

***Students' perceptions of medico-legal autopsy demonstrations  
as a learning experience at a South African medical school***

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Master of Education [Higher Education]

by

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## STATEMENT OF SOURCES

### DECLARATION

**I declare that this thesis is my own work and has not been submitted in any form for another degree or diploma at any university or other institution of tertiary education.**

**Information derived from the published or unpublished work of others has been acknowledged in the text and a list of references is given.**



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Signature

08/01/07

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Date

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## *Abstract*

How do medical students experience autopsy demonstrations that form part of the undergraduate curriculum? This was the primary question guiding this phenomenological study within the interpretive paradigm. Both explicit cognitive outcomes and elements of the “hidden curriculum” associated with autopsies were evaluated.

Most previous studies on this topic employed survey questionnaires and were conducted prior to the radical curriculum reformations in medical undergraduate training. Some of these pedagogical changes have threatened the use of autopsies for teaching. More recently some other studies concentrated on aspects that were not directly related to educational outcomes.

Burton (2003) conducted a phenomenological study interviewing medical educators about the uses of autopsy in the modern undergraduate curriculum, essentially detailing the “delivered curriculum”. Therefore this study focused on the “received curriculum”.

Interviews were conducted with 10 medical students in their 4<sup>th</sup> year of study, having attended medico-legal autopsy demonstrations forming a central part of a course in Forensic Medicine. The underlying assumption of the study is that ‘student voices’ need to be heard in determining what is taught and how (Brooker & MacDonald, 1999), something typically determined by academic staff. This need is especially highlighted in a climate of “self-directed learning” promoted by modern medical curricula.

The data are analysed qualitatively using a theoretical framework of three dimensions of learning (Illeris, 2004): (1) cognitive content dimension, (2) emotional psychodynamic, attitudinal and motivational dimension, (3) social-societal dimension.

Findings of the study show that medical students perceive autopsy demonstrations to be of considerable benefit to their learning; both cognitive and affective outcomes are discussed detailing individual contextual factors that influenced the outcomes. Some suggestions regarding curriculum and autopsy-based teaching are made in the light of various factors found to influence students’ attitudes towards autopsies.

## **Description of Dissertation Chapters**

This dissertation has been organised into six main chapters:

Chapter One – Introduction to the study, provides an overview of the components of the proposed study. This includes the development of context by providing background information and a summary of the approach to researching the topic of interest. The rationale for the study and the key research questions are detailed here.

Chapter Two – Literature Review, is organised into three broad categories which include an analysis of published information relevant to (a) Autopsy demonstration in medical education; (b) Methodology employed and some findings of previous studies; (c) Pedagogical changes to medical curriculum affecting the use of autopsies for teaching. Collectively, this information provides the context from which this study was conceptualised. The relevant literature in each of these broad categories was critically reviewed and only the information that directly related to the proposed study was included.

Chapter Three – Theoretical Framework, describes the theories (arrangements of concepts) that have been used to define and explain various phenomena in this study: (a) Dewey's educational philosophy on learning experiences; (b) Illeris's "tension" field of learning; (c) Saljo's ways of conceptualising learning and (d) Habermas's types of interests.

Chapter Four – Methodology, depicts in detail the methods and procedures that were utilised for the study. An in-depth explanation of the research plan that was followed is provided. A detailed protocol addressing data collection, participant selection (sampling), data analysis procedures as well as the limitations of the study are specified.

Chapter Five – The Data, findings and discussion, is dedicated to the presentation and analysis of the qualitative data and discussion of the results. A condensed or distilled version of the collected data set is displayed using a set of conceptually arranged display tables to preserve the context of participants' perceptions and experiences as they related to the key research questions. The display tables are interspersed with descriptions of findings, interpretations and discussion of the data.

Chapter Six – Conclusions, the final chapter of this dissertation, briefly discusses the conclusions drawn from this study as they pertained to the results of the research. Attention was given to addressing the implications of this research for relevant audiences, as well as providing suggestions for future research on the topic of interest in this study.

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## ***Chapter One – Introduction to the Study***

The purpose of this study was to explore how 4<sup>th</sup> year medical students experience medico-legal autopsy demonstrations that currently form part of the undergraduate curriculum at the Nelson R Mandela School of Medicine. The autopsy demonstrations were used as a teaching strategy in the relatively minor discipline of Forensic Medicine. However, it seemed that the value derived by our future medical practitioners from viewing these autopsies extended a great deal further than simply learning the subject matter of Forensic Medicine.

Autopsy demonstrations require considerable attention to logistical detail and demand teamwork and co-operation on the part of staff from several organisations. For instance, a suitable cadaver needs to be selected, transported, dissected and a forensic examination conducted in a venue where students are able to view the procedure clearly. In my context this involves getting co-operation from Department of Health personnel of two different mortuaries and the transfer of equipment, protective clothing and documentation back and forth, in addition to the body itself. Specialist medical personnel need to be available to conduct the forensic examination and to discuss the proceedings with the students. For the past 18 years I have had the responsibility of co-ordinating autopsy demonstrations at this institution as Senior Technician and Student Co-ordinator for the Department of Forensic Medicine. During this period there have been many variations to the manner in which students were expected to view/attend the autopsies. I have listened to countless students expressing their views and their experiences and wanted to study and document these more formally.

In this introductory chapter of the dissertation, I have outlined the nature and purpose of autopsy demonstrations, presented a rationale for the study, explained the choice of participants and detailed the questions which the study sought to address.



## **Autopsy demonstrations**

Autopsies and studies of their findings have contributed greatly to the advancement of medical science, medical law and to society in general. The findings of autopsies may be of value to family members of the deceased, clinicians, pathologists, hospital administrators, the judicial system and to students of medicine (Dada & McQuoid-Mason, 2001, p. 327).

The terms “autopsy” (meaning to look at oneself), “necropsy” (meaning to look at the dead) and “post-mortem” (meaning after death) examination are generally used interchangeably without implying any difference in the nature of investigation performed. In this study I have generally used the term autopsy.

There are two distinct autopsy procedures that have been traditionally used for teaching medical students:

- the **hospital autopsy** performed by Anatomical Pathologists, mostly for the purpose of medically confirming clinical diagnoses or learning more about the disease/s that resulted in the patient’s death due to natural causes
- the **medico-legal** or **coronial autopsy** performed by Forensic Specialists, mostly in cases of non-natural death, involves a wide range of trauma pathology and generates a post-mortem report that serves the judicial system.

This study involved the latter procedure as students were in the process of learning Forensic Medicine. There are likely to be similarities in learning outcomes, specially the more ‘covert’ learning outcomes or elements of the “hidden curriculum” which relate to the personal development of students and developing professional conduct.

In medico-legal autopsies the dissection techniques employed vary depending on preferences of medical personnel conducting the examination and / or because of the nature of the case itself. Techniques may broadly be categorised into ‘complete’ or ‘restricted’ (eg restriction of type of skin incision, body cavity

examined or through surgical wounds). Complete autopsies are conducted by practitioners of this department. A “bib-like” incision is made extending from the mastoid processes inferiorly and anteriorly to meet at the suprasternal notch, then continued down in a straight line with an S-shaped twist just above the mons pubis. The Ghon technique is then usually employed for adult bodies in which the neck and thoracic organs, abdominal organs and the urogenital system are removed as organ blocks preserving the connections between the organs (Dada & McQuoid-Mason, 2001, p. 332). Each organ is then weighed, dissected and examined separately for macroscopic pathology and specimen blocks may be retained for further histological examination. At completion, all organs are returned to the thoracic or abdominal cavities along with some absorbent stuffing material to prevent oozing through the incision or normal body orifices and the incision is stitched closed.

The venues for autopsy demonstration have varied over the years and this does affect the way students experience autopsies as will be discussed in further detail when interpreting the findings of the study. During the year 2006 the autopsies were conducted at the Inkosi Albert Luthuli Central Hospital mortuary, which is a modern and technologically advanced facility.

The very idea that the medico-legal autopsy may be considered a valuable learning experience might seem odd to educators in many other fields. However, medical educators generally agree on the merits of this teaching tool. Especially as hospital autopsy rates have fallen dramatically (see *Literature Review* p. 8-9), medico-legal autopsies have become the only available resource for some specific aspects of medical training, such as linking various mechanisms of death to the macroscopic appearance of resultant organ pathology, understanding how to differentiate natural from non-natural causes of death and knowledge of prosection techniques, to name but a few of the overt learning outcomes. It is also difficult to imagine a qualified doctor who has not had the opportunity to develop familiarity with a freshly dead human body and may therefore be emotionally ill equipped to deal with family members of a dead patient, let alone explaining to them why an autopsy is required in cases of non-natural death.

## **Rationale for the study**

### Recent changes to medical curricula

The dramatic changes to undergraduate medical education that have taken place in the past decade are widely documented in the literature (Burton, 2003; Roberts, Lawson, Newble, Self & Chan, 2005; Watmough, Garden & Taylor, 2006). The process in most places seems to be characterised by a few common elements such as a reduction in overall factual content, a shortened training time and the use of multidisciplinary problem-based learning (PBL) Themes or Modules as the vehicle for active learning of core content.

At the Nelson R Mandela School of Medicine, a new 5 year curriculum was introduced in 2001 encompassing these changes. The previous 6 year traditional curriculum, primarily based on didactic lectures and on a division of training into pre-clinical and clinical years, was phased out. Instead, the reformed curriculum was introduced with an integration of basic and clinical sciences and PBL small-group tutorials as the main learning activities in years 1-3. The 4<sup>th</sup> and 5<sup>th</sup> years are devoted to clinical contact teaching within a framework of the Clinical Methods Course, which is where Forensic Medicine teaching takes place.

### Where do the autopsies fit in?

Owing to the specialised medico-legal nature of Forensic Medicine, it is difficult to find space for its coverage in the programme described above. It is possibly adequate in many other countries to have Forensic Medicine as a selective / elective course or relegated to postgraduate level studies. In South Africa, however, the exceptionally high levels of violence, crime and road-traffic accidents necessitate teaching the subject at undergraduate level. All medical practitioners in this context need to be aware of their medico-legal and ethical obligations towards patients with trauma-related injury, whether the patients are still alive or deceased. Therefore, here at the NRMSM all medical students take a course in Forensic Medicine in the 4<sup>th</sup> year of study as preparation to this end. Methods of delivery include a number of lectures, case-based tutorials in which most of the content is covered and the autopsy demonstrations central to this study, where practical application of the concepts is consolidated.

Having attended four autopsies, students are required to submit an authentic task assignment, which constitutes part of their year mark. This requires students to complete a Death Certification form (BI-1663) as though they were the attending practitioner for the case, construct a case-specific clinico-pathological correlation and answer a few questions deemed relevant to the case. Students select any one of four autopsies attended for this exercise which serves to encourage them to stay focused and actively engaged in the learning experience despite the fact that they are participating only as observers in the autopsy process. As very few of them are likely to be performing autopsies as part of their future practice, the intention is not the development of dissection skills. On the other hand every qualified medical practitioner will be expected to explain the mechanisms of death and correctly formulate a cause of death.

I have noted with concern the gradual marginalisation of autopsy demonstrations in progressive adaptations of medical curricula both here and elsewhere. In earlier years of study, learning experiences such as cadaveric dissection in Anatomy and teaching autopsies in Anatomical Pathology, appear to have been squeezed out in order to accommodate the overall shortened training time of new curricula. This situation is, I believe, currently receiving attention at this institution and plans are in place to re-introduce some of the preparatory learning experiences. However the cohort of students in my study did not encounter such prior learning experiences.

#### A fresh approach to researching student perceptions of autopsy

Choosing a qualitative approach in an interpretive methodology, uncommon in previous studies which primarily used positivist methodology (see *Literature Review* p. 10), this study sought insight into the meaning(s) attached by individual students to the event of viewing autopsies.

Burton (2003) used a similar approach in his study of the uses and curriculum considerations surrounding autopsy whilst interviewing medical educators. His findings and the way he organised his data into themes informed my study to a

significant extent. He also made a suggestion that the views of students would be interesting, though they fell outside the bounds of that particular study, further hinting at a comparison of the 'delivered curriculum' with that 'received' by students. For purposes of that study it was assumed, based on previous studies exploring the attitudes of students such as that of Benbow (1990), that the perceptions of educators and students were similar in this regard.

I felt that this notion was worthy of enquiry, especially within the interpretive paradigm (older studies being conducted using survey questionnaires within a positivist methodology) in order to compare 'cheese with cheese' rather than 'chalk with cheese'! Therefore my study foregrounds undergraduate medical students' perceptions of autopsy demonstrations as a teaching and learning strategy. The underlying assumption is that 'student voices' need to be heard in determining what is taught and how (Brooker & MacDonald, 1999), something which is typically determined by academic staff. This need is especially highlighted in a climate of "self-directed learning" within modern medical curricula being implemented in many medical schools around the world.

### **Student diversity in the South African context**

Sometimes fondly referred to as the "Rainbow Nation" (The Rainbow Nation, n.d), South Africa is a melting pot of different cultures. Higher education establishments in South Africa attract even further diversity as a fair number of students from other African countries, certainly immediately neighbouring states, are also admitted to study here.

One's socialisation, meaning the process by which the individual acquires current societal norms and structures (Illeris, 2004, p. 144), is more than likely to influence one's experience of encountering a dead body for the first time or seeing a human cadaver being dissected. This process of socialisation is likely to vary considerably for students from different racial / cultural and religious backgrounds. Therefore a stratified sample of ten students was pre-selected that was broadly representative of the racial and gender diversity within the entire

class so that the 'weighting' or significance of certain findings would not be inordinately skewed (see Chapter Four, *Methodology* for more detail). All students were in their 4th year of undergraduate medical education at the Nelson R Mandela School of Medicine.

Data collection was by means of semi-structured, one-on-one interviews. This allowed individualised probing of responses to open-ended questions, required for such an explorative study (see Interview Schedule attached as Appendix C).

The study assumes that students are holistic beings, whose learning is determined by a complex interplay of cognitive, emotional and social factors (see Chapter Three, *Theoretical Framework* for more detail). All participants were asked about the various factors that might have influenced their own autopsy viewing experience, including their prior learning and life experiences, belief system and what they believe happens to a person after death. This led to some interesting and intriguing discourses that lend insight as to *how* and *why* the autopsy is of educational value (see Chapter Five, *The Data, findings and discussion* for more detail), rather than simply *what* the autopsy can teach, understandably the main focus of educators as it reveals the cognitive benefits.

Another discussion, albeit in the background, is how the different socialisation of students results in different ways of thinking about this learning experience.

## **Key research questions**

The following key research question and sub-questions have thus been addressed by this study:

- How do medical students experience autopsy demonstrations that form part of the undergraduate curriculum?
  - are the demonstrations of benefit to their learning, and, if so, what is the nature of the benefit?
  - what are their experiences of the demonstrations (how did they feel about the autopsy process)?
  - what factors do they believe affected their experience?
  - what concerns or objections do they have about the use of autopsy demonstrations for teaching?
  - what recommendations do they make for future curriculum planning?

It is envisaged that an understanding of students' views would be advantageous in future curriculum design and in the planning of teaching programmes in such a way that enhances learning and minimises the negative aspects of the autopsy process.

For a summary of the rest of the dissertation please refer to the 'Description of Dissertation Chapters on page iv.

## ***Chapter Two – Literature Review***

In this chapter the relevant literature as it related to the study is reviewed.

Related research studies were explored to provide a background and present the array of research that pertains to this study. The chapter essentially provides a synopsis of the literature relating to the following, which provided the context for this study:

- autopsy demonstration in medical education
- methodology employed and some findings of previous studies
- the pedagogical changes to the medical curriculum which have impacted on the use of autopsies for teaching

### **Autopsy demonstration in medical education**

Autopsy demonstration is still credited with a variety of uses by medical educators in the 21<sup>st</sup> century. It contributes to students' knowledge and encourages their personal and professional development as future doctors (Burton, 2003). It also heightens awareness of the large number of patients with multiple conditions and the level of uncertainty in medicine, appreciation of which is not easily gained elsewhere (O'Grady, 2003).

In spite of the above-mentioned benefits to medical education, it is a fact that many medical students now graduate without ever witnessing an autopsy (Burton, 2003; De Villiers & Ruhaya, 2005). Various reasons for the decreasing use of autopsies as a teaching tool can be gleaned from the literature and are briefly outlined here.

Firstly, most authors writing about autopsy demonstrations for teaching purposes referred to the general decline of hospital autopsy rates (Benbow, 1990; Burton, 2003; De Villiers & Ruhaya, 2005; O'Grady, 2003), although the rate of coronial or medico-legal autopsies remains generally unaffected (De Villiers & Ruhaya, 2005; O'Grady, 2003). It has been suggested that the fall in hospital autopsies is



at least partly due to increased confidence in new methods of diagnosis, particularly modern imaging techniques (Burton, 2003).

Secondly, some technological alternatives to autopsy demonstrations for teaching purposes, such as videos, video links, CD-Rom images, museum specimens etc. have been found to offer certain advantages over the autopsy. For example some pathologists advocated the still video camera as a suitable and convenient method of demonstrating post-mortem findings (Hunt, James, & Bull, 1997). Autopsies, in contrast, can be physically unpleasant and frightening, a horrendous thing to do in human terms; labour intensive and may pose a risk of infection. Alternative methods are a lot cleaner and can be made more accessible to a larger number of students. The general consensus, however, is that they lack the immediacy of the autopsy and nothing virtual, embalmed or pickled is as good as the real thing (Burton, 2003).

Thirdly the use of autopsy demonstrations as a teaching tool appears to depend not only on the inclinations of medical educators, but also on several other factors and role players. Legislation, for instance, that governs the performance of autopsies also has a bearing on the teaching autopsy. For example, O'Grady (2003), wrote an article in response to the legal prohibition of students from attending coronial autopsies in Auckland, New Zealand, under an interpretation of the New Zealand Coroners Act.

The "Death of the teaching autopsy" by O'Grady (2003) is not a research report but a reflective discourse and literature review contributing to the debate of whether or not autopsies should be used for teaching. He examined the evidence supporting the relevance of autopsy in medical education and practice. His article invoked numerous "Rapid Responses" which are letters published online at <http://bmj.bmjournals.com/cgi/eletters> by medical educators as far and wide as India, the UK, Hong Kong, Spain and Australia bemoaning the decline of opportunities for autopsy demonstration in their own contexts as well.

One such response by Rawlins (2003), from the University of Bradford, stood out however, as he expressed a contrary opinion: “I suspect the level of medical students’ interest in autopsy has been dwindling for years!” But then, in support of O’Grady’s position, he extolled the value of the autopsy as a learning experience and concluded that students and junior doctors failing to understand the importance and implications of autopsy would not only fail themselves but fail their patients and indeed their patients’ relatives also. Thus, by alluding to their future practice he further re-iterates the notion that there are elements of the “hidden curriculum” imparted by the learning experience apart from the overt cognitive benefits. I would suggest a further inference from this statement is that educators should specifically explain the said ‘importance and implications of autopsy’ to students instead of expecting them to make the deductions for themselves.

As a final year student in London, Jones (2002) wrote a web article expressing his concern about the general decline of forensic medicine teaching at undergraduate level. He claimed that newly qualified doctors in England probably start practicing without having received even a basic grounding in medico-legal matters. This decline of forensic medicine as an academic subject was attributed to changes in the curriculum and certain changes of policy within the National Health System (NHS) framework relating to forensic pathology service delivery that seemed to have rendered academic departments in London near redundant. Although autopsy demonstrations were not specifically mentioned in the article, the deficiencies in learning that were identified, such as death certification, wound description and interpretation of injuries are areas of learning highlighted to students whilst observing autopsies.

### **Methodology employed and some findings of previous studies:**

Most previous studies that examined medical students’ views on autopsies used survey questionnaires to collect data in a normative scientific research methodology within the positivist paradigm. Their findings indicated that students did recognise autopsies as useful and necessary procedures in medical

education (Benbow, 1990; Conran, Nowacek, Adams, & Smith, 1996; Tazelaar, Scneiderman, Yaremko, & Weinstein, 1987; Verma, 1999).

Benbow (1990) is referenced by many researchers in more recent studies therefore this could be considered a “benchmark” study of the topic. Interestingly, the article contains numerous partial quotes of students’ comments on a wide variety of issues surrounding autopsy demonstrations, which enables students’ voices to be heard despite the quantitative methods employed in the analysis of data. During a pilot study for a postal questionnaire, 133 second and third year medical students at the University of Manchester provided these comments covering the following aspects:

- how useful and necessary a procedure the autopsy is in medical practice and in education
- personal distaste for the procedure
- whether attendance at an autopsy should remain a compulsory part of a medical education
- staff attitudes (as perceived by students)
- observance of relatives’ wishes and feelings about autopsies carried out on self or relatives

Benbow (1990) concludes that the unpleasant aspects of autopsy demonstration should be kept to a minimum to promote a sense of its value and suggests it might be useful to influence / modify students’ negative opinions before they become entrenched (as many qualified clinicians hold the same ideas), perhaps by giving higher priority to discussing dying and death in the medical curricula.

Similar quantitative analytical techniques are employed by Verma (1999), who also set out to examine medical students’ knowledge of and attitudes toward the autopsy as a learning tool, albeit in Delhi, India. A multiple choice questionnaire was distributed to 3<sup>rd</sup> and 4<sup>th</sup> year students who are taught pathology and forensic medicine, subjects for which the autopsy is relevant. Unfortunately this article is very brief (less than 1 page) reporting on a study that is of significant relevance to the topic. Apparently most of the respondents were aware of the

importance of autopsies in medicine and the 4<sup>th</sup> year students had a greater overall respect for the teaching and learning uses of autopsy. However, no details are provided of what questions were asked or what responses led to this finding.

Verma (1999) also notes that over a third of the 133 respondents were unhappy with the country's autopsy facilities, which may imply that the autopsy demonstrations were conducted either at a State hospital mortuary or medico-legal mortuary. Again no details were provided of the venue or environment. He concludes that it is necessary to "strengthen this aspect of the curriculum to encourage more positive attitudes toward the value of autopsies" (Verma, 1999 p. 855), once again without expanding on the concept any further. This finding does however indicate that the environment or facilities in which autopsies are performed are likely to play a significant role in determining how students' perceive the learning experience offered by autopsies.

Sanner (1995), a researcher from Sweden, attempted a comparison of attitudes held by medical students to those of resident physicians and the public at large. Fairly limited questions were addressed, specifically examining attitudes towards having an autopsy done on oneself and ones next of kin. A mixed mode method was employed as approximately half the students who responded to a questionnaire were also interviewed to confirm and clarify their responses. The sample sizes in this study were large as there were 129 respondents to the questionnaire which was distributed to 3 consecutive classes (172 students) and 57 interviews were conducted that lasted 1 to 2 hours. The interviews were taped, transcribed and coded for statistical analyses. This author claimed that the interviews were also analysed qualitatively and these results were to be reported elsewhere.

Although an interestingly high number of students indicated awareness of the value of autopsy demonstration under various circumstances, the study did not interrogate any specific benefits to their learning or professional development. Sanner (1995) reports striking similarities of attitudes between students and the

public but with some differences presumed attributable to medical training. Resident doctors, somewhat surprisingly, seemed to indicate an increased uneasiness had set in with experience, having experienced greater discomfort when contemplating an autopsy being performed on themselves.

De Villiers & Ruhaya (2005) conducted the only South African study reported in the literature of students' opinions on autopsy and death. They claim to have used the same questionnaire used by Sanner (1995) in the abovementioned Swedish study. The questions primarily dealt with students' future career plans, whether they found the handling of the corpse and the autopsy procedure acceptable; whether they discussed their wishes with regard to their own funeral with family or friends and whether issues around death and grief were discussed during their training. Therefore this study has similar limitations in that educational outcomes were not included in the key research questions.

The authors acknowledge that students' emotional reactions are an important but unfortunately neglected aspect of medical training. They also note that student teaching needs to deal effectively with expected reactions through the understanding and management of these emotional responses towards cadaver dissection and other medical procedures (De Villiers & Ruhaya, 2005). This opinion is in line with the educational theorist Dewey's view (as cited in Illeris, 2004) that educators need to evaluate a learning experience so they can judge and direct it on the grounds of what it is moving into (see *Theoretical Framework* p. 17).

#### Limitation of questionnaire methods (as compared to qualitative data)

The questionnaire methods used in these previous studies, especially when questions were closed-ended but even when open-ended questions were asked, did not allow sufficient depth or probing of responses required for an exploration of the *how* and *why* associated with the learning that takes place.

From an educational research perspective, traditional positivist methodology is also clearly limited when examining the attitudes and beliefs of students in what

is essentially a phenomenological study; therefore a more holistic approach is recommended (C. Mbali, personal communication, July 27, 2005).

Well collected qualitative data seem to address these limitations as they possess certain strengths as identified by Miles and Huberman (1994):

- the influences of the local context are not stripped away, but are taken into account
- the possibilities for understanding latent, underlying or non-obvious issues is strong
- their richness and holism, such data provide thick descriptions that are vivid

*“Qualitative data, with their emphasis on people’s “lived experience” are fundamentally well suited for locating the meanings people place on the events, processes and structures of their lives: their perceptions, assumptions, prejudgments, presuppositions and for connecting these meanings to the social world around them” (Miles & Huberman, 1994, p. 10).*

Face-to-face interviews are one particular method used in many qualitative studies, described for example by Babbie and Mouton (1998), which may be used to collect such rich data.

#### A phenomenological study within the new curriculum - educators’ opinions

In contrast, Burton (2003) in his study interviewing medical educators about the uses of autopsy in the modern undergraduate curriculum, used an inductive phenomenological methodology which provided an excellent starting point from which to approach a study investigating the views of students. Semi-structured interviews were conducted with a pre-selected ‘theoretical sample’ of medical educators affiliated to the University of Sheffield Medical School. Individuals with widely disparate views (both for and against the autopsy) and individuals whose views were unknown prior to the study were included. The respondents were a mixture of histopathologists and non-pathologists, surgeons and physicians etc. with a wide range of teaching experience and responsibilities. Interviews were

planned until 'theoretical saturation' was reached when the author felt that further interviews would not yield any new information.

All interviews were polythematic and a total of 43 themes were identified in which the overt uses of the autopsy reported in other studies were confirmed, issues of curriculum design and development were identified and elements of the 'hidden curriculum' or 'covert learning outcomes' from autopsy were also revealed. A range of disadvantages and alternatives to the autopsy were also discussed.

What value do students believe they derive from autopsy demonstrations as a learning experience? Do they perceive the same benefits and or disadvantages that medical educators hold to? These are questions that virtually beg to be answered when Burton (2003) suggests that the "received curriculum" is outside the bounds of that study which essentially dealt with the "delivered curriculum" and concluded that each institution will ultimately have to weigh up the benefits and uses of the autopsy against its negative aspects within the context of its own curriculum.

## **Pedagogical changes to medical curriculum (impact on the use of autopsies for teaching)**

The older studies also took place prior to the extensive curriculum reform introduced during the past decade. These curriculum changes have been primarily brought about as a result of some of the findings of educational research. For example, PBL programmes have been introduced in order to move away from didactic teaching and encourage greater learner-centeredness where problem solving, critical thinking and lifelong learning skills are developed more effectively (Watmough et al., 2006). This in itself has given rise to a significant change of context in the light of which it is worth re-examining student perceptions of various learning experiences.

Prior to encountering medico-legal autopsy demonstrations in Forensic Medicine, which is usually in the 3<sup>rd</sup> or 4<sup>th</sup> year of study if they are in the curriculum at all, there are some prior learning experiences that may help students cope with the emotional aspects involved. These include cadaveric dissection in Anatomy and teaching autopsies in Anatomical Pathology (see *Introduction* p. 2). This observation seems to be supported by the following study and literature review articles.

In a qualitative study (Lempp, 2005), interviews were conducted with students exposed to Anatomy dissections, which are typically included in the curriculum in the 1<sup>st</sup> or 2<sup>nd</sup> year of undergraduate medical training. Seven covert learning outcomes were identified in that study: teamwork, respect for the body, familiarisation of the body, application of practical skills, integration of and appreciation of the status of dissection within the history of medicine. These findings informed some of the questions posed to participants in my study, as they seemed likely to form part of the “hidden curriculum” imparted by autopsies as well.



Teaching objectives in Pathology that are described in the literature largely concentrate on two basic themes – teaching students the mechanisms of disease from a molecular to a gross level and teaching them how to use a medical laboratory. However, a third miscellaneous group of outcomes has been more recently detailed in a review of the English medical education literature, that is in line with the increased integration of disciplines that has accompanied curriculum reform. This list of outcomes includes showing students that autopsies have a vital role in quality control and research, and introducing students to forensic science (Marshall, Cartwright, & Mattick, 2004).

In conclusion, there is a lack of published research on the student experience of autopsy demonstrations particularly within the interpretive paradigm and in the context of the new curriculum. This study was aimed at generating rich descriptive data that would lead to a better understanding of the value students attribute to this learning experience. The benefits, the disadvantages and the covert learning outcomes, were all examined from a student's point of view.

## **Chapter Three – Theoretical Framework**

This chapter describes a combination of theories that were used to guide the various aspects of the study, especially the interpretive analysis of the data.

*“Theory provides a footing for considering the world, separate from, yet about that world. In this way theory provides both:*

- *a framework for critically understanding phenomena*
- *a basis for considering how what is unknown might be organised”*

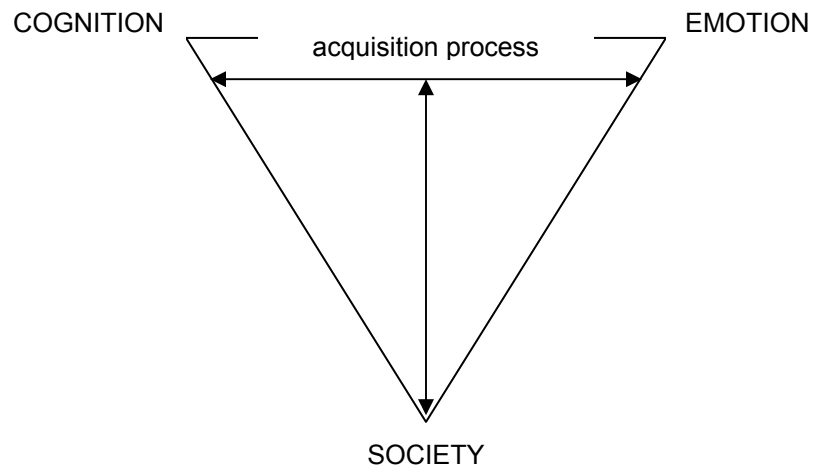
(Silverman, 2000, p. 78)

The idea of using theory as a kaleidoscope (O'Brien, 1993) in other words the theory 'lenses' determining the appearance of the data and findings of any study, is further described by Silverman (2000, pp. 75-77) who states that even our qualitative research questions are inevitably theoretically informed, so we do need social theories to help us address even quite basic issues in social research.

Dewey's educational philosophy regarding learning experiences underpinned the rationale for this study, while Illeris's framework of the learning process informed the collection and analysis of the data. A worthwhile learning experience, according to Dewey (as cited in Illeris, 2004), was one that increased a person's motivation, curiosity and initiative; served as a bridge between previous learning and the fulfillment of future needs and constituted a transaction between a learner and his/her environment. He believed that it is the business of the educator to see in what direction an experience is heading...(and) to take the moving force of an experience into account so as to judge and direct it on the ground of what it is moving into.

Illeris (2004) proposed that a 'trio' of factors was evident in the holistic learning process. All learning in principle included these three simultaneous and integrated dimensions:

- Cognitive content dimension
- Emotional, psychodynamic, attitudinal and motivational dimension
- Social-societal dimensions



**Figure: Interaction between the dimensions in the tension field of learning**

(reproduced with permission)

(Illeris, 2004, p. 118)

According to Illeris (2004) there is a direct integration or exchange between the two internal psychological dimensions (cognition and emotion). He further defines this connection in that cognitive structures are always emotionally obsessed, and emotional patterns are always affected by cognitive influences. In addition, emotions and motivations are what mobilise and regulate psychological energy in both the cognitive and the emotional aspects of learning. Thus, it is the totality of the two internal psychological dimensions that is proposed to interact with the surrounding world and the social-societal (external) dimension in the “tension field of learning”.

Therefore the theory of learning described above and more specifically the concept of experience containing the following important elements, frames the way in which the data were analysed in this study:

- cognitive content and knowledge - we acquire or understand things we perceive to be important for ourselves

- emotion - we are committed affectively and motivationally to the learning that takes place
- social-societal - we learn things that are not only of significance to us personally but concerns the relationship between ourselves and the world we live in

(Illeris, 2004, p. 146)

In addition to these three dimensions of learning, the way in which individual students conceptualise learning and the interests they have will most likely affect their experience of a learning situation. Therefore, Saljo's (1979) five conceptions of learning and a sixth which was later added by Marton, Dall'Alba & Beaty (1993) were also included in the evaluation of data. They postulated that learning could be seen as:

- 1) increasing knowledge
- 2) memorising
- 3) acquiring facts or procedures which can be used at a later date
- 4) abstracting meaning
- 5) interpreting to understand reality
- 6) changing as a person

These conceptualisations in conjunction with the "types of interests" described by Habermas (as cited in Cranton, 1996), afford another way of looking at the "tension field of learning" (Illeris, 2004). Habermas described three types of "interests" and "ways of knowing" that humans possess, which define what counts as knowledge in our society:

- Technical interests and Instrumental knowledge - the "how to do it" type of knowledge obtained through empirical, analytical investigations / scientific methodologies.
- Practical interests and practical knowledge – "how do you see or experience this?" is asked as there is a desire to understand others and to be understood. This leads to knowledge of social norms, traditions and values underlying our culture and a mutual understanding among

individuals; obtained through hermeneutic or interpretive research.

Mezirow (as cited in Cranton, 1996) uses the term *communicative learning* to discuss such knowledge.

- Emancipatory interests and emancipatory knowledge – these come from our desire to grow and develop. People are interested in self knowledge, self awareness and an understanding of how their past has shaped their way of being, which includes a desire to be free from self- and social distortions of knowledge. Critical theory is the philosophical position underlying emancipatory interests and enlightenment is sought through a process of self-reflection that reveals distorted self-knowledge and institutional domination i.e. leading to transformative learning.

(Cranton, 1996, pp. 16-21)

Therefore I would propose, for example, if it is technical interests that prevail within a student during a learning experience, then it would be reasonable to expect the 'cognition' aspect would probably be limited to surface learning (an increase of knowledge, memorising and acquisition of facts). Whereas, if a student has practical and / or emancipatory interests during a learning experience, then the 'emotion' and 'society' aspects (relating to their affective development) are bound to be more significant in their learning process and therefore be more likely to lead to deeper learning (an abstraction of meaning, a process of understanding reality or changing as a person).

A discussion of the different types of interests that medical students have, which then have a direct bearing on their experience of and their learning from autopsies will be mentioned further in the analysis of the data.

*"It seems clear that knowledge of education is practical knowledge. Education is a social activity. It involves communication among individuals with the aims of mutual understanding, meeting the needs of individuals and groups, and social change. If we hope to understand our roles as adult educators and to grow and develop within our practice, we are interested in improving our communication with and our understanding of our learners as well as the social context within which we work."*  
(Cranton, 1996, p. 19).

## ***Chapter Four – Methodology***

This chapter provides details of the research methods and procedures utilised for the study. In the following section I have explained how I came to position myself as an interpretivist and chose qualitative methods for their strengths towards discovering the meanings people attribute to an experience. Detailed protocols addressing data collection via interviews, participant selection (sampling) and data analysis procedures are followed by an account of the limitations of the study.

### **Methodological Considerations**

Initially, when considering the idea of formally studying student perceptions relating to autopsies, I must admit to considerable methodological confusion! Coming from a positivist scientific background and training, I was unaware of the values of and different approaches to conducting social research. On submitting the idea of a questionnaire based survey to a lecturer from the Center for Higher Education Studies, I was advised to join the M.Ed programme to gain an understanding of the different concepts and terms associated with educational research (C. Mbali, personal communication, July 27, 2005).

This exposure to a new field resulted in literally making the paradigm shift to position myself as an interpretivist. The study was interpretive as its aim was to understand human behaviour (Babbie & Mouton, 1998). Because my intention was to gain a deeper understanding of the various meanings that individual students attach to their experience of autopsies, I soon recognised the benefits of qualitative research as better fitting this aim.

Therefore, an inductive phenomenological approach was chosen over the traditional positivist methodology (commonly regarded as the “scientific method”). Phenomenology is the exploration of an individual’s experience with a particular phenomenon according to McMillan & Shumacher (1997). The study is inductive in that it does not attempt to prove or disprove a particular hypothesis (picture of

reality), but rather seeks to explore student perceptions of their reality. From the findings I hope I have begun to paint a picture of their reality.

However, Silverman (2000) warns against “simplistic inductivism” and argues that some theoretical perspective is required, without which even inductive work is rendered meaningless. This study uses a clear theoretical framework of the 3 dimensions of ‘cognition’, ‘emotion’ and ‘society’ described by Illeris (2004) as the tension field of learning, whilst seeking a better understanding of each dimension as relating to a specific learning experience, namely autopsy demonstration.

### Qualitative Methods

Qualitative research may be defined in various ways; however, I found a general definition used by Strauss and Corbin easy to understand and relevant:

*“Any type of research that produces findings not arrived at by statistical procedures or other means of quantification. It (qualitative research) can refer to research about persons’ lives, lived experiences, behaviors, emotions, and feelings as well as about organizational functioning, social movements, and cultural phenomena”* (Strauss & Corbin, 1990, p. 17).

According to Miles and Huberman (1994, p. 9-10) “qualitative data are sexy” (!) as they are a source of well-grounded, rich descriptions and explanations of processes in identifiable local contexts. These authors expand on the value of qualitative data in that one is able to preserve chronological flow, see which events led to which consequences and derive fruitful explanations. Therefore qualitative data are well able to lead to new integrations, helping researchers go beyond initial conceptions to generate or revise conceptual frameworks.

Based on this reasoning, qualitative methods appeared to offer a suitable way to find answers to the research questions posed in this study. One on one, in-depth, semi-structured interviews were selected as the method of choice to enable collection of rich, contextualised data.

## **Data collection - Interviews**

Interviews lasting 35 - 45min were conducted at an office within the department for convenience, accessibility and privacy. The more general and non-threatening questions were posed first. Therefore, interviews began with questions pertaining to various cognitive benefits derived from autopsy demonstrations, which I presumed students would be likely to be most comfortable answering. I then proceeded to ask questions relating to their emotions and factors affecting the experience, which often required them to share some sensitive or personal detail such as their belief system and life experiences. The interviews ended with a few questions relating to any objections / concerns they had and future recommendations pertaining to the use of autopsies in the training of undergraduate medical students, which were again not likely to be emotionally loaded.

Individual questions were structured in a way that allowed for probing of initial responses (see Appendix C for the interview schedule). Interviews were audio taped after obtaining permission to do so from each participant at the beginning of their interview. Tapes are currently being stored securely in a locked cabinet in the department and will be retained for a period of 5yrs as stipulated by the University research rules for storage of raw data.

In addition to the interviews, I kept an observation record (see Appendix D) during each of the autopsy demonstrations attended by this cohort of students, paying special attention to “spontaneous reactions”. These observations were simply used for descriptions of context and to inform some of the probes used during the interviews. My overall impression of and specific observations on each interview were also recorded in order to access specific contextual details that might otherwise be forgotten after some time had elapsed. These were referred to later at the time of data analysis and a few points of salient personal detail on each participant have been included in the first data display table (Table 1 – Cognitive learning).



Ethical approval for the study was obtained from the Research Office of the University of KwaZulu-Natal (Ethical Clearance Approval No. HSS/06178A – see Appendix E).

### **Selection of Participants (Sampling)**

Participants were 4<sup>th</sup> year undergraduate medical students at the Nelson R Mandela School of Medicine. The entire 4<sup>th</sup> year class comprised of ±200 students who attended autopsy demonstrations in 4 cohorts of ±50 students during their Forensic Medicine course. All students were required to attend 4 autopsy demonstrations.

Having decided on interviews as the most appropriate vehicle for the collection of data, the next difficult decision was the choice of sample. A solely random sample, an available sample and a stratified sample along racial groupings were options considered at length. Finally a stratified sample of 10 students according to the various population groups represented at the medical school was selected from the first cohort to complete their autopsy demonstrations.

The entire fourth year class of 200 medical students was divided into 4 cohorts for purposes of attending autopsies. A stratified sample of ten students was pre-selected from one of the 4 cohorts, and was representative of the racial and gender diversity within the cohort (as shown below) and broadly so of the entire class. There were no students classified as “Coloured” (mixed race group) nor were there any White male students within this particular cohort. Sampling excluded one student repeating the 4<sup>th</sup> year of study in this cohort.

<b>Demographic criteria</b>	<b>No. in overall cohort [49]</b>	<b>No. in study sample [10]</b>
African male	18	3
African female	17	3
Asian female student	7	2
Asian male student	5	1
White female student	2	1

[1 Muslim, 1 Hindu]

The belief system of participants was unknown (or unconfirmed) prior to the interviews except in the case of the two Asian females where their religious backgrounds were presumed by their given names and 1 Muslim and 1 Hindu name were deliberately included.

#### Attempts to exclude bias in choosing individual participants

Names were pre-selected from a class list (with photographs) to fit the above demographic criteria and a reasonable balance of male and female students was also attempted although this was not intended to be a fixed determining factor in selecting students. Sample selection was also spread across a range of smaller tutorial groups (determined by the School of Undergraduate Medical Education) represented in the cohort, to avoid undue contact between participants. Whilst it is understood that such a sample is too small to make any generalisations, it seemed a reasonable expectation that it would yield a greater diversity of responses than a random sample. The choice of sample was further influenced by not wanting to skew the results in any way by asking for volunteers or asking the most available students, which may have resulted in only the loudest mouths being interviewed. The aim was therefore to increase the transferability of data and provide insights for further research, or other studies elsewhere, by studying a wide variety of individuals.

None of the participants had any pre-existing extraordinary or personal relationship to me. Two of them had encountered me as a facilitator of PBL tutorial groups some time prior to their fourth year of study, but the others were unknown to me except through brief contact during the course of my duties as student co-ordinator for the department.

Concerning the existence of any power relationship, as I am a staff member it was a possibility that some students might consider me to be in a position of authority over them. However, as a support staff member who does not assess them formally, my experience is that students seek advice with any difficulties

they have and most students regard me as a confidante if they require one. Therefore I do not feel that this was an issue in the study, in fact, participants seemed to speak their minds more freely than they might have if I was a medically qualified lecturer.

### Invitation to Participate

Once the prospective participants had been selected from the class list an e-mail invitation (see Appendix B (a)) was sent to the group with the information document attached (see Appendix A):

As I had not received any responses within a week, a follow up e-mail message (see Appendix B (b)) was mailed individually to which the information document was attached again and the initial message was copied over for reference:

This slightly more personalised and informal plea (with the offer of biscuits!) yielded a few immediate responses and others who did not check their e-mail messages straight away responded when they had had the opportunity to do so. All except one invitee agreed to be interviewed at some mutually convenient time within the following few weeks. There were two students who had to be followed up during scheduled class contact or incidental contact and asked to check their e-mail messages. One of the invitees had not opened her messages in 3 weeks and on meeting her incidentally I discovered that she was feeling emotionally fragile due to a personal problem and as her messages remained unopened (I was able to see this by checking the message properties on my e-mail). I selected another student with the same demographic criteria (Asian female – Muslim) who responded to her invitation immediately and was in fact my very first interviewee.

## Data analysis procedures

In this exploration of how students experience autopsy demonstrations, the purpose of gathering qualitative data was two fold:

- a) to answer the research questions
- b) to locate meanings students place on their learning experience and for connecting these meanings to the social world around them (Miles & Huberman, 1994, p. 10)

I followed the overall process of analysis as outlined by Miles and Huberman (1994) consisting of 3 concurrent flows of activity:

- Data reduction (selecting, focussing, simplifying, abstracting and transforming the data). Data reduction occurs continuously, even prior to data are collected, for example, as decisions are made regarding which conceptual framework, which cases, which research questions and which data collection approach to use
- Data display (organising the data into compressed arrangements, e.g. matrices, graphs, charts or networks, which allows for interpretations and conclusion drawing)
- Conclusion drawing and verification – ongoing from the very beginning when the qualitative analyst starts deciding what things mean (noting regularities, patterns, explanations, possible configurations, causal flows and propositions); though it is advisable to ‘hold these lightly’, maintaining openness and skepticism. “Final” conclusions may not appear until data collection is complete, depending on the methods of coding / storage / retrieval used, researcher characteristics etc.

Data re-organisation and reduction:

In addition to anticipatory data reduction decisions described above, this process was achieved by reading and re-reading the interview transcripts, whilst searching for similarities and differences in themes that I could identify. These themes were given code names in a process of ‘open coding’ described by Strauss and Corbin (1990 p. 58), which was a means of re-organising the data

prior to reduction. The computer software package N-Vivo 2 was used to code the categories and subcategories, which were compiled as a hierarchical structure of tree nodes. As I began with a somewhat exhaustive list of subcategories (over-categorised at this early stage of analysis), printing out node reports in N-Vivo was useful as I discovered where there was overlapping or repetitive coding and was also able to organise those themes into categories of related topics, patterns, concepts and ideas as they emerged from the students' perspectives. Writing memos and summary notes during this process was a useful exercise as these were referred to throughout the data analysis.

#### Data display:

Having considered various alternative methods of displaying qualitative data, matrices or display tables of rows and columns of categorised data, often supported by original quotations, were chosen as the main vehicle for this activity. Starting with a single large table containing many columns, which became too cluttered for comfort, this was then split into 3 separate matrices where the data were organised into columns according to the key research questions (see Chapter Five, *The Data, Findings and Discussion*). From this assembly of organised information in an accessible, compact form, I was able to draw justified conclusions or move on to the next idea that was suggested by the display.

#### Conclusion drawing and verification:

Arranging the themes according to the key research questions made it possible to group the concepts relating to each question. The data were also examined in the light of the 'tension field of learning' described by Illeris (2004) as relating to cognition, emotion or society (see *Theoretical Framework* p. 18-19). Any apparent explanations or patterns of causality were checked and rechecked against all the relevant data. To my understanding, this is the same process described by Strauss and Corbin (1990) as moving between inductive and deductive thinking which is explained as a constant interplay between proposing and checking – verifying inductively what is proposed deductively. They suggested asking questions in terms of conceptual labels, how one category may

be related to another. With such category-relating questions in mind, I returned to the data and looked for evidence to support or refute the links between the categories.

In this way, whilst it is understood that generalisability is not the main aim of qualitative research, the meanings emerging from the data were tested for their plausibility and confirmability (validity or trustworthiness). Cohen *et al* (2000) suggest that in naturalistic research generalisability may be translated as comparability and transferability. Therefore, in this qualitative study I have attempted to provide clear, detailed and in-depth descriptions so that others can decide the extent to which the findings from this piece of research are generalisable to another situation.

## Limitations of the study

No researcher can honestly claim that a study has absolutely no limitations. It is obviously important to identify and acknowledge these limitations so that recipients / readers of a report may evaluate the findings from a more informed perspective. Therefore in this section I have discussed the inherent limitations of this study pertaining to the following aspects: approach, investigator, instrument, participants and analysis of data.

### Approach (limitations)

Positioning myself as an interpretivist for this study gave rise to some characteristics that are limitations in and of themselves. Seeking the meanings that students attributed to the learning experience of autopsies meant that I was dealing with subjective issues such as attitudes, feelings, beliefs and values. My own subjectivity is also therefore part of the approach, which implies that another researcher with a different history and context would possibly interpret the data differently. Therefore I have attempted to remain open and honest about my assumptions and provide as much detail as possible throughout the reporting of my findings to allow the reader to judge how my interpretations of the data have been influenced by such subjectivity.

The most significant limitation of working with qualitative data is that generalisability cannot really be claimed except cautiously and to a moderate degree for purposes of transferability to other contexts (see concept of *moderatum generalisation* in the discussion of the data). Despite these limitations, qualitative data have strengths discussed previously when compared to questionnaire-based research (see Chapter Two, *Literature Review*), which justifies the use of this methodology for the study.

### Investigator (limitations)

As mentioned elsewhere I was a complete novice to qualitative research and my inexperience has no doubt affected aspects of the study, particularly relating to

the collection and analysis of data. Although I had read about doing qualitative research, there is only so much that can be learned from textbooks and the rest must be learned from experience. For example, during the first interview I conducted, I inadvertently asked several partial questions, one of which led to my query about dealing with family members of a deceased patient being misunderstood by the participant as referring to her own family members. Of course this was clarified and I was able to learn from my mistakes as the interviews progressed.

On the subject of qualitative data analysis it has been said that researchers, especially novices, end up having to conduct two studies; one being the topic within their field and the other into how to handle and analyse the data (Chenail, 1995). This was certainly apt, so much so that a significant amount of time allocated for writing up this report was consumed in studying the various methods of data analysis and trying to decide how these could be adapted to this study. However at the end I am convinced that I have selected the most relevant data and analysed them with reflexivity and creativity, which makes the time spent worthwhile.

### Instrument (*limitations*)

One on one interviews have several advantages for interpretive research as discussed earlier on in this chapter. However, they also posed some limitations. Firstly, interviews are time-consuming and thus the number of students who could be interviewed was limited. Then the semi-structured schedule designed to allow students the freedom to express their opinions was also limiting to some degree. The interviews were essentially conversations with well-prepared questions and prompts to which participants responded spontaneously. The spontaneity, whilst being advantageous for capturing authentic reactions and attitudes without the participant having much time to think about their responses, does assume that the participant has a coherent response or attitude on the topic. Some questions may have been better responded to after some time to think and reflect about them. I felt this was relevant to some of the factors affecting the learning experience. Some of the responses dealing with



recommendations for future curriculum design may also have been different with some time to consider various options.

Another point of limitation relating to the semi-structured format and how the interviews were conducted is that I tended to use more of the prompts when responses were lacking in substance, but when a participant was talking, relevant to the study topic or not, I allowed them to carry on without steering the conversation back too soon. In retrospect I felt that if all participants had been consistently asked about each prompt (a more structured interview format) it might have resulted in slightly different numbers of participants expressing a particular opinion. However it is possible that a more structured interview schedule may not have then elicited some of the more personal feelings and values that were shared.

#### Participants (*limitations*)

Medical students are well known to have very busy schedules in their fourth year of study and are under a great deal of pressure towards the end of block assessments when the interviews had to take place. One of the participants appeared so distracted by other work deadlines when first presenting for his interview, that I rescheduled for a time when he was relatively less stressed. Also in the case of the final interviewee, she had postponed the appointment several times until it was the day of the examination in Forensic Medicine. It was definitely not an ideal time to conduct that interview, but I felt it could not be postponed any further as the examination paper / performance might further influence responses regarding learning outcomes from autopsies, as well as the difficulties of access once students have moved on to another teaching block.

Regarding motivation to participate in the study, I was grateful to find all the participants seemed genuinely interested in the topic as communicated via the information document (Appendix A). However, a few participants used the opportunity to air their views, both positive and negative, which were not particularly related to the study questions, for example the merits / demerits of

the new PBL curriculum, how the Forensic Medicine teaching programme should be structured etc.

Overall, knowing about the pressures of their clinical studies and the time constraints involved, I was most appreciative of the co-operation I received from each student who participated in the study.

#### Analysis of data (*limitations*)

Recommendations in the literature say “go beyond a list of themes identified in the discourses” (Silverman, 2000, p. 32) and “see with analytical depth” (Strauss & Corbin, 1990, p. 75). This makes the commencement of qualitative data analysis quite a daunting prospect! Some practical advice on constructing data displays from Miles and Huberman (1994) helped me overcome this seemingly insurmountable barrier and actually enjoy the process (see Chapter Five, *The Data, Findings & Discussion*).

At the end, the importance of reflexivity (meaning to start with a battery of concepts but to allow these to be challenged by the findings) is paramount (Williams, 2003) and this is likely to grow with experience. However, in my favour, I believe that my passion for developing students and years of communicating with them has been an advantage whilst exploring the meanings they attribute to a learning experience.

Silverman (2000, p. 35) also questions if in fact people attach a single meaning to their experiences, suggesting one is more likely to find they hold multiple meanings of a situation or activity. Thus, in conclusion, it helps to make limited claims and understand that a piece of research is just one way of ‘slicing the cake’. It is understood that other approaches to conducting a study or using different types of data may not be directly competitive, but may lead to emphasis on different aspects as they are viewed through different lenses.

## ***Chapter Five – The Data, Findings and Discussion***

The data elicited by the study are contained in this chapter, where a condensed version of the full data set is presented, the findings and interpretations made are discussed according to the theoretical framework described previously.

“Data as star” is an idea expressed by Chenail (1995) with regard to presenting qualitative data, whereby the data, which have been painfully collected should “be the star” - meaning that the main focus in qualitative research is the data itself, in all its richness, breadth and depth.

Miles and Huberman (1994) warn that human brains are in fact not too powerful as processors of large amounts of information as our cognitive tendency is to reduce complex information into selected and simplified extracts or easily understood configurations. Otherwise, we may drastically overweight vivid information that jumps out after a long “boring” passage! Therefore extended text, a frequently used form of display in the past, is not recommended as it can overload our information-processing capacities and prey on our tendencies to find simplifying patterns.

My own experience supports this theory, as my initial inclination as a novice qualitative researcher, once all the interviews were fully transcribed, was to “condense” the transcripts into more manageable documents. However, as I summarised, I could not help feeling that I had lost too much of the context and somehow ‘overdone’ the process of data reduction. Therefore, having considered various approaches to handling qualitative data (Miles & Huberman, 1994; Silverman, 2000; Strauss & Corbin, 1990; Williams, 2003) I have tried as far as possible to present the data in a form where it is still “grounded” or where the context from which it came is preserved (Chenail, 1995; Strauss & Corbin, 1990).

According to Chenail (1995), the key to presenting qualitative data is how well researchers are able to juxtapose the data with their own descriptions, explanations, analysis or commentaries.

Systematic arrangements of the data into displays that are sufficiently focused to allow viewing of a 'full data set' (not meaning complete field notes, but the condensed, distilled data from the full range of persons, events or processes under study) are strongly advocated by Miles and Huberman (1994, pp. 91-93). Formats of these displays may need to be handcrafted by the qualitative analyst and be as various as the imagination of the analyst. They fall into two broad types: (1) matrices (defined rows and columns) and (2) networks (a series of "nodes" with links between them). The data entries may also vary depending on what the analyst is trying to understand: text, quotes, phrases; ratings, abbreviations, symbolic figures, labeled lines and arrows etc.; may be used. As a result, they could turn out to be rather busy, but will not be monotonous! Formats must always be driven by the research questions involved and the analyst's developing of concepts (often via codes). Because such displays are arranged coherently to permit careful comparisons, detecting differences, noting patterns and themes, seeing trends etc. the possibility of drawing and verifying valid conclusions is enhanced.

For purposes of displaying the data in such a manner, a series of three display tables were constructed. In these tables the coded data were arranged conceptually into categories according to the key research questions of this study. Several supporting quotes of responses in the actual language used by the students were included within this display to preserve the "groundedness" of the data. Quotations also have an authentic ring to them and allow the reader to 'hear students' voices' and make interpretations for themselves, which might be similar or different to my own interpretations.

**Table 1 – Cognitive learning:** This table contains: additional salient personal detail; explicit benefits to learning and covert learning outcomes (pages 39-41)

**Table 2 – Emotional and societal influences:** This table contains: experience of autopsy and factors / conditions affecting the experience (pages 46-48)

**Table 3 – Student recommendations:** This table contains: objections / concerns and recommendations raised by students, relating to the future use of autopsy demonstrations for purposes of teaching medical students (pages 58-59)

The display tables have been interspersed with relevant discussion segments to achieve the element of juxtaposition of the data with analytic and interpretive thinking. These segments have been structured primarily by the 3 dimensions of learning discussed in the theoretical framework for the study. In addition, two brief sections dealing with environmental factors and objections/concerns and recommendations raised by students have been included following Table 3 – Student recommendations.

Pseudonyms typical to each participant's cultural background were carefully selected for purposes of display (retaining the same initial as the participant's actual name to make it easier for me to keep track of them!). This enabled me to provide the required anonymity whilst preserving the authenticity of their original context. The data are tabulated in the order in which the interviews took place; thematic key points or key words in the data segments have been highlighted.

**Table 1 – Cognitive learning**

Additional salient personal detail	Name, [socio-cultural group], age	Explicit benefits to learning	Covert learning outcomes
Forthright, outspoken [described herself and her friend as "vocal"], enthusiastic about the learning experience; first time seeing a dead body.	<b>1 Halima [Asian Female - Muslim], 22yr</b>	<b>Anatomy:</b> appearance of organs, especially brain; <b>Death certificate:</b> "...whether somebody died of a natural or unnatural death, so I think it's important to recognise what those are ....so I think it makes you see an <b>objective perspective</b> on things...." <b>Mechanisms of death:</b> <b>Traumatology:</b> wound descriptions, pathology; eg "hyperextension injuries...able to see the laceration, also to understand how the patient died, obviously through internal bleeding....It was through demonstration I think....it made sense".	<b>Hardening:</b> "I adjusted to it and it got better"; <b>Deal with family of deceased:</b> "...better position to explain to the family what had occurred...died of unnatural causes you'd be able to qualify why the body would have to go for an autopsy,... I think better equipped at doing that"
Mature, thoughtful, from Botswana after 2yrs of BSc; had seen dead bodies.	<b>2 Gaone [African Male], 24yr</b>	<b>Death certificate:</b> natural/unnat; mechanisms of death; <b>Traumatology:</b> extent of injury [internally] "Opening the body and seeing you know, the extent of the injury and damage to the body, that was I would say it was quite a learning [experience]"	<b>Hardening:</b> "when you look at it, the first post-mortem I sat there, I just looked what they were doing, I didn't take any notes, I didn't do anything. But those post-mortems that followed that's when I began to take notes and concentrate"; <b>Exposure to field</b> appreciated; <b>Statistics:</b> reality of road traffic accidents and violence in the country.
Soft-spoken gentleman, but with an obvious sense of humour. Speaks a unique style of English. Both parents died within a short period [father in '96, mother in '97]; claims to be "strengthened" by this though he was traumatised at the time, claimed not uncomfortable at autopsy because of this, seems to have developed a fatalistic attitude to death. First time seeing body.	<b>3 Mawande [African Male], 26yr</b>	<b>Anatomy:</b> see organs in situ; Clinico-path correlations; <b>Traumatology:</b> extent of injury - "...it did make sense [at lectures], but not as much as when I witnessed it, the autopsy...the guy was stabbed on the left [indicating chest], how far the knife, if it was a knife, traveled to the chest,...even in a real patient, I'll have a better understanding of say OK this guy's been stabbed, what may be happening inside..." - related to <b>future practice and live patient</b> as well; appearance of <b>macro-pathology</b> eg. pallour of viscera appreciated; <b>Legal significance</b> of autopsy;	<b>Hardening &amp; Deal with family of deceased:</b> "... it desensitised me. Because I think it's not a good thing to go to the family crying, trying to tell them how you feel, what happened. Because before the autopsy I was getting easily attached to the death, although I understood that the person is not there.....the autopsy made me understand someone is dead, they're nowhere there". Need to have <b>respect for the deceased</b> [emphasised].
Mature, sensitive lady, born in Uganda, came to SA before age 12yr. Lectured Biochemistry at another tertiary institution prior to entering Med School - attended some Anatomy sessions there. However hadn't seen a "fresh" dead body before.	<b>4 Prudence [African Female], 34yr</b>	<b>Mechanisms of death:</b> " you get to see the clinico-pathophysiology right there in front of you...it helped me understand the pathophysiology of disease, any disease, ...like shock, and it did tie everything up again..." [repeatedly expressed benefits to learning <b>Forensic Medicine</b> - in correlation to her reading "it really does put everything into perspective", but without specifying further]	<b>Hardening:</b> "they...desensitise for the future so you are able to deal with the wounded"; related to <b>future practice and live patient</b> <b>Respect</b> - dignity of the body - [see also Table 2 – Emotional and societal influences].

<b>Table 1 - Cognitive learning (continued)</b>			
<b>Additional salient personal detail</b>	<b>Name, [socio-cultural group], age</b>	<b>Explicit benefits to learning</b>	<b>Covert learning outcomes</b>
Appears timid, but spoke confidently about her views, less willing to speak about her beliefs. Overall rather brief [efficient] responses. First time seeing body.	<b>5 Sunitha [Asian Female - Hindu], 22yr</b>	<b>Anatomy:</b> organs in situ, appearance in cadaver; autopsy procedure; "It was interesting...we did Anatomy we never did dissection, so we'd never actually seen the organs...you know like how it's in place and how it would actually look in a cadaver". <b>Pathology:</b> application of theory; specific example of bloodless-field dissection of neck to check for injury.	<b>Hardening:</b> "...I don't know, it sounds quite harsh but, you tend to forget about the person, it sort of becomes a specimen on the table, but the first time it was quite jarring when they cut open the head and you know...but after that you just became used to being part of the procedure and I don't know, the emotional aspect like just like went away."
Well mannered and co-operative, [but deep feelings not expressed?]. Some contradictory factors noted in information provided by this student; but was also the only one to mention several interesting concepts e.g. "insider / outsider" - how he was seen by others seemed very important to him. From Botswana after 2yrs of BSc; had seen dead bodies before.	<b>6 Masego [African Male], 24yr</b>	<b>Fallibility of medical practice:</b> possibility of learning from mistakes and using <b>autopsy for audit</b> purposes identified. <b>Investigations [Forensic]:</b> used in cases of unnatural deaths.	<b>Dignity of body:</b> "...I think the problem lies more with the people who stay behind and that would know that there's been an autopsy done on you....the problem is not with the dead it's with the living....if you get what I mean...They're gonna know what happened to me....but I, I wouldn't have any problem, but the problem that I would have is that they would be thinking that that is what happened to me - sense of <b>own mortality</b> ; <b>Hardening:</b> "tend not to be scared...more in control of your fears"; <b>Exposure to the field:</b> also recognised as a beneficial; <b>Insider / outsider:</b> "...even after we left the hospital Inkosi Albert Luthuli.... as you pass by the hospital there you wouldn't actually know what transpires inside that hospital...as a lay man not knowing what actually happens,...after that you go and observe such an autopsy being done, and now you're like everyone else outside ...people don't really know what you've been watching in that hospital..."
Very methodical and dedicated to his studies, determined to be the "best he can be", [but my own feeling was that he may be detached, avoid relating to patients in a personal, empathetic manner]. Young for the class. Seen dead body before.	<b>7 Bhavesh [Asian Male], 21yr</b>	<b>Anatomy:</b> organs in situ, dissection techniques; <b>autopsy process:</b> Protocols - natural/non death certification, documentation; <b>Traumatology</b> - injuries; <b>Mechanisms of death</b> ; <b>Problem based thinking</b> [puzzle solving] approach described - "so you know, to see X,Y or Z and then to think of or postulate what caused X,Y, or Z, that's what a doctor does at the end of the day, so ya that's where the autopsy came in."	<b>Hardening:</b> minimal effect acknowledged reluctantly [possibly had developed clinical detachment because of extra time he had spent on the wards, which he mentioned as part of his response to having seen a dead body before].
Very enthusiastic, impatient to begin responding to Qs, knows what she wants / likes. Highly appreciative of the autopsies. Seen bodies but only 'had a glance' before.	<b>8 Precious [African Female], 22yr</b>	<b>Investigations [Forensic],</b> the how and why of them; <b>Mechanisms of death:</b> "...the clinical-pathological correlations, I learnt a lot...and what you look for in signs of hypovolaemia...the vital reaction signs, to show that the person was actually living at the time that injury happened, you know things like that..."	<b>Hardening:</b> "...it was the first time seeing somebody like that, close up like that and being cut, it was the first time experience. Very interesting! [repeated]". <b>Deal with family,</b> explain significance of autopsy etc.

**Table 1 - Cognitive learning (continued)**

Additional salient personal detail	Name, [socio-cultural group], age	Explicit benefits to learning	Covert learning outcomes
<p>Considerably older than class. Previously qualified and practiced as a Registered Nurse, it was medical students that she had assisted on the wards who suggested she should fulfill her dream to be a doctor. Obviously had encountered dead patients and dealt with bereaved family before. Highly reflective of more abstract issues eg. social loss, related to life experience of her nephew who was shot at age 30yr; also issues of respect for male / female bodies, venue characteristics etc.</p>	<p><b>9 Nolitha [African Female], 39yr</b></p>	<p><b>Anatomy:</b> organs in situ and actual appearance within body cavities, esp brain.  <b>Autopsy procedure,</b> dissection techniques.  <b>Traumatology:</b> mechanisms of injury e.g. bumper #, pelvic inj in MVA - pedestrian  <b>Mechanisms of death:</b> eg. hypovolaemic shock, seeing signs/evidence eg. haemothorax.  <b>Myths / misconceptions cleared:</b> "...we used to be informed when someone has died, like some of our relatives...people in the mortuary normally take the bowels, all the inside organs out and...bury them outside body...so to speak. With the autopsy I realised what is actually done...and why..."</p>	<p><b>Social link:</b> [significant] sense of "what a waste", "pity for the mankind"; thinking of the person at the time of incident eg. old lady at time of MVA "...may be because of old age she couldn't run and as quickly as she could from the car..." and about a patient with an ETT inserted - "it's quite horrific the difference when you are inserting them busy running around trying to help the patient to survive, yes, it was so [pause]...quite horrific and I was like "O my God, if it's like this to me, how much more to others who are not used to that situation".</p> <p>Also feelings of embarrassment about young female pt with STIs [genital warts].</p> <p><b>Deal with family of deceased:</b> Empathy, compassion, respect, professional development.</p>
<p>Usually an extremely conscientious and helpful student, however she had repeatedly postponed this interview until the last day of the block [exam day]. I found her quite distracted and labouring over thinking back to her autopsy experience. She also tended to be quite "fixated" on certain issues eg. Post-mortem changes should have been demonstrated more thoroughly. Mature student who previously practiced nursing, seen bodies before.</p>	<p><b>10 Deanne [White Female], 28yr</b></p>	<p>[Was uncomfortable ascribing benefits <u>specifically</u> to autopsy dems as she is always assimilating knowledge...yet she was the only student to attend more than the stipulated number!].  <b>Anatomy:</b> esp brain, also highly appreciated an additional autopsy she attended where trainee mortuary technicians were being instructed in dissection techniques.  <b>Death certification;</b>  <b>Autopsy procedure;</b>  <b>Traumatology;</b> wound descriptions, mechanisms of injury.  <b>Exposure to field:</b> Appreciates "puzzle" like nature of Forensic Medicine.</p>	<p><b>Social link</b> - unsure if due to autopsies specifically - "I've had a few experiences recently that, you know how you become quite clinical? - specially nursing you can just switch off, you become quite clinical, and I'm not sure if it's from autopsy or just inside, you just suddenly realise that that's a person and you're quite suddenly taken aback and I think that did happen to me in autopsy..."</p> <p><b>Exposure to the field,</b> "...but I think it's very good exposure 'cos obviously some people might wanna go that way and I think it's very interesting 'cos there's obviously things I know now that I wouldn't have known before and autopsy pathology" [she might have contemplated a career in Forensic Medicine except autopsies seem to have put her off!] "Well....I think it has,..."!</p> <p><b>Deal with family of deceased:</b> professional conduct and able to explain to family of deceased patient.</p>



## **Cognitive content dimension**

In this section I have primarily discussed the data presented in **Table 1 – Cognitive learning**, (Explicit benefits to learning), that is the content specified and assessed by educators (as opposed to covert learning outcomes which are more “caught than taught”, referring to the students’ affect and usually cannot be formally assessed).

### Learning Anatomy

This was frequently the first cognitive benefit to be mentioned by the students and to them it was obviously of considerable importance (6 participants). As this cohort of students had not had the opportunity to dissect a cadaver during their Anatomy training earlier on in the medical curriculum, they were especially impacted by being able to see all the organs of the body ‘in situ’ (as normally positioned within the various body cavities). In fact, some of the misconceptions they had held which were rectified by simply seeing the size and spatial configuration of the organs came as a surprise to me, as I had expected that they would have acquired this knowledge through other means such as images, models, fixed specimens or virtual resources. For example one participant expressed surprise that the brain filled quite so much of the cranial cavity and that the extradural and subdural spaces were not more substantial to the naked eye. Such benefits essentially represent the acquisition of factual knowledge to be used at a later date (Saljo, 1979). However, as there is a large amount of foundational content which medical practitioners need to be thoroughly familiar with, every aid in acquiring this knowledge accurately is important.

Two of the interviewees (Halima and Deanne) even went on to recommend that an Anatomy component should be included as part of their autopsy demonstrations in Forensic Medicine (Table 3 – Student recommendations). Being able to view the visceral blocks as they were dissected out was also mentioned as beneficial in this regard (Nolitha and Deanne) because in addition

to seeing the organs in situ, they were able to visualise them as connecting to other organs found in the same anatomical region.

Therefore, the medical students in my study agreed with the opinion of medical educators interviewed by Burton (2003) who were of the view that autopsies were underutilised for teaching in general and specifically for teaching Anatomy. Although autopsy-related teaching cannot replace adequate teaching of Anatomy in the earlier years of training, it is a definite opportunity for re-enforcing and revising Anatomy during the clinical years as well as for clearing misconceptions, which might have arisen as a result of working with embalmed specimens instead of fresh bodies. This finding has implications for future curriculum planning at this institution and may lend support to a cross-disciplinary effort to formally incorporate an Anatomy teaching session in at least one of the autopsy demonstrations.

#### Mechanisms of death (clinico-pathological correlations) and Death Certification

Students found that autopsies helped them to distinguish non-natural and natural causes of death and to have a better understanding of the various mechanisms of death (7 participants). This was extrapolated to a realisation that they would be better equipped to complete death certificates in their future practice, also representing the acquisition of factual knowledge to be used at a later date (Saljo, 1979).

Bhavesh explained that he had learned the correct protocols for death certification, which is acquiring essential factual knowledge, whereas Halima recognised that she would be better able to maintain objectivity in the process of distinguishing natural and non-natural causes of death. These two examples may reflect a surface and a deep approach of learning (Marton & Saljo, 1976), where Halima's answer is of increased complexity as it demonstrates an understanding of the underlying reasons for performing autopsies and how she may apply her learning in the future. However, both constitute significant benefits from autopsy

demonstrations towards producing well-informed and “safe doctors” who know their ethical obligations and will demonstrate professional conduct.

### Traumatology

Other cognitive benefits identified at a level of acquiring factual knowledge included correct terminology for wound descriptions, various mechanisms of injury and the extent of internal damage associated with various types of trauma e.g. stab wounds, gunshot wounds and injuries associated with motor vehicle accidents (6 participants). Mawande and Prudence made the connection that this knowledge would also be useful when treating living patients who had sustained traumatic injury (Table 1 - Cognitive learning).

This shows that autopsy demonstrations using medico-legal cases do in fact provide opportunities for learning certain aspects identified by British senior medical student Jones (2002) as lacking in their undergraduate medical training. Of course this assumes the availability of cases, which is not guaranteed in countries with significantly lower rates of crime and violence than South Africa!

### Forensic investigations, autopsy procedure and “exposure to the field”

Knowing about the various investigations that can be performed at autopsy and their applications was mentioned as beneficial (Masego and Precious). Other students claimed that knowledge of the actual autopsy procedure was useful to them (Nolitha and Deanne) as it deepened their understanding of why things were done in a certain manner.

The autopsy for purposes of audit and recognising the fallibility of medical practice is a learning outcome that features in the literature (Burton, 2003; O’Grady, 2003), however in this study it was only mentioned by one student (Masego) who said that doctors could learn from their mistakes in this regard (Table 1 – Cognitive learning).

These benefits could also count as “exposure to the field” (a more covert learning outcome) mentioned specifically by 3 participants as being potentially useful for students contemplating a career in pathology or forensic pathology. In this study, unfortunately, Deanne seemed to have been discouraged from considering a pathology-based career from her experience of autopsies! Even though she clearly recognised the benefits to her undergraduate training, she found herself reacting quite negatively to the prosection, which took her by surprise and the reasons for which she still appeared to be pondering at the time of her interview. However, from her point of view, the viewing autopsies at this stage of her training may have prevented her from making a mistake in her future career choice and therefore of great personal significance.

#### Process of cognitive development

The following two **processes** were evidently associated with students’ learning from autopsies:

- correlation between theory and practical demonstration was mentioned by all participants as helpful to their learning – one specific example used was the ‘bloodless field neck dissection’ (Sunitha) for investigating cases of neck trauma such as hanging or manual strangulation. Content from lectures, notes or other resources as well as prior knowledge from previous work / study experience therefore definitely played a role in students’ learning from autopsies.
- familiarisation developed with repeated exposure to the cadavers and the appearance of fresh organs (as opposed to fixed or embalmed specimens) made it possible for students to recognise and differentiate macroscopic pathology (4 participants), for example post-mortem changes and pallour of viscera from their “normal” appearance.

**Table 2 – Emotional and societal influences**

Name, [socio-cultural group], age	Experience of autopsy	Factors / conditions
<p><b>1 Halima</b> [Asian Female - Muslim], 22yr</p>	<p><b>Anticipation:</b> "I was looking forward to it, because there's a first time for everything...";  <b>Uncomfortable:</b> "different sort of feeling, involved kind of I wouldn't say disturbing...but um"...but from a medical point of view it's the most gruesome thing we've seen";  <b>After effects:</b> slept well but didn't take supper too well after the 1st PM.</p>	<p><b>Belief system - Muslim</b> - "Ya actually it did have a huge bearing..." [see also Table 3 – Student recommendations];  <b>Previous Study:</b> DH prepared a bit, somewhat similar experience;  <b>Venue</b> - impressed, had heard prev yrs exp. considered this an improvement.  <b>Peer discussion:</b> stayed back at end of session with friend to ask Qs.</p>
<p><b>2 Gaone</b> [African Male], 24yr</p>	<p><b>Anxious</b> initially, but <b>fascinated</b> with procedure: "...how they were going to open the body was something I couldn't like imagine, as to how are they gonna do it, but when I saw it, it was quite...amazing", admiring of <u>dissector</u> and concerned for <u>his</u> mental wellbeing [abstract thought]</p>	<p><b>Conditioning from previous clinical contact</b> and study;  <b>Belief system:</b> only <b>nominally Christian</b>, but affected to some extent by beliefs in life after death;  Experience not discussed with peers, only when submitting assignment.  <b>Venue:</b> Good.</p>
<p><b>3 Mawande</b> [African Male], 26yr</p>	<p><b>Interested</b> and <b>anticipating</b> initially but cautious because his family traditionally only allowed older people to see the dead: "...but at the back of my mind there's that thing, the way you were raised up is always going to follow you wherever you go....'cos I was raised up in a community or family where you were told that to see the dead person is for older people etc."</p>	<p><b>Socialisation:</b> Upbringing, cultural background, life experience;  <b>Belief system:</b> belief in life after death, but not affecting experience, felt it important to return organs to body.  <b>Venue:</b> OK, dreaded microphone!  <b>Peer discussion:</b> was humourous</p>
<p><b>4 Prudence</b> [African Female], 34yr</p>	<p>"I was...it was <b>mixed feelings, dread and anticipation</b>, I wanted to see, just for <b>curiosity</b>, how a fresh dead body would be like, and also dread, would it be grotesque?...that was my <b>fear</b>". "...even in the first instance, I was so amazed at how lifelike the person looked, he looked <b>as if he was sleeping</b>. I think that also helped me during the session...so by the next one...it wasn't bad...it's only when they start stripping them of their skin, that it gets a bit dramatic in a way, but always at the beginning you just look and they look as if they're sleeping, looks all <b>like you're just operating on someone who's living</b>, then when you <b>start cutting and removing the face it gets scary</b>..."</p>	<p><b>Life experience, work and study.</b>  <b>Belief system - Christian</b>, had previously held opinion that it didn't matter too much what happened to the body, but after conversation with her father who wants to be buried in the country of his birth [Uganda], has decided it does matter, though still not so much for herself, "just the body that stays.... Because a person has a spirit and a soul and that is the most important thing...";  "That made me start thinking so about dignity of a actual body, even though the spirit has left the body needs to be treated with dignity [and respect].";  Had not heard from prev yrs, but "I thought you'd get a body that had been found in a bush somewhere!"  <b>Venue:</b> impressed with technology.  <b>Peer discussion:</b> was humourous, also shared her concern re ethics of discussing the autopsy with husband.</p>

Table 2 - Emotional and social influences (continued)		
Name, [socio-cultural group], age	Experience of autopsy	Factors / conditions
<b>5 Sunitha</b> [Asian Female - Hindu], 22yr	<p><b>Anticipation:</b> "I was looking forward to it, because we'd never seen it before, we felt like we'd missed out on it when we did Anatomy...so we were interested to see how all this was done, because we'd heard so much about it in the lectures we actually wanted to see it".</p> <p><b>Uncomfortable</b> too "Beforehand I thought I'd be OK, wouldn't be too bad, but when we actually <b>saw them cutting into the patient</b> and I saw him open, it was quite...I don't know...", but no after effects.</p>	<p><b>Television programmes [!]:</b> "Well I watch a lot of CSI [TV programme with autopsies] [shared laughter]...I've seen how it ends so I guess being exposed to that, because that can be quite gruesome a times, so I think that has helped a bit.",</p> <p><b>Specific preparation:</b> "Not real life...well, we've see photos in the lectures...that prepared (us)"; <u>not</u> DH.</p> <p><b>Belief system:</b> "OK no I'm Hindu so normally a person is cremated, so whilst we believe in re-incarnation, but I didn't really think of any of the stuff during the autopsy..."</p> <p><b>Venue:</b> impressed and grateful for glass partition.</p>
<b>6 Masego</b> [African Male], 24yr	I had [seen a dead body before], but I had not seen it explored as it was...the first autopsy that I saw it was strange for me that, the way that they opened up the body....a bit "prickly" you know...[uncomfortable]	<p><b>Conditioning from previous clinical contact</b> and study;</p> <p><b>Belief system:</b> Nominally Christian family, but <b>contradictory personal beliefs</b> - "I believe once a person has died they've died, there's no such thing as life after death, that's just what I believe...."; "I don't find anything wrong with it, because after all the person is passed on...gone". But at the same time he admitted <b>reluctance to advocate autopsy on a family member</b> of his [even recognising closure as being important to families] as well as <b>discomfort with the idea of having one on his own body</b>.</p> <p><b>Venue:</b> Good</p>
<b>7 Bhavesh</b> [Asian Male], 21yr	Own attitude described as " <b>clinical</b> " [emotionally detached] - "OK, I'm doing Forensics now, I need to recognise these...you know, a lot of my Medicine, the way I do it is that...it's about the future when I'm on my own....that's how I rationalise things...I want to be capable, you know?" Describes others who were expecting a more solemn event, but even he found some of the procedure " <b>a bit callous</b> " [uncomfortable?].	<p>Strongly <b>motivated by future practice</b> - "I think perhaps when we're, not too long from now, when we're interns at whatever hospital or whatever clinic and an ambulance brings a patient, so we'll be the first people to see that patient dead or alive, and we need to be able to document you know, appropriately, we need to be able to examine appropriately, and in terms of injuries and that type of thing, so I think that was useful."</p> <p><b>Belief system - 'New Age'</b>, "...and whatever name you may call him by, whether it's Allah or whether it's God or whether it's Krishna, whatever it is, whatever name you call him by you will meet your creator and perhaps you will be accounted, you will be assessed or... that sort of thing..." But claims he didn't think about it, had no effect on his experience.</p> <p><b>Venue:</b> impressed with technology</p>

Name, [socio-cultural group], age	Experience of autopsy	Factors / conditions
<p><b>8 Precious</b> [African Female], 22yr</p>	<p><b>Anticipation:</b> "...with the first autopsy I was like "Wow, so this is what it really looks like" you know...I was excited, I couldn't wait, I couldn't wait to see...I wasn't frightened." But obviously before like, you know they come in that white packet like they haven't unraveled the body, there's still that <b>anxiety</b>, what am I gonna see, what am I gone see...but otherwise it was fine....and after that we could have our little [pause] little chocolates in there...." [<b>blasé?</b>]</p>	<p>Only student to mention being called to court in <b>future practice</b> and to claim <b>peer discussions</b> were learning centered. <b>Belief system - Christian</b>, body no longer housed spirit therefore unaffected. <b>Expectations:</b> Knew of prev yrs experience, "But I went through the first autopsy and I said 'it's nice to look at it that way', there was speak/communicate...we saw everything, there was no barrier...." Variation of <b>tutoring styles</b> - critical of some tutors lacking student engagement.</p>
<p><b>9 Nolitha</b> [African Female], 39yr</p>	<p><b>Anticipation:</b> - "I was looking forward as I've indicated because of the <b>myth that I used to have</b>, I wanted to <b>clear those myths in my head</b>, so I was looking forward to it and I also wanted to learn something out of it that was mainly my feeling...." [<b>interested</b>] Not fearful of dead body, but <b>apprehensive</b> about actual procedure - "Eh-hm OK, <b>there was a fear</b>, but not associated with the dead body per se, but the fear was <b>how the procedure was conducted</b>, how we can...if I can layman's terms, like how a person can be put into a butchery and be chopped up like that and be cut into pieces...[speaking very quickly]</p>	<p><b>Life experience:</b> [esp death of nephew]; <b>Work and study</b> [Nursing, medical curriculum - Anatomy, Physiology, Pathology and related lectures]. <b>Belief system - Christian</b>, "...when somebody dies the body will remain here, and then they can cremate the body, but the soul has left or the spirit has gone with God depending on whether you were saved or not..." had some effect on her feelings, but also mentioned thinking through these issues in 1st year because of the <b>Anatomy dedication ceremony</b> when students pledge to treat the donated cadavers with respect. Impressed with venue, but concerned about not seeing pathology directly if not seated in front. <b>Venue:</b> Good, not so impressed with technology as some other characteristics.</p>
<p><b>10 Deanne</b> [White Female], 28yr</p>	<p>"Oh Before I went into the autopsies, I was really like <b>excited to see autopsies</b>,...Aw you know this group we didn't get to do dissection [I really wanted to do that], but as far as autopsies, like I remember my first autopsy I didn't,...I wasn't really listening as such....you were more <b>interested</b> in what was going on!"; about subsequent autopsies "I found it really interesting, and intriguing, truly I mean, I didn't really enjoy the actual autopsy as such, but I enjoyed it, like <b>I didn't enjoy the cutting part</b>..."...surprised at her own reaction - "I think I was quite <b>taken aback</b> almost like....the harshness that they dealt with the body..."I must admit um although I've been exposed to dead bodies I was quite taken aback that I did find the autopsy <b>quite gross</b>, which I didn't think I would....ya, I don't think they were disrespectful,...I think it was just me I was taken aback by it...." [<b>uncomfortable</b>]</p>	<p><b>Life and work experience:</b> "I suppose seeing patients decompensated and that kind of thing..." I think specially also um, I mean we all know the Med student that died like last year,..she had to be autopsied and that kind of thing...I'm like interested...to know what would have been found in her body?"; <b>Belief system</b> - "I'm <b>Catholic</b>...you know your spirit goes to heaven, you live on in heaven, but, ya the body is dead..." In response to the question if this had an effect on her reactions or responses to the autopsy - "I don't, I don't think so, um it <b>might have but I don't really think so</b>..." She didn't like the technologically advanced <b>Venue:</b> "I don't particularly like the new facility, ...it's almost quite impersonal, you know 'cos they're there and we're here and I think ...sometimes you almost get lost whereas if you had a person right there and you're looking at them and going 'what's this for?' and you know, and concentrating, I think it's almost easier when you're all around the pers...around the body..."</p>

## **Emotional, psychodynamic, attitudinal and motivational dimension**

This section primarily pertains to the covert learning outcomes detailed in **Table 1 – Cognitive learning** and to the reported experiences of autopsy listed in **Table 2 – Emotional and societal influences**.

There is no doubt that learning from autopsies is a process that can be emotionally laden. However, the data of this study reveals that students exercise strict control over how much they allow themselves to “feel” and to reflect on “social links”; resulting in a wide variation of affective development.

In this section I have included a brief synopsis of the feelings described by participants and a discussion of the covert learning outcomes or “hidden curriculum” pertaining to autopsies.

Whether it was described as “excitement”, “curiosity”, “mixed-feelings of anticipation and dread”, “interested” or “intrigued”, there was a definite sense of “looking forward” to autopsies, especially the 1<sup>st</sup> autopsy, expressed by all participants. By the same token, all participants experienced a degree of discomfort relating to the dissection process, which was considerably greater at the 1<sup>st</sup> autopsy. Some of the terms used to describe their feelings were “anxiety”, “dramatic”, “scary”, “prickly” and “fear”.

Initially I attempted to separate and group these terms describing their emotions (during the process of ‘open coding’ described Chapter Four, *Methodology*), in an attempt to locate possible degrees of discomfort that were perhaps related to other individual characteristics such as having encountered dead bodies previously. However, these links were not consistently found and the terminology used was too imprecise to draw any conclusions in this regard. Therefore I felt it was more meaningful to display the descriptions as quotations (Table 2 – Emotional and societal influences) to preserve the individual context as far as



possible which makes for more interesting reading and allows the reader to connect these descriptions to the factors that each participant felt affected their experience.

What I concluded was that, despite the wide range of prior learning, life experience and demographic criteria represented, all participants were distinctly uncomfortable when faced with dissection of the human body. The dissection of the head (involving folding the scalp over the face and sawing through the skull), which may understandably be more “gruesome” or horrendous to lay people, especially caused discomfort. There is evidence from the interviews that students were unable to concentrate on any other teaching except the prosection itself during the 1<sup>st</sup> autopsy. However, all participants seemed to experience a fairly rapid “hardening” or “desensitisation” process, developing sufficient clinical detachment (Burton, 2003; De Villiers & Ruhaya, 2005) by the 2<sup>nd</sup> autopsy when they were able to concentrate on other aspects of the demonstrations. Therefore it may be advisable to hold off with the teaching of other Forensic Medicine concepts until the 2<sup>nd</sup> autopsy, whilst the 1<sup>st</sup> might be dedicated to the autopsy procedure and re-enforcement of Anatomy.

A question of particular interest to me was why some students felt it necessary to curtail their emotions and reflections (particularly obvious in the responses of Sunitha and Bhavesh). In some instances it is possible that this may be an attempt to maintain clinical detachment during the procedure in order to protect their own composure, in other words it could be as a ‘coping mechanism’ if the student feels vulnerable. However, this did not seem to be the case in any of the participants of my study. So, perhaps, a generally prevailing outlook that considers it “unprofessional” for doctors to become emotionally involved in patients’ lives, influences student responses? Or perhaps there is a pervading lack of appreciation of the benefits of reflective practice to learning, within medical circles, where teaching still tends to be so intensely content focused despite radical curriculum reform? Burton (2003) whilst interviewing educators

also identified themes such as clinical detachment as being elements of the hidden curriculum likely to result from viewing autopsies. The possibility that students may view the body as an object instead of a person was considered likely by many of his study participants who felt that careless autopsy practice might encourage students to objectify the deceased.

### Covert learning outcomes

Some of the covert learning described by students in this study, for example, increased respect for the body, familiarisation, integration of theory and practice and preparation for clinical work were common to the learning experience of anatomy dissection reported by Lempp (2005). Those 'difficult to measure' elements of the "hidden curriculum" such as recognising the dignity of the deceased patient, dealing with their family members with compassion and empathy yet being able to conduct themselves in a professional manner were, however, vastly different from one student to the next. I found Nolitha, for example, quite unafraid to reflect deeply on a wide variety of aspects relating to the autopsies which had to influence her affective development. Gaone, Prudence, and Masego also engaged in considerable reflection and more abstract thinking as evidenced by their responses (Table 1 – Cognitive learning and Table 2 – Emotional and societal influences). So, what set these students apart? Nolitha (39yr, had been a registered nurse) and Prudence (34yr had lectured Biochemistry) had considerably greater maturity and life experience than the other participants. Masego and Gaone (both 24yr and from Botswana) who had been pre-selected for medical training and had attended 2 years of a BSc programme and had some limited clinical contact in Botswana prior to entering medical school, therefore also had more experience and were marginally more mature than their colleagues. All of them were African, two female and two male.

Although the limited numbers of participants in this study do not allow for generalisations per se, all research is intended as a statement about the kind of

things one can expect in a similar context to that researched. This is the concept of *moderatum generalisation* (Williams, 2003) whereby the “cultural consistency generated shared norms, values, rationality and similar physical situations will produce replications” and is just the kind of cultural consistency we depend on every day to make sense of our lives.

In the light of these *moderatum generalisations*, which set the bounds as to what is possible in interpretive research, I hope that the following observation is acceptable. I was intrigued and humbled to note the openness with which the African participants in my study shared some of their most personal stories and feelings (Table 1 – Cognitive learning, Additional salient personal detail). This leads me to suggest that our socio-cultural factors as well as prior learning experience, various conceptualisations of learning (Saljo, 1979), personality types (Alexander, 2004), and the different interests we have (Habermas 1971 cited Cranton, 1996), all play a role in how deeply we allow ourselves to reflect and become emotionally involved in learning situations such as autopsies. From this study it would appear that the African traditional “ways of knowing” that so highly esteem community (see also pages 54 – 55) may encourage a deeper level of reflection than the typically individualistic Western mindset that tends to prevail even amongst the South African Indian population.

It is important then that educators are aware of such effects of student diversity if they are to meaningfully direct a learning experience so that it gives rise to positive affective development of their students.

On a less philosophical note, all participants alluded to aspects of their future practice in the course of the interviews which shows that this is a prevalent and weighty motivating factor for learning from autopsies. This again is a factor that could probably be used by medical educators seeking to influence students’ learning experiences of and attitudes towards autopsy (Tazelaar et al., 1987; Verma, 1999). Thus I would suggest that if educators were to make the uses of

autopsy for learning and the possible benefits to future practice more explicit, it may assist students who might not make the links themselves to be more focused and benefit more from the learning experience.

### **Social-societal dimension**

I have already strayed into this arena towards the end of the previous discussion segment whilst contemplating the question of why the affective development of students varies considerably within the same learning situation. In this section I have discussed the findings primarily from **Table 2 – Emotional and societal influences** (that affected the learning experience) and some insights gained during the study into how socialisation and more specifically belief systems affected learning from autopsies.

Death is after all more than just a physical event. The way we regard death and dead bodies, is steeped in our religious beliefs and cultural practices. There are various “rites of passage” associated with death which are stipulated by different religions (Rites of passage about death, n.d.). I felt it was feasible that some of these belief systems might therefore affect how students experience autopsy demonstrations and that some may even object to the practice outright if it interfered with the death rites of their religion.

I have also learned that the various belief systems have quite different and profound effects on an individual’s attitudes towards knowledge and education as a whole. In his book “Education and Cultural Diversity”, Hulmes (1989) provides valuable insight into the different perspectives held by some of the major religions of the world (Muslim, Jewish, Christian, African Traditional and Hindu perspectives). Although an in-depth discussion of the various religious beliefs and practices is beyond the scope of this study, I have applied some of the insights gleaned to interpret the thoughts and experiences described by some of the participants.

The following distinct belief systems were represented amongst the participants, Christian - both 'nominal' (2) and 'fully persuaded'(3); Roman Catholic (1); Hindu (1); Muslim (1); "New Age" (1) and African Traditional Religion (1). All participants except one believed that there is life after death.

The exception was Masego who claimed to be a nominal Christian but didn't believe in life after death, which clearly contradicts Christian beliefs, therefore he presented an anomaly. Furthermore, he seemed bothered by contemplating an autopsy on himself or a family member. His explanation was that the problem lay with the living, that they would know what had happened to him, yet in fact few lay people are actually aware of what takes place during an autopsy, which he acknowledged elsewhere in the interview. Therefore, I felt that this was not a completely valid explanation of what he was feeling, however, it did show that this student was prompted to consider his own mortality as a result of autopsies. This is in line with the findings of some previous studies investigating students' perceptions of autopsies where students were found to have contemplated their funeral arrangements or an autopsy on themselves (De Villiers & Ruhaya, 2005; Sanner, 1995).

Prudence was another participant, of Christian faith, who showed that she had distinctly confronted thoughts about her own mortality during autopsies. She shared an interesting aside of how she had changed her beliefs about respecting the dignity of a dead person's remains following a discussion with her father (Table 2 – Emotional and societal influences). Despite her Christian belief that the spirit leaves the body at death, which had initially made her think it didn't matter what happens to the physical body after that, her father wanting his remains to be taken back to the country of his birth convinced her that it is also important what happens to the body after death.

I was initially concerned that Mawande might have been emotionally affected by the autopsies when he revealed that both his parents had died when he was 16 and 17yrs of age. However, he emphatically denied this and claimed that it had just given him another perspective on death, “realising that their time had come”. He did describe how traumatised he had been after his first Anatomy Dissecting Hall exposure, when he lost his appetite for a week - a more extreme reaction than any of the other participants had had - which seemed to have prepared him for autopsies. Having African Traditional Religious beliefs, where ancestors or the ‘living dead’ are believed to hand on their collective wisdom in a 2 dimensional conceptualisation of time that has virtually no future (Hulmes, 1989, p. 108) may provide an explanation for the more fatalistic attitude held by Mawande.

Interestingly, Halima, of Muslim faith, was the only one who had a basis for religious objection to the autopsy procedure. Although the Muslim faith does not forbid autopsies outright, it is clearly an undesirable practice which does not sit comfortably with their beliefs and rites of passage. At death the body is positioned to face Mecca, passages from the Qur’an recited, the body ceremonially washed, covered with spices and perfumes and burial is recommended as soon as possible following death (Rites of passage about death, n.d.). However, Halima expressed that she understood the purposes of Medico-legal autopsies and had no objections to using them for teaching. In fact her recommendation was that autopsies should definitely be a part of the undergraduate curriculum and that they cannot be replaced with any alternative teaching tools (Table 3 – Student recommendations) despite her conflicting personal beliefs.

Sunitha and Bhavesh seemed somewhat reluctant to go into too much detail regarding their belief systems (Hindu and New Age respectively) because they thought it was irrelevant to their learning. Claiming “not to have really thought about that stuff”, Sunitha was very economical with words throughout her

interview and spoke very quickly as though not wanting to waste time. Although she seemed willing enough to respond to the questions, her response describing “hardening” (Table 1 – Cognitive learning) epitomised her lack of emotional involvement at the autopsies and apart from the cognitive benefits, she really seemed to treat them as an extension of a television series called CSI!

Bhavesh did admit to a vague perception of “callousness” regarding the handling of the body, particularly due to the organs not being returned to their original anatomical regions. He was unaware of the reasoning behind this practice, which is to minimise oozing from breached skin and bone. If details such as why a wad of absorbent stuffing material is used to retain the shape of the head etc. are explained to students during the procedure, such perceptions of callousness may be avoided. Bhavesh was otherwise extremely focused on being able to “do the right thing” in a technical sense when he is a medical practitioner in the not too distant future.

Therefore, I would consider both these participants to have technical interests at the fore (Habermas 1971 cited Cranton, 1996) with a conceptualisation of learning that is consistent with surface learning more than deep learning. In contrast, the participants discussed previously who allowed themselves to feel and reflect on their experience, would possibly have practical and emancipatory interests with a conceptualisation of learning that is consistent with deep learning (Marton & Saljo, 1976).

#### Importance of “community” in African culture

Participants Masego and Nolitha, though having different belief systems, had a cultural value in common. They both surprised me somewhat with the emphasis they placed on their newly acquired knowledge regarding what happens to the dead body at autopsy, claiming that it set them apart from the lay community in one way or another. Masego felt that he was somehow set apart from lay people who would not have the knowledge that he now had of what happens inside such

a hospital building as Inkosi Albert Luthuli Central Hospital where the demonstrations took place - a perception of “insider vs outsider”. He also felt he would not like to have an autopsy done on himself when he died, because “others would know what had happened to him...” and felt “the problem lies with the living and not the dead” signifying that the way in which other people perceived him was very important to him. Nolitha said that viewing the procedure was beneficial to her in that it dispelled a commonly held misconception that all internal organs were removed at mortuaries with only the “empty shell” being returned to the family. This of course would be unlawful and unethical; therefore she expressed satisfaction with the process she observed where the dissected organs were returned to the cadaver, albeit into the chest / abdominal cavities without discrimination.

At the time of the interviews, I was unaware of the actual meaning that these students attributed to feeling different to other people in their communities. However, having gained some awareness of the significantly important position of “community” within African tradition in general, I was able to make more sense of their statements. Hulmes (1989, p. 106) explains the relationship of the individual to the community in African tradition is such that it is conformity of the individual to the beliefs and customs of society that makes for stability of the community. In return it is the stability of the community, which protects the rights of the individual. The emphasis given in Western cultures to the uniqueness of the individual and the attention given in Western education to the concept of autonomy are generally alien to indigenous African traditions and would even be considered misguided!

Again, an understanding of the diversity represented in student populations can only be an advantage to educators who want to make the most of learning situations to foster a culture of acceptance and respect for students from diverse backgrounds.



**Table 3 – Student recommendations**

Name, [socio-cultural group], age	Objections / concerns	Recommendations
<p><b>1 Halima</b> [Asian Female - Muslim], 22yr</p>	<p><b>Beliefs:</b> "I'm Muslim...as I said it's not the choice of the family, but we <b>don't believe in autopsies</b>". Went on to explain the body should be buried as soon as possible, agony in death is increased if not etc.</p>	<p>Add <b>Anatomy component</b>; Definitely <b>keep in curriculum</b>, should be <b>compulsory</b>, <b>No. 4</b> cases OK perhaps would have liked to see 2 more. <b>Alternatives:</b> "No! [emphatic]...I don't recommend anything else, absolutely nothing" [<b>appreciates immediacy</b>]. OK behind glass, <b>wouldn't mind view from around body, but not preferred</b>.</p>
<p><b>2 Gaone</b> [African Male], 24yr</p>	<p><b>No objections.</b></p>	<p>Forensic Med as <b>single block</b>. <b>Appreciates immediacy:</b> definitely <b>would prefer to be next to table</b>, "...even one chance to...step around and see some of the injuries. e.g. SEH...you wouldn't be able to appreciate it as much as if you would be seeing it (on the heart); <b>Variety</b> of cases important, <b>No. 4</b> cases OK. <b>Compulsory</b> - all students should appreciate...</p>
<p><b>3 Mawande</b> [African Male], 26yr</p>	<p>Possibility of <b>known body</b>.</p>	<p><b>At 1st PM</b> grateful for <b>separate viewing area</b>, but after that <b>would have preferred to stand next to the table</b>. <b>Keep in the curriculum</b> and should be <b>compulsory</b>: "Ya I think they must be compulsory; I mean I'm a student, unless something is compulsory you do take your time...I think, we as students, we don't realise the importance of something till it's gone... <b>No. 4</b> cases OK.</p>
<p><b>4 Prudence</b> [African Female], 34yr</p>	<p><b>No objections</b> she could think of.</p>	<p><b>Variety</b> important. Should be <b>compulsory</b>: "because in the beginning it would be hard, but it really does <b>help you for future</b>" [so just in case students lack insight of future benefits]. <b>Alternatives possible</b> "I suppose they could [be replaced], because it's basically the same what we're doing, we're not actually in the lab, you know cutting, cutting...so it could be replaced. Because the screen the glass screen would be like a video screen." [surprising lack of appreciation of immediacy!] <b>Would not prefer to be by the table.</b></p>
<p><b>5 Sunitha</b> [Asian Female - Hindu], 22yr</p>	<p><b>Vulnerable</b> psyche: " well for me I don't have a problem with it, but I don't know for other people, <b>some people may be really squeamish</b>, that may be a problem that affects them psychologically..."</p>	<p><b>Keep in curriculum</b>: - "I think definitely, because so much of pathology, we got to see the actual pathology, how to go about doing the autopsy...I think they are essential". But reluctant to recommend compulsory out of concern for others. <b>No. 4</b> cases OK but <b>variety</b> important. <b>Appreciated immediacy</b> - "I think it's a lot more....I mean if you have the actual patient it's so much better than having something that's not really there or...if you have the actual patient it puts things into perspective, you know you have this actual person" <b>Would not prefer to be by the table.</b></p>
<p><b>6 Masego</b> [African Male], 24yr</p>	<p>Not himself, but <b>others might have religious objections</b></p>	<p>FM as <b>single 'block in continuity'</b> ±3weeks! <b>Keep in curriculum</b>, definite role in training MPs but <b>not compulsory</b> [see objection]. <b>No. 4</b> cases OK. <b>Cannot be replaced</b>, no alternative tool would be as good as 'seeing the real thing' [<b>appreciates immediacy</b>] Up close and personal' would be better [<b>smaller groups</b> and definitely <b>would prefer to be next to table</b>].</p>

Table 3 - Student recommendations (continued)		
Name, [socio-cultural group], age	Objections / Concerns	Recommendations
<b>7 Bhavesh</b> [Asian Male], 21yr	<b>No objections</b> , except concern for others with <b>religious objections</b> ; Perception of <b>callousness</b> of the procedure.	<b>Keep in curriculum</b> : definite role in training, <b>but did not seem to appreciate immediacy</b> of demonstration; <b>Alternatives possible</b> : could be replaced with videos etc as long as able to see the pathology, document properly, act appropriately [!] <b>Wouldn't mind view from around table, but queried practicality.</b>
<b>8 Precious</b> [African Female], 22yr	<b>Known body</b> : "what I thought was the first day when we went to...I said what if the person that they were having there, was family member of somebody that was sitting there...and you carry on with the autopsy...let's just say it's my brother...."	<b>Expectations</b> : "I used to hear...you know they stand next to the table and whatever....and when I got to Albert Luthuli and we looked at the whole barrier thing, it's like a little lecture..." <b>Keep in curriculum, appreciates immediacy, cannot be replaced</b> , but reluctant to recommend compulsory viewing for others. Definitely <b>would have preferred to be next to the table</b> , but after seeing the "bigger picture" first, <b>No. 4 cases OK.</b>
<b>9 Nolitha</b> [African Female], 39yr	<b>Known body</b> : "...the feeling that I had, OK because it was still unidentified, so what if one of the relatives is around, as the students were never been asked whether...if anyone has lost a relative around whatever ...and what if it happened that there is one of the students who are related to the body...really a bit of shocking and traumatising realisation..."	<b>Keep in curriculum</b> : essential for medical training. <b>Alternatives</b> : recognised that video linking might enable a range of autopsies to be viewed by people based far and wide, but also <b>appreciated immediacy</b> of the experience, but <b>would not prefer to stand next to the table</b> : "NO! don't need the smells!" <b>No. 3 cases OK.</b> Alludes to <b>better preparation</b> of students for autopsy procedure, especially in case it is a known body.
<b>10 Deanne</b> [White Female], 28yr	<b>Vulnerable psyche</b> : "I'm just like thinking of the psychological thing..."	<b>Keep in curriculum</b> : definite role in teaching medical students. Suggests <b>at least one be mandatory</b> to appreciate the procedure and be able to allay concerns of family members of deceased, but reluctant to say they should be compulsory. Add <b>Anatomy component</b> . <b>No. ?</b> [unsure how many PMs are adequate "there's always different things to see"; attended 5, but "wouldn't mind going to join more"]. Suggests <b>better preparation</b> of students for autopsy procedure, eg. view a video before actually attending the demonstrations. Definitely <b>would have preferred to be next to the table</b> , went as far as to say she didn't like the venue because of the solid glass partition.

## Environment

When Illeris (2004) proposes the 'tension field of learning' that has framed the discussion of data thus far, he initially makes reference to the interaction processes between the individual and his or her material and social environment, but then concentrates on the social-societal dimension without mentioning the material surroundings. He subsequently links the material environment to the social-societal dimension, taking it as given that the individual is in interaction with material surroundings all the time; the nature of this interaction is claimed as "always being transmitted socially and societally" (Illeris 2004 p119). However, pertaining to autopsies, the physical environment in which the demonstrations take place affects the students' learning experience in a more diffuse way – in my thinking more like the cytoplasm of a cell surrounding the nucleus affects cell function – therefore it would have a bearing on the whole of the tension field incorporating cognition, emotion and society.

By way of background, I mentioned earlier in this report that there had been various different facilities used for autopsy demonstrations in the past. A different hospital mortuary, where the viewing area was much smaller ( $\pm 35$  seats) and the audiovisual technology not nearly so advanced, was used in the traditional curriculum. Since the advent of the new PBL curriculum and small-group teaching, groups of 10 students at a time were initially taken to a State police-run mortuary, where conditions were far less congenial to say the least. Students were given personal protective clothing (disposable gowns, masks, caps and overshoes) and expected to stand around in the large dissecting halls where up to 15 autopsies were in progress simultaneously in one morning. There were several incidents at this facility when students were emotionally traumatised by what they saw and nauseated by the smells of dead and decomposing bodies. Of course the range of trauma-related pathology they

were able to view was quite incomparable to the limited selection of cases that can be transferred for demonstration at a single case per week.

In 2006 the entire rotation structure for Forensic Medicine was changed, so this cohort of students was the first to have autopsy demonstrations at Inkosi Albert Luthuli Central Hospital, a technologically advanced, modern and thoroughly clean facility. Movable cameras (via foot-controlled buttons) projected images to multiple monitors within a large viewing auditorium completely separated by solid glass partitioning and containing  $\pm 80$  seats. Microphones were required for communication between the dissecting area and the viewing area.

Each participant was asked his or her opinion regarding the venue (along with any other general factors that they felt affected their learning experience) and the findings revealed that they were quite divided in their opinions (Table 3 – Student recommendations). Many admitted that they had heard from the previous year's students about their experience at the police mortuary (9 participants), therefore they came with some preconceptions or expectations based on what had gone before. Some felt strongly that they would have preferred to be around the dissecting table for at least one of the cases (5 participants) others wouldn't have minded the opportunity but were not completely convinced (2 participants) whereas the rest were grateful for the solid glass partition they sat behind and would not have preferred to be next to the table (3 participants). This finding leads me to suggest that students should be allowed to have a turn observing the autopsy from around the table on a voluntary basis. This would obviously depend on the facilities being used for demonstration and sufficient funds being available to provide protective clothing etc. However, my impression was that the participants felt strongly about this issue and the opportunity would be greatly appreciated if it could be accommodated.

Tutors are, of course, an important “part of the environment” for this particular learning experience. The variation in tutoring styles was brought up by Precious as affecting her experience of autopsies and this was supported by my observations. Some tutors provided a running commentary of the autopsy proceedings instead of actively engaging the students in discussion (Table 2 – Emotional and societal influences). This practice should obviously be discouraged as it would have similar limitations to traditional didactic lecturing.

To comment on another style of teaching during autopsies, Mawande said that he was rather intimidated by the roving microphone (referring to it as the “dreaded mike”!). Some tutors requested that the microphone be passed from student to student whilst asking a continual string of questions. This may have had the desired effect of keeping a larger group attentive to the content being covered, but it is not ideal and a smaller group of students where discussion takes place face to face would obviously be preferable if restructuring of student groupings is at all possible.

Thus the various environmental factors directly affect students’ experience of autopsies, either positively or negatively. Some of these factors can be controlled fairly easily by educators, programme co-ordinators and mortuary personnel, whereas others may be beyond control. Wherever possible, factors leading to negative attitudes should be eliminated as their consequences have a bearing on future practices regarding the use of autopsies by medical practitioners.

## **Students' objections, concerns and recommendations**

An intriguing concern expressed (3 participants) was one about a hypothetical situation where the body selected for autopsy might be known to someone in the class (Table 3 – Student recommendations). As the cases for autopsy demonstration are commonly yet unidentified by next of kin at the time, it is a real possibility. Precious and Nolitha reflected that it might be a family member of one of the students and even worse they might be unaware that the death had taken place, which is also quite possible as the cases are mostly trauma-related deaths in Forensic Medicine! As far as I am aware, this has not occurred in the past, but is certainly worth consideration as it would be a “shocking and traumatising” experience. Perhaps it would be advisable to prepare students by setting out a planned course of action to be followed if the situation does arise in the future.

None of the participants of this study had experienced after-effects of a severe or lasting nature such as inability to eat or sleep or had nightmares etc. as a result of viewing autopsies. Only Halima mentioned that after the 1<sup>st</sup> autopsy she “didn't take supper so well”. However, there was a reluctance to recommend compulsory viewing of autopsies out of concern for other students who might be psychologically vulnerable or overly squeamish (Sunitha, Precious and Deanne). Also the possibility that others may have religious objections contributed to the reluctance to say that autopsies should be compulsory (Masego and Bhavesh) although the participants themselves would definitely attend.

Those who did recommend that autopsies should be compulsory (4 participants) reasoned that it is an experience that all medical practitioners should have had, similar to another study (Conran et al., 1996) where a large majority of students were of the same opinion. Mawande was concerned that “students might not realise the importance of something till it's gone”. Even Deanne, reluctant to use the term ‘compulsory’ suggested that at least one

autopsy be mandatory to gain an appreciation of the procedure and be able to allay concerns that family members of a deceased patient might have. Similarly Benbow's article (1990) quotes several students saying that one autopsy should be a compulsory part of the course for the same reasons. However, in the same study, other students felt strongly that attendance should not be compulsory and one student put forward a balanced recommendation that "further autopsies should be encouraged (to see a wider selection) and easy to attend, but totally optional".

Between 3 or 4 cases were generally thought to be an adequate number of autopsies as long as the spectrum of trauma observed could be varied. Thinking about it at the interviews, some of the participants felt they would have attended more (Halima and Deanne).

Another point raised by Nolitha and Deanne was that students should be better prepared for the autopsy viewing experience. This opinion was also expressed by some of the medical educators participating in Burton's study (2003). Deanne used an example of viewing an autopsy on video beforehand, but perhaps some form of detailed explanation of what they should expect at autopsy is warranted.

When questioned about possible alternatives to autopsy demonstrations such as videos, virtual autopsies or computer images, it was clear that most students appreciated the immediacy of the learning experience (8 participants). Viewing an actual body being dissected in front of them had had an enormous impact and the visual and emotive nature of this would never be forgotten. They were quite emphatic in their response that absolutely no alternatives would be comparable or acceptable, which makes sense considering the covert learning outcomes discussed such as development of clinical detachment, empathy and respect.

Therefore I was slightly surprised that Prudence and Bhavesh were exceptions in that, while they were highly appreciative of the benefits to their learning from autopsies, they did not appear to appreciate the immediacy. They felt that viewing autopsies from behind a glass partition or on the television monitors might be the same as viewing a computer screen anywhere. Of course none of the students had experienced a virtual alternative and therefore the comparison had to be made based on their imagination which might explain the difference of opinions.

Thus, the findings of the study provided insight into the ways in which students learn from viewing autopsies and showed that their experiences varied considerably depending on their socialisation. Their recommendations regarding how autopsy demonstrations should be carried out also varied, however, it was clear that they appreciated the usefulness of autopsies to their cognitive learning and affective development.



## ***Chapter Six – Conclusions and Recommendations***

In this final chapter, the main conclusions drawn from the study are briefly stated. How have the findings addressed the original research questions? What is the significance of these findings to curriculum organisers and medical educators within this institution and elsewhere? Some suggestions pertaining to curriculum development and further research have been included.

I believe that this study has indeed gone a long way to answering the research questions posed and provided that deeper understanding of how students experience autopsies which I sought. Bearing in mind the limitations discussed in Chapter Four – *Methodology*, this has been a productive way to “slice the cake” and gain insight into the topic.

### **Curriculum considerations**

There is no evidence to support the suspicion expressed by Rawlins (2003) that students’ interest in autopsies has been dwindling over the years, which may have been the case in the past. On the contrary, developing a population of medical students who take more responsibility for their own learning because of curriculum reforms of the current decade, is likely to increase interest in learning from autopsies.

This study shows conclusively that medical students perceive autopsy demonstrations to be of considerable benefit to their learning - both cognitive and affective. The expense and inconvenience of organising autopsy demonstrations should be weighed up against the explicit and covert learning outcomes that have been highlighted by students, especially those outcomes pertaining to their future medical practice. Wherever the prevailing context permits the use of autopsies for teaching, for example, suitable mortuary facilities being available, adequate staff and funds, legal recourse, etc. medical

students are likely to appreciate the learning experience. The fact that forensic or coronial autopsies may provide an alternate source of cases, where hospital autopsies have become redundant, should also be considered. Curriculum organisers would therefore be well advised to keep autopsies in undergraduate medical education programmes where they are currently being utilised. Alternatives to the autopsy should be considered only if there are insurmountable difficulties to providing this learning opportunity, such as prohibitive legislation (Hunt et al., 1997; O'Grady, 2003).

Although recent studies have shown that prior learning experiences such as Anatomy dissecting hall experience and autopsies in Anatomical Pathology prepare students for autopsies in Forensic Medicine, such experiences have also been marginalised in reformed curricula. As pointed out previously, the cohort of students of my study had not encountered autopsies as part of their Pathology teaching and was not involved in the dissection of cadavers in Anatomy.

#### Autopsy-based teaching

Where autopsy demonstrations exist in medical curricula, but are underutilised in terms of what they can teach, adjustments may have to be made to ensure that teaching is relevant. Aims and objectives of the demonstrations need to be communicated to students clearly. Teaching should ideally be integrated with learning outcomes of related disciplines such as Anatomy and Anatomical Pathology in order to maximise the benefits to students.

Cognitive benefits to learning Anatomy seemed to be considered paramount by the students, whilst it was not the primary aim of educators in this setting. Although certain aspects of Anatomy were incorporated, the focus was teaching Forensic Medicine and trauma-related pathology. Therefore, particularly if dissecting hall experience in previous years has not included dissection of a cadaver, the opportunity presented by autopsies should be

better utilised for gaining Anatomy knowledge and for revision thereof. The autopsy does present an opportunity for interdisciplinary teaching, which is a thrust of the new curriculum. Alternatively, the content could be covered by forensic pathologists as an added component possibly at the first autopsy as discussed in the previous chapter (because students felt they were unable to concentrate on anything but the prosection at their 1<sup>st</sup> autopsy viewing).

There were distinct benefits described by students to their understanding of trauma pathology and mechanisms of death. They further recognised that these had implications to future medical practice, even when confronted with live patients who present with traumatic injury. This confirms that autopsies were in fact useful for the purpose for which they were intended. In addition, perhaps educators should explain the extrapolated benefits of autopsies in more detail because future medical practice was demonstrated to be a weighty motivation in this whole learning experience.

A variety of cases is something that is currently aimed for and is achievable in this context. However, where trauma and violence related deaths are not as common as in South Africa, I would suggest that any cases available for autopsy demonstration should be used, perhaps in conjunction with computer-based images depicting a range of traumatic injuries prior to the actual autopsy. This suggestion is made in light of the students identifying the process of correlation with lectures (which included PowerPoint presentations with images) as being important to their learning.

#### Hidden curriculum

Educators should be aware that, apart from the factual medical knowledge and protocols they teach intentionally, a variety of hidden curricular elements may be operating beneath the surface leading to either positive or negative affective outcomes. The study reveals that these elements are likely to be different for individual students depending on their backgrounds as discussed in the

previous chapter. Many of these factors shown to have an effect on covert learning are beyond the control of the educators e.g. prior learning (including life experience), cultural / religious beliefs, conceptualisations of learning, interests and psychological predispositions etc. However, an awareness of the complex interplay of emotions described as associated with the autopsy learning experience may be advantageous to influence attitudes of students whilst they are being formed.

Some of the 'causal conditions' may be controlled by educators, for example:

- incorporating previous preparatory learning experiences within the curriculum
- specifically preparing students for autopsies - prior explanation of the autopsy procedure and making explicit the various uses of autopsies both for education and medical practice
- employing effective communication and interactive teaching methods during demonstrations
- avoiding a display of attitudes and practices which may appear callous or disrespectful. A recent study on teaching professional attitudes within UK medical schools (Stephenson, Adshead, & Higgs, 2006) showed consensus that the greatest threat to professional behaviour came from teachers and other staff modeling poor attitudes and inappropriate behaviour
- encouraging reflection aimed at producing doctors who will treat their patients (and family members) with empathy and respect.

This study re-affirms that environmental factors and the manner in which autopsies are conducted play an important role in students' perceptions of autopsy (Benbow, 1990; Tazelaar et al., 1987). Therefore these elements should be monitored and controlled wherever it is feasible to do so, in order to positively influence attitudes of future practitioners towards autopsies.

### Suggestions for further research

The limited number of participants in this qualitative study did not show any of the negative reactions to autopsies that a small percentage of the class might experience. Such reputed reactions could turn out to be a myth or be confirmed as a genuine disadvantage to the use of autopsies. As the approach to this study sought depth and richness of responses rather than numbers of students who expressed a particular opinion, a quantitative study illuminated by the findings of this study may elicit that type of information.

Qualitative studies in medical schools from various contexts would help to clarify some of the interpretations made from this study, especially relating to factors affecting covert learning outcomes and students' affective development from autopsies. Further research is required to assess the appropriate number of autopsies, and the time and place at which they are best integrated into the curriculum. Possible supplementation with structured introductory and reflection sessions also needs to be evaluated.

As suggested by Burton (2003), each institution needs to weigh up the benefits of autopsy-based teaching against its negative aspects within the context of its own curriculum. The study provides evidence for such decisions that need to be made at this institution and might be transferred accordingly to contexts with similar characteristics. The main findings were that medical students still perceive autopsies as essential even in the context of self-directed learning. They identified a better understanding of anatomy and traumatology as the main cognitive benefits. At an emotional level they felt they had developed a degree of clinical detachment and would be better equipped to deal with issues surrounding death. Whilst socialisation did influence students' feelings about the autopsy, this did not detract from their appreciation of the educational value of the experience.

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**INFORMATION DOCUMENT**

**Study title: Students' perspectives regarding the value of medico-legal autopsy demonstrations as a learning experience at a South African Medical School**

Dear 4<sup>th</sup> year Student

The autopsy, according to several reports in the literature, has an important role in medical education. Most medical educators perceive the autopsy as "having a multifactorial role in providing the doctors of tomorrow with the appropriate knowledge and attitudes needed for the practice of medicine in the 21st Century".

And yet, apparently, many medical students around the world now graduate without ever witnessing an autopsy [for various reasons].

Certainly in this Department of Forensic Medicine, your teachers consider the autopsy demonstrations to be indispensable from the Undergraduate Curriculum. However, in my 17years experience as Student Co-ordinator, I have seen many changes to the manner in which students are expected to view/attend these autopsy demonstrations.

There are not many studies that report on student perceptions as to the value of autopsy demonstrations. Hence, I have embarked on this study to explore your views on the matter.

**Invitation to participate:**

You are hereby invited to participate in a research project by providing feedback about the autopsy demonstrations you attended. The results of the study will be reported as a dissertation towards an M.Ed in Higher Education in 2007.

**What is involved in the study:**

I will need to interview you one on one for a maximum of 30min. Please take this time to reflect on your learning experience and respond to the questions as fully as you are able. With your permission the interview will be tape recorded. Tapes will be stored securely for a period of 5yrs as stipulated in the University research rules.

No particular risks are associated with this study as it is an evaluation of what is already part of the curriculum.

Although there are no direct benefits to yourself, I hope that this exercise will help you to come to terms with your own thoughts and feelings on the subject and it is an opportunity to voice your opinions. It is further envisaged that your responses will have a significant influence on the way in which autopsies are demonstrated at this institution in the future.

**Participation is voluntary** and you may discontinue your participation at any time i.e. if you find you do not wish to answer any question asked of you, you are in no way obliged to do so.

**Reimbursements:** None

**Confidentiality:**

Information obtained will be collated and reported in ways that do not link specific persons with particular information; however, if the results are published it may lead to cohort identification.

**Contact details of researcher:**

**Mrs Lakshini McNamee** Tel: 031 260 4538 E-mail: [mcnameel@ukzn.ac.za](mailto:mcnameel@ukzn.ac.za)

**Contact details of Project Supervisor:**

**Mrs Frances O'Brien** Tel: 031 260 2291 E-mail: [obrien@ukzn.ac.za](mailto:obrien@ukzn.ac.za)

**Contact details of Ethical Clearance Office (Human and Social Sciences):**

**Ms Phumelele Ximba** Tel: 031 260 3587 Email: [ximbap@ukzn.ac.za](mailto:ximbap@ukzn.ac.za)



**Appendix B (a) - Invitation to participate [original]**

Dear Student

Please see the attached information sheet regarding a study I am doing on autopsy demonstrations as a learning experience.

Basically, I need you to come and talk to me at my Med School office [Room 284] as soon as you can make some time available [ $\pm 15 - 20$  min]. This would be once you have completed your stipulated 4 PM demonstrations, but before the end of the block. I will ask you a few questions to find out how you felt, what you learned from the demonstrations and what you found useful or not useful etc. Also any suggestions you may have for future curriculum design would be welcomed.

Unfortunately I cannot offer you any money for your participation, but will definitely offer you a cup of coffee / tea / juice! Please reply to this e-mail and let me know if you are willing to participate in the study. Also I would appreciate it if you would identify yourself to me at your final PM demonstration or soon afterwards to make a mutually suitable appointment.

Thank you.

Kind Regards  
Lakshini

**Appendix B (b) - [follow up e-mail]**

Dear [First Name]

You are part of my initial selection of students to interview for the study described in my previous message [copy below].

I need to know urgently if I may count on you or not? I'll even throw in biscuits with the tea/coffee/juice?

Seriously, if you really don't want to participate, I have to invite another student instead and time is of the essence, so please let me know.

Kind Regards  
Lakshini

## **Interview Schedule (semi-structured)**

### **Introduction:**

- Thank participant for agreeing to be interviewed
- Confirm purpose of the study
- Obtain permission to tape-record the interview, explain what will be done with the tapes
- Confirm anonymity and that participation is voluntary, free to withdraw at any stage or not to answer every question

### **Context and background of participant:**

*Record during interview*

<b>Age</b>	15-20yr	20-25yr	25-30yr	over 30yr
<b>Race group</b>	Black	Asian	White	Coloured
<b>Gender</b>	Male	Female		

### **Educational value derived by the student:**

Did you feel you benefited in any way from attending the autopsy demonstrations? - In what ways?

Probes:

- What did you learn from the experience? How were the autopsies helpful to your learning? (encourage reflection into how the participant achieved the learning outcomes mentioned)
- Apart from actual knowledge you gained, do you think there were any other benefits to you personally? [familiarisation with dead body, better prepared to cope with seeing traumatic injuries in live patients, better prepared to deal with deceased patient and their loved ones] – i.e. relate to participant's development as a professional

### **Experience of demonstration:**

What were the demonstrations like for you?

Probes:

- What did you feel when you had to attend your first autopsy demonstration? (beforehand, during the autopsy procedure, afterwards?)
- How did you feel when attending subsequent autopsies?

### **Factors affecting their experience:**

What do you think made the demonstration of benefit / no benefit to you? [depending on description used in response to the first question]

Probes:

- What previous experiences, if any, have you had that perhaps prepared you for the autopsy demonstrations in Forensic Medicine? – i.e. helped you to cope emotionally? (probe towards previous learning experiences e.g. anatomy dissections and anatomical pathology if necessary)
- Did your beliefs have any bearing on your emotions when attending autopsies? - what religion or belief system do you belong to? – relate to participant's beliefs concerning what happens to a person at death
- Have you had any previous experiences of trauma / death of a friend or family member? – did these have an effect on your feelings during the demonstration?
- Were there any other general things that might have affected your experience?

Probes: - physical conditions (room temperature, seating, auditory arrangements), state of mind at the time, attitude to Forensic Medicine, content discussed, demonstrator, other students etc.

### **Conclusions/Recommendations**

- Do autopsy demonstrations have a role in teaching medical students?
- Do you have any objections to autopsy demonstration as a teaching tool?
- Could autopsy demonstrations be replaced by any other teaching tool? (probe with some examples if necessary - videos of virtual autopsies, computer images, museum specimens)
- In your opinion should autopsy demonstrations be mandatory/optional for medical students?

## Observation Record

<b>Class &amp; Group:</b>	
<b>No. of students:</b>	
<b>Tutor in attendance:</b>	
<b>Autopsy conducted by:</b>	
<b>Case demonstrated:</b>	
<b>Date:</b>	

Record reactions of students in the form of:

Criteria	Frequency				
	1	2	3	4	5
expressions of nervousness					
expressions of interest					
expressions of fear					
expressions of fascination					
expressions of distaste					
expressions of shock					
making jokes					
laughter					

Record involvement of students during the autopsy procedure:

Criteria	Frequency				
	1	2	3	4	5
students observe attentively					
students listen attentively					
students ask questions during autopsy demonstration					
students ask questions at the end of the autopsy demonstration					

<b>1</b>	not at all
<b>2</b>	some students some of the time
<b>3</b>	some students often
<b>4</b>	most students some of the time
<b>5</b>	most students often

### Narrative:

Record any comments made by the students about the learning experience immediately following the autopsy demonstration either to the tutor or the student co-ordinator.



RESEARCH OFFICE (GOVAN MBEKI CENTRE)  
WESTVILLE CAMPUS  
TELEPHONE NO.: 031 – 2603587  
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29 JUNE 2006

**MRS. LS MCNAMEE (205527660)**  
EDUCATION

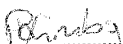
Dear Mrs. McNamee

**ETHICAL CLEARANCE APPROVAL NUMBER : HSS/06178A**

I wish to confirm that ethical clearance has been granted for the following project:

“Students’ perspective regarding the value of medico-legal autopsy demonstrations as a learning experience at a South African medical school”

Yours faithfully

  
.....  
MS. PHUMELELE XIMBA  
RESEARCH OFFICE

PS: The following general condition is applicable to all projects that have been granted ethical clearance:

THE RELEVANT AUTHORITIES SHOULD BE CONTACTED IN ORDER TO OBTAIN THE NECESSARY APPROVAL SHOULD THE RESEARCH INVOLVE UTILIZATION OF SPACE AND/OR FACILITIES AT OTHER INSTITUTIONS/ORGANISATIONS. WHERE QUESTIONNAIRES ARE USED IN THE PROJECT, THE RESEARCHER SHOULD ENSURE THAT THE QUESTIONNAIRE INCLUDES A SECTION AT THE END WHICH SHOULD BE COMPLETED BY THE PARTICIPANT (PRIOR TO THE COMPLETION OF THE QUESTIONNAIRE) INDICATING THAT HE/SHE WAS INFORMED OF THE NATURE AND PURPOSE OF THE PROJECT AND THAT THE INFORMATION GIVEN WILL BE KEPT CONFIDENTIAL.

cc. Faculty Research Office (Derek Buchler)  
cc. Supervisor (Frances O'Brien)

2006-07-06