers the situation concerning, particularly since at the outset of the programme the DoH and MA were both aware of the potential for a number of individuals to be undertaking invasive procedures on patients without holding appropriate regulation and registration. Such a situation provides significant frustration for trainees and the program management team alike, particularly with the forthcoming closure of the NPP. The issue of regulation demands urgent attention to be paid, of which the author argues should have been instigated and planned for at the

commencement of the programme not only to provide some reassurance to the endoscopy community but also to the public and trainees alike. It is hoped that the publication of the white paper regarding regulation (DoH, 2007) will add further momentum to the drive for registration and regulation.

As described in chapter 5, the development of practitioner roles within the NHS has been under significant scrutiny. Important issues have been raised in relation to the appropriateness of training "non-qualified, non-registered" healthcare workers to undertake invasive techniques, in particular within the field of gastrointestinal endoscopy. Whilst issues raised were valid and justifiable concerns, it is pointed out that the practical training and academic requirements of the programme are of a high standard as illustrated in chapters 7 and 9.

The programme developed offers a variety of learning experiences, and equips individuals with a diverse range of knowledge and skills to benefit the provision of gastroenterology and endoscopy services within the NHS and enhance the patient's journey. The projected skills mix of the completing practitioner are illustrated and discussed in chapter 10. Whilst it is recognised that many of the skills identified are currently undertaken by nurse specialists, a number of the more "routine" tasks could become an integral role of the endoscopic practitioner, thus enabling the highly specialised knowledge, skills and practice base of the nurse specialist to be further developed through advanced practice.

The focus of this work was directed towards unqualified individuals bearing a variety of learning and life experiences, with some perhaps being away from the environment of education for some time. The author suggests that diversity supports learning in a variety of ways, particularly through social and discovery learning as discussed in chapter 2. By linking the proposed curriculum and the knowledge and skill acquisition to student achievement, it is evident from chapter 10 that students completing the programme are equipped with broad ranging skills which can contribute to service provision and delivery within the provision of endoscopy and some aspects of gastroenterology.

The author suggests that the curriculum designed and thus described in chapter 6 provides a suitable framework from which to develop individuals with the necessary

knowledge, skills and attitudes required for safe, competent practice within FS. Chapters 7 and 8 provide evidence of student achievements in both academic and practical aspects of the programme and indicate that despite the diverse range of student and supervisor backgrounds (i.e. previous roles; academic ability; individual attitude and motivation; variability in work based support and varying degrees of endoscopic exposure) each student achieved the prescribed learning outcomes with a rate of 93% (101 from 108) of success in first attempt at assessment. This indicates that the nature of the curriculum provides a broad range of learning, teaching and assessment strategies befitting to a wide range of individuals. As described in chapter 3, Curzon (2003) recommends that a curriculum should facilitate engagement and embrace variations in style allowing for a cross section of learning to be experienced by students. the author proposes that the curricula described in this thesis provides significant opportunities to realise such recommendations.

As discussed in chapter 6, unqualified individuals within the healthcare environment generally do not meet the traditional entry requirements of HE and hence it is necessary to design and develop a curriculum which accommodates such individuals whilst not diluting the quality of output. In order to maintain quality of output and exercise high standards of academic scrutiny, an external examiner reviews samples of assessments for each module undertaken and provides comments on the suitability of the assessment, quality of work submitted and marks awarded. Given the specific nature of the programme, a NE with a national profile was appointed external examiner of the programme who has applauded the high quality of the programme and has been impressed by the standard of practical ability the students possess whilst attending OSCE assessments. The author therefore suggests that the curriculum and hence programme developed meets the needs of a diverse student population, and prepares students to a high standard in preparation for future practice within endoscopy.

Whilst the initial intention of the programme was to develop an individual's knowledge, skill and understanding to perform FS, it became apparent towards the end of the first year that the knowledge and skills base the students developed was much broader than originally anticipated. During the first semester students were exposed to and subsequently assessed in practices undertaken by support staff within endoscopy to include care and maintenance of endoscopes, cleaning and disinfection and the use of endoscopic accessories in a technical capacity. The ability to provide a supporting role

provides greater flexibility for the endoscopy department and in the context of the pilot programme, provided the base endoscopy departments with an additional skilled individual capable of supporting endoscopic practice. It is considered that this is essential for increasing acceptance and integration within the endoscopy team as discussed in chapter 5.

Questions have been raised over the reliability and safety of practitioners undertaking the programme. From the outset it was the central intention of the programme team to develop highly skilled, competent and safe practitioner capable of performing FS. With this in mind the main focus always surrounded patient and practitioner safety, with appropriate governance measures and clinical supervision being of paramount importance. The trainees attended externally provided legal study days and were encouraged to continually reflect upon and consider the implications of their practice. Regular discussion and debate was held both in the university setting and online to share, explore and evaluate / analyse incidents which occurred in practice. This proved particularly popular as the trainees found situational evaluation particularly useful to facilitate reflection of their own actions leading to modifications in their practice.

Throughout the programme students were required to maintain regular, up to date records of their practice in addition to completion of a clinical competency document as described in chapter 6. The results illustrated within chapter 8 have been produced from practice data gathered within the recorded practice element of the programme and suggests that for students who receive significant exposure and support, the time taken to commence full procedures is 4 months, whereas average exposure takes 6 – 8 months to progress onto full procedures. Students who struggle to gain access and hence exposure to practice takes significantly longer at 13 months. The author suggests from experience of cohorts on NE programmes for FS the same challenges arise and hence is not isolated to this role.

There are a number of issues which can affect the provision of endoscopic training such as provision of appropriate training lists, competition with other trainees (particularly medical trainees) and regular availability of supervision. The author argues however that once trained, the practitioner offers longer term investment as apposed to short term gain as observable in medical training due to training rotations. The author does however consider that the role perhaps has a more significant role within the District

General environment, particularly in the context of initial training. From experience individuals receive increased opportunities for hands on practice due to reduced numbers of medical trainees, and once qualified can have a significant role in maintaining service requirements. One site did not have a junior medic to train and hence attention could be focussed towards the student and as a consequence, the training cycle was much more efficient and the trainee was able to contribute to the service from a much earlier stage.

The programme requires endoscopy departments and clinical supervisors sign up to facilitating regular training at the base trust however what occurs in practice can often deviate from original intentions due to waiting lists and target achievement. In instances where such situations have arisen and training has suffered as a consequence, students have been awarded mitigation and supervisors required to provide evidence of the reasoning behind limited access and plans of how the situation will be resolved. To date once such agreements have been made, the training situation has improved with no other action being required. In the instance of no demonstrable improvement, the programme management team would decide upon the next appropriate steps to take and would be dependant upon the individual situation.

As alluded to in chapter 1, the remit of the programme from the outset proposed by the CWP was to develop a training package which could be used to train unqualified individuals to safely and competently undertake FS which was linked to academic credit. Initial discussions surrounded a one year programme however it was considered by the curriculum development team that a two year programme was a more suitable option, with students given the opportunity to continue studies to BSc level. This could be facilitated through a slight modification of the NE provisions described in chapter 6 and thus facilitating a truly multidisciplinary approach to learning. The reasoning behind the slight modification was due to the fact that the trainees had completed FS practice and were hence not required to repeat the theory and practice modules for FS which form part of the NE course. Therefore, a portfolio based FS practice module and evidence based practice were incorporated as alternatives.

Evaluation of the two year programme led to a number of revisions to the original programme. The original provisions developed and illustrated in figures 6.2 and 6.3 focussed around two pathways, one featuring endoscopic practice and one focussing

around supporting / technical roles. What became apparent at the end of year 2 for the FS programme was the distinct gap between practical ability and academic level as discussed in chapter 10. It was considered that should an individual stop at diploma level they would possess a practical skill base around career framework level 5, but academic underpinning of the specialised area to level 4, and hence develop a truly technical role. The author considers this inappropriate and inefficient use of a resource, particularly when a structured framework exists in which to develop the academic standard to the equivalent level 5 / 6. Therefore the curriculum has been modified to reflect this situation and thus elements from both pathways have been combined, with year one focussing more on the generic skills of supporting healthcare practice and year two having greater emphasis placed on supporting roles for endoscopy. The majority of endoscopic exposure will be undertaken in year three, aligned with the NE provisions. This modification means that the commencement of endoscopic practice will be delayed until towards the end of second year (whereas the current programme commences from the start of the first year).

The decision to modify the start of the endoscopic practice has not been made lightly, since it could be argued that there are certain advantages to having a longer period of exposure to scope handling. It has however been recognised as a consequence of monitoring and observation of the current intake, there is a demonstrable gap between the technical ability of the student and their level of knowledge and understanding related to practice within coloproctology / gastroenterology. It is as a consequence of this issue which has prompted the decision to delay hands on practice. It is felt that whilst technical ability is essential, it is paramount this is accompanied with appropriate academic foundations to minimise the risk of over confidence in endoscopic practice.

From the results shown in chapter 8 for three individual students, it is proposed that delaying endoscopic exposure to year three will not disadvantage unqualified staff, since the results show that with regular hands on endoscopic exposure, procedural capability can be achieved from 5 months. Where exposure is limited and slow to commence, the time to procedural capability is significantly slower which the author considers is not a reflection of the background of the individual. Furthermore, it is suggested that a delay in commencement of hands on endoscopic practice will enable unqualified students to consolidate their learning without the addition pressure of FS practice.

As outlined in chapter 6, the curriculum design demands a strong affinity with the workplace and therefore to reflect the more vocational elements of the programme and the benefits of experiential and work based learning, the two year programme is being converted to a foundation degree, with an option to link with the NE provision for the award of BSc. The author suggests that future registration and regulation for endoscopic practitioners will require an academic standard of BSc as is becoming increasingly prescribed by other professions within healthcare such as Clinical Scientists, Clinical Physiology, Radiography and increasingly nursing. To illustrate the planned foundation degree and its integration with the pre-existing NE provisions, table 11.1 provides an outline of the planned revised programme.

From the 2007 / 08 academic year the programme will form the basis of a foundation degree programme with shared learning opportunities with other practitioner initiatives which are current or planned developments within the HEI. The first year will provide students with generic knowledge, skills and understanding in which to practice within the healthcare environment and will include anatomy and physiology, professional practice and basic clinical skills in addition to practice specific modules in order to provide a foundation for future practice.

Table 11.1 Programme outlining proposed foundation degree in gastroenterology and endoscopy and its integration with pre-existing nurse endoscopy provisions for FS.

Foundation Year 1		
Semester 1	Semester 2	Semester 3
Clinical Skills	Healthcare in focus	Evidence Based Practice
An Introduction to Anatomy and Physiology	Supporting roles in healthcare	Effective communication
Foundation Year 2		
Semester 1	Semester 2	Semester 3
Anatomy & physiology of the GI tract	Gastroenterology and disease	Preparation for professional practice
Supporting GI assessment (theory)	Supporting GI assessment (practice)	Developing an experiential portfolio

Year 3: BSc – pre-existing NE provision for FS		
Semester 1	Semester 2	Semester 3
Developing and updating professional practice	Theoretical principles of conscious sedation	Advanced endoscopic techniques
Extending skills for flexible sigmoidoscopy	Advanced practice in coloproctology	
The practice of extended skills for flexible sigmoidoscopy		

The second year of the proposed foundation programme will introduce and develop more specific knowledge, skills and understanding of roles which support practice within gastroenterology. In order to underpin practice within coloproctology, students will undertake an anatomy and physiology module concentrating on the GI tract along with gastroenterology and disease in which to apply the knowledge and understanding gained through the anatomy and physiology module.

On the basis of the delayed commencement of the practical training, there lies the opportunity for the students to develop significant key / transferable skills which are valuable in the provision and delivery of modern healthcare. It is envisaged that through multi-professional learning and working as a result of shared provisions, students will gain many competencies and qualities which will be transferable within the healthcare setting such as interpersonal and communicative skills, IT, literacy and numeracy skills

in addition to information retrieval and research which are all essential components of the healthcare professionals role in contemporary practice.

The mode of delivery throughout the two year programme was through blended learning, whereby students attended for one full week in which the theoretical aspects of the module were delivered and subsequently supported through online learning for the remainder of the module. This posed challenges for the students and the base trusts particularly in the second year whereby some trusts refused to pay accommodation costs for their students in full on account of their financial situation. [It should be noted at this point that the funding for the project provided by the MA was only for the first year of the programme, with base trusts having to find the funding themselves for the second year. Whilst the author considers the situation unacceptable it is not within the remit of this thesis to discuss the issue further.]

As the NHS faces significant financial challenges, there is an increasing need to develop educational programmes which are more flexible in nature as many education budgets face cuts. Many trusts are unable to provide backfill or study time for their employees and hence more flexible methods of delivery are required. Conversely HEI's must become less reliant on the local healthcare market and the NHS as the major purchaser of their products. Over recent years the numbers of HEI's providing courses within endoscopy has reduced significantly to the situation where there are only two providers in the UK currently offering provisions.

As a consequence of the financial challenges of the NHS and hence reductions in student numbers, a change in delivery was undertaken at the start of the 2006 / 07 academic year to that of E-Learning. The theoretical modules are facilitated online through a virtual learning environment and further supported by a two day workshop two thirds of the way through the module. The students are required to undertake directed study through tasks which are linked to the learning outcomes, assessment and thus indicative content of the module. The workshops serve to underpin the tasks and include scenarios and case studies. It is considered however that during the first year of the foundation programme students will require more time in the HEI environment in order to acquaint them with HE and their learning journey. The provision of online learning will be introduced from the start of the programme to prepare them for future online learning, with attendance within the HEI reducing gradually in the second year.

The reasoning behind the original pilot was to provide a workforce capable of coping with the demands of increased endoscopic requirements, namely for FS. It was projected that there would be an increased demand for routine lower GI endoscopy in addition to a potential increase as a consequence of colorectal cancer screening. At the present moment in time the screening focus centres around that of FOB with all screen positives being referred for colonoscopy which will impact the provision of colonoscopic investigations. Whilst this does not have a direct impact on FS through increased procedural requirements, there will be an increased need for experienced endoscopists to perform the screen colonoscopies which may reduce the number of endoscopists undertaking routine colonoscopy. One option looked at within the endoscopy community is to train those undertaking routine FS's (namely NE's) to undertake routine colonoscopy but thus generates challenges when trying to cover FS lists. This challenge could be reasonably addressed with the endoscopy practitioners who have followed a programme such as the proposed curriculum within this thesis.

As the requirement for diagnostics increases as a consequence of the 18 week targets, there is an identifiable need to improve service provision and delivery in many areas of the healthcare environment which in many ways requires individuals to work not only together but differently. By extending the skills base of the available workforce some aspects of practice can perhaps be done differently. At the time of submission of this thesis there are still questions over the real need for the role. The implementation of the bowel cancer screening project is within relative infancy. The true impact on service provision and delivery are not yet known, nor is the likelihood of any modifications to the screening modality to be used for screening in the future, and whether FOB will remain the gold standard or whether FS will be introduced at some stage.

In summary it is suggested that the role provides an opportunity for career progression at all levels of the career framework. More senior staff are afforded the opportunity to extend their practice base without loss or detriment in areas they previously contributed to. Such an example lies with the provision of colonoscopy. Screen colonoscopy requires highly skilled and experienced endoscopists and hence leaves some of the more routine procedures at risk due to a reduction in the number of available endoscopists to meet the needs of service. The author suggests that the most logical solution to the situation is the progression of NE's undertaking FS to colonoscopy which is becoming

increasingly common in England (Vance, 2003). However, this subsequently leaves a potential gap in the provision of FS.

The author suggests that such a gap can be filled by an endoscopic practitioner who has completed an educational programme consistent with what has been described within this thesis. The role of the endoscopic practitioner provides a realistic opportunity to contribute to the achievement of targets within endoscopy in a reliable, safe, effective and competent manner, as illustrated within this work.

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SECTIONS	LEARNING OUTCOME
SECTION 1: HANDLING & CARE OF ENDOSCOPES; The trainee demonstrates appropriate care and handling of endoscopes, and can identify the anatomy of the endoscope	1.1 The trainee can describe the anatomy of the scope
	1.2 The trainee can explain the function of the various parts of the endoscope and its accessories
	1.3 The trainee demonstrates knowledge and use in respect to the correct and safe handling of equipment
	1.4 The trainee is able to demonstrate ability to clean, disinfect and maintain endoscopes and accessories
SECTION 2: SAFETY IN ENDOSCOPY; The trainee works with the team to organise and maintain a safe environment for the patient in all aspects of endoscopy preparation and examination	2.1 The trainee can identify potential risks to the safety of the patient attending for flexible sigmoidoscopy examination
	2.2 The trainee is able to plan actions in collaboration with the endoscopy team with respect to risks identified
	2.3 The trainee evaluates these actions by monitoring outcomes with the support of the endoscopy team
	2.4 The trainee operates within identified boundaries and demonstrates the ability to recognise limitations and actions required to maintain safe practice within these boundaries
SECTION 3: COMMUNCIATION WITHIN ENDOSCOPY; The trainee demonstrates the ability to communicate with the patient, family and members of the endoscopy team	3.1 The trainee demonstrates the ability to identify emotional and psychological factors which promote anxiety states within patients attending for flexible sigmoidoscopy examination
	3.2 The trainee employs strategies (both verbal and non-verbal) to help reduce anxiety
	3.3 The trainee can describe those factors about the care of the patient and family, which may prevent effective communication and rapport
	3.4 The trainee can describe, demonstrate and reflect upon actions, which have promoted good communication, rapport and cooperation of the patient
	3.5 The trainee can demonstrates the ability to apply basic communication skills, theory and concepts to own practice setting
	3.6 The trainee is able to document clearly, concisely and legibly his / her interactions with the patient and family, including the flexible sigmoidoscopy examination and result
	3.7 The trainee disseminates accurately information about the examination and outcome to the patient, family and endoscopy team
SECTION 4: CONSENTING FOR FLEXIBLE SIGMOIDOSCOPY; The trainee demonstrates the ability to obtain and record consent for the flexible sigmoidoscopy examination	4.1 The trainee can identify and describe the main components of the consent process
	4.2 The trainee demonstrates an understanding of current legislation, recommendations, guidelines and good practice in relation to consent and the process of consent

	4.3 The trainee is able to gain the cooperation of the patient and obtain consent according to current legislation, recommendations and guidance (local and national)
	4.4 The trainee demonstrates advocacy in relation to the patients rights, wishes and protection
	4.5 The trainee is able to clearly, concisely and legibly document the consent process
	4.6 The trainee is able to answer questions from the patient and family about the proposed examination and consent to their satisfaction
SECTION 5: PATIENT PREPARATION; The trainee is able to safely prepare the patient for the flexible sigmoidoscopy examination	5.1 The trainee in partnership with the endoscopy team can ensure the correct and safe working of equipment used for the flexible sigmoidoscopy examination
	5.2 The trainee is able to obtain relevant information from the patient about current health status and suitability for flexible sigmoidoscopy within agreed protocols and guidelines
	5.3 The trainee recognises limitations of skill and competence and demonstrates appropriate actions when these are reached
	5.4 The trainee is able to identify clinical situations and takes appropriate actions in which the proposed flexible sigmoidoscopy examination would be contraindicated or deemed unsafe
	5.5 The trainee demonstrates the ability to use all information obtained at patient assessment and synthesise this information to inform of their decision to proceed / defer the flexible sigmoidoscopy examination
	5.6 The trainee can safely position the patient to facilitate the flexible sigmoidoscopy examination
	5.7 The trainee demonstrates knowledge and understanding of the principles, methods and effects of bowel preparation
SECTION 6: OBSERVATION OF ENDOSCOPY; The trainee, through observation, is able to describe the basic techniques and manoeuvres of flexible sigmoidoscopy and normal / abnormal anatomy of the colon and rectum	6.1The trainee observes the assessment, preparation and positioning of the patient by an experienced endoscopist
	6.2 The trainee is able to identify the common endoscopic anatomical landmarks of the anus, rectum and colon
	6.3 The trainee observes and is able to describe the techniques strategies employed to facilitate safe intubation of the anus
	6.4 The trainee observes the correct storage and handling of the endoscope during transit, during and following the procedure
	6.5 The trainee can describe and predict the effects the controls have on the tip of the scope, when manipulated

	6.6 The trainee is able to define and demonstrate torquing
	6.7 The trainee is able to predict and demonstrate the effect that torquing manoeuvres have on the tip of the endoscope
	6.8 The trainee is able to describe and predict how these manoeuvres effect the 1.) large bowel and 2.) the patient
	6.9 Through observation, the trainee demonstrates recognition of the common pathologies of the anus, rectum and colon
	6.10 The trainee observes how these pathologies are confirmed and treated
	6.11 The trainee is able to observe the recovery of the patient through to discharge following flexible sigmoidoscopy
	6.12 The trainee observes the discharge of the patient with regards to their physical and psychological wellbeing and what information (and sources) is given to the patient and their family
	6.13 The trainee is able to describe the key elements of the examination, which should be documented, and how this can be achieved
	6.14 The trainee reflects on their observation period and is able to critically apply this to own practice and knowledge base
SECTION 7: ENDOSCOPY SIMULATION; The trainee is able to perform flexible sigmoidoscopic examination on a patient simulator	7.1 The trainee correctly positions him / herself in relation to the patient and correctly demonstrates the handling of the endoscope before the procedure commences
	7.2 The trainee is able to explain techniques implemented throughout simulated procedure
	7.3 The trainee demonstrates appropriate use of hand-controls, torquing techniques and air / suction buttons to keep the colorectal lumen in full clear view
	7.4 The trainee is able to demonstrate smooth and controlled procedure within 25 minutes of commencement, and where appropriate, identify landmarks and pathologies
SECTION 8: ENDOSCOPE WITHDRAWAL; The trainee is able to withdraw the flexible sigmoidoscope safely, identifying all anatomical landmarks and pathologies, following insertion by an experienced endoscopist	8.1 The trainee correctly positions him / herself in relation to the patient and correctly demonstrates the handling of the endoscope before withdrawal commences
	8.2 The trainee establishes a rapport with the patient and endoscopy assistant
	8.3 The trainee where appropriate is able to clearly verbalise instructions to the patient and endoscopy assistant, to assist with the completion of the endoscopic examination
	8.4 The trainee demonstrates appropriate use of hand controls, torquing techniques and air / suction

	buttons to keep the colorectal lumen clear and in view
	8.5 The trainee begins to anticipate the movement and direction of the tip of the endoscope as the colon changes direction during withdrawal
	8.6 The trainee is able to demonstrate smooth and controlled safe withdrawal of the endoscope within 10 minutes, identifying all anatomical landmarks and pathologies
	8.7 Of those pathologies identified, the trainee is able to describe appropriate action if any, to confirm
	8.8 The trainee is able to collect safely, samples for histological analysis using cold biopsy and brush techniques
	8.9 The trainee is able to perform safe retroflexion of the endoscope to facilitate examination of the lower rectum
	8.10 The trainee, once the examination is completed, leaves the patient in a safe and comfortable position
	8.11 The trainee demonstrates through their actions and care of the patient throughout the examination, recognition of the patients right to privacy and dignity
	8.12 The trainee assists in the safe transfer of the patient to the recovery area, accurately disseminating relevant information about the examination and results, identifying any potential risks and / or concerns to be particularly aware of during recovery and what actions should be taken
	8.13 The trainee assists in the documentation of the examination and follow-up
	8.14 The trainee reflects and critically appraises own strengths and weaknesses and how they can be applied to future practice
SECTION 9: PRACTICE OF FLEXIBLE SIGMOIDOSCOPY; The trainee safely performs flexible sigmoidoscopy examination	9.1 The trainee communicates effectively with the patient and endoscopy staff to facilitate safe endoscopic examination
	9.2 The trainee positions the patient correctly and safely prior to endoscopic examination
	9.3 The trainee responds sensitively and appropriately to the patients needs, privacy, dignity and wishes throughout their episode of acre and involvement
	9.4 The trainee safely performs inspection and per rectal examination prior to flexible sigmoidoscopy
	9.5 The trainee is able to identify strategies and actions to deal with findings at 9.4, which would contraindicate flexible sigmoidoscopy
	9.6 The trainee successfully intubates the anus and rectum with minimal discomfort to the patient
	9.7 The trainee quickly adopts correct and appropriate handling of the endoscope attaining a good

	endoluminal view of the rectum before beginning flexible sigmoidoscopy
	9.8 The trainee demonstrates good eye-hand coordination using controls, air / suction buttons and torquing techniques to facilitate safe intubation of the rectum and colon maintaining good endoluminal views
	9.9 The trainee frequently and critically appraises endoscope position (tip & shaft) and predicts manoeuvres that the patient may find uncomfortable for a short time
	9.10 The trainee performs and adapts safe, effective manoeuvres and strategies to reduce discomfort to the patient
	9.11 The trainee completes the required number of full examinations of the colon and rectum, identifying all pathologies and anatomical landmarks
	9.12 The trainee completes flexible sigmoidoscopy safely within 20 minutes and without the need for verbal or manual assistance
	9.13 The trainee identifies and implements correct procedures and strategies to deal with untoward events according to guidelines and protocols
	9.14 The trainee produces an accurate and concise record of the examination, results and any planned follow-up
	9.15 The trainee critically reflects on performance throughout full examination and is able to apply this to own practice and development
SECTION 10: THERAPEUTIC FLEXIBLE SIGMOIDOSCOPY; The trainee is able to demonstrate the safe removal of polyps, if appropriate, for histological assessment	10.1 The trainee demonstrates knowledge and understanding of the principles and safety of endoscopic diathermy.
	10.2 The trainee is able to demonstrate safe and correct use of the diathermy unit and accessories appropriate to colorectal polyp removal.
	10.3 The trainee is able to assess polyp suitability for removal and recognising own skill limitations, chooses appropriate strategy for its removal/non-removal.
	10.4 The trainee utilizes a risk assessment framework to reduce potential complications from polypectomy and can critically utilize information gained to optimise patient care and safety, should an adverse event occur.

SECTIONS	PERFORMANCE CRITERIA
SECTION 1: Communicate and relate to individuals during endoscopic procedures This workforce competence covers communicating and relating to individuals, at any time during the provision of endoscopic procedures. Any communication difficulties have to be taken into account when deciding how best to interact with people. It is important to establish a rapport with the individuals undergoing endoscopic procedures, and identify any signs of distress or anxiety. Communication is important in providing information, but it is also about listening to what people have to say. A separate workforce competence (END2) is available to cover the provision of information on the endoscopic procedures themselves.	1. respect the individual's rights and wishes relating to their consent, privacy, beliefs, and dignity
	2. discuss with the individual the role and responsibilities of the service and practitioners, and the individual and their carers
	3. identify any communication difficulties with the individual, and agree the use of communication aids if required
	4. ensure that the environment for communication is suitable for the purpose of the communication
	5. ensure that the interaction is appropriate to the individual, the purpose of the communication, and any communication difficulties
	6. enable the individual to ask questions and to seek clarification on any issues relating to the endoscopic procedure
	7. establish a rapport with the individual, and respond sensitively and honestly to any issues raised
	8. identify any signs of distress or anxiety from the individual and their carers that have the potential to escalate into violent or disruptive behaviour, and take appropriate action
	9. provide clear and accurate information on organisational procedures and how to contact the service to obtain assistance if required
	10. agree the most appropriate communication methods to maintain contact with the individual
	11. keep accurate, legible, and complete records, and comply with all the relevant legal, professional, and organisational requirements and guidelines
SECTION 2: Provide information on endoscopic procedures to individuals This workforce competence covers the provision of information to individuals, at any time during the provision of endoscopic procedures. Individuals undergoing endoscopic procedures require different types of information at different stages of an endoscopic procedure: to help them prepare, to help them understand what is happening, and to know the results. It is important that their right to information is respected, and that	1. respect the individual's rights and wishes relating to their consent, privacy, beliefs, and dignity
	2. establish the extent to which the individual requires any carers to be involved during the provision of information
	3. discuss the amount and type of information which the individual requires, or has already accessed, to make informed decisions relating to the endoscopic procedure
	4. provide information that is relevant to the individual's requirements, and ensure it is as accurate as possible within the context of what is known about their condition
	5. use a range of information giving methods to present information to the individual
	6. answer honestly any questions raised by the

they are provided with honest and accurate information. A separate workforce competence (END1) is available to cover the way information is actually communicated.	individual, and refer any questions that cannot be immediately answered to the appropriate person
	7. identify other sources of information and information resources that the individual can accessed to clarify their situation
	8. provide sufficient opportunity for the individual to reflect on the information
	9. keep accurate, legible, and complete records, and comply with all the relevant legal, professional, and organisational requirements and guidelines.
SECTION 3: Refer individuals for endoscopic procedures This workforce competence covers the referral of individuals for endoscopic procedures. The referrer has to ensure that the appropriate referral information accompanies the referral. This information should contain details of the medical history and current symptoms of the individual, along with any other relevant information. The referral needs to be sent to the appropriate practitioners and agencies. Those receiving the referral are covered by a separate workforce competence (END5).	1. respect the individual's rights and wishes relating to their consent, privacy, beliefs, and dignity
	2. provide support to the individual, and the carers they specify, to enable them to make informed choices throughout the referral process
	3. review the individual's symptoms, co-morbidities, and any other relevant factors
	4. provide advice to the individual on the options for managing their condition, and agree with them whether to proceed with a referral
	5. refer the individual for an endoscopic procedure according to the established referral criteria
	6. collate referral information that is relevant to the individual and their condition
	7. provide referral information to other practitioners and services in accordance with any guidelines or requirements stated by those receiving the referral
	8. identify the priority of the individual's requirements in the referral information
	9. ensure that the referral information is processed effectively according to organisational procedures
	10. keep accurate, legible, and complete records, and comply with all the relevant legal, professional, and organisational requirements and guidelines
SECTION 4: Agree endoscopic procedures for individuals This workforce competence covers agreeing the delivery of endoscopic procedures. The practitioner needs to review referral information, and obtain and review any other relevant physiological measurements. A decision has to be made, with the individual concerned, on the type of procedure that is to be undertaken, and then steps taken to schedule the procedure. The scheduling of the	1. respect the individual's rights and wishes relating to their consent, privacy, beliefs, and dignity
	2. provide support to the individual, and the carers they specify, to enable them to make informed choices throughout the agreement process
	3. provide guidance to other practitioners and services on the important referral information that is required from them
	4. obtain and review all relevant referral information and physiological measurements relating to the individual
	5. determine the clinical objectives and priorities for the endoscopic procedure
	6. determine from the available information whether the

procedure is covered by a separate workforce competence (END4).	individual is in an appropriate condition to undergo the endoscopic procedure
	7. select the endoscopic procedure which takes account of the needs of the individual and all other relevant factors
	8. agree the provision of the endoscopic procedure with the individual and all relevant people, according to organisational procedures
	9. ensure that the appropriate practitioners are capable of undertaking the endoscopic procedure
	10. agree with colleagues the methods for reviewing the outcomes and reports of the endoscopic procedure
	11. ensure that the scheduling of the endoscopic procedure is appropriate to the clinical objectives and priorities, and takes account of the needs of the individual
	12. keep accurate, legible, and complete records, and comply with all the relevant legal, professional, and organisational requirements and guidelines.
SECTION 5: Prepare the delivery of the endoscopic procedures This workforce competence covers the preparations for the delivery of endoscopic procedures. This involves preparing the equipment and the environment for the procedure, and checking that all health and safety measures are complied with. The equipment has to be set up correctly, and positioned ready for the procedure. The reprocessing of the equipment is covered by a separate workforce competence (END21).	1. identify and gather the endoscopy equipment and drugs that will be required for the endoscopic procedure
	2. ensure health and safety measures are implemented at all times when preparing for the endoscopic procedure
	3. make sure that environmental conditions are established to achieve the best outcomes for the endoscopic procedure
	4. check and confirm that the endoscopy equipment and drugs are in a suitable and safe condition for the endoscopic procedure being undertaken
	5. dispose of any damaged or out of date items in an appropriate safe place according to organisational guidelines
	6. handle endoscopy equipment and drugs safely, correctly, and hygienically
	7. position and set up the endoscopy equipment in the correct way for the endoscopic procedure, and to meet the needs of the individual
	8. keep accurate, legible, and complete records, and comply with all the relevant legal, professional, and organisational requirements and guidelines.
SECTION 6: Prepare individuals for endoscopic procedures This workforce competence covers the preparation of individuals undergoing endoscopic procedures.	1. respect the individual's rights and wishes relating to their consent, privacy, beliefs, and dignity
	2. provide support to the individual, and the carers they specify, to enable them to make informed choices throughout the preparations for the endoscopic procedure

It is necessary to check the identity of the individual, and obtain consent. The individual requires support, information, and assistance during the procedure. It is also important to ensure the safety and security of the individual and their possessions throughout the procedure. The positioning of the individual ready for the procedure is covered by a separate workforce competence (END8).	3. ensure health and safety measures are implemented at all times when preparing the individual
	4. confirm that the individual's identity and any other relevant information is consistent with the available records
	5. ensure that the individual has provided the necessary consent for the procedure and that it is correctly recorded
	6. check that the individual has complied with any preparation instructions
	7. enable the individual to ask questions and to seek clarification on any issues relating to the endoscopic procedure
	8. prepare the individual correctly according to the requirements of the endoscopic procedure being carried out
	9. provide assistance to the individual to prepare for the endoscopic procedure if requested
	10. ensure that personal articles are secured safely during the endoscopic procedure
	11. take prompt appropriate action in response to any problems which occur during the preparations
	12. keep accurate, legible, and complete records, and comply with all the relevant legal, professional, and organisational requirements and guidelines.
SECTION 7: Position individuals during endoscopic procedures This workforce competence covers the positioning of individuals during endoscopic procedures. The individual undergoing the procedure has to be positioned prior to, and a number of times during, the procedure. The positioning has to be undertaken safely, and needs to be coordinated with other practitioners. During this process the individual should be monitored to ensure their safety. The preparation of the individual ready for the procedure is covered by a separate workforce competence (END7).	1. respect the individual's rights and wishes relating to their consent, privacy, beliefs, and dignity
	2. provide support to the individual, and the carers they specify, to enable them to make informed choices throughout positioning procedures
	3. ensure health and safety measures are implemented at all times when positioning the individual
	4. prepare the environment and resources ready for positioning, and remove all obstructions
	5. coordinate positioning with other practitioners involved
	6. position the individual according to the requirements of the endoscopic procedure and the endoscopy equipment that will be used
	7. position the individual in a dignified way which minimises any discomfort or pain
	8. use appropriate padding, support, and covers to prevent injury to the individual and excessive heat loss
	9. identify any unexpected change in the individual's condition during positioning, and report it promptly to the appropriate member of the care team
	10. ensure positioning equipment is returned to the

	correct place after use.
SECTION 8: Assess and optimise the condition of individuals during endoscopic procedures This workforce competence covers the assessment and optimisation of the individual's condition during endoscopic procedures. The condition of the individual is monitored and reviewed numerous times during the procedure. It is also necessary to change the condition of the individual so that the procedures being undertaken can be completed, and this can involve changing the physiological condition, eg by the introduction of drugs and gases. It is important that the individual is safe during these processes, and any indication of problems is identified immediately. A separate workforce competence (END10) is available to cover the administration of sedation and analgesia.	1. respect the individual's rights and wishes relating to their consent, privacy, beliefs, and dignity
	2. ensure health and safety measures are implemented at all times during the endoscopic procedure
	3. review all relevant information about the condition of the individual
	4. determine the optimum condition of the individual and the endoscopic procedure being undertaken
	5. identify the appropriate methods for optimising the condition of the individual
	6. coordinate with other practitioners the methods for optimising the condition of the individual
	7. ensure any changes made to the individual's condition will be safe
	8. optimise the condition of the individual using appropriate methods according to organisational procedures
	9. monitor the physiological measurements of the individual and assess their condition
	10. identify quickly if there is a need to resuscitate the individual during the course of the endoscopic procedure
	11. assess the effectiveness of optimising the condition of the individual and make further changes if necessary and safe to do so
	12. keep accurate, legible, and complete records, and comply with all the relevant legal, professional, and organisational requirements and guidelines.
SECTION 9: Perform diagnostic and therapeutic procedures This workforce competence covers the performance of diagnostic and therapeutic endoscopic procedures. This covers the use of endoscopes during a number of endoscopic procedures, including the insertion, guidance, manipulation, and withdrawal of the scope. The scope has to be positioned in the appropriate place for the specific procedures to be carried out. These procedures cover any activity relating to the use of the endoscope; however there are separate workforce competences that complement this competence,	1. respect the individual's rights and wishes relating to their consent, privacy, beliefs, and dignity
	2. confirm the diagnostic or therapeutic purpose of the endoscopic procedure, and ensure that informed consent has been obtained
	3. ensure that health and safety measures relevant to the endoscopic procedure are undertaken
	4. ensure that the condition of the individual has been assessed, and that it is monitored at all times throughout the endoscopic procedure
	5. ensure that all preparation procedures relating to the endoscopy equipment are undertaken before and after the endoscopic procedure
	6. examine the relevant orifice to ensure that there are no blockages or difficulties, and that it is safe to proceed
	7. insert the lubricated endoscope carefully using the appropriate technique for the endoscopic procedure being undertaken

covering identifying signs of abnormality (END13), collecting specimens (END14), managing polyps (END15), and managing strictures (END16).	8. ensure that any fluids or gases are introduced according to the requirements of the endoscopic procedure
	9. guide the path of the endoscope by maximising mucosal visualisation to achieve the required position, as confirmed by the monitoring systems where possible
	10. manipulate the endoscope by applying carefully controlled movements and appropriate speed and pressure
	11. reposition the individual if necessary to assist the manipulation of the endoscope and the completion of the endoscopic procedure
	12. utilise different accessories within the endoscope to provide diagnostic and therapeutic procedures
	13. record images of features required for clinical records and further diagnostic and therapeutic procedures
	14. withdraw the endoscope by carefully guiding and manipulating it
	15. keep accurate, legible, and complete records, and comply with all the relevant legal, professional, and organisational requirements and guidelines.
SECTION 10: Identify signs of abnormality revealed by endoscopic procedures This workforce competence covers identifying signs of abnormality revealed during endoscopic procedures. This covers the use of endoscopes, during a range of endoscopic procedures. As the endoscope is guided along, any signs of abnormality are identified and their location recorded. These signs are not always clear, so there is an aspect of interpreting the information obtained from the endoscope. A separate workforce competence (END12) is available to cover the actual use of the endoscope.	1. respect the individual's rights and wishes relating to their consent, privacy, beliefs, and dignity
	2. review all relevant information about the condition of the individual
	3. ensure that health and safety measures relevant to the endoscopic procedure are undertaken
	4. monitor the effects of the examination on the condition of the individual, and ensure their safety at all times
	5. examine comprehensively the clinical status of the individual according to the potential condition being assessed
	6. guide and manipulate the appropriate endoscope to enable the assessment of the mucosa
	7. interpret the information revealed by the endoscopic procedure and identify any signs of abnormality
	8. record the signs of abnormality with suitable imaging systems, where possible, according to organisational procedures requirements and guidelines.
	9. determine the most appropriate actions to take with the abnormalities
	10. keep accurate, legible, and complete records, and comply with all the relevant legal, professional, and organisational and guidelines.

SECTION 11: Collect specimens through the use of endoscopic procedures This workforce competence covers collecting specimens during endoscopic procedures. This covers the use of endoscopes, during a range of endoscopic procedures. Specimens or samples are collected at various points during the procedure, and these need to be processed for analysis. It is important to collect a sufficient amount of the specimen, and check that there are no unexpected effects arising from the collection. A range of techniques is available for collecting specimens. A separate workforce competence (END12) is available to cover the actual use of the endoscope.	1. respect the individual's rights and wishes relating to their consent, privacy, beliefs, and dignity
	2. review all relevant information about the condition of the individual 3. ensure that health and safety measures relevant to the collection of the specimen are undertaken
	4. monitor the effects of the specimen collection on the condition of the individual, and ensure their safety at all times
	5. ensure the appropriate specimen collection equipment is ready for use
	6. position and manipulate the appropriate endoscope to the site of the specimen
	7. select the most appropriate specimen collection technique to use
	8. insert the appropriate accessories down the endoscope channel
	9. ensure a sufficient quantity and type of specimen is removed for analysis
	10. remove the specimen without unduly damaging surrounding tissue
	11. ensure the specimen is labelled correctly and processed efficiently according to organisational procedures
	12. identify any complications resulting from the collection of specimens, and take appropriate action to resolve them
	13. keep accurate, legible, and complete records, and comply with all the relevant legal, professional, and organisational requirements and guidelines.
SECTION 12: Manage polyps through the use of endoscopic procedures This workforce competence covers managing polyps during endoscopic procedures. This covers the use of endoscopes, during a range of endoscopic procedures. Different types of polyps are identified at different points during the endoscopy. A decision has to be taken whether to leave them or remove them, and then if the polyp is to be retrieved for analysis. A range of techniques is available for removing the polyps. The sites of polyps can also be marked to ensure	1. respect the individual's rights and wishes relating to their consent, privacy, beliefs, and dignity
	2. review all relevant information about the condition of the individual
	3. ensure that health and safety measures relevant to the polypectomy are undertaken
	4. monitor the effects of the polypectomy on the condition of the individual, and ensure their safety at all times
	5. ensure the appropriate polypectomy equipment and drugs are ready for use
	6. position and manipulate the appropriate endoscope to the site of the polyps
	7. decide which of the polyps should be removed, and select the most appropriate polypectomy technique to remove them
	8. insert the appropriate accessories down the endoscope channel

that they can be monitored in the future. A separate workforce competence (END12) is available to cover the actual use of the endoscope.	9. remove the designated polyps by applying the appropriate degree of heat and pressure to remove the polyp head
	10. check the remaining polyp bases to ensure that they are not bleeding after separation
	11. retrieve the polyps if possible, and ensure that samples are labelled correctly and processed efficiently according to organisational procedures
	12. mark the site of the removed polyps for future management
	13. identify any complications resulting from the management of the polyps, and take appropriate action to resolve them
	14. keep accurate, legible, and complete records, and comply with all the relevant legal, professional, and organisational requirements and guidelines.
SECTION 13: Review the results of endoscopic procedures This workforce competence covers reviewing the results of endoscopic procedures. Whether the endoscopic procedure is diagnostic or therapeutic, the results will need to be reviewed to determine the next steps in the management of the individual's condition. These steps could involve further diagnostic or therapeutic procedures, and an appropriate management plan needs to be devised. The individual undergoing the procedures will need to be consulted on their requirements. A separate workforce competence (END19) is available to cover the reporting of the results.	1. respect the individual's rights and wishes relating to their consent, privacy, beliefs, and dignity
	2. provide support to the individual, and the carers they specify, to enable them to make informed choices throughout the discussion
	3. review the information obtained from the endoscopic procedure, along with other relevant information on the individual
	4. utilise the results of the endoscopic procedure to inform the diagnostic process
	5. decide whether further diagnostic or therapeutic procedures could be required
	6. determine an appropriate management plan for the individual's condition
	7. decide the appropriate time and person for sensitively discussing the results of the endoscopic procedure with the individual
	8. ensure the individual is provided with sufficient information to assist them to understand any issues that have emerged, along with the proposed management plan for the condition
	9. keep accurate, legible, and complete records, and comply with all the relevant legal, professional, and organisational requirements and guidelines
SECTION 14: Provide reports on endoscopic procedures This workforce competence covers providing reports of endoscopic procedures. Whether the endoscopic procedure is diagnostic or therapeutic, a report on it needs to be	1. respect the individual's rights and wishes relating to their consent, privacy, beliefs, and dignity
	2. confirm who is to receive the reports of the endoscopic procedure
	3. provide reports relevant to the individual and their condition, in accordance with any guidelines or requirements stated by those receiving the reports
	4. identify the priority of the individual's requirements

produced. The report will cover what procedures were undertaken, how they were undertaken and by whom, and the results of the procedure. Information relating to the procedure will need to be collated, according to organisational procedures. A separate workforce competence (END18) is available to cover the review of the results.	in the reports 5. ensure that follow up procedures for the individual are processed correctly 6. collate all reports relating to the endoscopic procedure and ensure that they are processed efficiently according to organisational procedures 7. respond to enquiries from practitioners on the progress of the reports with accurate information 8. maintain the confidentiality of information consistent with organisational procedures 9. keep accurate, legible, and complete records, and comply with all the relevant legal, professional, and organisational requirements and guidelines.
SECTION 15: Reprocess endoscopy equipment This workforce competence covers the reprocessing of endoscopy equipment. This involves preparing and testing the reprocessing equipment prior to use, and then reprocessing the endoscopy equipment, including the endoscope itself. Any problems with the endoscopy equipment needs to be reported before it is allowed to be used again. All used, damaged, or out of date items need to be disposed of correctly. The preparation of the equipment for further use is covered by a separate workforce competence (END6).	1. check that all endoscopy equipment is accounted for after the endoscopic procedure 2. ensure that health and safety measures relevant to reprocessing are undertaken 3. handle endoscopy equipment safely, correctly, and hygienically during transfer between different clinical areas 4. test reprocessing equipment prior to use, and report any problems with it 5. reprocess the appropriate endoscopy equipment according to the specified organisational procedures 6. report any endoscopy equipment that is not functioning correctly or is requiring maintenance 7. dispose of any used, damaged, or out of date items accordance with organisational procedures 8. restore the endoscopy equipment and environmental conditions to an appropriate state ready for the next procedure 9. keep accurate, legible, and complete records, and comply with all the relevant legal, professional, and organisational requirements and guidelines.
SECTION 16: OBSERVATION OF ENDOSCOPY; The trainee, through observation, is able to describe the basic techniques and manoeuvres of flexible sigmoidoscopy and normal / abnormal anatomy of the colon and rectum	1. The trainee observes the assessment, preparation and positioning of the patient by an experienced endoscopist 2. The trainee is able to identify the common endoscopic anatomical landmarks of the anus, rectum and colon 3. The trainee observes and is able to describe the techniques strategies employed to facilitate safe intubation of the anus 4. The trainee observes the correct storage and handling of the endoscope during transit, during and following the procedure 5. The trainee can describe and predict the effects the controls have on the tip of the scope, when

	manipulated
	6. The trainee is able to define and demonstrate torquing
	7. The trainee is able to predict and demonstrate the effect that torquing manoeuvres have on the tip of the endoscope
	8. The trainee is able to describe and predict how these manoeuvres effect the 1.) large bowel and 2.) the patient
	9. Through observation, the trainee demonstrates recognition of the common pathologies of the anus, rectum and colon
	10. The trainee observes how these pathologies are confirmed and treated
	11. The trainee is able to observe the recovery of the patient through to discharge following flexible sigmoidoscopy
	12. The trainee observes the discharge of the patient with regards to their physical and psychological wellbeing and what information (and sources) is given to the patient and their family
	13. The trainee is able to describe the key elements of the examination, which should be documented, and how this can be achieved
	14. The trainee reflects on their observation period and is able to critically apply this to own practice and knowledge base
SECTION 17: ENDOSCOPY SIMULATION; The trainee is able to perform flexible sigmoidoscopic examination on a patient simulator	1. The trainee correctly positions him / herself in relation to the patient and correctly demonstrates the handling of the endoscope before the procedure commences
	2. The trainee is able to explain techniques implemented throughout simulated procedure
	3. The trainee demonstrates appropriate use of hand-controls, torquing techniques and air / suction buttons to keep the colorectal lumen in full clear view
	4. The trainee is able to demonstrate smooth and controlled procedure within 25 minutes of commencement, and where appropriate, identify landmarks and pathologies
SECTION 18: ENDOSCOPE WITHDRAWAL; The trainee is able to withdraw the flexible sigmoidoscope safely, identifying all anatomical landmarks and pathologies, following insertion	1. The trainee correctly positions him / herself in relation to the patient and correctly demonstrates the handling of the endoscope before withdrawal commences
	2. The trainee establishes a rapport with the patient and endoscopy assistant
	3. The trainee where appropriate is able to clearly

by an experienced endoscopist	verbalise instructions to the patient and endoscopy assistant, to assist with the completion of the endoscopic examination
	4. The trainee demonstrates appropriate use of hand controls, torquing techniques and air / suction buttons to keep the colorectal lumen clear and in view
	5. The trainee begins to anticipate the movement and direction of the tip of the endoscope as the colon changes direction during withdrawal
	6. The trainee is able to demonstrate smooth and controlled safe withdrawal of the endoscope within 10 minutes, identifying all anatomical landmarks and pathologies
	7. Of those pathologies identified, the trainee is able to describe appropriate action if any, to confirm
	8. The trainee is able to collect safely, samples for histological analysis using cold biopsy and brush techniques
	9. The trainee is able to perform safe retroflexion of the endoscope to facilitate examination of the lower rectum
	10. The trainee, once the examination is completed, leaves the patient in a safe and comfortable position
	11. The trainee demonstrates through their actions and care of the patient throughout the examination, recognition of the patients right to privacy and dignity
	12. The trainee assists in the safe transfer of the patient to the recovery area, accurately disseminating relevant information about the examination and results, identifying any potential risks and / or concerns to be particularly aware of during recovery and what actions should be taken
	13. The trainee assists in the documentation of the examination and follow-up
	14. The trainee reflects and critically appraises own strengths and weaknesses and how they can be applied to future practice

Flexible Sigmoidoscopy pathway

CONFIRMATION OF ACHIEVEMENT OF CLINICAL COMPETENCY FORM

SECTION 1: Communicate and relate to individuals during endoscopic procedures

NB. For performance criteria, please refer to pages 13 – 18 of this document.

This form must be completed by the Consultant responsible for the Flexible Sigmoidoscopy Training

Name of Student:		
Date of completion:		
Outcome:	Achieved*	Not Achieved*
	(* delete as appropriate)	
Please provide evidence to identify that the named student has achieved each of the identified performance criteria as defined in the above, taken from Skills for Health (2005):		
Comments regarding the quality of the students knowledge base relevant to the competency identified above:		
Consultant Signature:		Student Signature:
Date:		Date:

Reflective statement of evidence regarding completion of Clinical Competency (Section 1); to be completed by the student on completion of the clinical competency, in a minimum of 500 words, to a maximum of 1000 words. A separate sheet can be inserted where necessary.

Acknowledgement by the Student

Where assessed practice involves patients / clients and / or their significant others, prior consent of the individuals has been obtained. Confidentiality will be maintained at all times.

Student Signature: **Date:**

Appendix 4

Programme Specification for Diploma Gastroenterology (Flexible Sigmoidoscopy)

1. Awarding institution / body	
2. Teaching institution	
3. Programme accredited/validated by	
4. Final award	Dip HE Gastroenterology (Flexible sigmoidoscopy)
5. Programme title	Dip HE Gastroenterology (Flexible sigmoidoscopy)
6. Professional body award title	
7. UCAS code	
8. Relevant QAA subject benchmarking group	NA
9. Date of production / revision	April 2005

10. Educational aims of the programme

The proposed programme of study aims to take students from a variety of backgrounds and abilities and prepare them, through acquisition and application of knowledge, skills and attitudes to undertake, within their chosen level and scope of practice, assessment, investigation, diagnosis, surveillance, screening, support and preparation for treatment of patients, relatives and their families whom have conditions and diseases of the gastrointestinal tract.

The overall aims of the programme are to enable the candidate to:

- Become a competent, safe and motivated practitioner within the field of gastroenterology
- Gain professional attitudes, values and perspectives in relation to self and others
- Respond to changes within the context of professional practice
- Develop cognitive, affective and psychomotor skills in relation to clinical practice in the context of research, critical awareness, and reflection
- Embrace the principles of inter-professional learning / multidisciplinary working and the emerging roles within the NHS

11. Programme outcomes

The programme outcomes identified below interlink across

- The requirements for JAG endoscopy training (JAG, 2004)
- National Clinical Competencies for Endoscopy (Skills for Health, 2005)
- The framework for higher education qualifications (QAA 2001)

It is expected that, at the successful completion of this programme, students will be able to;

- Develop skills to become a competent, safe and motivated endoscopic practitioner to perform flexible sigmoidoscopy
- Recognize the limitations of their own endoscopic practice through experiential learning and reflective practice
- Respond to changes within the field of endoscopy and the introduction of bowel screening

having acquired the

A. knowledge and understanding
B. intellectual skills
C. practical skills
D. transferable skills

that are required of, and appropriate for practitioners within gastroenterology and endoscopy.

A. Knowledge and understanding

Learning outcomes	**Teaching / Learning methods and strategies:**
On successful completion of the Dip HE Gastroenterology (flexible sigmoidoscopy) pathway, students will be able to: A1. Have recognition and understanding of the basic principles of anatomy and physiology of the main systems of the human body A2. Be able to apply knowledge of the normal structure and function of the GI tract within the clinical arena and discuss basic applications of pharmacology in GI disease A3. Identify the wider healthcare team and explore and evaluate the impact on practice and service delivery A4. Be able to apply knowledge of the normal structure and function of the colon and rectum within the clinical arena, and apply to disorders of the colon and rectum	A varied approach to learning and teaching will be employed to include lectures, seminars and workshops to provide and underpin knowledge and understanding. Student led presentations/directed learning tasks will also be employed to extend knowledge and understanding. The concept of experiential learning will also be introduced and supported through peer support, enquiry and group learning techniques. The learning and teaching processes will be further supported with the integration of 'Blackboard' and practice based learning. **(Outcomes A1 – A4)** See teaching methods matrix **Assessment:** A varied approach to assessment will form the basis of methods utilised to examine learning and achievement of learning outcomes. This will include the implementation of assignments, case studies, reflective journal keeping, literature review, practice assessment and individual portfolios. **(Outcomes A1 – A4)** See assessment methods matrix

B. Intellectual (thinking) skills	
Learning outcomes On successful completion of the Dip HE Gastroenterology (flexible sigmoidoscopy) pathway, students will be able to: B1. Apply the concept of clinical ecology B2. Describe the ethical and legal responsibilities pertaining to informed consent and the duty of care appropriate to intended practice B3. Be able to identify abnormal pathology and take appropriate actions to ensure that they are confirmed and reported upon to allow for appropriate management B4. Apply knowledge of abnormal pathophysiological processes to colorectal disease	**Teaching / Learning methods and strategies:** A varied approach to learning and teaching will be employed to include lectures, seminars and workshops to provide and underpin knowledge and understanding. Student led presentations/directed learning tasks will also be employed to extend knowledge and understanding. The concept of experiential learning will also be introduced and supported through peer support, enquiry and group learning techniques. The learning and teaching processes will be further supported with the integration of 'Blackboard' and practice based learning. **(Outcomes B1 – B4)** See teaching methods matrix **Assessment:** A varied approach to assessment will form the basis of methods utilised to examine learning and achievement of learning outcomes. This will include the implementation of assignments, case studies, reflective journal keeping, literature review, practice assessment and individual portfolios. **(Outcomes B1 – B4)** See assessment methods matrix

C. Practical skills	
Learning outcomes On successful completion of the Dip HE Gastroenterology (flexible sigmoidoscopy) pathway, students will be able to: C1. Assess and plan care actions appropriately and monitor such actions and care delivered C2. Describe and apply risk assessment strategies to ensure the safety of the patient and act upon adverse events and complications which may arise from planned interventions C3. Will undertake competently, safely and independently, diagnostic flexible sigmoidoscopy including skills required to retrieve tissue for analysis and diagnosis where indicated under proximal (indirect) supervision C4. Meet recommended training and practice standards as set by the Joint Advisory Group (JAG) for flexible sigmoidoscopy C5. Will be able to achieve concise findings at flexible sigmoidoscopy and provide appropriate information allowing for treatment and management actions	**Teaching / Learning methods and strategies:** A varied approach to learning and teaching will be employed to include lectures, seminars and workshops to provide and underpin knowledge and understanding. Student led presentations/directed learning tasks will also be employed to extend knowledge and understanding. The concept of experiential learning will also be introduced and supported through peer support, enquiry and group learning techniques. The learning and teaching processes will be further supported with the integration of 'Blackboard' and practice based learning. **(Outcomes C1 – C5)** See teaching methods matrix **Assessment:** A varied approach to assessment will form the basis of methods utilised to examine learning and achievement of learning outcomes. This will include the implementation of case studies, reflective journal keeping, OSCE's, Competency assessment and practice portfolios. **(Outcomes C1 – C5)** See assessment methods matrix

D. Transferable skills

Learning outcomes	Teaching / Learning methods and strategies:
On successful completion of the Dip HE Gastroenterology (flexible sigmoidoscopy) pathway, students will be able to: D1. Identify and develop competent communication skills and apply these to meet the needs of the patient and clinical situation, to include the process of informed consent D2. Will develop communication strategies and demonstrate effective liaison and support for patients, carers, their families and other healthcare professionals D3. Evaluate professional accountability and responsibility in respect of developing practice and exhibit skills required for professional practice	A varied approach to learning and teaching will be employed to include lectures, seminars and workshops to provide and underpin knowledge and understanding. Student led presentations/directed learning tasks will also be employed to extend knowledge and understanding. The concept of experiential learning will also be introduced and supported through peer support, enquiry and group learning techniques. The learning and teaching processes will be further supported with the integration of 'Blackboard' and practice based learning. **(Outcomes D1 – D3)** See teaching methods matrix **Assessment:** A varied approach to assessment will form the basis of methods utilised to examine learning and achievement of learning outcomes. This will include the implementation of assignments, case studies, reflective journal keeping, literature review, practice assessment and individual portfolios. **(Outcomes D1 – D3)** See assessment methods matrix

12a References used in designing the programme

This programme has been designed according to

Department of Health, (2000) The NHS plan: a plan for investment. A plan for reform. HMSO, London

Department of Health, (2004) National Bowel Cancer Screening Programme. Announcement made by John Reid, October 2004. www.DoH.gov.uk, London

Department of Health, (2004) The NHS Knowledge and Skills Framework and the Development Review Process. NHS, London.

Hughes L (2005). Inter-professional learning curriculum: learning outcomes. Faculty of Health and Social care, University of Hull, unpublished

JAG (2004) Guidelines for the appraisal and assessment of trainees in gastrointestinal endoscopy. Obtained from www.thejag.org.uk

Quality Assurance Agency for Higher Education (2002) Subject benchmark statements: Healthcare Studies. QAA. Gloucester

The programme is based on the above up-to-date specifications and therefore relevant to existing professional conditions and requirements and has been developed in consultation with practicing professionals within the NHS. Gastroenterology is a continually field which will be reflected in the delivery of the programme.

Table outlining the learning outcomes for modules within the two programme FS programme

Basic skills in colorectal endoscopy	1. Demonstrate an understanding of the structure and function of the endoscope 2. Extend understanding of endoscope structure and function to allow for the care, cleaning and disinfection of the endoscope 3. Demonstrate knowledge and use in the safe and correct handling of the endoscope 4. Demonstrate knowledge and its clinical application with respect to guidelines for maintenance and disinfection of endoscopes and their accessories 5. Perform troubleshooting in endoscope handling and function 6. Identify potential risks to patient safety during endoscopy
An introduction to anatomy and physiology of the human body	1. Develop understanding of the structure and function of human body systems, to include cellular structure and function 2. Identify and explain function of major systems within human body 3. Explore the principles of mechanistic control and function of the human bodily systems 4. Recognise the effect of pathology on body systems 5. Identify the effects of altered states of physiology on normal function 6. Explore and recognise examples of pathology which affect body systems 7. Discuss principles and processes of infection control 8. Integrate sources of e-learning and blackboard in self directed learning
An introduction to basic gastroenterology	1. Develop an understanding of basic gastroenterology and its application to endoscopy 2. Apply the understanding of basic structure and function of the gastrointestinal tract to the application to simple disease algorithms and aetiology 3. Demonstrate knowledge and recognition of simple pathology to allow for identification of pathology related to gastroenterology 4. Demonstrate a basic knowledge of patient presentation, clinical assessment and treatment strategies in gastroenterology and disease

An introduction to diagnostic flexible sigmoidoscopy	1. Demonstrate a basic knowledge and understanding of indications and contraindications for flexible sigmoidoscopy 2. Develop an understanding of aspects of legal and ethical issues which surround accountability and duty of care 3. Demonstrate understanding in all aspects of consent and its application to endoscopy 4. Discuss effective methods of communication 5. Review and discuss risk assessment for patients undergoing flexible sigmoidoscopy, to include an introduction to the theory of anticoagulation, antibiotics and diabetes 6. Describe abnormal pathology encountered during flexible sigmoidoscopy 7. Explore the potential risks to patient safety during endoscopy
Basic practice in diagnostic flexible sigmoidoscopy	1. Apply and analyse risk assessment for patients undergoing flexible sigmoidoscopy, to include an introduction to the theory of anticoagulation, antibiotics and diabetes 2. Demonstrate understanding of aspects of legal and ethical issues surrounding accountability and duty of care 3. Understand the process and acquisition of consent and its application to endoscopy 4. Demonstrate effective communication skills in relation to endoscopy 5. Identify abnormal pathology encountered during flexible sigmoidoscopy 6. Identify potential risks to patient safety during endoscopy
Preparation for professional practice	1. Describe the development of the National Health Service (NHS) with regard to New Ways of Working and identify the various professional groups that make up the NHS workforce 2. Understand the changing nature of health care practitioners with particular emphasis on the endoscopic practitioner 3. Understand the meaning of "Professional practice" and identify its importance within the role of a healthcare practitioner 4. Understand stereotyping and professional prejudices and the impact of these on inter-professional working 5. Explore own beliefs, experience and attitudes with regard to professionalism and practice, and develop knowledge, skills, competencies and attitudes which are common to all professions 6. Identify and reflect upon the role of a practitioner as a member of the healthcare workforce and any barriers affecting personal development, and discuss ways of overcoming barriers

Further skills in diagnostic flexible sigmoidoscopy	1. Explore personal attitudes and values required to perform flexible sigmoidoscopy with proximal supervision 2. Explore the indications requiring tissue retrieval during the procedure 3. Demonstrates knowledge and clinical application of guidelines for follow-up strategies in endoscopy 4. Able to apply knowledge base of abnormal pathology to both assessment and treatment care pathways 5. Analyse effective methods of communication which meet the requirements of both patient and clinical needs 6. Extend knowledge of legal and ethical issues surrounding patient assessment and consent issues 7. Explore the inclusion of a one-stop rectal bleed clinic and its role within the Colorectal Unit
The practice of diagnostic flexible sigmoidoscopy	1. Perform flexible sigmoidoscopy correctly and safely with proximal supervision 2. Recognise and act upon such indications requiring tissue retrieval during the procedure 3. Demonstrates knowledge and clinical application of guidelines for follow-up strategies in endoscopy 4. Obtain informed consent for patients undergoing flexible sigmoidoscopy 5. Able to apply knowledge base of abnormal pathology to both assessment and treatment care pathways 6. Deliver effective communication skills which meet the requirements of both patient and clinical needs
Anatomy and physiology of the GI tract	1. Consolidate their knowledge and understanding of the structure and function of the GI tract 2. Develop understanding of the structure and function of the large intestine 3. Extend their understanding of gastroenterological disease 4. Identify the major controlling systems of the large GI tract to include neural and vascular supply
Gastroenterology and disease	1. Extend knowledge and understanding of basic gastroenterology and apply to alterations of gastrointestinal function 2. Apply understanding of basic gastroenterology to disease assessment and management 3. Demonstrate and understanding of the pathology of diseases and their clinical assessment

	4. Discuss the structure and function of accessory organs and recognise the disease processes which can affect such organs 5. Demonstrate knowledge and recognition of simple disease processes and discuss their relative prognosis 6. Demonstrate a basic knowledge of patient presentation, clinical assessment and treatment strategies in gastroenterology and disease 7. Demonstrate a basic knowledge of GI pharmacology and apply within the field of gastroenterology
Developing an experiential portfolio	1. To apply the validity of experiential learning already achieved without compromising the integrity of the professional / academic award 2. To examine existing knowledge, skills and self-confidence to be able to learn more effectively from any situation. 3. To analyse their current and past learning and experiences in practice 4. To distinguish and quantify the achievements of learning and to identify opportunities for new learning requirements. 5. To compile a portfolio of evidence of learning achieved and to reflect upon how this will impact upon future personal and professional development.
Extending skills for professional practice	1. Discuss the English legal system in relation to healthcare provision 2. Describe the elements of Law and practice attributed to informed consent 3. Describe the legal and moral aspects of obtaining consent 4. Define responsibility and accountability 5. Describe the differences between responsibility and accountability 6. Explore fundamental principles and various models / beliefs of ethics, and the integration of clinical audit, clinical governance and clinical supervision to the role of the healthcare professional 7. Explore issues which have ethical and legal implications in their practice

MODULE SPECIFICATION (*Theory based)

Module No. :	
Module Title :	Preparation for professional practice
Module Leader :	
No. Credits :	20
Level :	4
Semester Available :	Semester 3
Pre –requisites :	None
Concurrent Module :	None
Post-requisites :	None
Excluded combinations :	None
Advisory constraints :	None
Estimated number attending module :	15-20

Aims and Distinctive Features

This module aims to introduce the student to the environment of healthcare and in particular introducing the individual to professional practice and multidisciplinary working. In addition, the student will be introduced to the roles of other professional groups who deliver healthcare services. This module is particularly suitable for students who have never worked within the healthcare service.

The aims of this module are to enable the student to gain awareness and understanding of;

1. Inter-professional working relationships
2. Reflective practice related to their own practice
3. Professional practice and its role within the healthcare environment
4. Academic skills associated with professional practice

Learning Outcomes

The student will be able to:

1. Describe the development of the National Health Service (NHS) with regard to New Ways of Working and identify the various professional groups that make up the NHS workforce
2. Understand the changing nature of health care practitioners with particular emphasis on the endoscopic practitioner
3. Understand the meaning of "Professional practice" and identify its importance within the role of a healthcare practitioner
4. Understand stereotyping and professional prejudices and the impact of these on inter-professional working
5. Explore own beliefs, experience and attitudes with regard to professionalism and practice, and develop knowledge, skills, competencies and attitudes which are common to all professions
6. Identify and reflect upon the role of a practitioner as a member of the healthcare workforce and any barriers affecting personal development, and discuss ways of overcoming barriers

Mapping to internal and external reference points

MODULE LEARNING OUTCOMES	PROGRAMME LEARNING OUTCOMES (FS pathway)	PROGRAMME LEARNING OUTCOMES (Care pathway)	KNOWLEDGE & SKILLS FRAMEWORK: Dimension (Level Descriptor)	FRAMEWORK FOR HIGHER EDUCATION QUALIFICATION (QAA 2001)
1	9, 10	9, 10	1 – 6 (1), HWB 1&2 (1)	LEVEL 4
2	9, 10	9, 10	1 – 6 (1), HWB 1&2 (1)	LEVEL 4
3	10	10	1 – 6 (1), HWB 1&2 (1)	LEVEL 4
4	9	9	1 – 6 (1), HWB 1&2 (1)	LEVEL 4
5	9	9	1 – 6 (1), HWB 1&2 (1)	LEVEL 4
6	10	10	1 – 6 (1), HWB 1&2 (1)	LEVEL 4

References

Department of Health, (2004) The NHS Knowledge and Skills Framework and the Development Review Process. NHS, London.

Quality Assurance Agency (2001) The framework for Higher Education Qualifications in England, Wales and Northern Ireland. Gloucester. QAA.

Teaching and Learning Strategies

The expected study hours (to include contact time) for this module are 200 hours. The following teaching and learning strategies will be adopted within this module:

LEARNING STRATEGY	LENGTH IN HOURS	MODULE LEARNING OUTCOME
Participative / taught lectures	30	1 – 6
Tutorials	7 (1.5 individual)	1 – 6
e-learning	15	1 – 6
Group working	8	1 – 6
Directed learning	50	1 – 6
Self directed learning	90	1 – 6

Arrangements for Revision and Private Study

Tutorial will be provided on a group and individual basis throughout the module. Students will be given the time and opportunity to utilise the University's information resources. Where appropriate, personal study will be facilitated and directed, supported by relevant suggested reading. Students undertaking this module are encouraged to include 6 – 12 hours of related reading per week in their study timetable.

Assessment Strategy

The following assessment strategies are used within this module:

- Written assignment

ASSIGNMENT TO INCLUDE THE FOLLOWING;	RELATES TO LEARNING OUTCOME NO.
Explore the development of healthcare professionals over the last 10 years, in particular within endoscopy	1, 2,3
Describe the potential impact of new roles within the NHS and their integration within multidisciplinary teams	1, 3, 4, 5, 6
Discuss the benefits and challenges of inter-professional working	6

Type of Assessment

Students will be required to complete a 2000 word written assignment regarding the role of the healthcare practitioner. The subject of the assignment must be discussed and agreed with the academic supervisor prior to commencement of the assignment.

Purpose of Assessment

The student is able to demonstrate understanding of their role within GASTROENTEROLOGY and explore the potential implications of such a role. The student will demonstrate their individual considerations for the development of such new roles within healthcare. The student will also demonstrate skills in information retrieval and review of academic literature.

Referral

If the student is referred in their written assignment then one further attempt will be allowed as per University examination rules and regulations. The student will be given feedback and further support and guidance will be mutually agreed with student tutor to aid successful completion of the module.

Indicative content

- NHS Modernisation
- Role of the endoscopist
- Multidisciplinary team working
- Inter-professional learning
- Professional prejudices and stereotyping
- Clinical audit
- Reflective practice
- Introduction to evidence based practice
- Clinical supervision
- Introduction to protocols
- Communication skills
- Legal and ethical issues

Suggested reading

Benner, P. (1984) From Novice to Expert Menlo Park. California: Addison Wesley Co.

Boud, D., Keogh, R. & Walker, D. (1985). Reflection: Turning Experience into Learning, Kogan Page: London

Carr, W. & Kemmis, S (1986). Becoming Critical, Falmer Press: London

Cottrell, S (2003) The study skills handbook. Palgrave Macmillan, Hampshire

Dimond, B. (1995) Legal Aspects of Nursing London: Prentice Hall

Ewles and Shnnett (1995) Promoting Health: A Practical Guide London: Scutari Press.

Palmer, A., Burns, S. & Bulman, C. (1994). Reflective Practice in Nursing - the growth of the professional practitioner, Blackwell Scientific: Oxford

Palmer D, Kaur S. (2003) Core skills for Nurse Practitioners. Whurr

Websites

www.doh.gov.uk
www.modern.nhs.uk/endoscopy

MODULE SPECIFICATION (*Practice based)

Module No.:

Module Title: The practice of diagnostic flexible sigmoidoscopy

Module Leader:

No. Credits: 20
Level: 5
Semester Available: Semester 1 (Long thin)
Pre-requisites: None
Concurrent Module: Further skills in diagnostic flexible sigmoidoscopy – *this module must run alongside the related theory module*
Post-requisites: None
Excluded combinations: None
Advisory constraints: None

Estimated number attending module: 15 - 20

Aims and Distinctive Features

This module is designed to give the student the extended skills in which to perform flexible sigmoidoscopy without direct supervision. The skills required to perform conventional biopsies will also be evaluated and instructed. The knowledge previously obtained with regard to recognition of pathology will be extended. The wider implications with regard to multidisciplinary team working will also be examined and their impact on service impact and delivery. Aspects of this module also contribute to certain learning requirements of the JAG basic skills in endoscopy courses, as described in JAG Training Guidelines for Gastrointestinal endoscopy, 2004.

The aims of this module are to:

1. Enable student to safely and correctly perform flexible sigmoidoscopy with proximal supervision
2. Extend skills in pathology recognition and apply to procedure
3. Recognise situations where tissue retrieval is indicated
4. Perform simple conventional biopsies where indicated

Learning outcomes

The student will:

1. Perform flexible sigmoidoscopy correctly and safely with proximal supervision
2. Recognise and act upon such indications requiring tissue retrieval during the procedure
3. Demonstrates knowledge and clinical application of guidelines for follow-up strategies in endoscopy
4. Obtain informed consent for patients undergoing flexible sigmoidoscopy
5. Able to apply knowledge base of abnormal pathology to both assessment and treatment care pathways
6. Deliver effective communication skills which meet the requirements of both patient and clinical needs

Mapping to internal and external reference points

MODULE LEARNING OUTCOMES	PROGRAMME LEARNING OUTCOMES (Flexible sig. pathway)	FRAMEWORK FOR HIGHER EDUCATION QUALIFICATION (QAA 2001)	KNOWLEDGE & SKILLS FRAMEWORK: Dimension (level descriptor)	JAG BASIC SKILLS IN ENDOSCOPY*
1	D, E	LEVEL 5	1-3&6 (2), 4,5 (1/2), HWB 6&7 (2), IK 1&2 (1/2), G2 (1/2)	3.1, 3.2, 3.3
2	D, E	LEVEL 5	1-3&6 (2), 4,5 (1/2), HWB 6&7 (2), IK 1&2 (1/2), G2 (1/2)	3.2
3	B, F	LEVEL 5	1-3&6 (2), 4,5 (1/2), HWB 6&7 (2), IK 1&2 (1/2), G2 (1/2)	3.1
4	3, 8, E	LEVEL 5	1-3&6 (2), 4,5 (1/2), HWB 6&7 (2), IK 1&2 (1/2), G2 (1/2)	1.4, 1.5, 1.6
5	B, C	LEVEL 5	1-3&6 (2), 4,5 (1/2), HWB 6&7 (2), IK 1&2 (1/2), G2 (1/2)	3.1, 3.2, 3.3
6	3, 4	LEVEL 5	1-3&6 (2), 4,5 (1/2), HWB 6&7 (2), IK 1&2 (1/2), G2 (1/2)	1.5, 1.6

*(*Please refer to table highlighting the JAG training requirements for Gastrointestinal Endoscopy adapted from the JAG training handbook, 2004)*

References

Department of Health, (2004) The NHS Knowledge and Skills Framework and the Development Review Process. NHS, London.

Quality Assurance Agency (2001) The framework for Higher Education Qualifications in England, Wales and Northern Ireland. Gloucester. QAA.

Teaching and Learning Strategies

The expected study hours (to include contact time) for this module are 200 hours. The following teaching and learning strategies will be adopted within this module:

LEARNING STRATEGY	LENGTH IN HOURS	MODULE LEARNING OUTCOME
Participative / taught lectures	28	1 – 6
Tutorials	7 (1.5 individual)	1 – 6
e-learning	25	1 – 6
Directed study	35	1 – 6
Group working / discussion	5	1 – 6
Self directed learning	50	1 – 6
Clinical practice	50	1 – 6

Arrangements for Revision and Private Study

Tutorial will be provided on a group and individual basis throughout the module. Students will be given the time and opportunity to utilise the University's information resources. Where appropriate, personal study will be facilitated and directed, supported by relevant suggested reading. Students undertaking this module are encouraged to include 6 – 12 hours of related reading per week in their study timetable.

Assessment Strategy

The following assessment strategies are used within this module:

- OSCE assessments
- Clinical competencies
- Recorded practice

Type of assessment

Summative OSCE assessments

The following OSCE assessments within this module carry equal weighting and must be passed for successful completion of the module.

ASSESSMENT	% OF TOTAL MARK	STUDENT TO DEMONSTRATE	LEARNING OUTCOME
OSCE 1	25	Set-up, take down, cleaning & disinfection of endoscopes	1 – 6
OSCE 2	25	Consent and patient interview prior to flexible sigmoidoscopy	1 – 6
OSCE 3	25	Correct and safe completion of the flexible sigmoidoscopy procedure with retroflexion	1 – 6
OSCE 4	25	Recognition, sampling and management of abnormal findings	1 - 6

NB. The clinical competencies and recorded practice are key requirements for completion of the endoscopic theory and practice related modules, they do not form part of the formal assessment for this module .

Purpose of assessment

- Consolidate skills obtained during both Occupational and University based learning
- Extend skills base to include assessment, treatment and follow-up for patients presenting with pathology
- Allow for introduction and development of case study preparation

Referral

If the student is referred, he/she will be permitted to undergo one further attempt at the OSCE assessment(s) in which he/she was referred. The student will receive feedback from the initial assessment and advice and guidance be given to aid successful completion of the module. Should the student be referred in more than 50% of their OSCE's, they will be required to re-take the full series of OSCE assessments.

Indicative content

- Colorectal screening
- Biopsy & polypectomy
- Endoscope retroflexion
- Effective communication strategies
- Preparing the patient for the procedure – the initial interview
- Making the procedure easier to understand – practical hints and tips
- Reporting the procedure
- Data management
- Accurate dissemination of results to colleagues, patients and their families / carers

Suggested reading

Shephard M, Mason J (1998) Practical Endoscopy. Chapman Hall

Cotton P, Williams CB (1996) Practical Gastrointestinal Endoscopy, 4th Edition. Blackwell Science

Table adapted from the JAG Handbook for Guidelines for the Training, Appraisal and Assessment of trainees in Gastrointestinal Endoscopy (JAG, 2004).

1. GENERAL ENDOSCOPIC TRAINING **OBJECTIVE: TO PROVIDE TRAINEES WITH THE KNOWLEDGE AND SKILLS TO UNDERTAKE ENDOSCOPIC PROCEDURES**			
SUBJECT MATTER	KNOWLEDGE	SKILLS	ATTITUDES
Equipment	1.1 Structure and function of an endoscope, light source, processor and accessories including diathermy and thermal methods for coagulation	1.2 Able to clean and disinfect equipment in accordance with BSG guidelines and use equipment in accordance with manufacturers instructions	1.3 Willing to undertake endoscopy cleaning as necessary and use the equipment appropriately
Consent	1.4 Medical and legal issues concerning consent and provision of information	1.5 Able to consent patient in accordance with BSG guidelines	1.6 Willing to obtain consent for endoscopic procedures
Sedation and monitoring	1.7 Sedative and analgesic drugs and their additive effects, patient observation and oxygen saturation	1.8 Able to safely and effectively sedate a patient for endoscopy and monitor before and after the procedure	1.9 Willing to participate in safe endoscopic practice
2. UPPER GASTROINTESTINAL ENDOSCOPY **OBJECTIVE: TO PROVIDE TRAINEES WITH THE KNOWLEDGE AND SKILLS TO UNDERTAKE DIAGNOSTIC & THERAPEUTIC UPPER GASTROINTESTINAL ENDOSCOPY**			
SUBJECT MATTER	KNOWLEDGE	SKILLS	ATTITUDES
Diagnostic gastroscopy	2.1 Indications, contraindications, complications, patient preparation and documentation	2.2 Able to undertake OGD, take biopsies, interpret findings and take necessary actions	2.3 Willing to undertake endoscopy in such a way as to minimise risk and discomfort to patients and obtain help when needed
3. LOWER GASTROINTESTINAL ENDOSCOPY **OBJECTIVE: TO PROVIDE TRAINEES WITH THE KNOWLEDGE AND SKILLS TO UNDERTAKE LOWER GASTROINTESTINAL ENDOSCOPY**			
SUBJECT MATTER	KNOWLEDGE	SKILLS	ATTITUDES
Flexible sigmoidoscopy	3.1 Indications, contraindications, complications and their management, patient preparation and documentation	3.2 Able to undertake procedure, take biopsies, undertake polypectomy and take other necessary action as required	3.3 Willing to undertake flexible sigmoidoscopy in such a way as to minimise risk and discomfort to patients, and obtain help where needed

END OF PROGRAMME EVALUATION SUMMARY

Student Name (Optional) :			
Programme Title: BSc Gastro (FS pathway)		Programme Number:	
Date Programme Commenced : Sept 04		Date Programme Completed : Aug 05	
Cohort : Sept 04		Branch :	
Award: *(Tick appropriate)*	Diploma [ ]	Advanced Diploma [ ]	Degree [ ]

How would you rate each of the following:
1 = strongly disagree 2 = disagree 3 = agree 4 = strongly agree

		1	2	3	4
1	The aims and learning outcomes of the programme (detailed in the programme handbook) were achieved				
2	Appropriateness of the assessment methods within the modules you studied				
3	Appropriateness of the module assessment methods in demonstrating the programme learning outcomes				
4	Opportunity for refection on learning				
5	Opportunity to prepare for assessments				
6	Quality of programme planning				
7	The overall quality of the programme				

5. Please identify which aspects of the programme you found most useful or valuable:

6. Do you have any recommendations on how the programme could be improved / developed in the future? In particular please provide a written comment expanding on any point rated 2 or less.

Appendix 6

Questionnaire for the evaluation of modules

Name of Course/Programme ....

Module name..... Module number .....

Date course commenced (Month and year) ..... Today's date .....

This anonymous questionnaire has been designed to give you the opportunity to evaluate the content and presentation of the course module/unit you have just completed.

Overall, how you would rate each of the following:
(please indicate by circling appropriate number)

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1 = poor **2 = fair/satisfactory** **3 = good** **4 = excellent**

Poor ⟶ excellent

	Organisation and content of module				
1	The quality of the module information	1	2	3	4
2	The organisation of the module	1	2	3	4
3	The amount of material covered in the module	1	2	3	4
4	The level of the material covered in the module	1	2	3	4
5	The relevance of the content to related modules	1	2	3	4
6	The quality of this module overall	1	2	3	4
	Delivery of module				
7	The clarity and delivery of the sessions	1	2	3	4
8	Encouragement to participate in sessions	1	2	3	4
9	The lecturers' responsiveness to questions from students	1	2	3	4
10	The provision of reading lists/follow-up material	1	2	3	4
11	Appropriateness of mode of assessment	1	2	3	4
	Extra-modular support				
12	The availability of reading material for the module	1	2	3	4
13	The availability of individual help/follow-up	1	2	3	4

If you have any additional comments, please write them overleaf

Aspects of the module found most useful or valuable for learning

Suggestions for improving the module

END OF PROGRAMME EVALUATION SUMMARY

Student Name (Optional) :			
Programme Title: BSc Gastro (FS pathway)		Programme Number:	
Date Programme Commenced : Sept 05		Date Programme Completed : Aug 06	
Cohort : Sept 04		Branch :	
Award: *(Tick appropriate)*	Diploma [ ]	Advanced Diploma [ ]	Degree [ ]

How would you rate each of the following:
1 = strongly disagree 2 = disagree 3 = agree 4 = strongly agree

		1	2	3	4
1	I feel that I have acquired the necessary theoretical knowledge to assume the roles and responsibilities of my chosen profession.				
2	I feel that the programme has prepared me with the necessary practical skills to be 'fit for practice'				
3	I feel that the programme has helped me to develop personally				
4	I feel that the programme handbook provided me with sufficient information for me to know what was expected of me				

5. Please identify which aspects of the programme you found most useful or valuable:

6. Do you have any recommendations on how the programme could be improved / developed in the future? In particular please provide a written comment expanding on any point rated 2 or less.

ENDOSCOPY PRACTITIONER PILOT: SUPERVISOR EVALUATION

Dear Supervisor,

I would be grateful if you complete the attached questionnaire regarding the development of the endoscopy trainee within your department over the first year of the pilot. I would be grateful if you could spare the time to complete the following questionnaire to enable me to evaluate your feelings as clinical supervisors of the training and educational programme currently being undertaken by your endoscopy trainee in partnership between the University of Hull, Castle Hill Hospital and your own area as clinical practice providers. All questionnaires received will remain confidential – in order to maintain anonymity I would be grateful if you could return the completed questionnaires to your endoscopy trainee so they can forward them to the University to the gastroenterology and endoscopy programme secretary who will then forward the returns. With many thanks for your assistance.

Anji Gardiner , Programme Leader, Gastroenterology, University of Hull.

1. To what extent has been your involvement with endoscopy training in the past?
2. Were you initially cautious over the initial inception of Nurse Endoscopy in the mid 1990's?
3. Were you initially cautious over the potential development of non-medical endoscopists?
4. Were you involved with the initial interest stages and recruitment of the trainee?
5. Regarding the initial information you received, do you feel you were dragged along with too little information?
6. Do you feel the training programme to date has been of a high standard?
7. Do you feel there are any improvements which could be made to the programme?
8. Have you been satisfied with the hands on / practical training provided by the training centre?

9. Have you had the opportunity to devote as much time to the trainee as you would like?
10. How much progress has the trainee made within the last year?
11. Does the trainee have a future within your hospital?
12. Regarding the concept of non-medical endoscopy – do you think it will become accepted?
13. Have you been surprised over the ability of the trainee?
14. How much has the trainee achieved over the last year – the same as expected, more or less?
15. Following your experience to date, would you be willing to have future involvement with non-medical endoscopy?

Thankyou for spending the time to complete this questionnaire which is vital in the development and acceptance of future endoscopy practitioners. If you have any queries regarding this questionnaire please contact me via email on A.B.Gardiner@hull.ac.uk and I will respond to your query as soon as possible.

With many thanks.

Anji Gardiner

ENDOSCOPY PRACTITIONER PILOT: SUPERVISOR EVALUATION, YEAR 2

Dear Supervisor,

As we are currently approaching the end of the second successful year of the endoscopy pilot I would be grateful if you could spare the time to complete the following questionnaire to enable me to evaluate your feelings as clinical supervisors of the training and educational programme currently being undertaken by your endoscopy trainee in partnership between xx, yy and your own area as clinical practice providers. All questionnaires received will remain confidential – in order to maintain anonymity I would be grateful if you could return the completed questionnaires to your endoscopy trainee so they can forward them to the University to the gastroenterology and endoscopy programme secretary who will then forward the returns to myself. I would be grateful if you could return the completed questionnaires as soon as possible to enable the review paper to be completed prior to the forthcoming meeting at the end of August – I would therefore ask for returns to be made NO LATER THAN 21st AUGUST. With many thanks for your assistance.

Programme Leader, Gastroenterology

1. Compared to 1 year ago, do you think that your trainee has made progress? (Please delete as appropriate)

Very significant Significant As expected Less than expected No progress made

Please give reasons for your answer

2. Does your trainee have regular access to lists (either training or other lists)? Yes No

If no, why and is this likely to continue?

3. Has your trainee commenced their own flexible sigmoidoscopy lists yet? Yes No

If no, are their plans to facilitate a list? Yes No
If yes, when is this planned for?
If no, why is this the case?

4. Is your trainee on target to achieve competence in diagnostic flexible sigmoidoscopy by the end of the academic year (ie. End of August 2006)?

Yes No

If no, why is this the case?

5. How do you monitor the progress and development of your trainee within clinical practice?

6. Do you feel that your trainee is safe and effective within diagnostic flexible sigmoidoscopy?

Yes No

(Please give reasons for your answer)

7. Does your Trust have any plans for audit of your trainee or service in general which would reflect the potential impact of your trainee / changes in practice observed since the commencement of the endoscopy pilot?

Yes No

Please give examples

8. Are there any instances / examples of service development and improvement which have occurred as a result of the trainee / programme (direct or indirect)?

Yes No

Please give reasons for your answer

9. Would you allow your trainee to undertake a flexible sigmoidoscopy on yourself or family members?

Yes No

Please give reasons for your answer

10. How would you compare the practice base (knowledge, understanding, skill and attitude) of your trainee compared to those trainees you have previous experience of. (Please state the nature of the trainees you have provided training for in the past)

11. Do you for-see any challenges ahead for your trainee? Yes No

Please give reasons for your answer

12. What was your initial opinion at the outset of the pilot?

Has your opinion changed over the duration of the programme?

Please give reasons for you answer

13. Would you consider recommending a trainee;
a. within your Trust Yes No (Please give reasons for your answer)

b. to other Trusts Yes No (Please give reasons for your answer)

14. At the end of the first year, did you feel that your trainee had a future role within your Trust?

Yes No

Please explain your answer

15. At the end of the second year, has your opinion changed? Yes No

Please explain your answer

16. Do you feel that the academic programme has been fit for purpose in that the quality of the educational basis of the trainee is to a high standard? Yes No
Please give reasons for your answer

17. Are there any areas which have not been covered to date within the first two years which you feel should have been covered? Yes No
Please give details

18. Have there been any elements of the programme which you did not expect but have proved beneficial for the trainee and perhaps some elements of clinical practice within your Trust?

Yes No
Please give details

19. Have there been any aspects of the educational programme which you have been surprised about?

Yes No
Please give details

20. Do you feel that you receive sufficient information regarding the educational programme? (this should be shared by the trainee in the context of adult learning)

Yes No

Please give details

21. How would you rate the scope of the clinical practice documentation which covers the clinical competency requirements of the practical aspects of the programme?

Excellent Good Average Fair Poor

Please give reasons for your answer

22. Do you consider the role of the non-medical endoscopist to become more accepted and hence widespread in the future?

Yes No

Please give reasons for your answer

23. Do you have any plans / thoughts for the potential role(s) of your trainee upon completion of the academic programme of study? Please give details

Does your trainee currently contribute to any other aspects of clinical practice other than the undertaking of flexible sigmoidoscopy? Please give details

Thankyou for spending the time to complete this questionnaire which is vital in the development and acceptance of future endoscopy practitioners. If you have any queries regarding this questionnaire please contact me via email and I will respond to your query as soon as possible.

With many thanks.

Dimensions and descriptors of the NHS Knowledge & Skills framework

DIMENSIONS	**LEVEL DESCRIPTORS**			
CORE	**1**	**2**	**3**	**4**
1. Communication	Communicate with a limited range of people on day-to-day matters	Communicate with a range of people on a range of matters	Develop & maintain communication with people about difficult matters and / or in difficult situations	Develop and maintain communication with people on complex matters, issues and ideas and / or in complex situations
2. Personal & people development	Contribute to own personal development	Develop own skills and knowledge and provide information to others to help their development	Develop oneself and contribute to the development of others	Develop oneself and others in areas of practice
3. Health, safety & security	Assist in maintaining own and others' health, safety and security	Monitor and maintain health, safety and security of self and others	Promote, monitor and maintain best practice in health, safety and security	Maintain & develop an environment & culture that improves health, safety & security
4. Service improvement	Make changes in own practice and offer suggestions for improving services	Contribute to the improvement of services	Appraise, interpret & apply suggestions, recommendations and directives to improve services	Work in partnership with others to develop, take forward and evaluate direction, policies and strategies
5. Quality	Maintain the quality of own work	Maintain quality in own work and encourage others to do so	Contribute to improving quality	Develop a culture that improves quality
6. Equality & diversity	Act in ways that support equality & value diversity	Support equality and value diversity	Promote equality and value diversity	Develop a culture that promotes equality and values diversity
HEALTH & WELLBEING	**1**	**2**	**3**	**4**
HWB1. Promotion of health and wellbeing and prevention of adverse effects on health and wellbeing	Contribute to promoting health and wellbeing and preventing adverse effects on health and wellbeing	Plan, develop and implement approaches to promote health and wellbeing and prevent adverse effects on health and wellbeing	Plan, develop, implement and evaluate programmes to promote health and wellbeing and prevent adverse effects on health and wellbeing	Promote health and wellbeing and prevent adverse effects on health and wellbeing through contributing to the development, implementation and evaluation of related policies
HWB2. Assessment and care planning to meet health and wellbeing needs	Assist in the assessment of peoples health and wellbeing needs	Contribute to assessing health & wellbeing needs & plan how to meet those needs	Assess health and wellbeing needs & develop, monitor & review care plans to meet specific needs	Assess complex health & wellbeing needs & develop, monitor & review care plans to meet those needs
HWB3. Protection of health and wellbeing	Recognize and report situations where there might be a need for protection	Contribute to protecting people at risk	Implement aspects of a protection plan and review its effectiveness	Develop and lead on the implementation of an overall protection plan

HWB4. Enablement to address health and wellbeing needs	Help people meet daily health and wellbeing needs	Enable people to meet ongoing health and wellbeing needs	Enable people to address specific needs in relation to health and wellbeing	Empower people to realise and maintain their potential in relation to health and wellbeing
HWB5. Provision of care to meet health and wellbeing needs	Undertake care activities to meet individuals' health and wellbeing needs	Undertake care activities to meet the health and wellbeing needs of individuals with a greater degree of dependency	Plan, deliver and evaluate care to meet peoples health and wellbeing needs	Plan, deliver and evaluate care to address peoples complex health and wellbeing needs
HWB6. Assessment and treatment planning	Undertake tasks related to the assessment of physiological and / or psychological functioning	Contribute to the assessment of physiological and / or psychological functioning	Assess physiological and / or psychological functioning and develop, monitor and review related treatment plans	Assess physiological and / or psychological functioning when there are complex and / or undifferentiated abnormalities, diseases & disorders & develop, monitor and review related treatment plans
HWB7. Interventions and treatments	Assist in providing interventions and / or treatments	Contribute to planning, delivering and monitoring interventions and / or treatments	Plan, deliver and evaluate interventions and / or treatments	Plan, deliver and evaluate interventions and / or treatments when there are complex issues and / or serious illness
HWB8. Biomedical investigation and intervention	Undertake tasks to support biomedical investigations and / or interventions	Undertake and report on routine biomedical investigations and / interventions	Plan, undertake, evaluate and report biomedical investigations and / interventions	Plan, undertake, evaluate and report complex / unusual biomedical investigations and / or interventions
HWB9. Equipment and devices to meet health and wellbeing needs	Assist in the production and / or adaptation of equipment and devices	Produce and / or adapt equipment and devices to set requirements	Design, produce and adapt equipment and devices	Design, produce and adapt complex / unusual equipment and devices
HWB10. Products to meet health and wellbeing needs	Prepare simple products and ingredients	Prepare and supply routine products	Prepare and supply specialised products	Support, monitor and control the supply of products
ESTATES & FACILITES	**1**	**2**	**3**	**4**
EF1 Systems, vehicles and equipment	Carry out routine maintenance of simple equipment, vehicle & system components	Contribute to the monitoring and maintenance of systems, vehicles and equipment	Monitor, maintain and contribute to the development of systems, vehicles and equipment	Review, develop and improve systems, vehicles and equipment
EF2 Environments and buildings	Assist with the maintenance and monitoring of environments, buildings &/0r items	Monitor and maintain environments, buildings and / or items	Monitor, maintain and improve environments, buildings &/or items	Plan, design and develop environments, buildings and / or items

EF3 Transport and logistics	Transport people and / or items	Monitor & maintain flow of people &/or items	Plan, monitor and control the flow of people and / or items	Plan, develop and evaluate the flow of people and / or items
INFORMATION & KNOWLEDGE	**1**	**2**	**3**	**4**
IK1 Information processing	Input, store and provide data and information	Modify, structure, maintain and present data and information	Monitor the processing of data and information	Develop and modify data and information management models and processes
IK2 Information collection and analysis	Collect, collate and report routine and simple data and information	Gather, analyse and report a limited range of data and information	Gather, analyse, interpret and present extensive and / or complex data and information	Plan, develop and evaluate methods and processes for gathering, analysing, interpreting & presenting data & information
IK3 Knowledge and information resources	Access, appraise and apply knowledge and information	Maintain knowledge and information resources & help others to access & use them	Organise knowledge and information resources and provide information to meet needs	Develop the acquisition, organisation, provision and use of knowledge and information
GENERAL	**1**	**2**	**3**	**4**
G1 Learning and development	Assist with learning and development activities	Enable people to learn and develop	Plan, deliver and review interventions to enable people to learn and develop	Design, plan, implement and evaluate learning and development programmes
G2 Development and innovation	Appraise concepts, models, methods, practices, products and equipment developed by others	Contribute to developing, testing and reviewing new concepts, models, methods, practices, products and equipment	Test an review new concepts, models, methods, practices, products and equipment	Develop new and innovative concepts, models, methods, practices, products and equipment
G3 Procurement and commissioning	Monitor, order & check supplies of goods and / or services	Assist in commissioning, procuring and monitoring goods and / or services	Commission and procure products, equipment, services, systems and facilities	Develop, review and improve commissioning and procurement systems
G4 Financial management	Monitor expenditure	Coordinate and monitor the use of financial resources	Coordinate, monitor and review the use of financial resources	Plan, implement, monitor and review the acquisition, allocation and management of financial resources
G5 Services and project management	Assist with organisation of services and / or projects	Organise specific aspects of services and / or projects	Prioritise and manage the ongoing work of services and / or projects	Plan, coordinate and monitor the delivery of services and / or projects
G6 People management	Supervise other people's work	Plan, allocate and supervise the work of a team	Coordinate and delegate work and review people's performance	Plan, develop, monitor and review the recruitment, deployment and management of people

G7 Capacity and capability	Sustain capacity and capability	Facilitate the development of capacity and capability	Contribute to developing and sustaining capacity and capability	Work in partnership with others to develop and sustain capacity and capability
G8 Public relations and marketing	Assist with public relations and marketing activities	Undertake public relations and marketing activities	Market and promote a service / organisation	Plan, develop, monitor and review public relations and marketing for a service / organisation

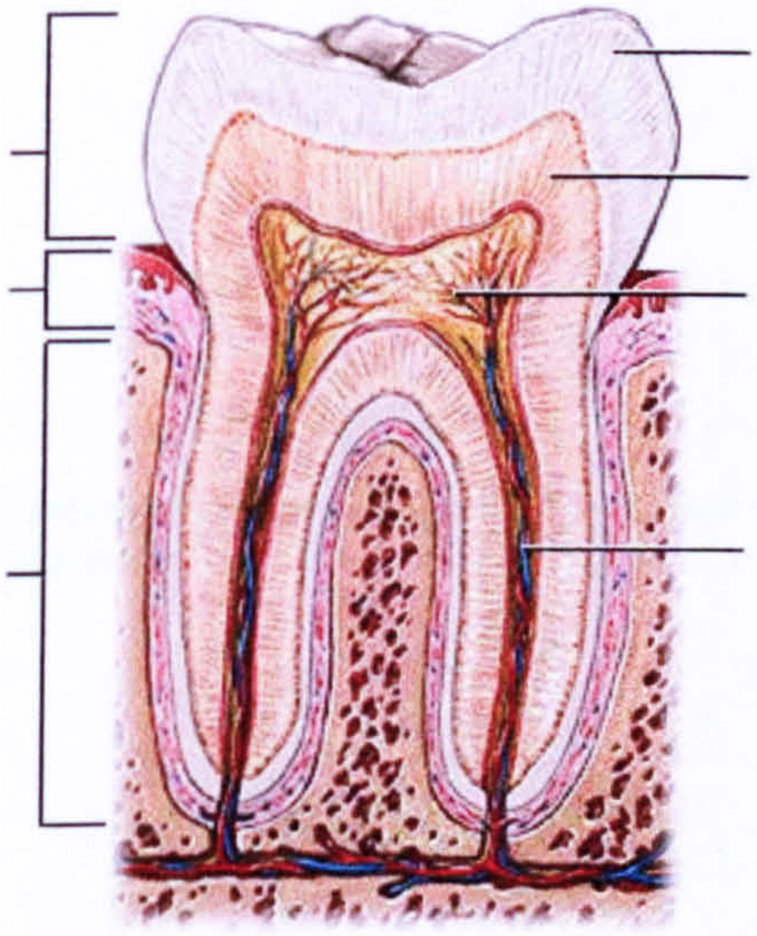
Table adapted from Department of Health, (2004e) The NHS Knowledge and Skills Framework and the Development Review Process. London, HMSO.

REFERENCE	COMPETENCY
END_01	Communicate and relate to individuals during endoscopic procedures
END_02	Provide information on endoscopic procedures to individuals
END_03	Refer individuals for endoscopic procedures
END_04	Schedule endoscopic procedures for individuals
END_05	Agree endoscopic procedures for individuals
END_06	Prepare the delivery of endoscopic procedures
END_07	Prepare individuals for endoscopic procedures
END_08	Position individuals during endoscopic procedures
END_09	Assist colleagues during endoscopic procedures
END_10	Administer sedation and analgesia to individuals during endoscopic procedures
END_11	Assess and optimise the condition of individuals during endoscopic procedures
END_12	Perform diagnostic and therapeutic endoscopic procedures
END_13	Identify signs of abnormality revealed by endoscopic procedures
END_14	Collect specimens through the use of endoscopic procedures
END_15	Manage polyps through the use of endoscopic procedures
END_16	Manage strictures through the use of endoscopic procedures
END_17	Manage haemostasis through the use of endoscopic procedures
END_18	Review the results of endoscopic procedures
END_19	Provide reports on endoscopic procedures
END_20	Provide care for individuals recovering after endoscopic procedures
END_21	Reprocess endoscopy equipment

Table adapted from Skills for Health Endoscopy Competency framework (Skills for Health, 2003)

Examples of examination questions utilised in Module 47784: Anatomy and Physiology of the GI Tract.

Question 1. Label the following diagram.



(4 Marks)

Question 3. Describe the process of
a.) mechanical digestion
b.) Chemical Digestion

(4 Marks)

Question 4. Describe the oesophageal stage of swallowing, using diagrams where appropriate.

(4 Marks)

Question 8. Define the process of peristalsis using diagrams where appropriate.

(4 Marks)

Question 10. Outline the composition of pancreatic juice and the relative digestive functions of each component.

(4 Marks)

Question 14. Describe the function of the pancreas.

(4 Marks)

Question 20. Using a simple arrow diagram, show how blood is returned from the GI Tract to the heart ensuring major veins and organs are identified.

(4 Marks)

OSCE Data: Skill acquisition and development

The following illustrates the skill sets in which students are assessed and the corresponding elements of service provision and delivery they can contribute to upon completion of the module / semester

Semester 1, Year 1: Completion of module Basic Skills in Endoscopy

Skill set	Competency / skill base	Contribution to service
Ability to set-up and take down endoscopes	The student demonstrates appropriate handling of the endoscope during transit and placement prior to set-up	Preparation of instrumentation prior to investigation
	The student demonstrates an efficient, systematic approach to the preparation of the endoscope for use	
	The student demonstrates the ability to connect the endoscope correctly for use	
	The student checks that the scope is working correctly and is ready for use	
	The student performs the initial cleaning steps prior to take down following local guidance	
	The student is able to disconnect the scope carefully and efficiently	
	The student demonstrates appropriate handling of the endoscope during transit to the cleaning suite	
Ability to clean and disinfect endoscopes	The student demonstrates immediate post investigation cleaning of the endoscope	Effective cleaning, disinfection and storage / handling of instruments
	The student uses an appropriate method of leak testing	
	The student identifies the need for and carries out ultrasonic cleaning of endoscope accessories	
	The student demonstrates an efficient, systematic approach to the cleaning of the endoscope	
	The student is able to place the endoscope within the disinfection bath to allow for disinfection	
	The student demonstrates appropriate handling of the endoscope following the cleaning & disinfection process	
Ability to perform troubleshooting of endoscopes	The student demonstrates systematic assessment of the endoscope	Effective troubleshooting of instrumentation
	The student efficiently and correctly identifies the source (s) of the fault (s)	
	The student demonstrates appropriate actions in dealing with the fault (s)	
	The student successfully rectifies the fault (s)	
	The student performs a full assessment of the endoscopes' function to ensure correct working order	
Knowledge of disinfection guidelines	Why is manual cleaning important	General knowledge, awareness and understanding of the significance of principles and practices of instrument care
	Why is an ultrasonic bath used for accessories	
	Why do we leak test endoscopes	
	Why do we need proof that the endoscope has been through the automated cleaner (with receipt)	
	When should the endoscope be cleaned	
	What happens to the endoscope at the beginning of the day	
	Put the points for scope cleaning in the correct order	

Semester 3, Year 1: Completion of module Basic Skills in diagnostic FS

Skill set	Competency / skill base	Contribution to service
Effective communication regarding flexible sigmoidoscopy	The student introduces him/herself appropriately and demonstrates strategies to help reduce the anxieties of the patient	Effective interaction with patients undergoing FS utilising methods of effective communication
	The student demonstrates advocacy in relation to the patients rights, wishes and protection	
	The student discusses the patients symptoms, previous & present	
	The student demonstrates strategies to assess suitability of the procedure and identify any potential risks.	
	The student describes the procedure fully to the patient (to include risks and benefits) and utilizes methods which determine the patients understanding of the procedure	
	The student is able to answer questions from the patient and family about the proposed examination to their satisfaction	
Appropriate and accurate consenting methods relating to flexible sigmoidoscopy	The student can identify and describe the main components of the consent process	Effectively undertake the patient interview to include the acquisition of informed consent
	The student demonstrates an understanding of current legislation, recommendations, guidelines and good practice in relation to consent and the process of consent	
	The student demonstrates advocacy in relation to the patients rights, wishes and protection	
	The student is able to gain the cooperation of the patient and obtain consent according to current legislation, recommendations and guidance (local and national)	
	The student is able to answer questions from the patient and family about the proposed examination and consent to their satisfaction	
	The student is able to clearly, concisely and legibly document the consent process	
Recognition of abnormal pathology	IMAGE A	Identification of commonly occurring colorectal pathology
	IMAGE B	
	IMAGE C	
	IMAGE D	
	IMAGE E	
	IMAGE F	
Knowledge and application of risk assessment	The student is able to describe the importance of risk assessment and its application within endoscopy	Ability to undertake an effective and structured risk assessment within the endoscopy environment
	The student is able to describe the process of risk assessment	
	The student can identify potential risks to the safety of the patient attending for flexible sigmoidoscopy examination	
	The student is able to describe appropriate actions in the event of the identification of a potential risk	
	The student is able to plan actions in collaboration with the endoscopy team with respect to risks identified	
	The student describes the evaluation of such actions through the monitoring of outcomes	

Semester 3, Year 2: Completion of module The practice of diagnostic FS

Skill set	Competency / skill base	Contribution to service
Set-up, take down, cleaning & disinfection of endoscopes	The student demonstrates appropriate handling of the endoscope during transit and placement prior to set-up, and demonstrates an efficient, systematic approach endoscope preparation prior to use	Preparation and assessment of the instruments prior to use; effective cleaning and disinfection of instruments
	The student demonstrates the ability to connect the endoscope correctly for use, and checks that the scope is working correctly and is ready for use	
	The student performs the initial cleaning steps prior to take down following local guidance and is able to disconnect the scope carefully and efficiently	
	The student demonstrates appropriate handling of the endoscope during transit to the cleaning suite	
	The student demonstrates an appropriate method of leak testing and demonstrates an efficient, systematic approach to the cleaning of the endoscope	
	The student is able to place the endoscope within the disinfection bath to allow for disinfection	
	The student demonstrates appropriate handling of the endoscope following the cleaning & disinfection process	
Consent and patient interview prior to flexible sigmoidoscopy	The student introduces him/herself appropriately and demonstrates strategies to help reduce the anxieties of the patient and demonstrates advocacy in relation to the patients rights, wishes and protection	Effective patient interview and acquisition of informed consent prior to the procedure
	The student discusses the patient's symptoms, previous & present and demonstrates strategies to assess suitability of the procedure and identify any potential risks. The student is able to answer questions from the patient and family about the proposed examination and consent to their satisfaction	
	The student describes the procedure fully to the patient (to include risks and benefits) and utilizes methods which determine the patients understanding of the procedure	
	The student is able to gain the cooperation of the patient and obtain consent according to current legislation, recommendations and guidance (local and national)	
	The student demonstrates an understanding of current legislation, recommendations, guidelines and good practice in relation to consent and the process of consent	
	The student is able to clearly, concisely and legibly document the consent process	
Correct and safe completion of the flexible sigmoidoscopy procedure with retroflexion	The student communicates effectively with the patient & endoscopy staff to facilitate safe endoscopic examination & positions the patient correctly & safely prior to endoscopic examination	Undertake FS safely, effectively and efficiently according to local guidance and best practice
	The student safely performs inspection & per rectal examination prior to flexible sigmoidoscopy & is able to identify strategies & actions to deal with findings on PR which would contraindicate flexible sigmoidoscopy	
	The student successfully intubates the anus & rectum with minimal discomfort to the patient & quickly adopts correct & appropriate handling of the endoscope attaining a good endoluminal view of the rectum before proceeding & throughout the remainder of the investigation	
	The student demonstrates good eye-hand coordination using controls, air / suction buttons and torquing techniques to facilitate safe intubation of the rectum and colon maintaining good endoluminal views	

	The student frequently & critically appraises endoscope position (tip & shaft) & predicts manoeuvres that the patient may find uncomfortable for a short time, & performs & adapts safe, effective manoeuvres & strategies to reduce discomfort to the patient, & demonstrates safe & retroflexion	
	The student identifies & implements correct procedures & strategies to deal with untoward events according to guidelines & protocols & produces an accurate & concise record of the examination, results & any planned follow-up	
Recognition, sampling and management of abnormal findings	The student is able to identify normal and abnormal pathology and recommends appropriate management based on findings and patient history	Appropriate means of undertaking tissue retrieval for histological analysis towards diagnosis
	The student demonstrates knowledge and understanding of the principles of endoscopic (cold) biopsy	
	The student is able to assess polyp suitability for removal and recommends appropriate strategies for removal / non-removal	
	The student is able to demonstrate safe and correct use of tissue retrieval accessories appropriate to colorectal polyp removal	
	The student utilises a risk assessment framework to reduce potential complications from flexible sigmoidoscopy and can critically utilise information gained at assessment to optimise patient care and safety, should an adverse event occur	