

https://dspace.org/

Approaches to learning adopted by students in the Graduate Entry Medical Programme at the University of the Witwatersrand

Manning, Dianne Mary

2008-06-19T11:48:56Z
http://hdl.handle.net/10539/4965

Downloaded from a DSpace repository. https://dspace.org/

Chapter 1
INTRODUCTION

> "All theories of learning are based on fundamental assumptions about the person, the world, and their relations". Lave and Wenger (1991:45)

In 2003 the University of the Witwatersrand, Johannesburg introduced a new curriculum for the medical degree (MBBCh[1]). Known as the Graduate Entry Medical Programme, the new curriculum aimed to provide different opportunities for learning which would change the way in which medical students approach their learning and the type of knowledge they are able to build. The curriculum integrates content horizontally across disciplines within a single year of study as well as vertically across levels of study. The learning process is structured around medical problems which the students analyse in small groups facilitated by a staff member. This form of curricular structure is known as problem-based learning since learning should occur in response to the problems. These problems are deliberately designed to stimulate the students to identify gaps in their understanding and seek appropriate multidisciplinary knowledge to fill these gaps. Problem-based learning is intended to be constructivist, self-directed, collaborative and contextual (Dolmans *et al.*, 2005).

Formal or institution-based learning most commonly occurs in relation to some plan of intended learning which forms the basis of what can be regarded as a curriculum. Cornbleth (1990:12) emphasises that conceptions of what constitute a curriculum will "emerge from and enter into practice". It follows that the design logic of the planned curriculum will embody conceptions held by the designers regarding knowledge, learning and learners, which may or may not intersect with the conceptions held by the agents enacting that curriculum i.e. the students. When a curriculum such as the Graduate Entry Medical Programme (hereinafter GEMP) introduces new conceptions of knowledge and learning as well as of the practice of medicine, the conceptions of the students are likely to impact on the ways in which they respond to the opportunities for learning which the curriculum provides. This study explores the ways in which students have approached learning in the GEMP in relation to its design principles.

[1] MBBCh is the acronym used for the degree Bachelor of Medicine and Bachelor of Surgery

WitsETD

1.1 Background to the Research

1.1.1 International perspective

In the last three decades there has been a major shift in medical education locally and internationally as a result of changes in the field of medicine and health care as well as in medical education itself. Changes may be identified in five domains: patient awareness, curriculum content, clinical performance and competence, the learning process and access to learning.

Patient awareness

Consumerism has affected the delivery of health care, with patients beginning to see the medical practitioner as a service provider and demanding a different set of professional standards. Medical councils and faculties have responded to this by introducing a greater emphasis on social awareness into curricula. Furthermore, the range of alternative health practices available, many of which focus on the concept of holistic care, has highlighted the need for a more patient-centred approach. Patients can no longer be seen as "diseases" or "cases", but as individuals with personal lives, who are part of families and communities. There is a shift from cure to prevention, from disease to wellness, from healer to educator, from patient dependence to empowerment and responsibility. Medical education programmes have been obliged to find ways to accommodate this approach, while at the same time adapting to the rapid advances in medical science. Given the increased levels of patient awareness and access to information on the internet, doctors are also no longer the sole custodians of medical knowledge, but have to learn to accommodate patients who have researched their own symptoms even before entering the consulting room.

Curriculum content

Developments in medical science during the last 50 years have produced an exponential growth of knowledge. This proliferation of knowledge initially resulted in a factual overload in medical curricula as faculties struggled to ensure that their students were equipped with all the latest information (Barrows and Tamblyn, 1980; Des Marchais *et al.*, 1992). More recently, however, there has been a growing awareness that there is such a proliferation of information and that knowledge is developing at such a rapid rate that it is nearly impossible for students to learn everything that each of their super-specialties demand and moreover, much of what they are being taught at any moment in time is likely to be outdated or incomplete fairly rapidly (Noguchi *et al.*, 2002). Thus there is a growing recognition that it is

WitsETD

more important for students to master the principles of the various disciplines and to develop skills related to information retrieval and analysis. The need for students to develop the motivation and skills necessary for self-directed and lifelong learning, which will enable them to update their knowledge on a continuous basis, has been identified as an essential component of medical education (General Medical Council, 1983; WFME, 1983).

Clinical performance and competence

It is important that medical practitioners should not only know what to do, and be able to do it, but they should have insights into when and "how much" to do, while demonstrating appropriate and ethical attitudes to their patients, their fellow health care practitioners, the health care system and society in general. This requirement for professional practice is sometimes expressed as a triad of knowledge, skills and attitudes. The emphasis on clinical competence thus focuses on expertise in several different domains and the debates on how to ensure that students acquire such expertise are ongoing.

The learning process

New understanding and theories of learning from the fields of cognitive and educational psychology have found fertile soil in this environment. Medical educators have been prompted to start asking not only *what* should be taught but also *how* students should be learning. There has been a definite shift in emphasis from curriculum content to the learning process, with an associated interest in the form and quality of the instruction. During the 1960's and 70's innovative curricula using problem-based learning (hereinafter PBL) were originally introduced at a few pioneering medical schools in Canada, the Netherlands, the USA and Australia (Norman and Schmidt, 1992).

Access

Another key issue in medical education has been the challenge of opening access to social groups who have previously had limited access to medical schools. In an era of democratic and human rights awareness, access to medical faculties has become a political issue. Some countries (e.g. the Netherlands) have an open access ballot system; in the UK and USA performance at secondary school/and or in undergraduate tertiary study are paramount; in Australia and New Zealand places are reserved for underrepresented minorities and foreign fee-paying students

WiSETD

In response to the challenges described above, many universities worldwide, including South Africa, have introduced contemporary curricular innovations which have drawn on and adapted the original PBL models developed in the 1960's and 70's.

1.1.2 Local perspective

The eight South African universities which qualify medical doctors have responded to the international trends described above to greater or lesser extents. Several have introduced curricula with a predominant emphasis on PBL, while others are more "problem-oriented" with a lower level of integrated teaching and assessment. At the University of the Witwatersrand (hereinafter Wits) a new PBL curriculum was introduced in 2003. It was aimed at changing not only what and how the medical students learn, but how they are admitted. In South Africa most medical students have traditionally been selected directly from school and enter a five- or six-year degree programme. All South African universities are now are moving towards a student complement which reflects the local and national demographics. Democratisation of access thus raises issues related to preparedness for university in general and the PBL method in particular.

At Wits there are now two distinct routes of entry:

- Direct admission from school followed by two years of basic medical sciences (Physics, Chemistry, Biology, Anatomy, Physiology, Molecular Medicine)
- Admission with a prior degree and certain prerequisites (Physics, Chemistry, Biology).

The two groups are merged in a four-year Graduate Entry Medical Programme (hereinafter GEMP).

In keeping with the challenges to medical education described above, the programme is intended to produce graduates who are competent to:

- provide comprehensive patient care in a plurality of health and social contexts
- develop and deliver appropriate care beyond the immediate consultation and short-term management plan
- function effectively with regard to individual patients, different social and professional groups, health care and health promotion teams.

WitsETD

The first cohort of this new programme graduated from Wits with the MBBCh degree at the end of 2006. The time is thus opportune to explore the achievements and shortcomings of the programme in terms of its intended outcomes. The research reported here is confined to the first two years of the programme i.e. GEMP I and II and focuses specifically on the students' approaches to learning in these two years of the programme.

1.2 Aim of the Research

The aim of the research is to explore whether the approaches and strategies to learning adopted by the students in the Graduate Entry Medical Programme at the University of the Witwatersrand are compatible with assumptions made about problem-based learning in the Faculty of Health Sciences, and to identify the factors which may be constraining and enabling learning.

Research question

Central to the study is the following critical research question:

What approaches to learning do students adopt in the GEMP?

To address this, the main question may be broken down into several sub questions:

- What approaches to learning does the GEMP seek promote and why?
- What are the approaches that students adopt and how do they account for these approaches?
- To what extent does the design structure and logic of the GEMP promote the intended approaches to learning?
- What are the implications of these approaches for the learning outcomes in the GEMP?

1.3 Theoretical framework

The emphasis of the study is on understanding learning and, more specifically, understanding learning for the practice of medicine. Insights into different perspectives of learning may illuminate the approaches which students adopt to learning in a PBL curriculum. Historically, the original medical PBL curricula was informed by Dewey's concept of transformation through learning (Barrows, 1985), with strong links to Piagetian equilibration theory (Rowell, 1989). However, the role of the facilitator as a mediator in the

WitsETD

learning process may also be interpreted in terms of the learning which occurs in the Vygotskian zone of proximal development (Wertsch, 1984). Furthermore, since the learning is situated in a specific social context by means of which the students are able to develop competence and a professional identity, a perspective of participation in a community of practice, as described by Lave (1993) and Lave and Wenger (1991), should also be considered. This research draws on insights from these theories to develop a lens through which to analyse the students' approaches to learning in relation to the assumptions about learning made by the curriculum designers.

To understand the design logic of the curriculum it is also important to understand some of the deeper dynamics of the intended formal curriculum. From a broader perspective of the levels of power and control by which decisions relating to the curriculum objectives and structure are made, a Bernsteinian lens on curriculum structure (Bernstein, 1975) is valuable. Selection, sequence, pacing and criteria in the curriculum are interpreted in terms of the regulative and instructional discourse associated with classification and framing (teacher codes) and student participation in terms of recognition and realization rules (learner codes) (Bernstein, 1996).

The following chapter describes the design of the GEMP curriculum and the assumptions about the type of learning which the curriculum promotes.

WitsETD

Chapter 2

THE GEMP CURRICULUM

This chapter describes the aims of the curriculum, the curricular structure and organisation designed to promote these goals, and the assumptions about learning which are embedded in the curriculum.

2.1 Curriculum goals

The goals of the GEMP I and II curriculum were derived from decisions made by the MBBCh Curriculum Committee of the Faculty of Heath Sciences (1999):

- Reduce information overload and encourage an understanding of concepts, principles and underlying mechanisms
- Foster an integrated, holistic approach to patient care
- Promote basic and human science knowledge which is transferable to the clinical years (GEMP III and IV) and to clinical practice
- Provide earlier exposure to the clinical setting & skills development
- Increase student diversity
- Encourage responsible, self-directed, life-long learning
- Develop competence in the use of electronic media and information technology and skills in information retrieval, analysis and evaluation
- Promote appropriate learning through congruency between objectives, learning and assessment

2.2 Curriculum structure and organisation

2.2.1 Organisation of contents

The GEMP I and II curriculum forms a two-year continuum which is organised into 11 teaching blocks. The first block, Preliminary Concepts of Medical Science (PCMS), provides the graduate entry students with an introduction to Anatomy, Physiology and Molecular Medicine, after which all students receive a series of lectures and practicals which provide a framework for the disciplines Anatomical Pathology, Genetics, Immunology, Microbiology, Pharmacology, Biomedical Ethics, Research Methodology and Information Retrieval and Management. They are also introduced to the principles of PBL and small group process. The remaining 10 blocks use the PBL learning model. Block 2, Life on the Street, presents five medical cases which are important in the South African context i.e. malnutrition, HIV/AIDS, rape, infectious diseases and inherited genetic disorders. The

WISETD

remaining 9 blocks are based on the human body organ systems: Cardiovascular, Respiratory, Renal, Haematology, Endocrine, Gastrointestinal, Musculoskeletal, Reproductive and Neurosciences. The content of blocks 2 to 11 consists of four longitudinal themes running the two years: Basic and Clinical Sciences (e.g. Anatomy, Physiology, Pathology, Microbiology, Immunology, Genetics, Pharmacology) and three themes which emphasise the psychosocial elements of medical practice: the Patient-Doctor relationship (PD theme), the Community-Doctor relationship (CD theme) and Personal and Professional Development (PPD theme). The intended integration of the content of these four themes constitutes a biopsychosocial approach to patient care. The blocks are organised as a weekly series of medical cases which the students analyse in small-group PBL tutorials.

2.2.2 Rationale for the PBL process

The rationale for using problem-based learning in medical education has been well documented in the literature (see for example Barrows (1985); Barrows and Tamblyn, 1980; Schmidt, 1983; Schmidt, 1993). It was adopted as the learning model for the GEMP curriculum because it is believed to:

- Provide a contextualized learning situation which facilitates the transfer of information to new learning contexts.
- Activate the prior learning of the participants and thus facilitate their engagement with new information.
- Encourage the integration of a cross-disciplinary understanding of disease processes
- Promote elaboration, communication and socialisation by working in a safe, stimulating environment.
- Stimulate self-directed learning since students are encouraged to identify gaps in their understanding which they will seek to fill.

2.2.3 Learning opportunities

A number of different learning events are made available to students including:

- Small-group problem-based learning tutorials: three per week, two of which are facilitated and one of which (PBL 2) is not.
- A weekly “plenary session” with the week coordinator at which data related to the week’s problem is discussed.
- A maximum of six lectures per week.
- Laboratory-based practicals.

WitsETD

- "Theme Sessions" at which psycho-social topics relating to the doctor-patient relationship, community perspectives, ethics and information retrieval and analysis are presented.
- Printed and web-based "Learning Topics".
- References to relevant information in text books, journal articles and websites
- Clinical skills instruction.
- Visits to hospital wards where students examine and take simple histories from patients.
- Service learning activities at community centres.
- Visits to rural community health centres.
- Permanent and topic-specific museum displays.
- Online formative assessments.
- Self-reflective portfolio entries.

In order to limit the students' insecurity about what is expected from the Faculty perspective, a series of objectives is provided which are linked to the criterion-referenced assessments.

An outline of the PBL process as it rolls out in a typical week is shown in Figure 1 overleaf.

2.2.4 The PBL tutorials and facilitators

The PBL tutorials are facilitated by a Faculty staff member. The intention is that the facilitator scaffolds the learning by prompting, questioning and redirecting the discussion but does not teach. Their prime task is to help the students to identify the gaps in their understanding and to integrate the information brought to the discussion, while supporting the group process so that all students feel equally valued and have opportunities for participation. Some of the facilitators are clinically trained while others have a background in an allied medical discipline, medical science or education, but all the facilitators undergo a short training course in facilitation. At the start of each problem the facilitators attend a briefing session and receive a printed guide which outlines the key learning objectives, core content and resources for the week.

WitsETD

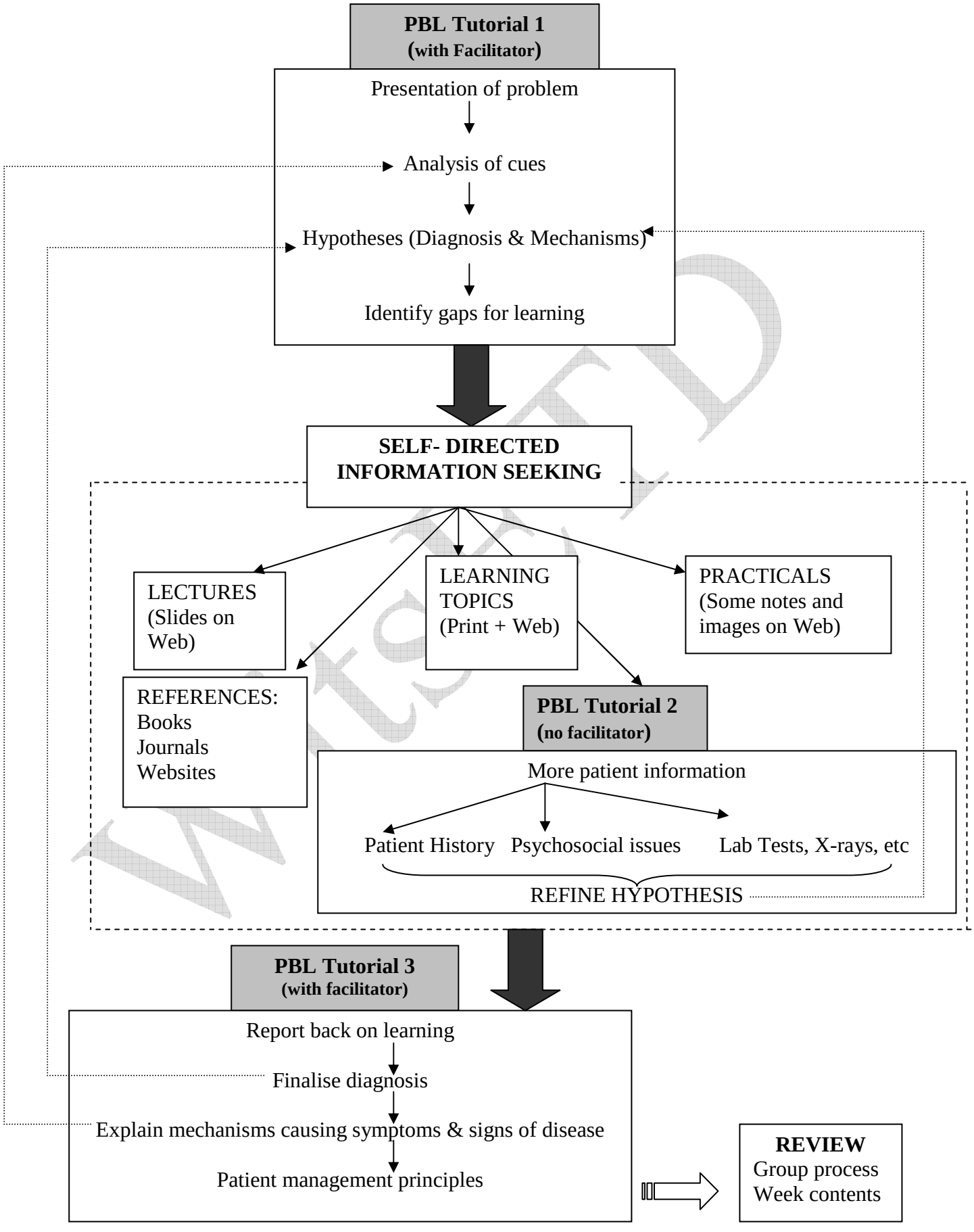


Figure 1: The PBL Process in the GEMP Curriculum

2.3 Assumptions about learning in the GEMP

The design of the GEMP curriculum was informed by the 1999 guidelines of the South African Medical and Dental Professional Board (now South African Health Professions Council) and was shaped by the Faculty in consultation with several international medical schools who had introduced PBL programmes.

The Faculty curriculum designers made certain assumptions about the knowledge, competence and student dispositions that the curriculum should promote. It was assumed that the students selected for the programme, particularly the graduates, would possess the maturity, motivation, resources and personal attributes to adopt a self-directed learning approach, making full use of the learning opportunities provided. The assumptions made about learning in the GEMP relate to the three key design principles of the GEMP: access to the study of medicine through graduate entry, the integrated structure of the curriculum, and the development of a self-directed approach to learning through the PBL process.

However, a planned or intended curriculum does not necessarily translate seamlessly into practice. Anecdotal reports from educators, students as well as information derived from assessments and preliminary course evaluations suggest that several design assumptions of the GEMP may not be working as intended.

- Not all students appear to participate actively in the PBL tutorials.
- Not all students appear to have engaged with the anticipated self-directed learning process. On the contrary, some appear to have become even more dependent on the course materials and show little inclination to access and evaluate additional resources.
- While some students are able to reproduce factual details in assessments, their grasp of important concepts and principles may be deficient.
- Of the first cohorts of students in GEMP III and IV, not all students showed the ability to transfer and apply certain GEMP I and II content and skills to real clinical settings.
- The failure rate, particularly of the graduate entrants, has been higher than anticipated. Given the pressures on all South African universities to improve “throughput rates”, this is an area which commands attention.

WiSER

It is important to note that some or all of these issues may have been shortcomings of the previous traditional “layered” curriculum and may not be specific to the new integrated curriculum. However, they are of concern here because they represent some of the issues the new curriculum was specifically introduced to address.

As established previously in Chapter 1, the aim of this study is to explore what approaches the students are adopting to learning in the GEMP in relation to the design assumptions of the curriculum. Based on this a questionnaire was developed and the next chapter describes the research methods used in the study to collect, analyse and interpret data related to the students’ approaches to learning.

WitsETD

Chapter 3
METHODOLOGY and RESEARCH METHODS

3.1 Nature of the research

The research was empirical in that it was based on gathering evidence to be interpreted within a stated framework. The approach may be described as an exploratory study, the aim of which was to explore the approaches students are taking to studying in the GEMP curriculum and to understand how they account for their approaches. Since it was important that the research was conducted in such a way that it produced data which would reflect the attitudes and practices of a wide spectrum of the participants and provide opportunities to gain an in-depth understanding of the processes occurring, a variety of research instruments was used. These included questionnaires, participant observation and focus group interviews.

3.2 Study population and sampling

The study population was the GEMP II class of 2006 and the data was collected between March and October of that year. This group was chosen as the students had completed at least a full year of study in the GEMP curriculum and could thus be expected to have developed fairly stable approaches and attitudes to studying. The research aimed to identify the attitudes and approaches which they had developed during the GEMP I and II phase of the curriculum. Three different forms of data collection were used. First, all students were invited to complete the anonymous questionnaire which provided a broad view of the approaches adopted by a large number of students. Second, a single PBL group was observed during two consecutive weeks of PBL tutorials to gain insights into the processes operating in the tutorials. Third, in order to gain a deeper understanding of the emergent issues which confirmed or contradicted the assumptions about the learning, focus group interviews were conducted with four groups of students chosen to represent the diversity of opinion which emerged from the questionnaire analysis and group process observations. The three research instruments were thus used to triangulate the data. Cohen *et al.* (2000:112) define triangulation as “the use of two or more methods of data collection in the study of some aspect of human behaviour”.

WitsETD

3.3 Research instruments

3.3.1 Questionnaire

Questionnaires are a widely-used and effective tool for collecting large amounts of structured, often numerical data (Wilson and McLean, 1994; cited in Cohen *et al.*, 2000:246*)* A questionnaire was designed which aimed to explore as widely as possible the GEMP students' approaches, attitudes and strategies for engaging in learning in the GEMP (see Student Questionnaire form, Appendix A). The questionnaire included questions on personal background, perceptions of the PBL tutorial process, the usefulness or otherwise of the various different resources provided by the programme, participation in self-directed and information seeking activities, strategies and selective learning for summative assessments and the factors other than academic that may be contributing to learning. A seven point Likert-like rating scale was used since respondents are often reluctant to select the extremes of a scale, effectively reducing a five point scale to three (Cohen *et al*., 2000:254). Possibilities for open-ended responses were included in all sections. The questionnaire was validated by two staff members involved in the GEMP and piloted with five GEMP III students.

Questions included in the biographical data section of the questionnaire were chosen primarily for insights into the profiles of the GEMP students admitted through the widening of access to medicine at Wits. Questions relating to age and their educational qualifications (i.e. whether they are matriculants[2] or graduate students) were seen as important if the study was to produce useful information on the assumptions about graduate students as mature and competent learners who could cope with the curriculum in spite of not having had the same basic science background as the matric entrants. Questions were included on sociocultural/race groups and self-perceptions of English language competence as these had previously been identified as possible factors impacting on the possibility of full participation in the PBL process. The questionnaire was also an opportunity for asking about family responsibility and constraints such as finances, accommodation and transport, although these were not regarded as key areas of interest in the present study but might become a useful source of information for informing future investigations.

[2] Matriculation is the South African school leaving qualification

WitsETD

The major focus of the questionnaire was on the attitudes, approaches and strategies adopted by the students in relation to the curriculum as a whole, as well as to the different learning opportunities offered by the curriculum. The questionnaire was aimed at establishing the extent to which students were able to develop deeper approaches to learning and integrate course content as intended by the curriculum design. The questions were intended to collect data which could lead to an understanding of the importance of the attitudes of the students and the role of the PBL facilitators in the students' engagement with the curriculum and opportunities for making meaning. Section 1 on the curriculum overall was primarily directed at a general understanding of students as self-motivated, responsible learners. Since the curriculum design had opened the frame of control over learning and deliberately left approximately 40% of the timetable free for information gathering, the questions were focussed on the individual use of the resources such as time, notes, websites, books, journals and faculty tutors.

The second section, on the PBL tutorials, was the most extensive because this is the core component of the curriculum and is intended to be an important driver of successful learning. The questions in this section covered the individual student's role in the PBL process, perceptions of the usefulness of each of the three PBL tutorials in the week, and ability to use the tutorials as a means towards integrating and understanding. Drawing from the literature on the importance of the social context of learning and the facilitator as a mediator of the group's progress, several questions were directed at perceptions of the social environment of the PBL group and the role of the facilitator.

Sections three, four and five questioned the participation in and perceived usefulness of the three key methods for delivering core course content, the Learning Topics, Lectures and Theme Sessions. Section 6 was aimed at obtaining information on the strategies students used in learning for assessments. For the learning in an integrated curriculum to be aligned with its assessment, the assessment should require an integrated understanding of the various different constituent disciplines. The assessments in GEMP I and II, which include questions from each of a number of different basic, clinical and human science disciplines, with no discipline-based sub-minima, represents a major departure from the independent discipline-specific assessments of the previous curriculum. There were concerns in the Faculty (and anecdotal reports that these fears were being realised) that students were able to ignore certain disciplines such as Pathology and Pharmacology and still pass the integrated

WitsETD

assessments and the course overall. The questions on assessment thus specifically addressed students' general as well as discipline-based learning strategies.

3.3.2 PBL group observation

The observation of PBL tutorial sessions was aimed at adding to the questionnaire data by gathering direct information on how the students were engaging with the intended process of knowledge building through participation in PBL discussions as well as on the role of the PBL facilitator as a scaffolder of that learning. According to Cohen *et al*. (2000:305), observational data are useful because they provide first hand 'live' data from 'live' situations. A simple coding framework was established for recording data during the observation. De Grave *et al*. (2001) and Visschers-Pleijers *et al*. (2004) provide useful models for recording and coding the group activity in the PBL process. Since the scope of this study did not permit extensive analysis of the observation data, the coding was limited to an indication of whether each contribution of a student was offered freely or elicited in response to an intervention made by the facilitator. The observation was semi-structured in that the researcher had a preconceived idea of what sort of activity was likely to occur e.g. questioning, reasoning, and conflicting episodes, elaboration and constructions. However, the researcher was open to noting and recording what De Grave *et al*. (2001) might refer to as unexpected and critical incidents. The most noteworthy observation, and one that differed from the information derived from the questionnaires, was the extent to which certain students tended to participate in the discussion only when expressly prompted by the facilitator. An observation that was supported by the questionnaire was the extent to which the students relied on the facilitator, who was a medical practitioner, to explain issues they might not have understood and relate the discussion to the practice of clinical medicine. These observations were useful for framing some of the questions for the focus group discussions.

3.3.3 Focus group interviews

After analysis of the completed questionnaires and PBL group observation a number of issues presented themselves as interesting and/or surprising and worthy of deeper investigation. A noteworthy example here is that of the Afrikaans language students whose questionnaire responses indicated a particularly responsible and self-motivated approach to learning and informed the decision to invite them to an interview as a separate group. Through semi-structured focus group interviews the information derived from the

WiSER

questionnaire and observations could be clarified, interpreted, simplified and expanded upon. Morgan (1993) suggests that feelings, attitudes and perceptions may be elaborated on and the synergy of the group interaction provides opportunities for generating valuable data. Focus groups provide valuable opportunities for gaining access to the student "voice", or discovering not only what is occurring but why (Barbour, 2005). However, Barbour cautions that in using focus groups it is important never to lose sight of the importance of the context within which the group is conducted and the possible impact of culture on the group's effectiveness.

3.4 Data collection

3.4.1 Questionnaires

The questionnaires were distributed to all students in GEMP II during the Musculoskeletal block of 2006. This is the seventh block of the programme and the second teaching block in that year of study, beginning in mid February and lasting for 6 weeks. Students were informed by the researcher in advance of the purpose of the research and asked for their cooperation but it was stressed that participation was voluntary and neither inclusion nor exclusion would result in any benefit or disadvantage (see Ethical considerations below). A pack of questionnaires was compiled for each PBL group and placed in an unsealed envelope to which a tag with the group number was attached. Facilitators were asked to distribute the packs to their groups and a group representative was asked to collect the completed questionnaires, seal them in the envelope and place them in a marked box in the administration area of the GEMP learning centre. An administrator was then asked to remove the tags and deliver the envelopes to the researcher. In this way the researcher had no way of identifying either individual respondents or the groups to which respondents belonged. The administrator was asked to check the removed tags to see if all groups had submitted an envelope. When a few were found to be outstanding the students were asked by means of the electronic notice board to return their envelopes if they still intended responding.

In total 124 of the 207 questionnaires distributed (60%) were returned. The biographical data was used to calculate the percentage of each group in the class who returned the questionnaire. These are shown in Table 1 below. This information was necessary to establish whether the questionnaire responses from a particular group could be regarded as representative of that group in the whole population i.e. the GEMP II class. Those groups

WitsETD

with a response rate of less than 60% were thus underrepresented and those with a response rate of greater than 60% were overrepresented.

Table 1: Questionnaire Returns

Group	Number in class	Number of questionnaires	% Response
Black	63	35	56
Indian	57	25	44
White	87	55	63
Graduates	64	52	81
Matric entrants	143	70	49
Black graduates	18	16	89
Indian graduates	10	6	60
White graduates	36	28	78
Black matric entrants	45	19	42
Indian matric entrants	47	19	40
White matric entrants	51	27	53

3.4.2 PBL group observations

The observations of the PBL process took place shortly after the questionnaires were distributed and returned. They took place during weeks four and five of the Gastrointestinal system block. Although it was originally intended that two different groups would be observed, it is not possible for a single researcher to observe two different groups discussing the same case, since all groups meet simultaneously and it was suggested that differences in the nature of the discussion in two groups might be a result of the different content of the week. Therefore it was decided to observe the same group on two different problems, firstly to minimize the effect of the problem content on the group interaction, and secondly to minimise the effect of having an observer in the tutorial. It was felt that by the second week the group would be more comfortable with the "intruder" in their midst. The same group was thus observed in PBL tutorials 1 and 3 of successive weeks i.e. on four different occasions. This group was chosen randomly from the 30 groups of the GEMP II class in that a facilitator who was comfortable with the idea of being observed asked his group if they were prepared to participate. In this sense the group was chosen randomly since the

WitsETD

researcher did not know beforehand who the members of this group were. The PBL groups are constituted in such a way as to create the greatest diversity possible: there is representation of gender, ethnicity, graduate and matric entry and repeating students in each group. At the start of the session the researcher thanked the participants, explained the importance of the research and the use to which the data would be put. The students and the facilitator all signed a form giving their informed consent to the researcher to conduct the study.

The purpose of the observation was to gain a better understanding of the group dynamics i.e. how the students interacted with one another and the facilitator, what sort of contributions they made and whether they were spontaneous or elicited by the facilitator, and how the facilitator guided and scaffolded the learning. An important aspect of the observation related to the sociocultural nature of the group behaviour – whether the graduates and matric entrants, the different language groups and racial groups participated equally and how the facilitator and group members appeared to value each others contributions.

3.4.3 Focus group interviews

Four focus group interviews were conducted. These were only arranged once a preliminary analysis of the questionnaire had been completed, which helped identify emergent themes, surprises and areas that required clarification. The groups were constituted to be comprised of students who represented some of the characteristics which were of particular interest. These were:

Group 1: Matric entrants
Group 2: Graduate entrants
Group 3: Repeating students
Group 4: Students whose home language was Afrikaans

Since the questionnaire respondents had identified themselves as graduates or matric entrants and supplied their racial affiliation and home language, the responses of the students in these groups could be triangulated with the questionnaire data. The questionnaire did not identify repeating students so triangulation was not possible but this group was of interest to establish whether they may have changed their learning approaches as a result of repeating a year. It had been intended to have a fifth group, namely students whose home language was an African language, but all of the students selected for this focus group declined to attend. Nevertheless, there were African language students represented in Groups 1, 2 and 3. The

WitsETD

questions used in the focus group interviews are given in Appendix B. They were directed at the students' use of unscheduled curriculum time, strategies for learning, including the use of objectives, strategic selection of content, participation and experiences in PBL group process, the importance of language and sociocultural identity, and approaches to learning, including how these may have changed through studying in the GEMP.

The participants for the focus group discussions were selected by identifying the class members who met the specific criterion for each group, listing them alphabetically and using a random number table to select 10 members for each group. All selected members were contacted and requested to attend but assured that there was no advantage or disadvantage associated with participation. They were informed that the participants would not be identified in the research report, and that the anonymity of any statements they made during the interview would be assured. However, since the researcher could not guarantee that the statements made during the interview would not be made public by other participants present in the same interview, the participants were all urged to respect the confidentiality of each others' contributions. The interviews took place during the last block of GEMO II i.e. the Neurosciences block. They were audio recorded with the groups' permission and transcribed for analysis. All participants signed the informed consent form.

3.5 Data analysis

The questionnaires were analysed quantitatively to identify frequencies and trends. Since the research was intended to be essentially qualitative, no rigorous statistical analysis was undertaken, particularly since rating scales produce ordinal and not interval variables and may thus not be subjected to parametric analyses such as ANOVA (Jamieson, 2004:1217). Jamieson also warns against the use of mean scores in rating scales ("the mean of Fair and Good is not Fair-and-a- half"). The intention of the research was more to understand the underlying factors related to the approaches students adopted than it was to quantify the statistical differences between comparable groups e.g. graduates and matric entrants or students with different home languages. One approach to quantifying rating scale data is to conflate the total number of "agree" statements and the total number of "disagree" statements. This can also produce misleading information since the conflation of the three levels then gives no indication of the strength of the feelings in either direction. Thus, while remaining cognizant of the fact that a mean for an item for either the whole class or a specific subgroup within the class is not an exact measure of that parameter, means for items

WitsETD

were found to be a useful way of identifying overall patterns of response and variations between groups on a particular question as well as between questions for the whole class.

Preliminary analysis of the data showed that there were apparent differences between some of the student variables on some of the questions. All questions were thus analysed according to the predominant race groups (Black, Indian, White), entry point (Graduate or Matric), age group (20-25, 26-30 and 30-plus) and major home language groups (English, Afrikaans and all African languages). Some of these categories served as controls for each other – for example similar results could be expected for the graduate and older student groups, and for Black students and African language groups.

The group observations and focus group interviews were transcribed and coded according to the types of interactions occurring and information produced. Analysis and reduction were used to reveal patterns from which conclusions could be drawn. The method described by Huberman and Miles (1994) suggests that data should be analysed as it is collected and conclusions fed back to inform the subsequent observations and interviews. In this case the data from the questionnaire and group observations were used to inform the focus group questions and interpretations. The interactive data analysis model of Miles and Huberman (1984:23) explains how data reduction, data display and conclusion drawing and verification may occur before, during and after data collection.

3.6 Ethical considerations

Soltis (1990:247) outlines the major ethical principles in qualitative research as honesty, justice and respect for those who are participating. Strauss and Corbin (1984) emphasise the ethical obligation of the researcher to the actors/participants to "tell their stories/give them voice", albeit in the context of the interpretation as well as to society to develop theory with practical application which is relevant to policy makers and the wider society. The code of ethics of the University of the Witwatersrand for research on human subjects in the Faculty of Health Sciences was upheld and ethics clearance was obtained before collecting data (Ethics clearance number M060229).

The rights and welfare of the participants were the researcher's primary concerns and their written, informed consent was obtained. They were each given an individual letter explaining the aims and purpose of the research and that their involvement should be

WitsETD

completely voluntary and that withdrawal at any time would not have any repercussions. Furthermore, there would be no positive or negative implications for them, irrespective of whether they chose to participate or not. Questions were not embarrassing and permission was obtained before the use of audio recorders. All results would be confidential and the anonymity of the participants would be maintained in the report. If necessary, aliases and disguises would be used to protect the identities of individuals.

The ethical implications of the researcher's involvement were also carefully considered. Although I do not teach the participant students or mark their assessments, I am the coordinator of the GEMP II course and as such am involved in arranging the examinations and coordinating the mark compilation. The students were assured of my impartiality and that participation could not influence their academic results in any way.

3.7 Validity and Reliability

Unlike quantitative research in which validity is largely determined by means of control groups, randomised sampling and statistical analysis of data, in qualitative research there are no specific objective measures by which the validity may be expressed (Maxwell, 1996:88). The validity of qualitative research is established on the basis of ensuring that there is evidence of trustworthiness and authenticity in the research design, data collection and interpretation. Maxwell (*Ibid*: 89-90) proposes five categories of understanding and validity. The research took cognizance of these as follows:

Descriptive (accuracy of an account): the interviews were recorded and transcribed; detailed notes were taken in the group observations.
Interpretive (inference and interpretation): interpretations of comments in the focus groups were fed back to participants for confirmation.
Theoretical (explanations of events): interpretations were discussed with colleagues;
Generalisability (systematic extension to new settings): the outcomes cannot be generalised to other universities, but care was taken in generalising from the groups studied to the whole class only if results were consistent between all the groups studied;
Evaluative: evaluative frameworks, for example in coding data, are made explicit.

Merriam (1995) regards internal validity as an important component of qualitative research, to ensure that "we really are observing or measuring what we think we are". One of the

WitsETD

suggested methods for securing trustworthiness in qualitative research suggested by Merriam is triangulation. Cohen *et al.* (2000:112) define several different modalities of triangulation according to differences in time, space, and levels of participants, theories and investigators (*Ibid*: 113). The current research was triangulated according to method (observations, interviews and questionnaires), and time (similar data was collected at several different times during the investigation period).

Reliability (i.e. replicability of findings) is not usually possible in qualitative research since the research is usually related to specific events in specific circumstances. Cohen *et al. (*2000*:*120*)* regard dependability as its equivalent, and Lincoln and Guba (1985:289) advocate 'audit trails' to ensure that the results are consistent with the data. Consistency was maintained in the way in which the research was conducted e.g. the four PBL session observed were recorded and evaluated in the same way, all questionnaires were analysed in the same way and as far as was possible all focus group interviews were conducted in the same way, under the same conditions and using the same set of semi-structured questions. The data collection, analysis and interpretation represent a clear 'audit trail' by which the authenticity of the findings may be evaluated if necessary.

3.8 Thematic analysis

The recorded data were coded according to the content of the responses and the dominant emergent themes were identified as the issues which were mentioned most frequently and were of interest in relation to the assumptions made about learning in the GEMP curriculum. The emergent themes were thus related to the design logic of the GEMP and more specifically to the assumptions made about the learning which it would promote. To make sense of the content within each theme a tree diagram was created to conceptualise the relationships between the constituent parameters and sub-themes of each theme.

The research findings will be interpreted in relation to key debates in the literature on curriculum, learning in general and learning in medical education. The following chapter presents a review of the literature in these areas, which may be useful for illuminating the findings of the study.

WitsETD

Chapter 4
LITERATURE REVIEW

The aim of this study is to gain insights into the approaches and strategies for learning which students are adopting in the GEMP. The study therefore focuses on an aspect of the relationship between the intended and the actual learning. The research, research methods, analysis and interpretation of the findings will thus be positioned in relation to the assumptions that the curriculum design makes about the students and their intended learning and the learning processes involved. This chapter develops an account of the key debates in the relevant literature, which provide insights into these areas as they relate to the learning that is made possible by the GEMP curriculum. It will develop a historical account of the GEMP in order to debate its key design features, and presents a lens through which to analyse the logic and implications of the GEMP design for shaping students' approaches to learning in the GEMP. However, the approach taken here is a methodological move, and is not intended to imply that the curriculum designers were necessarily aware of all the learning theories and underlying logic which shaped the curriculum.

4.1 The Concept of Curriculum

A working definition of 'curriculum' is a useful starting point from which to analyse some of the debates in this field. Bernstein (1975:85) suggests that formal education consists of three intersecting message systems: curriculum, which defines what counts as valid knowledge (i.e. content), pedagogy, which defines what counts as the valid transmission of that knowledge, and evaluation, which defines what counts as the valid realisation of that knowledge by the student. These message systems are features of both the planned as well as the enacted curriculum. Bernstein (1996) argues further that any curriculum is shaped by "distributive rules" (*who* may learn, i.e. the students), "recontextualisation rules" (*what* discourse is made available and *how* the learning is intended to occur), and "evaluative rules" (the assessment of *what counts* as learning). Furthermore, the selection of content, the pace and sequence of the learning through the pedagogy and the structure of the assessment may favour some groups more than others. These features of a curriculum may all be recognised in the GEMP design, which is characterised by a change in student access through changes in admission policy, has an integrated, problem-based curricular structure, espouses student-centred learning, and evaluates learning through integrated, criterion-referenced assessments.

WitsETD

It is clear that the decisions which lead to the specific design elements of the GEMP were determined by positions which took both educational and political considerations into account. Indeed, Cornbleth (1990:12) argues that our conceptions and enactment of a curriculum can never be "value free or neutral" and Bernstein (1975:85) is also clear that curriculum is a political construct:

> *"How a society selects, classifies, distributes, transmits and evaluates educational knowledge … reflects both the distribution of power and the principles of social control"*.

As a result, curriculum change, no matter how well intentioned, is unlikely to be accomplished without conflict. Kelly (1989:149) suggests that the curriculum can be seen as the battleground of many competing influences and ideologies which may result in a gap between the intended and the enacted curriculum. Some of the key perspectives of curriculum are thus useful lenses through which to view the GEMP and the factors which influenced the adoption of the PBL curricular model.

4.1.1 Perspectives of Curriculum

Conceptions of what a curriculum is and how it is created are important because they reflect and shape issues pertinent to the education made available to students. Cornbleth (1990:12). distinguishes between what she regards as the two major views of curriculum, namely *technocratic* and *critical*, which differ essentially in their treatment of context (*Ibid*: 13). The technocratic conception sees curriculum as a plan for instruction, akin to a course outline or a syllabus. This view decontextualises the curriculum by separating the product from policy-making and its developers are generally not responsible for the education made available to the students (*Ibid*: 17). In this view the curriculum is a document which represents an idealised logic rather than classroom practice. Most typically a technocratic view of curriculum includes underlying positivist assumptions about knowledge as a predetermined object which can be transmitted to students and hence possessed by them. Kelly (1989:28) concurs with Cornbleth that the view one takes of education, and hence of curricular design, will be predicated on assumptions about the nature of knowledge and a particular set of values.

In contrast to the technocratic concept, Cornbleth proposes a critical conception of curriculum as being the "*actual* day-to-day interactions of students, teacher's knowledge and the milieu" (*Ibid*: 24). If we are concerned with opportunities which enable learning, then the

WitsETD

enacted classroom practice should be our focus and not the documented intentions. By viewing curriculum as a contextualized social practice we then extend the "what" of teaching to include the "how" and "to whom". Brown *et al.* (1989) express a similar idea, with the proposal of learning as being situated in a context which takes into account the history and values of the participants as well as the intentions of the designers. Rather than a technical rationality, this view reflects a critical rationality which is characterised by a continual probing and questioning of claims, evidence and proposals relating to the intended *versus* the actual learning. Although a critical curriculum will also have a plan, it does not become the curriculum but is only part of the curriculum. The plan will offer a general specification of what might be taught but does not include the implementation context. Since it decontextualises the context, the social organisation, along with its interrelationship with subject content, comes more sharply into focus in a critical concept of curriculum. Kelly (1989:34) concurs: "Knowledge is thus socially constructed and debate about the curriculum is thus dispute between conflicting ideologies". Muller (2000:9) makes similar distinctions to Cornbleth's between what he calls "official or codified" knowledge, as opposed to the "passage of knowledge...as that process by which…social knowledge becomes validated as [school] knowledge" and as what counts as knowledge. These forms are equivalent to what Young (1976, cited in Muller, 2000:9) calls the 'curriculum as fact' and the 'curriculum as process'.

From the socially-determined, critical perspective then, curriculum knowledge means the opportunities actually available to students to construct, reconstruct or critique knowledge (Cornbleth, 1990:26). Where the technocratic curriculum emphasises the phenomena to be studied, the critical curriculum presents a more integrated structure. The curriculum is enacted as a situated practice, the context of which both situates and shapes it. Curriculum context is variable and fluid over time as well as in relation to the local, national and global environment. The impact of each of these contextual factors depends on their relative strength.

4.1.2 Forms of curriculum

The organisation of the opportunities for learning are important in determining the type of learning that is possible and the type of knowledge that may be acquired. Bernstein (1975) proposes that there are two main forms of curriculum – *collection* and *integrated*. In the collection form of a curriculum the boundaries between the different constituent disciplines

WitsETD

are robust and act to reinforce the power of each discipline. In an integrated form of curriculum the boundaries between disciplines are weak and the power in the curriculum is held centrally and not by the constituent disciplines. Bernstein refers to these forms of curriculum as collection and integrated "codes" because the structure and organisation of the curriculum is contextualised as messages about what counts as knowledge and what type of learning is valued. The context in which the code operates includes the history and expectations of the learners and educators and the message is thus interpreted by them according to their own personal models.

Bernstein draws on the distinction between forms of curriculum to explain social control in education and the implications of curricular change in terms of the relative weakening and strengthening of the two codes. Since curriculum is a tool of power and control in society through its recontextualising rules, changing from one code to another will change the possibilities for access to knowledge. As described in 2.2 above, a PBL curriculum has an integrated code because each problem presents an area of interest which integrates a number of discipline areas. Therefore, according to the distributive rules of Bernstein's 'pedagogic device', the change in code which is brought about by the introduction of a PBL curriculum may create the potential to restrict access to knowledge for certain groups of students.

Central to Bernstein's theory of curricular codes are the concepts of *classification* and *framing*. Classification refers to the degree of insulation between the different content areas in a curriculum. For example, in a traditional medical curriculum knowledge is organised according to clearly demarcated, discipline-based content areas such as Anatomy, Physiology, Pathology, Microbiology and Surgery, sometimes referred to as "silo" knowledge. In such a curriculum students are first socialised into the principles of each discipline independently and then taught its application in a more holistic setting. In an integrated medical curriculum, such as one using PBL, the student acquires discipline-based knowledge in relation to the problems around which the learning is structured and the internal logic and organisation of the content of each discipline are thus not clearly defined. The selection, sequence and pacing of the disciplinary content is determined by the logic of the integrated curricular structure and its integrating principles. Where strong boundaries exist between content areas, Bernstein refers to the classification as *strong*, and the contents are in a *closed* relation to each other. Where the boundaries are blurred the classification is *weak* and the contents stand in an *open* relation to each other:

WitsETD

> "*Classification thus refers to the degree of boundary maintenance between contents*"
>
> (*Ibid*: 88, author's italics).

The concept of framing is used to describe the message system or form of the pedagogy, more specifically the relationship between the educator and the taught as to the degree of control each has over the selection, sequence and pacing of the curricular content. When framing is strong there is a sharp boundary and the educator retains more control over the pedagogy. Where framing is weak and boundaries are blurred, there is an expanded range of options by which the learner is able to come into a relationship with the knowledge:

> "*Thus frame refers to the degree of control [teacher] and [pupil] possess over the selection, organization, pacing and timing of the knowledge transmitted and received in the pedagogical relationship."* *(Ibid:* 89, author's italics*)*

Returning then to the concept of curriculum, Bernstein proposes that a curriculum with strong classification has a collection code (i.e. the curriculum is a loose collection of separate and distinct content areas) while a curriculum with weak classification will have an integrated code, where integration refers to the subordination of previously isolated subjects to some relational idea, thus blurring the boundaries between subjects (*Ibid*: 93). An integration code has implications for areas of specialisation and raises questions about the possibilities for socialisation of students into the internal logic of these areas. The distinction between these two types of curriculum code is key in this study since, as will be shown below, the GEMP sought to change learning by changing the code. These concepts of curriculum codes thus offer useful insights into the implications of the design of the GEMP and will be important in relation to the structure of the curriculum because the nature of the classification and framing will affect the power relations through which control is exercised over which knowledge may or may not be made accessible to students.

4.2 Development and introduction of the GEMP

A historical account of the process of curriculum change for the MBBCh degree at Wits seeks to provide insights into the following questions:

- Why was the MBBCh curriculum at Wits changed?
- Why was graduate entry introduced as a means of access to the study of medicine at Wits?
- Why was an integrated, problem-based learning model adopted for the GEMP?

WitsETD

4.2.1 The need for curricular change

The process of curriculum change at Wits was initially informed by a global realisation that the overload of factual information in the medical curriculum was leading to what Des Marchais *et al*. (1992) referred to as 'curriculopathy'. In 1994 the response of the Faculty of Medicine at Wits to this situation was to modify the basic structure of the curriculum to create what was known as the 'core plus selectives' model, which would satisfy the South African Medical and Dental Council (SAMDC) requirement for specified discipline-based content (Milne, 1994). In each of the first three years of the six-year programme all students completed the same core courses as laid down by the SAMDC, as well as an additional credit selected from several options. At the end of each of the fourth and fifth years students spent four weeks in an elected discipline of their choice, which could be undertaken in a hospital or practice outside of the Wits academic complex. Despite the Dean of the Faculty suggesting that it was important for students to obtain skills in learning, problem solving and information retrieval and an "understanding of the Holistic nature of man in his community" (Hart,1994), this restructuring of the curriculum was directed solely at the syllabus or content plan and conformed to what Cornbleth (1990) would describe as a 'technocratic exercise', with little evidence of an attempt to engage in discussion around the educational philosophy of the learning process or other epistemic issues such as the context of the learning, responsibilities of educators and learners or the role of assessment in the promotion of learning.

Nevertheless, an interest in more substantial curriculum reform had already been indicated by the production of a Faculty Mission Statement in 1993, leading in 1995 to a major survey of the attitudes and perceptions of staff, students and graduates to the curriculum. This was followed in 1996 by a Faculty Board document stipulating the desired attributes of a newly qualified medical graduate of the Faculty. The goals expressed in this latter document can clearly be seen as the principles from which the GEMP learning outcomes would ultimately be derived. These goals were stated in terms of the knowledge, skills and attitudes the graduating student should have acquired, and the need for developing lifelong, self-directed and independent learning skills was recognised.

4.2.2 Changing access to the study of medicine

In considering the assumptions made about learning in the GEMP curriculum it is necessary to consider not only the curricular content and model for transmission, but *who* the students

WitsETD

are and how they relate to the process and context of the learning. The decision to introduce an alternative route of access for graduate students is thus relevant here.

Graduate entry

The decision to change access to the study of medicine by introducing a graduate entry system arose from three different principles. Firstly, in line with the newly achieved national democracy it was necessary to facilitate access to more students from disadvantaged educational backgrounds who had not previously qualified for entry into medicine after matric but whose potential had been realised through completing other degrees. This was intended as a contribution to a 'leveling of the playing fields' in the sphere of higher education. Secondly, it was argued that there were students, who may or may not have qualified for entry after matric, but who had been unsure or not sufficiently mature to make the decision about a career in medicine at that stage of their life, and who had come later to a desire to study medicine. Thirdly, the diversity and variety of life experience that the graduate entrants could bring to the PBL group discussion, which is at the core of the students' learning experience, would greatly enhance the elaboration that was possible and would be to the benefit of all the group participants. The initial Faculty proposal was that the new integrated PBL curriculum would be four years in duration and that all entrants into the programme would have a prior degree. A new three year degree, the Bachelor of Health Sciences, was proposed as the route into the graduate programme for about two thirds of the entrants with the remaining students entering with other appropriate degrees.

The motivation for a graduate entry programme was informed largely by the experience of the Australian graduate programmes. Several studies (Geffen, 1991; Rolfe *et al*, 1995; Newman and Peile, 2002) have reported that graduates

- came in with a range of life and educational experience which added a richness to the group discussions
- had valuable research and information retrieval experience
- were older, more mature, competent, responsible and motivated learners

While graduate entry has been the norm in North America for many decades, it is a relatively new phenomenon in Australia and the UK. In the UK it was introduced in response to a government initiative for widening access to students from disadvantaged areas and lower socio-economic groups. In Australia there was an additional intention to use graduate entry

WitsETD

as a means of extending medical services for rural and remote areas and improving indigenous health by selecting graduates from rural areas, who would return to practice in their communities after completing their medical training (Powis *et al*., 2004).

During the planning stages of the GEMP major concerns were expressed in the Faculty regarding the three plus four-year model, when other South African medical schools were staying with six- or even changing to five-year curricula. A total of seven years was felt by some to be too expensive for prospective students and there were concerns that Wits would 'miss out' on the best applicants who would go elsewhere. In fact, a five-year minimum requirement of the professional qualifying body, the Health Professions Council of South Africa (HPCSA) determined the decision to retain a six-year MBBCh degree with school leavers entering in the first year and special permission was obtained to have a maximum of 60 (later increased to 80) graduates entering in the third year of the MBBCh degree i.e. the first year of the GEMP.

One of the key concerns with the graduate entry model was that, while the entry requirements would include first year courses in Physics, Chemistry and Biology, not all the graduates would have studied Anatomy and/or Physiology and Molecular Medicine, the three compulsory courses in MBBCh II. The assumption about the graduate entrants which was put forward to allay this concern was that as mature, competent and motivated learners they would be equipped to 'catch up' the necessary extra content. Furthermore, there would be some relevant content of these disciplines in each of the organ-system blocks of the GEMP curriculum. It was however decided that the graduates would need some sort of foundation on which to build further knowledge and so a three-week module in preliminary concepts of Anatomy, Physiology and Molecular Medicine was created specifically for the graduate entrants at the start of the GEMP course before the matric-entrants registered.

There are several assumptions about learners and learning contained within this model. Firstly, all graduate entrants would be competent and mature learners irrespective of their home language, the university they had attended or the disciplinary nature of their prior degree/s. Secondly, the introductory courses in Anatomy, Physiology and Molecular Medicine in the Preliminary Concepts block would be sufficient to give the graduate entrants a foundation in these basic sciences which would enable them to manage the same learning content as the matric entrants. Thirdly, the latter group would be able to remember and apply

WitsETD

what they had learnt in the first two years of the MBBCh degree to an understanding of the problems in the integrated context of the GEMP.

Diversity, language and literacy

The change in access policy not only changed the educational background of a substantial number of students in the MBBCh class, but introduced more students whose home language is not English. Language is a key element in learning. Vygotsky (1978) places the use of language centrally in his model of socially mediated learning and Gee (1996) emphasises the role of language in cultural models of learning which play a role in determining access to the culturally determined context of the learning. One of the untested assumptions of the GEMP access policy was that although many of the students admitted to the GEMP would not have had English as their home language, they would all have attained levels of English literacy which were adequate for managing the course content and the learning demands of the course.

The extensive literature on academic literacy suggests, however, that the reality may be more complex and that the social context of the learning may have placed the English second language (ESL) students at an even greater, albeit unintentional, disadvantage than simply that of having to learn in a second (or third) language. English *et al.* (1999) explain the three dimensions of language in learning: as a prerequisite for learning, as a means of learning, and as the means of communicating what has been learnt. Brinton (1999) suggests that there may be a gap between our expectations and the reality of our students' literacy. The expectations in higher education are that students should be able to process written and spoken texts, analyse and critique the ideas and synthesise the content of multiple sources. Certainly the PBL model of the GEMP requires that students interpret and select from texts and integrate information from different disciplines meaningfully. Brinton believes that in reality we may be unaware that many students have limited text processing ability, difficulty compressing information, experience barriers to comprehension and prior experience which restricts their generic skills in responding adequately to university tasks.

Cummins (1996) proposes a four-quadrant model for enhancing the academic performance of ESL students by scaffolding their cognitive development through using progressively more complex and decontextualised language. The steps in his model involve firstly activating prior knowledge using contextually undemanding conversational language before

WiSETD

introducing cognitively more engaging inputs and providing feedback which builds language awareness and learning strategies. Brinton's and Cummins' models have implications for the design logic of the GEMP which makes assumptions about the skills of the PBL facilitators in dealing with the content as well as with the contextual issues such as the academic, cultural and language diversity which are inevitable when institutional access is deliberately widened.

Slonimsky and Shalem (2004:82) highlight the difficulties associated with learning in a second language at university. In the current South African context, these difficulties are linked to the relations between power and institutional access, between participation and cultural capital. The shifts in power which brought about the introduction of the GEMP have deliberately changed the patterns of access to the institution. The aim of the current study is to evaluate the ways in which this curriculum has in fact created possibilities for access to the knowledge as well as to the institution.

4.2.3 Problem-based learning in medicine: theory and practice

Although PBL is said to have had its roots in Dewey's philosophy of functionalism, it "emerged in conjunction with the cognitive revolution in psychology" and was first introduced as an innovative educational method for medical students at McMaster University, Canada in 1966 (Schmidt, 1993:430-431). It differs from problem solving in that the problem is encountered *first* and "learning results from the process of working towards the understanding or resolution of a problem" (Barrows and Tamblyn, 1980:1). In contrast, problem solving usually implies the application of learning to solve a problem i.e. the learning precedes the problem. In the past three decades the PBL process has been adopted by a wide range of schools across the globe including South Africa. Each school has adopted the basic model to suit their own particular circumstances. PBL curricula generally have most, if not all of the following features:

- Student-centred – students make decisions about their own learning
- Self-directed – students are responsible for their own learning
- Integrated – discipline content is vertically and horizontally integrated
- Contextual – the learning relates to realistic, common medical problems
- Collaborative – students work together in small groups

WitsETD

- Patient and community oriented – in the context of the problem the student sees the patient as an individual within a community i.e. the bio-psycho-social approach referred to in Chapter 2.

The problems chosen as vehicles for driving the learning of content and development of skills and attitudes generally reflect medical problems common to the specific local context. For example the problem used to drive learning about congenital genetic abnormalities at Sydney University is phenylketonuria – relatively common in Australia but very rare in South Africa. At Wits the problem used to promote much of the same learning is albinism – relatively rare in Australia but quite common in the South African Black community. Furthermore, these two conditions each have a different set of psychosocial elements which reflect the different broader social context of the learning.

Factors which enable learning in PBL curricula

The foundations on which problem-based learning are based relate to three conditions which are believed to facilitate learning (Schmidt, 1983). These are:

1. The activation of prior learning: By confronting the problem first, the student has the opportunity to activate prior knowledge which acts as a framework on which to add new learning. This is in line with Ausubel (1985) who believes that the most essential principle of educational psychology is to teach a learner according to what he/she already knows.
2. Encoding specificity: By learning in the context of medical cases students should more easily transfer this knowledge to an understanding of real patients. Schmidt (1993:424) expands on this concept in relation to the creation of knowledge networks: the need for restructuring clinical knowledge is reduced if the learning context approximates the clinical setting. PBL problems thus create the authentic learning espoused by Brown *et al.* (1989).
3. Elaboration of knowledge: Small group discussions of the problem provide opportunities for asking and answering questions, challenging, explaining, teaching, defending, summarising and reflecting. These are all metacognitive activities (see below), which should enhance learning. Anderson and Reder (1979, cited in Schmidt, 1993:426) suggest that elaboration creates multiple “retrieval paths”, thus improving the availability of knowledge.

WitsETD

While a self-directed, student-centred and constructivist approach to learning emphasises the role of the student in the learning process, there is a considerable body of research which explores the influence of a range of other factors including:

- the role, experience and subject expertise of the **facilitator** in the group (Maudsley, 2002; Schmidt *et al.*, 1993; Steinert, 2004; Ten Cate *et al*., 2004)
- the cultural climate and level of interaction within the **group** (De Grave *et al*., 2001; Steinert, 2004; Visschers-Pleijers *et al*., 2004)
- the nature of the **cases** (Dolmans *et al.*, 1997*;* Steinert, 2004)
- the nature of the **assessment** (Schuwirth and Van der Vleuten, 2004)

Thus, although the major focus of the current research will be on the students' approach to their learning, it will be important to remain aware of the complex, multifaceted nature of the learning model and to take cognizance of the range of factors which may influence their learning. The students' engagement in the learning process of the GEMP curriculum needs to be interpreted in relation to the assumptions about learning which are embedded in the curriculum in terms of the instructional discourse (i.e. the rules governing the organization and delivery of the content) and the regulative discourse (the rules relating to the hierarchy within pedagogical interpersonal relations) which determine what specific 'slice' of a particular discipline is to be taught, how the knowledge is to be acquired and how it will be assessed (Bernstein, 1996). Dolmans *et al.* (2005: 736) conclude that successful implementation of PBL is dependent on

> *"designing a learning environment that stimulates students towards a constructive, self-directed, collaborative and contextual learning and … alignment between all aspects of the curriculum such as the problems used, the tutor's guidance and the assessment employed".*

This view thus points to a critical concept of the curriculum as a socially contextualised experience.

4.2.1 Changing the learning process

The historical account of curriculum change in the Wits MBBCh curriculum provides insights into the events which resulted in the specific decision to adopt the problem-based model of learning for the new curriculum. In 1996 a new Dean was appointed who was an enthusiastic proponent of both changing the curriculum and widening access to the study of medicine. During that year a team of academic staff members with an interest in education and curriculum change attended an international conference in Durban which focussed on

WitsETD

community-oriented and integrated, problem-based learning. This was the first time many of the faculty had been exposed to the PBL epistemology and it was likely to have been an important factor in the decision making process.

A commitment to curricular change having been established in principle, several events escalated the process and its direction. In 1997 and 1998 several influential medical education experts from Australia and the USA visited the Faculty and Wits staff members visited medical schools in the USA, UK and Australia where they took note of current trends in curricular design and delivery. By 1999 a proposal was drafted for a curricular model which

- was integrated horizontally and vertically
- introduced earlier clinical exposure
- used a combination of problem-based learning and traditional lectures, practicals and tutorials (i.e. a "hybrid model")
- emphasised teaching in the community and secondary hospitals
- stipulated the need for the development of appropriate skills and attitudes in addition to factual knowledge.

This proposal was formulated in accordance with the 1999 guidelines of the Medical and Dental Professional Board for undergraduate medical and dental training (previously the SAMDC). An important departure here was that for the first time the guidelines of the professional body were stipulated not in terms of curriculum content but of objectives in the domains of knowledge, skills and attitudes and made recommendations for curriculum, teaching and learning, attitudes, behaviour, assessment methods, and programme evaluation. The guiding principles for these recommendations had been derived from a number of documents originating in international bodies such as the WHO, General Medical Council of Great Britain, and the World Federation of Medical Education. The PBL curriculum which was adopted by Wits for the GEMP can thus be recognised as essentially the product of the influence of international trends in medical education on local conditions.

The curriculum design adopted for the GEMP included intentions relating to the type of learning which would be promoted by the PBL model. Bearing in mind the need for students to develop the ability to seek, evaluate and apply appropriate information, a key assumption made by the curriculum planners was that students would be encouraged to develop qualitatively different approaches to learning which would contribute to the acquisition of

WitsETD

deeper forms of knowing. Understanding how students learn, with the aim of promoting more useful approaches to learning, has been the focus of much research. At this point it is useful to review the literature on theories of learning. Although the philosophy which led to the problem-based model of learning evolved primarily from constructivist theories, useful additional insights into the learning activities demonstrated in the PBL environment may be drawn from alternative theories.

The development of the PBL model was influenced predominantly by post-behaviourist theories of learning which focus on the role of the individual, responsible for his/her own knowledge building. The role of the social in PBL is evidenced by the group collaboration around understanding the problem and the position of the facilitator in guiding the learning.

4.3.1 Constructivism: cognitive foundations of problem-based learning

The literature which presents arguments justifying the introduction of PBL in medical education draws extensively on constructivist epistemology. According to Barrows and Tamblyn (1980:1), the origins of the learning theories which underpin PBL lie in the functionalism which John Dewey proposed as far back as 1929. Schmidt (1993:423) cites Dewey as suggesting that knowledge cannot be 'transferred' but the learner has to 'master' it himself. Schmidt (*op. cit.*) regards the 'cognitive revolution' in psychology as heralded by the constructivism of Piaget and Bruner's ideas of intrinsic motivation as fundamental to the principles which form the foundation of PBL ideology. Central to Piagetian constructivism is the awareness of a cognitive 'gap' which is activated by a problem or dilemma to solve and which the learner strives to 'equilibrate' by means of assimilating new knowledge which is accommodated in existing cognitive structures (Piaget, 1964; Rowell, 1989).

The problems which are used as initiators of the learning and which drive the PBL experience are the instigators of the initial awareness of such a gap in understanding. The chief role of the PBL tutorial facilitator is to maintain discussion which contributes to creating awareness of these gaps as a stimulus for further learning (Barrows, 1985). The facilitator thus provokes and frames the learning. Fundamental to students being able to construct their own knowledge is that they should be self-regulated (i.e. identify their own learning needs) and self-directed (seek information to complement those needs). Since the self-directed learning approach requires that students are reflective and identify deficiencies in their own knowledge systems, it is suggested here that a metacognitive interpretation of

WitsETD

the learning process (Flavell *et al*., 1970), may also be appropriate. While cognitive strategies enable the building of knowledge, metacognitive strategies enable self-monitoring and improvement (Gourgey, 1998:82). Weinert (1987:8) describes metacognitions as second order cognitions: "thoughts about thoughts, knowledge about knowledge, reflections about actions". The latter are likely to occur as conscious intellectual experiences such as defending a claim, linking new ideas to old, making inferences, judgements and decisions or accommodating self-contradictions (*Ibid*:28). Hartmann (1998:1) regards metacognition as "one of the most prominent constructs in cognitive and educational psychology". Metacognition is thus a useful conceptual tool for analysing and integrating the activities which occur in PBL. Gourgey (1998) regards student-generated questions as an essential component of metacognition and believes that guided practice can play an important role in developing this skill, an important implication for the scaffolding role of the facilitator in the PBL group sessions. Brown (1987:65) suggests that metacognition is a central concept in learning. The individual's Piagetian equilibration response to a cognitive challenge is a conscious *self-regulation* process (*Ibid*: 89). The intervention of a mediator who guides the learner towards a higher level of thinking about their own learning constitutes *other-regulation* which Brown (*Ibid*: 100) equates to the socially determined learning which characterises the learning theories of Vygotsky (see below).

4.3.2 The zone of proximal development: social mediation in PBL

Vygotsky developed the idea of meaning as socially determined and to explain how social interaction promotes learning, he proposed the concept of a "zone of proximal development" (ZPD) which exists between the learner and the mediator (Vygotsky, 1978:86). Instruction "creates" the ZPD and enables the learner to progress beyond their "actual" developmental level (lower edge of the ZPD) by renegotiating a new "situation definition" with the mediator (Wertsch, 1984:13). The upper edge of the ZPD represents the higher level of understanding which the student, in conjunction with the mediator, may achieve. In the context of the PBL curriculum, the facilitator, without actually teaching, mediates the interaction between the students and the problem and in so doing enhances the potential of what the students are able to achieve.

Language as a tool in the construction of meaning is central to the theory of social mediation and the intersubjective communication between learner and mediator, is converted into an intrasubjective, internalized form of consciousness (Kozulin, 1986). Hedegaard (1990:287)

WitsETD

uses the ZPD as a tool in group instruction for school children who are stimulated to construct knowledge relevant to problems. The group activity associated with PBL may thus also be interpreted in terms of mediation in the ZPD. The facilitator is a more capable "other" who knows what the learning outcomes for the session should be, and scaffolds the group process in attainment of this goal – equivalent to reaching the upper edge of the ZPD.

Bernstein (1993: xvii) draws attention to his own interpretation of the ZPD as an "extension of cognitive functions" and suggests that the Vygotskian view of development was "essentially cognitive and a practice which appears to privilege the acquisition of the 'tool' rather than the social context of the acquisition". There thus appears to be no clear consensus on the boundary between cognitive and socially mediated concepts of learning. A situated perspective (see below) will lend further emphasis to this overlap.

The concept of learning as socially mediated has significant implication for learning in the Wits PBL model. Firstly, the importance of the facilitators cannot be underestimated. Their subject knowledge, facilitation skills and identity as an educator of medical students will all contribute to their ability to engage, stimulate and guide the students appropriately. Secondly, the role of language is particularly important in the context of a culturally diverse student and facilitator population. In a situation where inevitably not all members of the group share the same home language and cultural identity, the possibilities for alienation and conflict are increased. Gee (1996:124-132) is useful in providing insights into the importance of cultural models of learning and power relations in education. He suggests that language communicates not only what you are saying, but who you are and what you are doing. Gee develops the concept of 'Discourses', of which language is one component, as an 'identity kit' by which one is able to display membership of socially meaningful groups – such as PBL groups. Introduction of the PBL process has changed the way in which students are initiated into the discourse of medicine through working with medical problems.

4.3.3 Communities of practice: medical education as situated learning

One of the key features of PBL is that the learning is structured in relation to problems chosen because they reflect a reality which the student is likely to encounter once she/he enters the real practice of medicine. The learning process is designed to bring the context of the learning activity closer to the situation in which the knowledge will be used and thereby facilitate the application of that knowledge when the need arises. The learning can thus be

WitsETD

said to be what Bernstein (1996:46) refers to as a recontextualised form of the practice because it represents the context of the practice for which the students are being prepared. Brown *et al.* (1989) provide useful insights into the importance of the context in which learning takes place:

> *"Situations might be said to co-produce knowledge through activity. Learning and cognition…are fundamentally situated"*

These authors explore the idea of knowledge as a conceptual tool, the appropriate use of which is a function of the culture in the community in which it is developed. The activities which cohere in a meaningful and purposeful way to the social practices of such communities are defined as *authentic tasks*. The PBL problems which are intended to develop the clinical reasoning process and promote the application of scientific knowledge to create an integrated approach to understanding and managing patients can thus be interpreted as authentic activities because the recontextualised activities represent the realities, skills and significance of the practice.

Lave (1993) and Lave and Wenger (1991; 1999) have further developed the theory of situated learning, thereby extending the importance of the social dimension of learning. Countering the view of learning as a process of internalisation of knowledge in the individual, they prefer to interpret it as an increase in legitimate participation within a community of practice, which concerns the whole person acting in the world (Lave and Wenger, 1991:49). This view places the emphasis on meaning as being socially negotiated with an interdependence of "agent, world, activity, meaning, cognition, learning and knowing" (*Ibid*: 50). Lave and Wenger explain that all learning takes place in communities of practice, since "learning, thinking and knowing are relations among people in activity with and arising from the socially structured world". Meaning is produced, reproduced and changed during activity (*Ibid*: 51). The activities that occur in the PBL tutorials and, more importantly, the role of the facilitator in guiding and directing the learning as the students develop trajectories into the practice and assume identities as medical professions, should not be underestimated, since the distribution of power within the group may be reflected in the access to learning through group activities.

Engeström and Miettenen (1999) see areas of overlap between the different social approaches to understanding how learning occurs and have brought together the instructional theory of Davydov (which arose from the Vygotskian social mediation tradition), the

WitsETD

situated theory of legitimate peripheral participation of Lave and Wenger and a theory of "learning by expanding" developed by his own group, as all sharing the same key idea of *joint activity* or *practice* as the unit of analysis. These all draw on the theory of activity developed by Leont'ev, since all three place heavy emphasis on artifacts in mediating cognition and learning. The use of PBL cases and their associated resources could be said to be equivalent to such artifacts since their purpose is to stimulate learning as a group activity.

Most medical schools which use constructed PBL cases to drive learning tend to do so only for the first phase of the medical degree, after which students participate in clinical "clerkships" in hospitals and community settings and have access to real patients as the stimulus for their learning. The site of the learning thus shifts from a recontextualisation of the practice to the actual practice. Since the students work under qualified practitioners during this clinical phase, they are operating in a mode which is much closer to that of "apprentices" under "masters", or as "newcomers" learning from "old-timers" (Lave and Wenger, 1991:56). The learning is still institutionalised, though not to the same extent as in the PBL phase. A search of the PBL-related literature in journals which report specifically on research in medical education reveals that medical educators appear not to have taken significant note of the possibility of meaning as being jointly negotiated in accordance with Lave and Wenger's idea of identity as created by participation in an enterprise. At a recent meeting of the Association for Medical Education in Europe (AMEE, 2006), a plenary discussion panel on learning theories in medical education included a presentation on situated learning which was delivered in a way which suggested that the concept was generally unfamiliar to many of the 1800 delegates. Nevertheless, the prominence of group interaction in the learning environment and the use of medical cases to create 'authentic' contexts around which the learning is structured, do provide an opportunity to explore the idea of the PBL group as a community of practice. The theoretical rationale for PBL in medical education was presented in the earliest literature in this field (see Barrows, 1985; Barrows and Tamblyn, 1980; Schmidt, 1983; Schmidt; 1993). As it was adopted more widely, most research in the field has taken the theoretical basis for granted and reported on predominantly practical, and largely technocratic implementation and evaluative issues. More recently however, as the real and perceived outcomes of PBL curricula are being questioned and compared with those of traditional curricula, the theoretical constructs of the model are now being debated (see for example Colliver, 2000; Norman and Schmidt, 2000; Dolmans *et al*., 2005).

WitsETD

4.4 Student approaches to learning

4.4.1 Surface and deep learning

A key assumption made by planners in PBL curricula is that students will develop qualitatively different approaches to learning. Understanding how students learn, with the aim of promoting more useful approaches to learning has been the focus of research spanning several decades. Following on the constructivist ideas which promoted learning as building individual knowledge, a number of authors have sought to develop methods for analysing the relationship between the ways in which students approach their learning and the quality of the learning that results. It was suggested that being able to attach some sort of measure or label to an individual performance will enhance the learning strategies that may be promoted. It is also thought that particular styles of learning are associated with success in certain types of tasks. A range of different models and inventories has thus developed to help categorise learning approaches and styles (see for example Honey and Mumford, 1983; Kolb, 1976; 1984). Ford (1985) differentiates between an approach and a style in saying:

> "*The particular way that an individual approaches a learning task, on one occasion, is a learning strategy… A tendency to use one type of strategy consistently is a learning style. Comprehension and operation are learning styles: they describe how an individual tends to approach learning in general.*"

Biggs (1987) developed a classification of learning styles which attempts to understand not only how the student approaches a task, but what the motivation is. He describes deep, surface and achieving approaches. It would be most consistent with the goals of PBL if students adopted deep approaches to learning but it is realistic to assume that, given the fact that most of the students accepted into the course are relatively high academic achievers, at least some of them will be using achiever as well as other strategies.

The concept of deep as opposed to surface learning, while apparently simple, has proved to be more robust than other tools for understanding learning, and has been incorporated into much of the work of Ference Marton and his co-workers. Central to the work of Marton is the concept of learning as experience, and the quality of the learning as determined by the nature of the experience, the awareness of the learner of his experience and the transformation of the knowledge which occurs during the learning experience. In one of their earlier works Marton and Säljö (1976) contrast deep learning with surface learning. Deep learning is described as occurring when the learner is paying attention to gaining an

WiSER

understanding of the underlying *meaning* of the message, rather that to just knowing what the message is. The differences in learning outcomes could be attributed to differences in the ways in which learners approached their learning and engaged with the task. Marton and Booth (1997:166) explain that deep learners pause and reflect on what they have read, how it relates to previous learning. They break it into its parts, determine the key point of each part and relate it to their previous experience.

More recently Marton, Runesson & Tsui (2004) describe learning as being aware of *variation* and that successful learners are able to be aware of variation in several different aspects of the object of learning simultaneously. Examples of patterns in variation include contrast in value or number, generalisation around a variable (e.g. three apples, three cars, three books), separation of variables where one aspect changes while others stay the same (*Ibid*: 16). It is also important to see the whole as a sum of its parts and the parts as components of the whole *(Ibid*: 12). This concept of being aware of variation is particularly important in the field of medicine where the practitioner is confronted with the patient as a multifaceted "problem" in which the variation in all domains require simultaneous attention. In its simplest form, the importance of the bio-psycho-social model foregrounds the essence of this complexity. Another important point made by Bowden and Marton (1998) is that only by experiencing variation are we able to prepare ourselves for a future varying in unknown ways.

In a field in which the knowledge base is said to double every ten years it is essential that medical students are equipped to deal with variations which may not yet exist or of which they may be unaware during their undergraduate training, but which are likely to confront them at some stage in the future. There are definite implications here for curricular design: students need to be engaged and scaffolded in learning activities which will offer them opportunities to develop the skills which lead to the ability not only to seek knowledge but to evaluate its usefulness for explaining and understanding new experiences.

4.4.2 Learning for professional practice

The profession of medicine

The education of any professional is guided by the standards, norms and values associated with the practice of that profession. The desired attributes of the professional medical practitioner are continuously debated at international, national and institutional level.

WitsETD

International summits on medical education as a primary determinant in providing appropriate health care were held in 1978, 1988 and 1993. The World Summit on Medical Education in Edinburgh in 1993 laid down 21 recommendations for medical education which were expected to contribute to an improvement in the fulfillment of the social contract which the medical profession has with society (WFME, 1993). These recommendations focussed on the practices and policies which would produce a better type of medical graduate and health care system. The following recommendations for the graduating medical practitioner, summarised in the WFME document *(Ibid :*pp. 144-149 *)* are pertinent here:

- The relevance between education and practice should ensure professional satisfaction that what was learnt could be usefully applied.
- Graduates should display a basic competence with the range of expertise required by the institution and society.
- Doctors should be better prepared to serve the public and to optimise use of resources.
- Graduates should be competent to practice in the local environment and able to respond to transitions and changes in health care needs.
- Doctors should be more competent, ethical, compassionate and holistic with keener self-awareness.
- Practitioners should be multi-science-based to remain abreast of scientific advances and understand their relevance to the field of practice by being predisposed to continuing self-directed learning and participating in change.
- Doctors should be cost-effective and work as members of health-care teams.
- Doctors should be skilled communicators, able to listen, understand and advise patients, inform and educate the public, speak for patients, communities and society.

Changes in the challenges facing the education of the medical practitioner world wide produced a variety of responses. Included in these is the General Medical Council of Great Britain's document entitled "Tomorrow's Doctors" (GMC, 1993) which became the foundation for curriculum change in Britain as well as an influence in many other parts of the world. In South Africa all accredited medical schools are governed by the Guidelines laid down by the Health Professions Council of South Africa (HPCSA, which has replaced the SAMDC as the qualifying body.)

WitsETD

Learning to be a doctor

The medical student is a medical doctor in training and therefore the extent to which the student identifies with the Faculty's goals for developing professional competence may determine his/her ability to engage with the curriculum and its intended learning, and to develop an identity as a professional practitioner. Argyris and Schön (1974:149) explain professional behaviour as having a "practice and a theory of action in which that practice can become a reproducible valid technique". Education of the professional thus requires that not only must the appropriate techniques be taught, but the teaching must be enacted in such a way that the world in which the techniques are to be used must be created. For the practice of medicine the consulting rooms, hospitals, and laboratories are an artificially created environment in which the controlled and predictable behaviour of the profession may be imposed on patients. It is the

> *"knowledge of these environments and the ability to understand the language spoken in them and negotiate in them constitute a great part of the expertise and authority which sets the professional apart from the layman".* *(Ibid: 150)*

As shown in 4.3.3 above, Lave and Wenger's (1991) concept of learning in a community of practice can be applied to medical students who learn from practicing qualified medical doctors. An essential component of such learning in practice is the development of an identity as a practitioner of the profession. Wenger (1998:5) defines the components of a social theory of learning as including ways of talking about meaning (experience), practice (doing), community (belonging) and identity (becoming). These have important implications for the training of medical practitioners, particularly in a curriculum which purports to be concerned not only with what graduates know and can do but with who they are and to which values they ascribe.

However, no matter how noble and well-intentioned the policy documents for medical education such as those described above, the attainment of these ideals will depend largely on whether the Faculty members and students identify with these goals and are sufficiently motivated to strive to achieve them. As noted earlier, changing the curriculum involves challenging the norms and values of the constituents who may be heavily invested in the existing curriculum. Therefore, it is the context in which the learning occurs, the factors which influence the attitudes of the educators and learners and the learning environment, which will determine to a large extent the success or otherwise of the planned curriculum. In

WitsETD

trying to understand the variable extent to which students identify with the professional practice of medicine, as represented by its recontextualised form in a curriculum, and thereby participate in the learning to "do" the professional practice of medicine, theories about culture and the context of learning may be useful.

The cultural context of learning medicine

The concept of culture is too extensive to explore in any depth here, but Krajic Kachur and Altshuler (2004:101) provide a useful starting point: "The concept of culture reflects the breadth and the individuality of experience." Gee (1999) proposes that "cultural models mediate between micro levels of individuals and macro levels of institutions – they establish conventions which are understood by members". The introduction of the GEMP with its associated assumptions and expectations for different learning processes and outcomes suggests the need for a shift in cultural models of learning for both educators and students. Gee (*Ibid*: 60) explains that cultural models are "variable, differing across different cultural groups, including different cultural groups in a society speaking the same language". In relation to education Gee (1996:38) proposes that schooling *in itself* is not powerful: the important gains from schooling are the attitudes, values, norms and beliefs derived from the school environment. Access to the underlying *meanings* of texts (in its widest sense) is only made possible by becoming a member of the social practice which generates those texts (*Ibid*: 40). Medical education has its own culture. It is shaped by its history, its ambitions for the future, the institutions, trainees, educators and administrators (Ludmerer, 1985, cited by Krajic Kachur and Altshuler, 2004). What is more important is the relationship between the culture of medical education and the culture of the practice of medicine. The work of Gee (1996) on cultural models and Wenger (1998) on developing an identity as a member of a community of practice, suggest that the more the educational culture resembles the culture of practice the more easily the students will be able to form appropriate identities. It is thus important that the learning experiences of GEMP I and II be structured and implemented in a way which offers students authentic opportunities for access to the culture of the practice.

A study conducted in a traditional curriculum by Stern (1998) showed that one of the reasons that medical students may not be learning the norms of the profession is that the recommended values are not consistently taught. Although the intended and scheduled learning experiences are essential to the student's ability to realise the stipulated learning outcomes of the curriculum, potentially more important are the informal experiences of the

WitsETD

medical student (Stern and Papadakis, 2006) – the "hidden curriculum". The formal or explicit curriculum is the curriculum as it is enacted and experienced. The hidden curriculum is informal or implicit (Argyris and Schön, 1974). The learning that occurs in the hidden curriculum is in response to role modelling and the structure of the learning environment. McLean (2004 a, b) has investigated the importance of role models in a South African medical school. She found that most students believed that role models were important and that most commonly family members were identified as role models. The personal attributes ascribed to parents as role models were in fact similar to some of those considered important for medical professionals (caring, sympathetic, self-sacrificing). Appropriate role models are important because they may provide access to the implicit values and structures of the practice through the hidden curriculum.

Since the PBL tutorial groups and their facilitators are central to the context of the meaning making in which students participate, it is likely that the PBL group facilitator is one of the most powerful variables in the educational environment (Hutchinson, 2003) and is likely to become an important candidate for a role model. Schmidt *et al*. (1993: 790) showed that, particularly in the earlier years, students with little experience of PBL rely more heavily on their facilitator's subject matter expertise to guide and influence their learning, suggesting that the engagement of the learner is affected by motivation and perception of relevance, which in turn may be affected by the learning context and environment.

4.5 The challenge of curricular change

Changing an existing curriculum, at both the level of planning and of enactment, is likely to present challenges. Cornbleth (1990:29-31) explains how an education system, consisting of two or more interrelated components and their patterns of interaction, tends towards self-perpetuation. Participants have a stake in its maintenance and tend towards resisting change, particularly change which is seen as weakening the system or challenging its operating procedures or values. Kelly (1989:150) agrees:

> *"Curriculum change shares that tendency of all institutions to resist any attempts to do more than chip away at it and introduce relatively minor modifications".*

Any form of change will require that entrenched practices and constructs have to be 'unlearnt' and replaced, often with alien and thus threatening concepts. An understanding of curricular change requires an understanding of the culture of the system and component subsystems. Change which does not take into account the underlying culture and values of a

WiSETD

system may bring about little more than a superficial technological rearrangement (Cornbleth, 1990).

The technocratic and the critical curriculum have very different accounts of the challenges involved in change. For the critical curriculum change involves changing its context. Indeed, the sociocultural context often provides the impetus for changing the curriculum (Cornbleth, 1990:31). However, to shift from a technocratic approach to a contextualized curriculum, such as changing from a traditional medical curriculum to a PBL curriculum, is not without problems. Jacques Des Marchais, Vice-Dean of the Faculty of Medicine at the University of Sherbrooke (Canada), the medical school generally credited with being the first to successfully change from the traditional to a PBL curriculum, addressed the issue of curricular change. Having identified the problems associated with the old curriculum and the need for change, he stressed the importance of making the change an institutional project with clear goals, competent leadership and sensitivity to the attitudes and needs of the constituents, including faculty educators, administrators and the student body (Des Marchais *et al.*, 1992). An awareness of the context of the change and the inevitable implications for changes in power and control are thus key issues.

Evaluation of learning in the GEMP is essentially an evaluation of how effectively the new curriculum has enabled a different style of learning and is thus also an evaluation of how successfully the curricular change has been implemented in the Faculty. For example, the integrated structure of the GEMP curriculum aims to enhance students' ability to apply a more holistic model of understanding to their patients. A measure of success in the curriculum could thus be in terms of how effectively the graduating GEMP students are able to do this, particularly as compared with the graduates of the previous curriculum. Graduates of the old curriculum, including those who are now educators in the Faculty, are likely to be particularly resistant to change, because their previous models and values are being challenged.

Bernstein's model of curriculum codes provides further insights into resistance to curriculum change. An educational identity is created by means of socialisation in a particular curriculum code. Any change in curriculum code will be experienced as a threat to identity and is thus a source of resistance (Bernstein, 1975:96). In shifting from a collection to an integration code there is a weakening of the classification of knowledge which leads to a

WitsETD

disturbance in the authority structures, identity and ownership of curriculum (*Ibid:* 101). The traditional medical curriculum at Wits conformed to a collection model, with the constituent disciplines being both strongly classified and strongly framed. Each was taught and assessed separately with near total autonomy and decision-making power held by departmental heads. In contrast, the PBL curriculum of the GEMP represents a change in curriculum code to an integrated code since there is only one university course code for a whole academic year, and the teaching content as well as the assessment of the disciplines is integrated. More importantly, the decision-making power is now held centrally by the Faculty's MBBCh Undergraduate Committee instead of by the individual disciplines. Bernstein (*Ibid*: 107-109) warns that the authority structures of a collection code will be reduced in an integration code, depriving both educators and students of a 'sense of time, place and purpose' unless the following four conditions are met:

1. The integrating idea must be explicit with a high level of ideological consensus, hence important for educators involved in the planning and implementation
2. The nature of the linkage between the integrating idea and the content must be explicit to bring the educators and students into an appropriate working relationship. Such a co-coordinating framework is necessary to socialize educators into the new code. While a collection code may accommodate mediocre educators, an integration code requires greater powers of synthesis and tolerance of ambiguity.
3. Some form of central committee system is required to provide feedback as an agency for on-going socialization into the code. Evaluative criteria are likely to be relatively weaker and less explicit than in a collection code, resulting in insecurity for both educators and students.
4. The weaker frames are likely to enable a wider range of forms of assessment. Dispositional attributes such as attitudes and values become candidates for assessment along with cognitive attributes. While these increase the range of student diversity that may be taken into account in the assessments, students may develop new defences against the intrusiveness of the open frames of the integrated code, with implications for both students and implementers of assessments.

Bernstein further proposes several explanations for the movement towards institutionalisation of integration codes above the level of the primary school (*Ibid*: 110-111). These include the integration of knowledge structures, the need for flexibility in the labour force and moves towards more egalitarian education. As described earlier, all of the

WitsETD

above factors can, to a greater or lesser extent, be seen as contributing factors towards a trend which Bernstein identified at least two decades before it assumed the prominence now taken for granted in the sphere of medical education.

The historical perspective of the GEMP and the relevant literature presented above show how the key design features of the GEMP i.e. change in access, change in curriculum and change in pedagogy, make assumptions about the learning which the curriculum makes possible and the approaches that students will adopt. The organisation and structure of the planned curriculum have changed the classification of the curricular content with the intention that students will be able to construct better integrated webs of understanding. The PBL process has opened the frame of learning, changing the ways in which time and space are used and creating opportunities for students to develop more self-directed and responsible approaches to learning.

The following chapter presents the research findings on the student approaches to learning in the GEMP and an analysis of these findings in relation to the design logic and assumptions of the GEMP.

WitsETD

Chapter 5
RESEARCH FINDINGS

Chapter 3 described the research instruments used to collect data i.e. the questionnaires, PBL group observation and focus group interviews. The resulting information was coded and organised according to the major themes which relate to the logic and assumptions made in the GEMP curriculum design to promote a change in learning code. As described in the previous chapter, these three key design principles are:

- Changing the structure and organisation of the content through an integrated curriculum.
- Increasing access to the study of medicine through graduate entry.
- Opening the pedagogical frame through problem-based learning.

This chapter presents the research findings, which are interpreted in relation to the design principles of the planned curriculum and in relation to implications for these principles. However, the first of these, i.e. who the students are, opens up a range of sociocultural issues which goes beyond institutional access for graduate students, and raises questions about the sociocultural context in which the learning occurs and the access to knowledge which is made possible by the GEMP curriculum. These issues will come into focus more sharply after the findings on curricular structure and learning have been presented and will thus conclude the chapter.

5.1 The intended *versus* the enacted curriculum

The planned curriculum can never be identical to the enacted or delivered curriculum because the latter is a contextualised form of the former. Assumptions made about the students, the educators and the learning environment are often not realised, thus compromising the possibility for concordance between expectations and actuality. Coles and Grant (1985) present a useful curricular model consisting of three interlocking circles – the planned, the delivered and the experienced curriculum (see Figure 2: Curriculum Model below).

WISERD

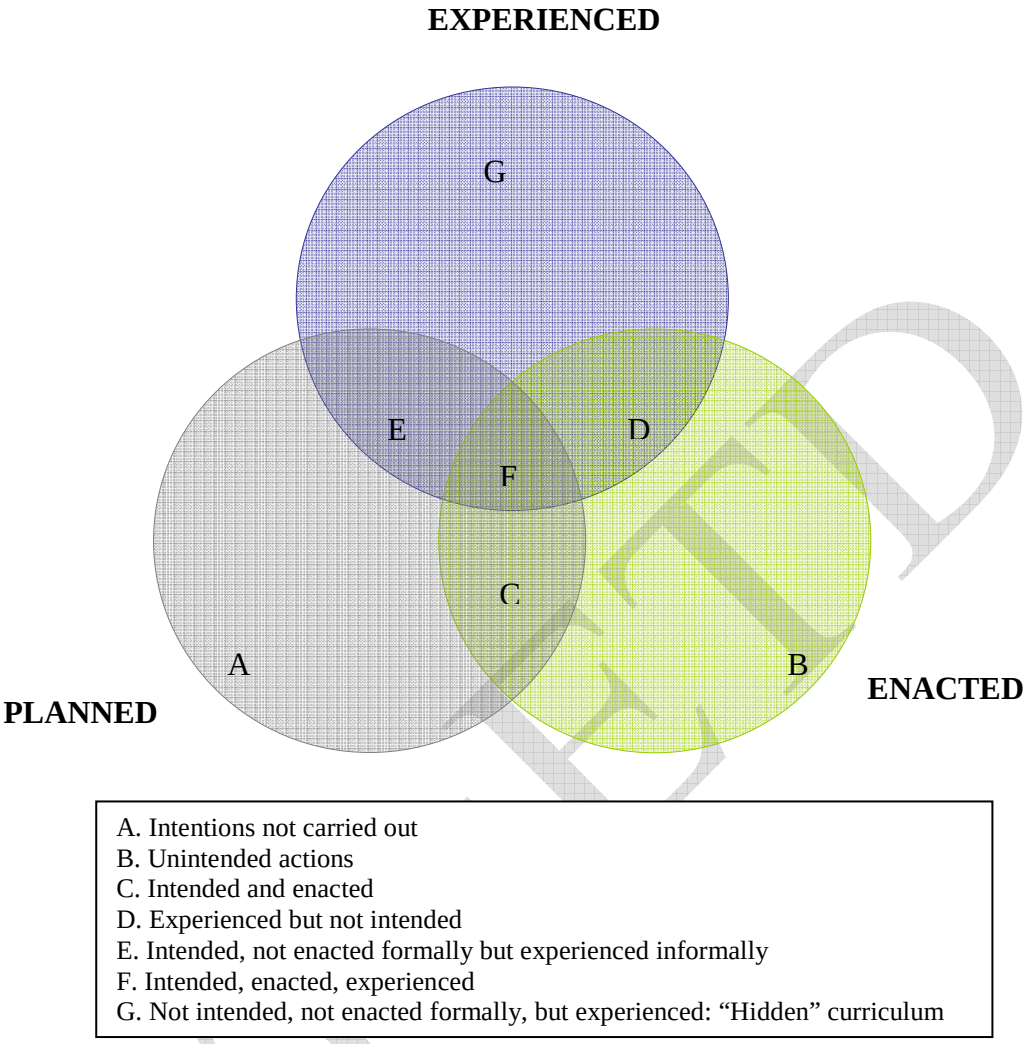


Figure 2: Curriculum Model (after Coles and Grant, 1985)

Kelly (1989:144) proposes that

> *"… there is a very wide gap between what is planned and what actually happens, between the official and the actual curriculum, between the ideals and conceptions in the minds of the curriculum planners and the realities of the outcomes of these in the classroom"*

He suggests a number of possibilities for this gap, including conflicting ideologies, institutional tendency to resist change, and administrative and resource constraints.

Discrepancies between the intended and the actual use of a curriculum perceived in Cornbleth's technocratic terms may arise from a mismatch between the procedures recommended by the curriculum planners on the one hand, and the beliefs, practices and

conditions which prevail in the implementation site on the other (Cornbleth, 1990:15-16). A technocratic view of curriculum is inherently conservative and if the values of the implementers and recipients are not addressed, myths about the neutrality of the curriculum are perpetuated. Cornbleth interrogates the concept of the hidden curriculum from the critical perspective. Preferring the term 'implict' to 'hidden' she concludes that:

> *"when curriculum is viewed as a contextualised social practice, so-called hidden curriculum or implicit curricula are made explicit and subject to scrutiny".* (*Ibid*: 48)

The implications of the difference between the planned and enacted curriculum are not the same for the students as for the educators. The assumptions the educator makes about the students' learning and the expectations for performance in assessments is likely to be derived from their understanding of the planned rather than the enacted curriculum. The students, on the other hand, are largely unaware of the planned curriculum and draw their inference as to what is valued from their experience of the enacted curriculum, whether intended or not, as well as the messages they receive regarding the "hidden" curriculum.

The gap between the planned and the enacted curriculum is likely to be significant when the disciplinary knowledge and skill of the experts in the field is so embedded in their practice that they have difficulty in deconstructing their practice to make it accessible to students, resulting in unfulfilled expectations of learning. Argyris and Schön (1974:8-11) are useful in distinguishing between espoused theories and theories-in-use and explain that implicit knowledge, equivalent to the 'tacit knowledge' of Polanyi (1967), is that which is known and displayed without being able to explain how and why. By formulating theories-in-use explicitly, tacit understandings are given voice. The concept of tacit and explicit knowledge has important implications for medical education and particularly for the development of professional knowledge and a professional identity. Much of what medical practitioners do, diagnosis for example, is internalised to the extent that the experts may find it difficult to explain the thought processes involved. The challenge for medical education is to make this tacit knowledge available to students as explicit knowledge. One of the aims of the GEMP curriculum is in fact, through the use of problems and integrated learning, to create a more authentic context which will make the clinical reasoning process more explicit and thus more accessible to students.

WitsETD

5.2 Students' experience of the structure and organisation of the curriculum

As was established in the previous chapter, a curriculum communicates its expectations through the message systems of its content, pedagogy and assumptions. Through its integrated, problem-based structure with open framing, the GEMP curriculum intends to develop self-regulated learners who will optimise the time available for study to pursue their own individually identified learning needs. The ways in which curriculum time is used are thus of particular interest.

5.2.1 Self-directed learning and use of curricular time

The structure of a curriculum can only be understood in terms of the measures of time which are allocated to various activities, whether it is a year of study in a degree, the number of weeks making up a module of block of work or the number of hours and minutes allocated to the different disciplines and activities. Bernstein (1975:86) speaks of "formal punctuation of time into periods" within a curriculum. These periods are "units of time" and a curriculum can be defined in terms of the relationship between these units and the way in which they are used – the curricular "content". The relative status of the content can be defined in a crude way by the number of units of time allocated to it and whether it is compulsory or optional.

The concept of time in the curriculum may be analysed from several different perspectives. From the student perspective time may be seen both as a resource or "temporal capital" (Slonimsky and Shalem, 2004:94). From the perspective of the Faculty, for those teaching time raises issues of ownership of the curricular time, and reward for time invested in teaching and assessment. For those who plan and coordinate the activities of the curriculum, time is a key area of decision making related to organizational issues such as sequence and pacing of the learning and often involves compromising pedagogical benefit for practical and logistical expediency such as the availability of teaching venues and appropriate teaching staff.

The GEMP curriculum has reconstructed the time allocations of the previous traditional curriculum in such a way that only about 60% of the available teaching time is specifically allocated to designated learning tasks and students are given the responsibility for making decisions for individual use of unscheduled time. In addition, there are now relatively few compulsory activities. The only compulsory activities are the PBL tutorials, since participation of all group members is necessary to achieve the desired group process which

WitsETD

stimulates learning, and attendance at Clinical Skills and hospital visits since these are essential for learning communication and examination skills for managing patients. The curricular design has thus weakened the pedagogic frame, allowing the students to take more responsibility for how they use the available unscheduled time to construct their own knowledge. Individuals are likely to take different approaches to the selection, sequence and pace of the knowledge they acquire according to their personally identified learning needs. This use of time is thus intended to contribute to the development of self-regulation which will form the foundation for the life-long learning skills necessary for medical practitioners to update and refine their professional knowledge on an ongoing basis (Barrows and Tamblyn, 1980). The design principle for the curricular organisation thus intends to serve two roles simultaneously: in the short term students seek knowledge required for adding to their immediate understanding, and in the long term they should be developing skills which will allow them to add to and replace that knowledge as the need arises. While a student-centred programme creates new possibilities for learning it also produces new tensions and disjunctions. The intended curriculum makes far-reaching assumptions about the capacity of students to manage their own time effectively for maximum benefit.

5.2.2 Use of unscheduled curricular time

Students responded in a variety of ways to the questions on their individual use of unscheduled curricular time. In the questionnaire (question 1.3), only 62 respondents (50%) of the respondents said that they were able to make good use of this time. In the table below, and all following similarly tabulated results, "%A" refers to the combined percentages of respondents to that question who agreed i.e. slightly agreed, somewhat agreed and strongly agreed with the statement. Similarly "%D" refers to all those who slightly disagreed, somewhat disagreed and strongly disagreed. The neutral position 'neither agree nor disagree' is not reflected. "Mean" is the mean score on the seven-point Likert scale for the rating of all respondents on that questionnaire item. Since the mid-point of the scale is 4 with strongly agree being 7 and strongly disagree being1, a mean of 4.2 confirms that overall there was a slight tendency towards agreement rather than disagreement with the statement.

Question	Statement	Mean	%A	%D
1.3	*I am able to make good use of the free time in the timetable for studying*	4.2	50	29
1.4	*I find the amount of work required is manageable*	4.3	52	31

There appeared to be a difference between some of the various different groups in the class, with the older students (a mean score of 6.0 for the 30 years-and-above age group),

WitsETD

Afrikaans students (mean 5.1), and Black students (mean 4.8) showing the highest positive usage. Of interest is that the Black and older students are also the groups who find the workload least manageable (question 1.4) and thus appear to be investing more time in their studies during the general working day. The apparent inability of nearly half the respondents to manage the volume of work required is also of interest since it was an intended design goal of the GEMP that content should be reduced to the essential "core" material, which would be communicated to students through the objectives. How the students are working with the objectives will be discussed later (see section 5.3.3).

The focus group interviews revealed several different reasons for the inability to use this time effectively. Some students use the time to earn money.

> *"I work – straight forward - not University work but in my practice"*[3]
>
> (Group3: Graduate entrant)

This was confirmed by the questionnaire (Biographical data question 9c): 30% of respondents said that they had to work to support themselves and/or their families, with the proportion in the graduate group (35%) being nearly twice that of matric entrants (18%). This is not unexpected since the graduates are older and more likely to have families to support as well as previous qualifications which provide an opportunity for engaging in working for financial gain. Some of the time intended for studying is thus being used by students in ways which were neither anticipated nor intended.

Several students said that they were able to use the single hours between lectures:

> *"I find the time quite beneficial I go through the material in the course pack, lectures etc."*
>
> (Group2: Matric entrant)
>
> *"I must be the nerd of the group because I do use the time to work. I find it easier to work at varsity than at home."* (Group3: Matric entrant)

Most of the students who said they did not use the unscheduled time for learning explained that the major constraints were the amount of time available and the study facilities available to them in the Faculty. In general, there was agreement that it was not worthwhile trying to work unless more than an hour was available.

> *"I do go to the library; I generally find that the short periods of the day are unproductive but the longer periods I can get something done but not if there is just one hour between lectures"*. (Group 1)

[3] This student, like many of the graduate entrants, is a qualified practitioner of an allied clinical profession and continues to run a part-time practice while studying medicine.

WitsETD

"Honestly I find it not much use if it's only an hour – if it's two hours I'll use it but not if it's only an hour. By the time you've got all your books out it's almost time to pack up again." (Group 4)

Some students found the physical environment constrained their ability to use available time satisfactorily.

"I find it difficult to work at Varsity. I need my computer and my own private space. I find it distracting with everyone else around". (Group 3)

"I'm quite specific about my study environment so I find it not conducive to studying here. It might work for some other people but it doesn't work for me." (Group 4)

Others were able to use the resources effectively.

"I mean I like to go to the library. So I generally go to the library…" (Group 1)

It is interesting that none of the students mentioned using or studying in the PBL tutorial rooms which were designed as study areas equipped with books and Internet access which would be available for students to use in the unscheduled times to seek and synthesise information. The curriculum design had taken into account the fact that students would need facilities for studying in the unscheduled time and had provided excellent facilities in the form of the PBL tutorial rooms. Not only are many of the students not using the time effectively but they are also apparently not making full use of the facilities available to access information from the books and websites as intended.

The specific time during the week in which the time was available was relevant for some students. In GEMP II the new case begins each week on a Monday afternoon. Monday morning is thus either free or may have a lecture related in some way to the previous week's case. One student commented that although she founded the time during the week useful, Monday mornings are effectively 'wasted time'.

"During the week it's fine – in between lectures I use the time, but on the Monday before PBL the time is wasted. I don't go over previous weeks' work or anything." (Group 2)

The design of the weekly timetable is structured with PBL tutorial 1 (analysing the problem and identifying knowledge gaps) on Monday afternoon, PBL tutorial 2 (adding to understanding through more patient information) and PBL 3 (integrating all knowledge gained during the week) on Friday, with an assumption that students would use the weekend and Monday morning for consolidation and revision before moving on to the next problem.

WISETD

It was also clear that the timing in relation to imminent exams changed perceptions of the value of small time slots available for study.

> *"It also depends on how close to the exams it is. Closer to exams we use every spare minute we have."* (Group 3)

> *"…- except just before the exams when I use all the time we have."* (Group 4)

It should, however, be noted that the unscheduled time was primarily intended for seeking information and not for revising before examinations.

The examples above show that the concept of how much time is available as a resource and the use which is made of such time is an important construct in the academic practice of the GEMP students. Oakshott (1986, cited by Slonimsky and Shalem, 2004:84) foregrounds *scholé* or "leisure time" as a key condition for mastering the range of intended academic practices. In the present context it appears that many students may be taking unscheduled time literally as leisure time in which academic thought, knowledge building and creating new understandings play no role.

To an appreciable extent there appears to be a gap between the assumption of mature, motivated and self-directed learners the curriculum was intended to both admit and develop and the reality revealed by this study. The challenge for the Faculty will be not so much in how to restructure the curricular time to accommodate the wishes and expectations of the students for a more "user-friendly" timetable, but how to encourage and develop responses and attitudes which are better aligned with the requirements of professional practice.

5.2.3 Effective use of PBL tutorials

Although the PBL tutorials are compulsory, scheduled activities of the GEMP curriculum, participation in the discussion groups represents a much weaker level of framing than that of the learning in the previous traditional curricular structure. The students themselves should be able to influence how effective the tutorials are by their levels of participation and the quality and quantity of the contributions they make.

From the questionnaire responses, it appears that the PBL 1 tutorial is generally seen as useful for identifying gaps (question 2.7, mean response 5.1 and 76% agree) and PBL 3 is useful in bringing things together (question 2.12, mean response 5.3 and 79% agree). In

WitsETD

contrast, the unfacilitated PBL 2 tutorial is less valuable (question 2.9, mean 3.6 and only 36% agree).

Question	Statement	Mean	%A	%D
2.7	*The discussion in the PBL 1 tutorial is useful in helping me to identify gaps in my knowledge and understanding*	5.1	76	17
2.12	*The PBL 3 session is valuable for bringing together my understanding of the week's case*	5.3	79	16
2.9	*PBL 2 is a useful session for adding to my understanding*	3.6	36	48

An unsolicited response from one focus group participant was emphatic that PBL 2 has little value:

> *"The PBL 2 is a waste of time. We all go there and sit and we know nothing so we achieve nothing. It's better to have a facilitator there to ask you questions."* (Group 2)

There is a clear indication here that the student perceptions of what knowledge is valuable and what learning is worth investing time in, do not match those of the planned curriculum. The difference in the perceived value of PBL's 1 and 3 as opposed to PBL 2 raises two important issues. Firstly, there is the importance of role of the facilitator in PBL 1 and 3. It appears to be the facilitator who determines the successful outcome of a PBL group activity:

> *"Everything depends on the facilitator - if he is knowledgeable he will ensure that you bring everything together."* (Group 1)

Not only do these students appear to understand the contribution which the facilitator makes to the process by which they are able to construct their webs of meaning, but their perceptions of the knowledge and learning that are possible in conjunction with the facilitator were seen as more valuable than without a facilitator. The role of the facilitator in enabling learning will be explored in greater depth in relation to the social context of learning (section 5.4 of this chapter).

The second issue raised by the inadequate use of the time allocated to PBL 2 is that of the development of competence in independent exploration and debate. PBL 2 is arguably one of the most essential components of the week in which students receive detailed information on the medical history and the results of clinical examination and laboratory tests of the 'patient' of the week. They are expected to use this time to analyse this new information to gain greater understanding of the disease mechanisms and refine their hypotheses in the light of this new information. In other words, it is a valuable opportunity for refining the clinical reasoning process essential to the practice of medicine, but one which is not being fully

WISERD

utilised. The apparent reluctance or inability to work independently in PBL 2 will be explored further in section 5.3 in relation to student approaches to learning.

5.2.4 Adapting to curricular change

The introduction of a different form of curricular structure intended to promote a different type of learning in the GEMP. Since few, if any, of the students would have had extensive experience of an integrated curriculum and self-directed model of learning, particularly at the tertiary education level, their adaptation to the change is of interest here. The learning strategies they had adopted previously and their motivation for learning will have been developed in relation to other curricular structures and learning expectations and will have formed part of their existing cultural models of learning. In order to cope successfully with the GEMP curriculum many of them would have had to 'unlearn' old ways of learning.
One of the free response comments in the questionnaire supports this:

> *"[The] GEMP programme is a masterpiece. The style of learning, though stressful in GEMP1, with time acclimatization develops and the learning process is accelerated."*

Two aspects of adaptation to curricular change are evident in the research findings: firstly the change which some students identified in their learning in the GEMP as compared with their previous experiences, and secondly changes which have taken place over the two years of GEMP I and II programme.

Several different ideas about change were brought into focus by the group discussions. A key intention of an integrated curriculum is that students develop the ability to see the interconnectedness of the different disciplines, to make links between related topics and think more holistically. An inevitable consequence of integrating between different disciplines in a programme based on body organ systems is that students do not necessarily make the connections between the content presented in the different organ systems. In other words, while the integration code may make the horizontal integration explicit, it may simultaneously produce unintended vertical dislocations. Nevertheless, some of the students had realised the importance of integrating *between* the different blocks as the course progressed:

> *"The good thing for me is that you start off in the different blocks but then I start to make the links between the different blocks and within blocks between the different cases. You must be able to make all the different links because that's what's important."*

WiSER

"Yes, for the Pharmacology sometimes you learn all about one drug in one block and then you have to remember it again in another block."

(Group 4)

Bernstein's theory of student codes of recognition and realisation may be useful here. Bernstein (1996) applies the concept of "recognition rules" to the ability of members within a pedagogical context to recognize shifts within the classification and framing of that context. Through the "realisation rule" they are able to put meanings together and create "legitimate texts" (Bernstein *Ibid*: 32). The students' comments above suggest that they have indeed recognised the need to respond to the message communicated to them through the integrated curriculum code.

5.2.5 Change in language competence

The change in access policy which sought to admit more Black students as graduate entrants had not regarded language as a barrier to learning in the GEMP. However, both anecdotally and in direct conversation with students, it became evident that language difficulties might be acting as a constraint to understanding and knowledge building. In particular the course materials which need to be mastered are not only written in what is essentially a second or third language for some students (English), but further add to the complexity by introducing the discourses of a number of different disciplines. Despite this challenge, several students reported an improvement in their language competence in the GEMP, both at the level of the English as well as that of the technical content:

"In the beginning it was very difficult for me to understand the language - in the sentence constructions and the meanings of the Learning Topics I didn't really understand, especially in the exams, what they wanted. I could understand the question but I didn't know what they wanted so I had to get a broad overview of what it was about. Now it's much better- maybe not in my marks (general laughter) but I feel it's much better." (Group 4)

"We've now got so used to the language that even if it's technical we can work out what they're trying to say." (Group 1)

5.2.6 Change in approaches to learning

The change in curriculum code assumed that students would change their organisation and approach to learning. Students in the focus groups could recognise that their approach to learning had changed as a result of the different demands of the course as compared with

WitsETD

some of their previous experiences. Several students compared their learning experiences in the GEMP with that at school – more specifically in matric.

"Basically I think in the time we have there's not enough time to learn like we used to in matric."

(Group 1)

"In matric we went over everything and made sure we understood everything whereas now with it being integrated there are literally things that you can't go over again."

(Group 2)

Having time to "go over" things more than once was seen as an important contributing factor in developing an "understanding" but with a limited amount of time to cover the content the students recognised the need to adopt different strategies.

Sequence and pacing of the curricular content are both conditions determined by the design of the curriculum. Sequence relates to the temporal relationship between different content areas selected for inclusion, while pacing is the relationship between the number of units of time allocated to each area. The latter is also a reflection of the importance which the curriculum planners attach to that particular content area. As described above it was evident that only 52% of the class found the amount of work expected in the available time to be manageable (see question 1.4 in 5.2.2 above), but the focus group interviews revealed that some students have responded by changing their approach to learning:

"There's a lot more work to cover in a week so you have to change" (Group 3).

"I have had to change how I work – I used to just read my course pack but some of my friends made notes so I started making notes as well." (Group 1)

Since it was one of the intentions of the curricular design to bring about a change in learning which would enable students to respond effectively to changes in knowledge in the future, their recognition of the need to change is interpreted as a positive outcome. How they realised this aim will be discussed in more detail in section 5.3.

The integrated curriculum code has also contributed to a change in learning for some students:

"GEMP has definitely changed how I learn because it is integrated so what I will do I have to link together all the psychosocial things to the medicine. In MBBCh II we just had to

WitsETD

learn Anatomy and Physiology but now in GEMP we have to integrate them together so it's a different approach". (Group 2)

Experiences of more or less effective strategies have also contributed to changes in approach during the GEMP:

"Last year [GEMP I] in some of the course packs they were talking about some things I wasn't sure about. So now I don't even bother about the course packs until I get a decent understanding of the topic." (Group3)

This student is indicating a change over time as they have become enculturated into a different approach to using course content. In terms of a Lave and Wenger's concept of participation in a community of practice this student is no longer a 'new comer' but is creating a trajectory into the practice and becoming an 'old timer'.

Several students were particularly aware of the fact that they had had to adapt to the increased demands of volume of work which the course placed on them. This is an affirmation of the intention that students in the GEMP would develop greater responsibility for their own learning as they became insiders to the practice.

"I haven't changed the way that I approach learning or studying at all but I do think- and I wrote my last portfolio about this – I think my brain has changed – it's getting more use. I remember studying Anatomy for the first time. Even learning the 4 muscles of the pectoral region it was extremely difficult to just remember the names whereas at the end of it I found it easy to remember the whole base of the brain and those things so I think that my brain has become more efficient"

"Never before have I had to do this for myself. Before, in school and in MBBCh I and II, there were strict guidelines. But here sometimes there's something vague in the course pack but you know you have to get the information for yourself because nobody is going to teach it to you. So if you don't do the work or do extra no one's going to help you. To be whatever you want to be you have to take the responsibility" (Group 4)

The quote above shows the positive response of a student to the opening of the pedagogical frame and to the expectation that students would develop a self-directed approach to learning.

The following general conclusions may be drawn about the students' experience of and responses to the integrated curricular code and open framing created by the GEMP:

WitsETD

Firstly, many students are using the unscheduled time which was intended for self-directed learning in unintended ways – either for socialising or for financial gain. The length of the 'packet' of unscheduled time available and its positioning both in the daily and the weekly programme as well as proximity to examinations impacts on its perceived usefulness. Secondly, the facilitated PBL 1 and 3 tutorials are perceived to be beneficial learning opportunities but not the unfacilitated PBL 2 tutorial. Thirdly, some, but not all, students had recognised the need to adopt different learning approaches to the different demands of the in GEMP I and II curriculum and have been able to respond to these demands.

The next sections will explore in more depth what these approaches are and why students adopt them.

5.3 Students' experience of learning in the GEMP

In the previous section the response of the students to the integrated curriculum with weaker framing brought into focus some of the different in ways in which they are engaging with the learning process. The focus will now be on three key concepts: motivation for learning (why), the process of learning (how) and the content students select for learning (what).

5.3.1 Motivation for learning

The motivation that drives learning is likely to be reflected in different learning styles and the production of different types of knowledge. The questionnaires and interviews revealed that a range of different motives appear to drive student learning in the GEMP. These have been grouped as the desire to pass the examinations, improve understanding and the development of personal and professional identity as a doctor-in-training. There is likely to be some overlap between these areas.

Several of the design features of the GEMP such as the integration of factual knowledge, seeking, evaluation and application of information and development of appropriate attitudes are aimed at fostering professional competence for the long term future. Two questions in the questionnaire specifically addressed the issue of short term motivation for success (i.e. performance in assessments) compared with the longer term goal of training to be a competent doctor.

WitsETD

Question	Statement	Mean	% A	%D
6.6	*I am generally focussed on the immediate goal of passing the exams of the current year*	4.7	58	29
6.7	*I have a long-term focus on what I need to know to be successful in the clinical years and/or medical practice*	5.6	78	7

Since this is an important aspect of the study it will be explored it in some detail here. Firstly, the mean response for question 6.6 (short term goal) was 4.7 with an agreement of 58%. Across the different groups of interest in the study there was, however, a wide range of mean responses. Age appeared to be the greatest differentiating factor, with a mean score of 2.6 for the 30+ age group and 4.6 for both other age groups. The matric entrants (mean 5.8) seemed slightly more motivated by passing exams than graduates (5.2), somewhat confirming the age differentiation since the oldest students are all graduates. These differences suggest that age, and presumably maturity, is associated with different priorities. In contrast, question 6.7 (motivation for learning to be a doctor) produced a much higher mean response, (mean 5.6 and 78% agreement) than question 6.6 and group responses which mirrored those in the previous question: the oldest students (mean 6.6) and graduates (5.8) are more focussed on becoming a doctor than their younger classmates (means of 5.9 for the 25-29 group and 5.5 for the 20-24 group) and the matric entrants (mean 5.4). The Indian students showed less of a long-term focus (mean of 5.0 for question 6.7) as compared with the Black and White groups of students (both 5.8). The range of mean scores across the different home language groups was also of interest. Afrikaans language students showed the greatest focus on their future as doctors (means of 4.2 and 5.8 for questions 6.6 and 6.7 respectively), with English speakers being the group with the greatest exam focus (mean 5.1) and lowest professional focus (mean 5.4). Since the English speaking group of the questionnaire respondents consisted of 25 Indian and 54 White students the results for the language groups appear to be consistent with those for race.

Some of these findings were corroborated by the focus group interviews. In response to question 9 in the interviews (see Appendix B) in which the groups were asked about how they approached their learning, it was only in group 4 (the Afrikaans students) that learning for becoming a doctor was specifically raised by the students as an important motivation for learning:

> *"…the vast majority of stuff I try to understand it. One day when you're a doctor you're going to have to have an understanding because you're going to have lots of patients coming in and you're going to need to know what's going on."*
>
> *"It's bigger and fuller like life in general and not all we're studying, we're studying not for now but to become a doctor like you said, so everything you learn you can't just study for the exam. You may be disadvantaging yourself and your future patients if you do that."*
>
> (Group 4)

WitsETD

The quotes above indicate the goal-oriented approach of the Afrikaans language students who demonstrate a focus on authentic tasks as important for developing professional competence. This was a surprising finding because there was an expectation that students in all the groups might have recognised the importance of structuring their learning towards their future practice.

The motivation for learning may also be linked to the students' epistemological position on knowledge. Those students who are focussed on passing exams may be operating within an acquisitionist model: knowledge is something you acquire and use to pass examinations. From the participative perspective, those who learn with a more career-oriented goal have already developed an identity with the profession of which they are still relatively peripheral participants. Since these approaches are apparently not evenly distributed across the different sociocultural groups in the class, the orientation to knowledge may be derived from their cultural models of learning, which will be explored in more detail in section 5.4 below.

If understanding is a motivating factor in learning, then we should assume that students should value those activities which contribute to their understanding. It may thus be useful to see whether in fact those activities which are intended to contribute to the integration of knowledge, and hence to an understanding of what the curriculum is intended to achieve, are in fact identified as useful by the students. Several questionnaire items were aimed at exploring whether the small group PBL tutorials were opportunities for learning which contributed to developing an understanding of the week's content. Questions 2.7, 2.9 and 2.12 and 2.13 are relevant here.

The results show clearly that although PBL 1 and PBL 3 are seen as making useful contributions to understanding, this is not generally the case for PBL 2.

Question	Statement	Mean	% A	%D
2.7	*The discussion in the **PBL 1** tutorial is useful in helping me to identify gaps in my knowledge and understanding*	5.1	75	17
2.9	***PBL 2** is a useful session for adding to my understanding*	3.6	36	46
2.11	*The plenary session after **PBL 2** is useful for understanding the patient history*	4.0	27	47
2.12	*The **PBL 3** session is valuable for bringing together my understanding of the week's case*	5.3	77	16
2.13	*After **PBL 3** I generally feel that I have a good understanding of the week's objectives*	4.9	67	16

WiSER

The results above confirm the discussion in the focus groups reported earlier (see 5.2.3) that students do not perceive PBL 2 as useful. The absence of a facilitator in PBL 2 could be one reason for the perception of that session not being useful. The assumption made by the design of the curriculum was that in PBL 2 students would be motivated to explore the patient history and work towards a refinement of their hypothesis generated in PBL 1. The scaffolding and support they receive in the facilitated session is absent and many groups seem unable to produce the self-directed approach required to carry out this function unassisted. However, the plenary session following directly after PBL 2 is conducted by a staff member, usually an expert in the field around which the week's learning is structured. A further assumption was that this plenary session would be highly valued by the students because there is an opportunity to ask questions and gain insights which will greatly enhance an understanding of the key pieces of information in the patient history and test results and how these contribute to making a definitive diagnosis and formulating a management plan.

An important question then is why PBL 2 and the plenary session are not valued by the students. Several possibilities present themselves. There is a wide variety of educator styles and ways in which the plenary session is conducted – the individual creates the learning. This is one aspect of the social context of the learning which is the subject of section 5.4 and I will return to it there. The second reason possibly relates back to the use of curricular time. The PBL 2 is held at 15:00 and the plenary from 16:00 to 17:00 on a Wednesday. Many students have requested a change of timetable because they are reluctant to stay later in the afternoon. The way in which timetable time is used thus becomes a constraint to learning because of the low perceived learning benefit in relation to other gains. The design assumption that useful sessions would be valued in spite of inconvenient scheduling is not supported by the research. This possibility was confirmed by a comment made in a focus group:

> *"The other thing is the arrangement of the PBL's. It's not very user friendly. Especially the Wednesday one. It's the only thing after lunch so people actually don't want to stay"*
>
> (Group 3)

The analysis of the questions above according to the different groups shows some variations that are noteworthy. Black students value all three PBL sessions the most and Indian students value PBL 1 and PBL 3 the least. Graduates rated all three sessions higher than did than the matric entrants. Reconciling the opinions reflected in the questionnaire and focus

WitsETD

groups with the observation of the group activities in the PBL 1 and 2 tutorials poses some further interesting questions. Of the three Black students in the observed group, only one (student 1 in the Table 2 below) participated actively, and was in fact the dominant student in the group. The other two Black students (students 2 and 3) were clearly listening to the discussion but seldom made contributions unless encouraged by the facilitator. In contrast, the three White students (students 6, 7 and 8) were generally vocal and constantly involved in the discussion. One of the Indian students (student 5) was prominent, the other (student 4) made the fewest contributions overall). Table 2 below, showing the number and type of contributions made by the individual group members, also shows that the quietest students did participate more when responses were elicited from them by the facilitator.

Table 2: **Profiles and numbers of contributions of students in PBL tutorials 1 and 3**

NO.	SEX	HOME LANGUAGE	SOCIAL GROUP	ENTRY	PBL1 contributions		PBL3 contributions		TOTAL Contributions
					Spontaneous	Elicited	Spontaneous	Elicited	
1	F	African	Black	Graduate	10 + 15	1 + 1	13 +11	3 + 2	**56**
2	M	African	Black	School	1 + 4	1 + 1	3 +2	5 + 2	**19**
3	M	African	Black	School	1 + 2	1 + 2	1 + 2	4 + 2	**15**
4	F	English	Indian	School	2 + 2	1 + 2	0 + 2	1 + 1	**11**
5	M	English	Indian	School	12 +14	0 + 1	8 + 5	2 + 2	**44**
6	F	English	White	Graduate	12 + 10	0 +1	8 +6	2 +2	**41**
7	F	English	White	School	9 +5	0 +2	8 + 4	2 +1	**31**
8	M	English	White	School	6 + 8	1 + 1	Absent +6	Absent + 2	**24**

Results from a study conducted previously in the same student cohort in the previous year of study (GEMP I of 2005), showed a very similar pattern of participation by the different sociocultural groups. The sociocultural elements of interaction and participation in PBL tutorials will be discussed in more detail in section 5.4.

A key assumption about learning in the GEMP was that participation in the PBL group discussion would motivate students to gain a deeper understanding of the issues raised by the group. In all the focus groups several students did mention that one of the motivating forces for learning was a desire to understand the work better. They also suggested that the need to understand was the reason for seeking additional resources outside of the notes and lectures provided.

"If I don't understand something I can't move on."

WITSRD

"If necessary I find a book or a computer or some other view point that will help me understand it."

(Group 1)

"I go through the course pack and things don't understand I have to look up." (Group 2)

"I won't move on until I have [understood]. If it doesn't make sense to me or I can't imagine what it would be like on a patient then I know that I don't understand it." (Group 3)

"Understanding for me is the most important component of learning. Even with some subjects like Mathematics with equations for example, if you understand the equation you can put down all the mathematical rules you can figure out the theory from your understanding and I think it's the same with the medical discipline as well."

"… but that's the problem with Medicine, you can't just memorise stuff, you have to understand it. So to work on a problem is much more beneficial because it helps you to understand it."

(Group 4)

It is clear that these students have recognised that there is a difference between learning and understanding and it appears that when the meaning of something is not clear it creates a cognitive gap which they attempt to close by creating a personal understanding. Sobral (2004) has described different types of motivation as driving medical students' learning. He classifies these as intrinsic and extrinsic, with the former including motivation to know, to achieve and to experience stimulus, and the latter group as identification, introjection and external control. The motivation to accommodate new material as understanding falls within the constructivist Piagetian concept of equilibration. In the following section I will show how the students are approaching their learning to achieve this understanding.

5.3.2 The process of learning

In the previous section it was shown that students expressed different motives for learning and it is likely that such motives lead to different approaches to learning. These processes appear to be directed at either learning so as to remember/memorise or at understanding. While repetition is a strategy associated with both memorising and understanding, a number of other approaches are adopted to achieve understanding.

The questionnaire scores for questions which addressed approaches to learning and understanding are shown below:

WitsETD

Question	Statement	Mean	% A	% D
2.18	*My own reports back to the group are a valuable part of my learning*	4.7	63	15
2.21	*The reports of other group members are a valuable part of my learning*	4.8	65	18
2.22	*By the end of each week I feel that I have pulled together and integrated my understanding of the various different disciplines related to the case*	4.9	63	10
2.26	*The facilitator should explain things that the group do not understand*	6.4	92	4
3.2	*I try to memorise the content of the learning topics*	3.9	42	41
3.3	*I try to structure/organise new information in such a way that it is easier to understand*	5.5	81	12

These results show a clear recognition of the need to structure knowledge (question 3.3) and not merely memorise content (question. 3.2). Students also show an appreciation that, as well as learning from their peers, constructing a report for presentation to the group members is a useful tool for their own learning. The response to question 2.26 was one of the highest in the questionnaire, and the expectation that the facilitator should teach difficult concepts suggests that the students have not yet accepted full responsibility for making sense of what they do not understand and still require the security of the having an 'expert' explain it to them. Between the different subgroups of the class there were small variations on questions 2.18 and 2.21. The graduates and older students were generally able to pull things together more effectively. The older students and Black students indicated that they were the least inclined to try and memorise content. The latter was an interesting finding since many Black students are generally assumed to have been educated in secondary schools and (and some Universities) in which rote learning is the norm and it might be expected that their cultural models of learning would be more aligned with a memorisation approach. It is also worth noting that students value their fellow student's reports as more useful than their own reports to the group. They have thus not fully realised the benefits of peer teaching as a means to learning. The above suggests that the form in which they are reporting may contribute to this finding. Students often just copy something from a book or handout and read it to the group. There is thus no need to understand the meaning of what they should be explaining to each other. The emphasis may well be on the production of a report rather than on the learning which is derived from it.

The focus groups gave valuable qualitative insights into some of the learning strategies students are using. These include repetition, constructing summaries and diagrams, classifying, explaining to others and linking ideas together.

WiSER

- Repetition

  "I believe in repetition. I go over it until I know it … I just read and read and read - I do actually understand it. (Group 1)

- Summaries

  "I go through the whole course pack and try to make notes and summarise it. And then when I learn for the exam I go over my summaries. Basically I think in the time we have here's not enough time to learn like we used to it matric. There's literally only enough time to read over everything."

  "I try to understand and not just memorise."

  (Group 2)

  "Me and my friend – we split the pack in half and I summarise half and we each become the expert in our half and if we have any questions we can debate them".

  "There's a lot of stuff that I don't understand in week1 so I make notes and do summaries of the things that I do understand and then I find that it comes together later on but that's a bit worrying because I don't feel that all my questions are answered in week 1[of the block]."

  (Group 3)

  "I make summaries of all my work."

  (Group 4)

- Notes

  "The only thing I make notes on is Pharmacology – it's too verbose". (Group 1)

  "Mostly I just read it but sometimes I will make notes".

  "I used to just read my course pack but some of my friends made notes so started making notes as well."

  (Group 2)

- Diagrams

  "Personally I'm a very visual person; I need to have diagrams, pictures and stuff. Also I can't learn something from just reading it so I do make notes but I like making flow diagrams and schematic things so when I look at it I can see OK this means that. Also one little diagram with a few notes on it gives me a general understanding. If you can take a lot of information, condense it into a diagram that has all the information on it it's much easier to remember – all the little things are on there so it's much easier to remember" (Group 4)

- Linking ideas

  "Now when we get learning topics I go through it and highlight the important things and then I try to figure out what is the overview – what are they trying to get across? I think what this case is about so I try to get the bigger picture."
  DM: ***Do you try to link new material to previous?***
  "Absolutely. I always try to do that because it makes a bigger picture."
  DM: Is ***your learning a huge network of facts linked together?***
  "Yes, because the human body is like that so nothing is there in isolation because it links to everything else in the body."

  (Group 4)

- Classifying

  "I need to classify something for instance we're doing Psychiatry at the moment so if I can classify all the information about the Psychiatric disorders then I can put it in a box and my brain is like room full of filing boxes and I know that I can walk through it and pick it up, then I know

WiSETD

that I have understood it. I put everything in little boxes and all the boxes in bigger boxes and that's the way that I know it's there." (Group 4)

- Explaining

"If I can't explain then I know that I don't understand it. If you understand it you should be able to close the book and teach it back to someone – obviously not the detail but I know that I understand it if someone were to come to me and say what do you think about this and I could explain how it works then I'd know that I understood it." (Group 3)

The students above have identified a range of different ways in which they learn for understanding. Fyrenius (2005) has categorised the approaches students adopt for achieving understanding in a medical PBL programme in Sweden as 'condensing', 'holding' and 'moving'. Condensing is an acquisitionist position with a realist foundation– a "taking in" of knowledge hidden in text books and teachers' minds. A 'holding approach' has some constructivist elements – active construction of understanding by reorganisation to achieve a proper understanding in terms of predetermined objectives. A 'moving approach' is characterised by a continuous reshaping, refining and challenging of knowledge, and is thus more fully constructivist. Most of the approaches listed above fall within the holding approach. Making notes, summaries, teaching and explaining to each other, classifying, diagrams and linking new ideas to old all involve a restructuring and therefore a transformation of the knowledge. McLean (2001), working with medical students in a PBL curriculum at a different South African university, showed that those students who had achieved higher academic scores expressed more 'transformative conceptions of learning' as opposed to their academically weaker peers, who tended to rely more on memorisation and recall.

Those students who mentioned strategies which involved changing or refining conceptions of learning and knowledge may have been working within a 'moving approach'. Included within this category are the students who may be adopting the self-directed approach to learning which was intended in the curriculum design by giving them more responsibility for directing their own learning. When something they were learning from the materials provided could not be understood they sought answers from additional sources. In this way they were challenging their immediate constructs and were seeking to refine the ways in which they understood. This approach may also be interpreted as being metacognitive. Several examples were suggested in the focus groups:

"If necessary I find a book or a computer or some other view point that will help me understand it". (Group 1)

WitsETD

"I go through the course pack and things I don't understand I have to look up".

"Everything we do and every section we do I try to find a textbook on. A basic text book and I read the text book. I don't necessarily learn from the text book but I read it so I can understand what it says and from there and if I've got a list in a learn topic – a list of points- at least I can understand it. I use the learning topics and lectures to actually learn what's required but for understanding I always use text books."

"That's why I use text books a lot because these point form lectures just don't work for me."

(Group 3)

The questionnaire responses provide further useful insights on the use of alternative learning resources:

Question	Statement	Mean	% A	% D
1.7	*I am stimulated to read outside of the specified objectives*	4.0	45	36
1.8	*I use additional resources in addition to the course packs, lectures and theme sessions for the week*	4.5	56	32
1.9	*I make use of the websites which are provided as links to deliveries on the GEMP website*	3.5	37	54
1.10	*I find additional interesting GEMP–related websites myself*	2.9	22	63
1.11	*I make use of the prescribed text books*	5.6	89	7
1.12	*I make use of library books*	4.6	67	27
1.13	*I make use of articles in medical journals*	2.7	17	69
3.4	*The learning topics stimulate me to read further*	4.2	50	30
3.5	*I supplement the content of the learning topics with other sources such as books and websites*	4.4	59	33

These results show clearly that prescribed books are seen the most useful source of extra information by the respondents (89% agreed with question 1.11 above). The chief librarian of the Health Sciences library has also reported an increase in the use of the library since the introduction of the GEMP[4]. It was of concern, however, to see a limited use of websites and journal articles reported as sources of information, particularly since there is a series of lectures and exercises on evidence based medicine which is specifically aimed at teaching students how to access and evaluate information.

A breakdown of the different student groups for questions 1.8, 1.9, 1.10, 1.12 and 1.13 above was useful to establish more precisely which students were in fact making use of these resources. Additional resources as a whole (question 1.8) were used most by the White students (mean 5.1) and least by the Indian students (mean 3.7). Websites and library books were used most by Black and least by Indian students. Graduates used all the resources more than the matric entrants. Except for the use of prescribed books, there was an increase in the use of all resources with an increase in age, and the 30+ age group was the only one which made good use of journal articles (6.0 as opposed to 2.4 and 3.0 for the other two age

[4] Personal communication

WitsETD

groups). In general the Afrikaans-speaking students made more use of the resources than the other language groups, with the notable exception being the library books which were used most by the African-language students. These findings suggest that the assumption that graduates will be more mature and self-directed learners may be confirmed, and further indicates that cultural models of learning may be an important factor in student's approaches to learning.

5.3.3 Selection of content for learning

Opening of the pedagogical frame has given students more control over their own learning and they are able to make more choices about what, how much and when to learn. Since it is generally not possible for students to learn everything they are given, they are required to make strategic decisions regarding what content to learn. It was the intention of the curriculum design that the objectives for each week and every subject area would indicate the required learning on which students could expect to be assessed and that students would make use of these objectives to guide their learning. There were thus questions in the questionnaire directed towards the use of the objectives.

Question	Statement	Mean	% A	% D
1.5	*I make use of the objectives to guide my learning*	3.7	36	49
1.6	*I am able to find the information needed to meet the objectives*	4.7	58	16
1.7	*I am stimulated to read outside of the specified objectives*	4.0	45	36
6.4	*I use the course objectives to guide my studying*	4.2	48	41

It is clear from question 1.5 that the objectives are important in directing learning for only 36% of the respondents. The Black students (mean of 5.2) and oldest students (mean 4.8) use the objectives more than the other groups. This was confirmed by question 6.4 regarding the use of objectives for studying for exams. Less than half the respondents make use of them and again, the only group showing a noticeable use of objectives is that of the Black students (mean 5.7), confirmed by African language students (mean 5.8).

The responses in all the focus groups were also overwhelmingly against the use of objectives:

> *"I don't use them at all."* (Group 1)
>
> *"The objectives are not much use because I often find that the objectives are not the same as what is given to us during the week."*
>
> *"To be honest I never ever use them. I just use the lectures and learning topics."* (Group 2)
>
> *"To be perfectly honest, I never look at them".*

WiBER

"For the most part of every block I don't use the objectives at all. Maybe before an exam".
(Group 3)

"I'll go through them briefly. But I don't really use them to guide my learning."
(Group 4)

Several students reported using objectives as a confirming device:

DM: ***Do you use the objectives to guide you in what to learn?***

"Only if you'll really, really not sure what they want you to know." (Group 3)

"Sometimes just to see if you've covered everything" (Group 3)

Two Black students in group 2 and an Afrikaans language White student in group 4 agreed that they did use the objectives as a guide for their learning:

"When I get the pack I go over the objectives and I highlight the things I need to follow up on".
(Group 2)

"I use the objectives to identify what appears to be important during the week – to focus my learning." (Group 2)

"Well I base my studying on that – completely… I look at which objective is linked to which lecture or whatever. I make summaries of all my work so I look at that. I like guidelines for what to study so I use the objectives as guidelines." (Group 4)

If students are not using the objectives in the way intended it is useful to find out what they are using to guide learning. Some reported that they try to learn all the course materials they are given:

DM: S***o how do know what to learn?***
"Everything." (Group 1)

"I learn everything."

"I just use the lectures and learning topics"
(Group 2)

"We're usually given everything in the learning topics so you'll cover everything any way so I don't even look [at the objectives]"

(All together) "*Everything!"* (Group 3)

The objectives are part of the pedagogical message system which is intended to direct the student towards the appropriate learning. Instead, the responses above suggest that the students are responding to the course content as the message that drives learning. It seems

WisETD

possible that they may not have switched codes and are the using old codes in which the intended learning was generally communicated through the taught content.

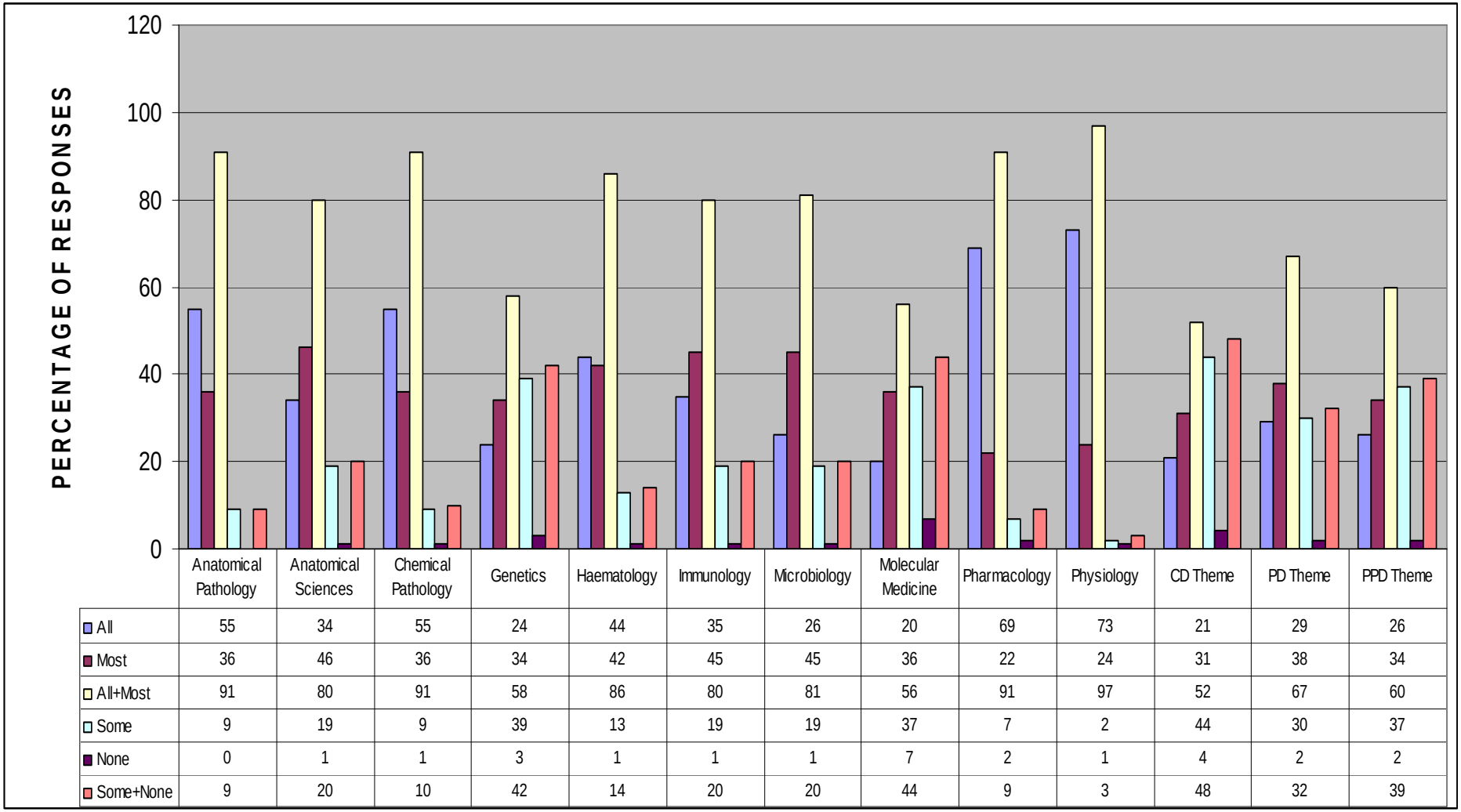
Several questions in the questionnaire sought to find out the extent to which students were studying the content selectively i.e. choosing to leave out certain content domains with the knowledge that in an integrated assessment it is possible to do so and to still pass the examinations. This is an important potential weakness of an integrated curriculum but the research results suggest that the extent to which selective learning occurs may be less than was anticipated:

Question	Statement	Mean	% A	% D
6.2	*I try to study all components of the course*	5.9	90	5
6.5	*I work strategically by choosing not to study certain disciplines because I know that I can still pass without knowing them all*	2.7	18	70

The high percentage of students agreeing with question 6.2 (90% agree, with 38% strongly agree) compared with the low percentage agreement with question 6.5 (18% agree, with 37% strongly agree) appear to confirm that a relatively small proportion of the class are studying selected subjects. The last section of the questionnaire was designed to find out which specific subjects might be deliberately ignored for assessment purposes. These results are summarised in the chart (Figure 3: Strategic studying of disciplines) overleaf.

The chart shows that there are differences in the approaches which the students have adopted to some of the different disciplines. Particular note should be taken of the yellow bars (All + Most) and the pink bars (Some + None). Physiology has the highest yellow bar as well as the highest blue bar (All), showing that this is probably the subject the students regard as most important. A surprising finding is that Pharmacology and Anatomical Pathology have the second and third highest yellow and blue bars. These are the two subjects which, anecdotally, students might elect not to learn. Molecular Medicine and Genetics are the two basic science disciplines to which students appear to pay the least attention. The former is dealt with largely in the Haematology block where it does not have an identity of its own and it is likely that students may not have realised that some of the content in that block was Molecular Medicine. If this is indeed the case, it is a consequence of the weak classification in the integrated code that identity of the disciplines may be reduced. Genetics content is represented in almost all the blocks, from either the scientific perspective or as genetic counselling.

WitsETD



	Anatomical Pathology	Anatomical Sciences	Chemical Pathology	Genetics	Haematology	Immunology	Microbiology	Molecular Medicine	Pharmacology	Physiology	CD Theme	PD Theme	PPD Theme
All	55	34	55	24	44	35	26	20	69	73	21	29	26
Most	36	46	36	34	42	45	45	36	22	24	31	38	34
All+Most	91	80	91	58	86	80	81	56	91	97	52	67	60
Some	9	19	9	39	13	19	19	37	7	2	44	30	37
None	0	1	1	3	1	1	1	7	2	1	4	2	2
Some+None	9	20	10	42	14	20	20	44	9	3	48	32	39

Figure 3: Strategic studying of disciplines

There are no obvious reasons why Genetics should have a low profile other than the possibility that the counselling aspect may be perceived in the same way as the Patient – Doctor Theme.

As a group the Patient–Doctor, Community–Doctor and Personal and Professional Development cluster of themes are studied less than the Basic and Clinical Sciences disciplines. There are several reasons why this may be the case. The curriculum design intends to create a holistic approach to patient care through integrating the biological domain with the psychological and social domains. It is the intention that the content of each week and the assessments should emphasise all of these elements in such a way that students learn to value them equally. However, the students still appear to perceive the BCS theme as the "real" medicine and the other three themes as the "fluffy stuff" or the "warm and fuzzy stuff". These perceptions may also be reinforced by some of the teaching staff, either explicitly with comments such as "I don't care what a doctor's bedside manner is as long as he/she can diagnose and manage effectively", or implicitly by some facilitators who may ignore the psychosocial aspects of the cases or treat it as an after-thought at the end of the case. Another possible reason relates to the nature of the content and the way it is presented. The structure of the knowledge content of these three themes is sometimes closer to that of the humanities than the hard sciences, and some of it may be based on opinions and models of behaviour rather than proven scientific 'facts'. Students have reported finding it difficult to learn for these themes (see later), possibly because the assessment criteria are not effectively communicated.

The differences between student perceptions of the BCS and the psychosocial themes[5] are confirmed in the questionnaire by the values attached to the respective theme sessions: the percentages of students who attended and found the BCS theme sessions valuable (question 5.3:90%) was far higher than those who found the PD and CD theme sessions valuable (question 5.5:45% and question 5.7:29% respectively).

[5] An unintentional error in the questionnaire omitted the PPD theme from this part of the questionnaire but the graph in Figure 3 shows that it was perceived to lie between PD and CD themes and thus it is likely that the values for PPD theme sessions would also have been between those of PD and CD.

WISERD

Question	Statement	Mean	% A	% D
5.1	*I attend all of the BCS Theme sessions*	6.2	92	7
5.2	*I work through all learning materials provided in the BCS theme sessions*	6.0	90	7
5.3	*I find the BCS theme sessions a valuable learning experience*	6.1	90	3
5.4	*I attend all of the PD theme sessions*	4.3	49	41
5.5	*I find the PD theme sessions a valuable learning experience*	4.0	45	39
5.6	*I attend all of the CD theme sessions*	3.9	38	53
5.7	*I find the CD theme sessions a valuable learning experience*	3.4	29	58

Some of the free responses confirmed these perceptions:

> *PD's, PPD's are a waste of time and not necessary! Just adding to study load.*
>
> *I leave the touchy feely stuff for just before the MEQ*[6]

The focus groups interviews attempted to gain more insights into which subjects were being studied less comprehensively and why. Anatomy was the one BCS subject that was mentioned frequently:

> *"There's so much Anatomy to learn and so few questions in the exam, I'd rather spend time on the things we think they would ask, things that need more understanding."* (Group 2)
>
> *"I agree. The Anatomy is taught in a lot more detail than we are asked in the exam."*
>
> *"The majority of people that are leaving out sections, it's more not where it's difficult but more where the time that's needed to study it is not worth the marks. That's why Anatomy is the big one because the time needed to study the detail they want us to know just does not warrant the couple of percentage they're going to ask so I mean I've got an Anatomy and Physiology text book and whatever Anatomy is in there that's what I learn despite what we're given because the time to achieve that is not worth the marks".*
>
> *"The other stuff (except the Anatomy which is a waste of time) I study to get a good understanding, I just study off by heart to get the marks."*
>
> (Group 3)

Group 1 mentioned Pharmacology:

> *"The one subject I can't learn everything is Pharmacology – there's a lot of Pharmacology and in the exam we may get one or two MCQ's and half an MEQ*[7] *relating to Pharmacology. I tend to look at a learning topic of 15 pages …so I try and look at it and say what could they ask and leave out quite a large portion."*
>
> *"Ja – if we had a Pharmacology exam I would learn all the Pharmacology …but now we just get examined on little bit"* (Group 1)

The assessment message system thus appears to be important in communicating and directing students' investment in different subject areas. In regard to the learning approaches discussed earlier (see 5.3.2) one of students had also singled out the Pharmacology content as being particularly difficult to learn and needing to use a different learning approach for that discipline.

[6] Modified Essay Question paper

WITSETD

The questionnaire responses which showed a tendency to invest less in the psychosocial subjects prompted a question specifically on these themes in Group 3, resulting in an extensive discussion which is worth repeating here:

DM: ***What about the PD, PPD and CD Themes?***
(General laughter)

"The PD, PPD, CD- you don't get marks if you don't put it exactly that way, it's about last minute cramming the night the exam before so I can write down the "3 F's and 5 A's and the 10 C's" even though I don't have a good understanding of it."

"That's how they mark it. You may have interpreted it in a certain way but you don't get the mark if you don't have that one word."

DM: ***Are these themes encouraging you to develop certain attitudes and behaviour?***

"I think it is important – I won't dismiss it as useless – I think it's good that we do it. I think it,s very objectively marked (sic) and examined: it's not flexible – I mean it doesn't blend in with your own ideas and thoughts so when it comes to writing it on paper you have to be very specific. But I think it is important that we do it. I mean PD especially because some people don't have the people skills that others might have …"

(Interruption)" *But will they ever?"*

" … So it's a way of trying to standardise that and make us aware of that important interaction."

"I think the whole thing would work much better if we did everything like once a week in a type of SCORPIO[8] *thing where you actually see what they're trying to say in a more example oriented way with simulated patients and that sort of stuff because I know for a fact, you can tell a person it doesn't matter what they think or how they should react to a particular situation everyone's going to react the way they normally would in a new situation even though they know this is the wrong way to react – the first time someone comes to you because they've lost someone because of something you've done, it doesn't matter how many lectures you've had on breaking bad news, it's still going to difficult"*

"There are guidelines – there's no good way to break bad news"

"I just found that the confrontation went on for ever and ever and ever!"

(General) *"Ja!"*
"
"I found the one on breaking bad news was good and dealing with children was good'.

Ja, but that's why I say we should have an interaction and role playing so we could actually see it working whereas if someone stands up and gives us a lecture about how to interact with someone it doesn't actually help…"

"We learn a lot from the ones where someone a patient actually comes – those are good-"

*(*General*)"Yes".*

"Like that talk from the guy about gay and lesbian..."

[8] A teaching session where students move between a succession of 'stations', each offering a different "authentic" experience.

WITBED

(General) *"Yes"*
"…issues. He was brilliant. He really engaged us. The problem is that many people don't really engage us. It seems they've taken a text book of all these theories and they just regurgitate it..."

"Or quotes!

"Yeah or quotes. But when they give us examples, like when Prof… gives examples from the patients he's seen, that's interesting. But the 5 A's and 3C's, that's not useful. But if you gave us an example of what you did with the old patient who came in, that's useful".

"Yes. That's a lot more helpful. That I can remember."

"Yes but that's why I say SCORPIOS work really well – small groups, interaction, role playing and communicating."

"It makes a huge difference for all of us."

"The lectures can make a difference. It was good when the patient with a spinal injury came- the blind guy—it helps you remember it. When you look back you remember it."

"I think you need an expert in each field. Like that guy with the gay and lesbian issues. Not just see the same people continuously and get bored."

The above discussion suggests that the students do realise the value the PD-CD-PPD sessions for their future as medical professionals (the discussion here is actually specifically about the PD theme) and the indications are that authentic tasks and real patients are able to capture their imagination and engage them in a meaningful way. There are strong implications here for the importance of appropriate learning activity and that a situated approach to building usable, robust knowledge requires a "cognitive apprenticeship" which embeds the learning in activity (Brown *et al.*, 1989:208).

Two main factors thus appear to be constraining the learning in the psychosocial themes. Firstly, the format of the teaching sessions: if the students are engaged in authentic tasks with authentic patients they see the sessions as valuable. If they are offered only theory and lists of factors ("five A's and three C's") to memorise, they see the task as being trivialised. They may make an effort to learn it, but it is just to pass the exam and not for the inherent value of the knowledge which they will need to apply in later years when confronted with real problems and real patients. They are thus making a distinction between the *theory* of the patient-doctor interaction and the *practice* of this interaction. Secondly, the format of the examination questions appears to constrain learning for understanding. Theoretical questions on the doctor-patient relationship are not perceived by the students as an appropriate way of assessing a skill, whereas a SCORPIO, in which they can demonstrate the ability to communicate effectively, would lead to a better outcome. A student in Group 4 made a

similar point about going through the motions of learning what is required for the exams but overall having a vision of what will be necessary for practice in the future:

> *"For me I will memorise some of the PD stuff like the different stages of the adult consultation even if I don't really see it as an understanding thing but the vast majority of stuff I try to understand it. One day when you're a doctor you're going to have to have an understanding because you're going to have lots of patients coming in and you're going to need to know what's going on."* (Group 4)

There is an interesting contradiction here about how the content and pedagogy of the PD theme (and possibly the PPD and CD themes as well) are communicating a very different expectation from what was intended. Compared with the traditional basic sciences these are new disciplines in the medical curriculum. According to Stern and Papadakis (2006:3) the formal teaching of "ethics, professionalism and humanism" were absent from the medical curriculum until the late 1970's. These disciplines are intended to contribute to an open learning frame but because they are developing a new language through which to communicate their criteria to the students, they may instead be closing the frame and reducing the richness of the content to the memorisation of lists. A free response comment in the questionnaire appears to support this possibility:

> *"We often get asked parrot-fashion questions, e.g. epidemiology & all that CD, PD, PPD rubbish so sometimes there is no option especially when there <u>is no</u> concept to grasp."*

The findings above have raised a number of issues about the learning choices that students make (the enacted curriculum) in contrast to the design logic which was inherent in the planned curriculum. The curriculum intended that students would be stimulated to be self-directed in their learning, but that they would be guided by the objectives as to what they could expect to be examined on. Since the objectives stipulate propositional and procedural knowledge as well as attitudes which students are required to develop, the design assumption is that they would value the acquisition of all such knowledge equally. In reality it appears that the majority are ignoring the objectives, are using the notes and lectures as the basis of their learning and some students are moderating their learning of certain important areas, such as Anatomy, Pharmacology and the PD, PPD and CD themes in accordance with a cost-benefit relationship driven by the amount of work required to master a particular discipline as compared with the marks afforded to that discipline in the exams. Standish (2005:62) is useful here, arguing that a closed set of objectives which narrowly defines the end point of mastery will inevitably reduce the possibilities for learning. Furthermore, while

WISETD

students are aware of the need to develop certain professional skills for their future careers, they do not necessarily accept the assessment as an authentic measure of such skill.

The integrated nature of the assessment is intended to promote an ability to integrate the content of the various disciplines which make up that block of teaching. However, instead of the students being able to master the content of the individual disciplines and then integrate it around problems, it may be that sometimes they are in fact being distanced from domain knowledge. This was addressed by a question to the focus groups:

> *DM:* ***Do you think the integration of disciplines within the organ-system blocks is fragmenting the discipline-based knowledge?***

Some students agreed:

> *"Sometimes it is a problem – you suddenly get a drug and you don't you don't know how it fits in to the whole of Pharmacology because you're not seeing Pharmacology continuously."*
>
> *"I think we don't get enough of the major subjects – Pharmacology, Microbiology – we're brushing over them. I'm not confident in my knowledge of these subjects. It's not how you learn but how much is presented to us."* (Group 1)
>
> *"Sometimes I do think we don't see the subject as a whole. For example we may learn about a drug in one block like Respiratory so you think of it as a respiratory drug but it may come up in another block and you don't see it as the same drug."* (Group 2)
>
> *"I would much prefer Pharmacology to be a subject because often what happens is that now in Neuro there was stuff that came from PCMS so I have to go back and remind myself about that and then there was a bit somewhere else so six month here and a year later there it's all over the place. I would much prefer to do Pathology as a subject, Micro as a subject Pharmacology as a subject and then still do all the stuff that we're doing now but maybe – I don't know – how ever it would work but I would prefer the separate entities."* (Group 3)

The comment above reinforces the significance of the integrated curricular structure for communicating the structure of the disciplinary knowledge to the student. Nevertheless, many students saw the benefits of an integrated approach:

> *"I prefer to learn all about the heart from the perspective of the different disciplines."* (Group 1)
>
> *"I actually find it much easier to learn it in the integrated way because, like, I hate Pharm so it's easier to learn in relation to the other subjects than just as Pharm I find it easier to learn scattered in between the other subjects.'* (Group 2)
>
> *"I prefer the integrated approach."*
>
> *"So do I. I think it makes a lot more logical sense. Also the whole thing about blending your week's work it just makes sense to have everything according to what you're doing at that moment."*

WITHDRAWN

"I would think it's difficult to learn it all as a subject in Third Year – all the Pharmacology say and then when you're trying to apply it to clinical things then Oh I can't remember that chapter it would be difficult for you to pinpoint in your head what you did three years ago. I think it would be more difficult for you to self integrate than when it's been taught to you in an integrated way." (Group 3)

"The good thing for me is that you start off in the different blocks but then I start to make the links between the different blocks and within blocks between the different cases. You must be able to make all the different links because that's what's important. Sometimes I manage to do the small bits and pieces but the links is what I struggle with."

"Yes, for the Pharmacology sometimes you learn all about one drug in one block and then you have to remember it again in another block. But I think that for the integrated exam will integrate it another way. But honestly we have stronger subjects and weaker subjects; I don't think if we'd had Pharmacology as a separate subject we would have coped with it. It is a problem that you can leave out stuff and still pass. I know people who leave out Microbiology because they don't like it and still pass." (Group 4)

The last two quotes from Group 4 students show how they have changed their orientation to learning through an awareness of the need to integrate content, and may be said to be moving centripetally with regard to the aims of the curriculum.

The students in Group 3 (graduates) suggested that having a strong discipline-based foundation is necessary before they would be able to integrate effectively:

"I think we need a better PCMS[9] course because if we left PCMS with a better understanding of Pharmacology and Micro etc and the kind of stuff they expect us to know like the different classes of drugs. For the Pharmacology we got lots of stuff on kinetics and graphs and lots of stuff we've never seen again, and it didn't really explain to us Pharmacology"

"Ja but I think they try to cram far too much into the PCMS course in the details of the stuff and don't focus on getting a general understanding. In Micro everything we do now we did in PCMS."

"I think initially I would have agreed with [the student who said he would have preferred a separate Pharmacology course] and initially I was quite worried about that but now I'm glad we did it this way rather spend a lot of time on the basics of Pharm"

(Group 3)

The structure of knowledge may provide us with a useful lens for understanding some of the responses of the students to learning in the integrated GEMP curriculum. Bernstein (1996; 2000) developed the concept of knowledge structures, which he describes as having 'verticality' and 'grammaticality'. The former refers to the how theory develops within a discipline and the latter to the way in which the theory deals empirically with its external relations. In terms of Bernstein's theory, knowledge domains in the sciences, which progress towards more integrated explanations and generalisable theories, are said to be hierarchical, have strong grammar, are less ambiguous and generate more predictable external correlates.

[9] Preliminary Concepts in Medical Science: the first block of GEMP I described in 2.2.1 above

WitsETD

Disciplines in the humanities, on the other hand, develop horizontally as a series of separate but equal 'languages' and either have strong grammar (mathematics and economics for example) or weaker grammar (psychology, sociology). Those with weaker grammar will transmit more ambiguity and have a more restricted capacity for generalisation.

According to this knowledge structure theory, the field of medicine would be classified predominantly as hierarchical since the scientific basis of its parent disciplines lies in a variety of life sciences such as biochemistry, anatomy, physiology, virology, bacteriology, immunology and genetics. The diagnostic scope of the profession has grown out of interpreting variations and disruptions of normal human structure and function associated with one or more of these areas, and the therapeutic component relates to interventions to correct these disruptions. However, the practice of medicine has an equally important humanities-based component which has as its parent disciplines knowledge domains in psychology, sociology, economics, and ethics which in the GEMP are taught by means of the PD, PPD and CD themes. The extended field of medicine can thus be thought of as a 'hybrid' knowledge structure including both hierarchical and horizontal disciplines, with implications for both its pedagogy and assessment.

Muller (2006) has drawn substantially on Bernstein's concept of the structure of knowledge in his argument that it is the verticality of discipline-based knowledge which provides its pedagogical strength and that attempts to integrate teaching across disciplines is likely to disrupt this strength. He further argues that assessment, particularly for [school] children from less advantaged groups, requires clear and unambiguous criteria if it is to be effective (*Ibid*: 12). These assessment criteria will be transmitted to the learners by means of the pedagogical structuring of the teaching: the selection, sequence and pace of the teaching convey to the learners what is important. These criteria are then strengthened if they correlate well with the assessment. Muller is critical of the so-called 'progressive' integration of curricular content and discipline-based knowledge because he says that it generates invisible learning gaps in the system which increase class differentiation, thus exacerbating the disadvantage of the very group which the system was intended to empower (Muller, 2005:240). There are important implications here for the GEMP since one of the aims of the graduate entry is to increase access to students from disadvantaged education systems. If Muller is correct, there is a tension between that agenda of the GEMP which

WitsETD

aims to promote inclusivity, and that which aims to promote contextualised, authentic learning through the use of an integrated curriculum code.

Muller (2000:46-54) refers to a discipline-based form of knowledge as 'mode 1' and an integrated one as 'mode 2'. He cites Gibbons *et al.* (1994:40) on the 'mode 2' model learning in medical education:

> *"The belief is that by using a problem-based approach students will gradually pick up much (sic) of the knowledge that they would have acquired by going the other way round, i.e. beginning with anatomy and going on to the fundamental sciences and from there to symptoms."*

Gibbons argues that 'mode 1 prejudice and academic conservatism' have contributed to the resistance of medical educators to adopting problem-based learning. Muller (2000:52) is critical of the assumptions made about the efficacy of 'mode 2' learning because he believes there is an implication that generic skills can be learnt as such in a context of application, a position which he contests:

> *"We learn higher-order modelling skills in specific discourses first. Genericity consists in generalizing the skill to analogous situations. There is no generic learning context in which every student can learn the generic skill. …. The argument against disciplinarity … holds a potential danger: the learning platform of students may be compromised and, at worst, undermined ….how much more so is it not the case in educational systems with shaky foundations such as is found … in South Africa?"*

In the present study the students have said clearly that although they understand, and indeed appreciate the integrated format as a recontextualisation of medical practise, they also believe that the integrated code may be restricting their access to the internal structure of disciplines such as Pharmacology.

The aim of an integrated medical curriculum is to encourage the building of what Davis, (1996) would call 'rich' knowledge in the form of interconnected networks. Such knowledge building creates opportunities for linking together the different component disciplines in such a way that, when confronted with a problem/patient, the student/practitioner is able to think holistically and see the interrelationships between the different aspects of the presenting problem. The way in which the curriculum seeks to make this learning possible is by giving students access to authentic, recontextualised problems in their PBL tutorial groups. The following section looks at the social dimension of the learning in the GEMP.

WisETD

5.4 The social context of learning in the GEMP

The previous two sections have examined the students' perceptions of the GEMP curricular structure, how they make use of the time and resources available to them and how they engage with learning in the GEMP as individuals. The PBL tutorials are intended to form the core of the social setting which directs much of the learning and each student brings to that setting their own prior experiences, attitudes and expectations. An understanding of the PBL tutorial environment is thus an important part of understanding the learning in the GEMP. This section will focus on the social context of the learning as an experience of the PBL process.

5.4.1 Participation in PBL group activities

An important design assumption of the curriculum was that the student-centred PBL model creates a more supportive, stimulating and enjoyable learning environment which should benefit all students (Barrows and Tamblyn, 1980; Albanese and Mitchell, 1993; Vernon and Blake, 1993). The questionnaire responses shown below suggest that in general the students do seem to enjoy the PBL process though possibly not as much as the literature suggests they might.

Question	Statement	Mean	% A	% D
1.1	*I find the GEMP programme an enjoyable way of learning*	5.2	72	13
1.2	*I prefer the GEMP curriculum to a more traditional lecture-based curriculum*	4.8	51	22
2.1	*I enjoy the PBL tutorials*	4.8	65	21
2.2	*I participate actively in the PBL tutorials*	5.5	73	6
2.3	*I do not participate unless the facilitator encourages me to do so*	2.3	8	81
2.4	*I am usually one of the more dominant participants in my group*	4.4	46	27
2.5	*I enjoy acting as the scribe for the PBL sessions*	3.1	32	42
2.6	*I enjoy chairing the PBL tutorial*	3.2	33	48

Although the respondents expressed a relatively high degree of participation in the tutorials (question 2.2, 73% agree) and generally agreed that participation was not necessarily prompted by the facilitator (question 2.3, 81% agree), two of the more demanding roles in the group i.e. acting as scribe (question 2.5, 42% agree) and chairman (question 2.6, 48% agree), were not seen as particularly enjoyable. The graduates and older students enjoyed PBL tutorials and these specified group roles more than the other students. The White students saw themselves as the most dominant participants and the Black students as the least dominant in group activities. These perceptions confirm the observations of the PBL group process (see 5.3.1). It was also noted that the Indian students enjoyed the role of scribe more than the other groups.

WITHDRAWN

It is possible that those who do not participate in PBL activity may be alienated by a dominant culture in the group with which they do not easily identify. The questionnaire sought to establish if access to the possibilities for learning in the group may have been constrained by a lack of cultural identity on either a social, linguistic or cognitive level:

Question	Statement	Mean	% A	% D
2.14	*I am reluctant to participate in PBL sessions because I am not comfortable communicating in English*	1.8	6	89
2.17	*I feel uncomfortable in the group because I do not identify on a social/cultural level with other group members*	2.3	8	84
2.19	*Having people from different backgrounds in the group is useful for sharing ideas*	5.3	77	12

While language does not appear to act as a constraint overall (question 2.14), there were some apparent differences between the means of the responses from the different groups (Black 2.5, Indian 1.7 and White 1.3). The English students (1.5) appeared to be a little less constrained by language than the Afrikaans language students (1.7) and substantially less than the African-language students (2.6).

Question 2.17 showed a low level of social discomfort overall, expressed more by the Black students (2.8) and Indian students (2.4) than by the White students(1.8). It should however be noted that a study of this nature does not intend primarily to show whether overall a particular phenomenon is present and if so at what level. The intention is rather to show what variations might be present and if so why. Thus, while an 84% 'disagree' response for question 2.17 might imply that this is not something we need be overly concerned about, the converse is that a minimum of 8% of the respondents *do* feel culturally alienated in their PBL group and another 8% at best are unsure whether they are alienated or not. If we extrapolate these results to be representative of the whole class, then there is at least one student in each group who is uncomfortable in that group and whose participation is likely to be constrained as a result. Students who do not offer reflections are limiting their opportunities for receiving feedback and thereby the possibilities for growth.

The PBL groups are deliberately constituted to maximise diversity in terms of race, gender, age, language and educational background and thus enhance the range of experience that group members can contribute to the discussion and interactions. The responses to question 2.19 indicate that the majority of students appear to appreciate the benefits of a diverse group. However, one of the free response comments suggested that students may not see the value of social diversity for building medical knowledge:

WiSETD

"Makes no difference as far as medical ideas are concerned, and cultural ideas (and sharing thereof) fairly useless, most of the time"

The focus group interviews further probed the advantages of having students from diverse backgrounds in the PBL groups. The responses showed an overwhelming perception of the benefits of diversity as expressed on several different levels.

- Learning to work in a multicultural professional health care team:

"We have to learn to work with people from different backgrounds". (Group 1)

"I think it's really nice, especially in our hospital group where we have some Black people who can speak the same language as the patients." (Group 2)

"It's easier to do this with people who are your friends because it's easier talking to them but after a while you get used to the group as well."

"I agree … in the sense that you discuss things related to work better with your friends but I do think it plays a part in self growth because as a doctor you're going to be forced to work with people you don't agree with and it's a skill you're going to have to learn. I find that many people and many students are still very childish in the way that they see other people and refrain from interacting with them simply because we are different and I think that is a problem because as I said as doctors we are expected to work as a team."

"You can't choose the ward sister or your other colleagues – you are expected to work as a team so in that respect it's very necessary."

"Also your patients may be very different from you; let's say you've got patients that are of a different race – you've got an opportunity to work with people who are of a different race. Here we get a nice view of them and we get to hear what they stand for. Me personally I get to understand what's going on and respect them for what they are. If we were just an Afrikaans group we wouldn't get to see how other people think. You understand what I'm saying- it helps you with your patient-doctor interaction as well." (Group 4)

- The richness that experience in different academic and professional practices can bring to the group discussion:

"Different people from different backgrounds bring different things to the table." (Group 1)

"I found it's been nice to have graduates in your group who've done Pharmacy or another [allied] medical discipline because we don't have much medical experience and we've had a couple of Pharmacists in our group and it's been useful to have someone who knows something about something else."

(Group 3)

- Personal development from learning about other sociocultural values and practices:

"Even if it's not got to do with our work, like holidays like the Jewish holidays someone in our group explained to us what it was about."

"I think it contributes to our personal development."

…and also with understanding other cultures – people can explain things to each other.

WISER

(Group 2)

"Well I've never found it to be a negative. I've learnt a lot about different things like religion."

While we're waiting for our facilitator we'll discuss different religions and cultures and that's something you'd never get in lectures so being n a PBL group so you get to discuss.

(Group 3)

- Broadening of a personal social base in the cohort:

"You also meet more people in the class. There are a lot of people who arrive at the exam and I've never seen before..."

"Most of the people I've been in a PBL group with I've kept in contact with." (Group 3)

One student suggested that the diversity may sometimes create a level of discomfort in the group which is detrimental to those quieter students:

"I don't know if the diversity makes people quiet sometimes. You know in every group you get people who may be afraid to speak, I think sometimes 'Am I too loud?' But at the end of the day you have to do it for yourself sort of, I mean you have to get out of it what you can. Everyone gets along with each other but in every group there are some people who don't say a word the whole session and you think "Why – what's wrong here?" (Group 3)

The PBL group is intended to create a supportive learning environment in which all students have the right to be heard and can develop the confidence to risk making mistakes from which both they and the whole group may learn. Although just over half the students (question 2.15, 52%) admitted to participating only when they are confident in their knowledge, only 12% (question 2.16) said that they lacked the confidence to risk exposing their knowledge gaps in the group environment.

Question	Statement	Mean	% A	% D
2.15	*I participate in PBL's only when I am confident about the contribution I am offering*	4.0	52	31
2.16	*I do not participate in PBL sessions because I am afraid to risk exposing my lack of knowledge/understanding*	2.6	12	70

These two responses appear to be contradictory: it is not clear how a student who agrees with 2.15 might disagree with 2.16. It is possible that question 2.16 was interpreted as "I *never* participate because …" Clearly this is a weakness in the questionnaire and shows that two-part questions are susceptible to ambiguity and inconsistent responses. If students felt uncomfortable making contributions of which they were not confident, we might expect them to prefer to be in a group of students of a similar academic level to themselves.

WITSETD

Question	Statement	Mean	% A	% D
2.20	*I would prefer to be in a group with students all of a similar academic level to myself*	3.2	22	65
2.21	*The reports of other group members are a valuable part of my learning*	4.8	63	8

This is largely not the case: 65% of respondent disagreed with question 2.20 (40% at the level of strongly disagree), with the Black students (mean 2.8) disagreeing the most strongly. The reason for their wish to be in an academically mixed group may be suggested by question 2.21 above – students like to learn from each other and advantages of being able to learn from other students is appreciated. One questionnaire free response suggested that PBL2 might be more effective if students were of similar levels:

> *"It would be more sense to be in a group with students of a similar academic level, so that esp. PBL2 sessions will be more stimulating and effective*"

The focus group interviews provided some further insights into some of the students' different experience of and attitudes to PBL group activity.

- As an exciting experience:

  "…the very very first group that we had for PBL … the group dynamics were phenomenal – it worked really well. The PBL sessions were exciting to go to. We went and we did it and it worked really really well, actually we were a bit sickening…" (Laughter) (Group 1)

- As a stimulus to inquiry:

  "I think PBL is great it really does stimulate you – you really do want to go and look on the computer. It definitely helps you – it's a fun way of learning." (Group 1)

- As a resource:

  "You know – trying to solve the problem with the whole group. BUT the whole thing is depended on the group."

  "PBL groups are good because if you don't understand something the others can help you and sometimes you find other people didn't understand it either."

  (Group 2)

  "Honestly. Again it's the group; if everyone does their work then I will learn from them. But as you said, it is great opportunity to integrate all the different disciplines. No where else do you get that opportunity. If you had to go and sit by yourself and integrate everything, the Anatomy with the Physiology and the Physiology with the Pathology and the Pharmacology. Here as people read out their questions you do think of something." (Group 4

- As inequitable:

  "Sometimes you find some people haven't done their work and you're providing all this knowledge and they're just sitting there taking it in and not providing anything so from that point of view it might be a bit unfair. But generally it's good." (Group 1)

- As a source of conflict:

  "With me I haven't been that fortunate to have such a nice group. One of my groups last year we had a bit of a clash between a certain individual." (Group 3)

WisETD

The opinions expressed above show an awareness of the importance of a good group dynamic which is determined by all the group members being responsible to the group as a whole and everyone contributing equally. A few students mentioned the stimulation of learning together but the focus here was very much on learning from each other as reflected by question 2.21 above. This collaborative aspect of PBL was certainly part of the intended curriculum but it was surprising that more mention was not made of the group as a forum for challenging and instigating new ideas. The responses further suggest that the key to the group activity may lie heavily with the facilitator.

5.4.2 Role of the facilitator

The questionnaire addressed the role of facilitator in the following questions:

Question	Statement	Mean	% A	% D
2.24	*I find it easier to participate in PBL 1 and 3 when the facilitator is from a similar social/cultural background to myself*	2.9	17	55
2.25	*The facilitator should guide the PBL discussion but not teach*	4.2	42	40
2.26	*The facilitator should explain things that the group do not understand*	6.4	92	4

The cultural identity of the facilitator (question 2.24) does not appear to be a dominant factor in the success of the group for the majority, with only 17% of respondents agreeing that it was. The differences between the respondent groups were not large but it was the White and English students who agreed slightly more strongly here. Although 17% does not seem to be a large percentage it takes on more significance if one remembers that the implications of this are that in each PBL tutorial group of seven or eight students there may be one or two who feel somewhat alienated by a lack of cultural identity with the facilitator. This is a similar finding to that in question 2.17 (see 5.4.1 above) in which 8% of students said that they did not relate on a sociocultural level to other group members. Given the need for all members of a group to feel included if the group is to function effectively, this may in fact be an important source of group discordance. It is noteworthy that while 17% are saying a shared cultural identity with the facilitator is an important factor in their learning, only 8% appear to believe that a shared identity with the other group members is important. The identity of the facilitator may thus be a more important factor in learning than the social composition of the group.

The focus groups clearly identified the facilitator as the most important factor in the group process from several different perspectives.

WitsED

- Knowledge of the process

  "…some of the facilitators are awesome. We had a very good facilitator who understood why we were there and what we supposed to achieve." (Group 1)

  "Depends on the facilitator - if he is knowledgeable he will ensure that you bring everything together." (Group 2)

- Attitude

  "The facilitator's attitude is definitely important." (Group 1)

  "Some of them go out of their way to help us. Some of them just sit there." (Group 2)

  "… but now the last group I've been in, the group is really lovely but the facilitator we've got – I didn't think it was possible to get worse than the last one – the current guy we've got now for example he's usually in such a hurry to get out of there, I mean the longest PBL session we've had so far has been 10 minutes and so far, I think we're on our 7th PBL for the Neuro. block – and so far he's only shown up for 2 of the PBL 3 sessions – and 2 of the PBL1's we've had to persuade him to come and when he does come it's like OK he'll look at his paper – give me a problem statement and he'll go back to the hospital." (Group 3)

- Guidance

  "One of my groups last year we had a bit of a clash between a certain individual … and a number of people in the group so the PBL's themselves were not that enjoyable because of a lot of the things that happened but the thing is that even in that bad group we had a group of facilitators coming in I think they were from the Pathology dept, and even with all the conflict and everything else, because the facilitator was guiding us properly and working with us. "

  "… well we learnt a lot from that. Whereas now we've got the opposite – a nice group but the facilitator adds nothing to us – a lot of the time we'll give a suggestion and the facilitator goes " Oh – what's that?" and we have to explain to him. And if we ask a question he goes: "Oh well I'll leave that to you to find out" and he never checks if we find out or anything – so it's been a bit of a nightmare."

  "… but also we had nice facilitators who would direct things and say "Whoa calm down now – let someone else answer." So the facilitator is the key to everything."

  (Group 3)

  "… and also the facilitator – if they say "what about this and what about that" it makes you think about it. So it is a good system but it depends, ja."

  (Group 4)

The comments above show that the students understand the importance of having a facilitator who is fully aware of the purpose of the tutorial, who is capable of directing the discussion in the right direction and can handle the conflicts and tensions which arise so that they do not impede group progress. In this sense it appears that the students have developed an awareness of the goals of PBL which is more sophisticated and appropriate than that of some facilitators. This is not unexpected, since the students who were interviewed had been participating in PBL tutorials for nearly two years, whereas some of the facilitators were comparatively recent recruits. This may be understood as an example of the learners being the "old-timers" and the facilitator the "new-comer" (Lave and Wenger, 1991) in "doing"

PBL. Given the expectation of students regarding the role of the facilitator as a more knowledgeable and competent participant, it would be surprising if an inadequate, or disinterested facilitator did not lead to frustration and resentment on the part of the students.

The students also seem to have one perception of the role of the facilitator which is fundamentally at odds with the intended one. Only 42% agreed that the facilitator should guide but not teach (question 2.25) and a surprising 92% agreed (with 67% agreeing strongly) that the facilitator should explain things to the group (question 2.26). It thus appears that the students may not yet have made the intended epistemological shift from their perception of the facilitator as a dispenser of information to that of a supporter and scaffolder of their learning in the ZPD (Vygotsky, 1978) by stimulating them to construct knowledge through what Wenger (1998) refers to as 'negotiating meaning'. If the facilitator is either inadequately trained to take on this responsibility or disinterested in the process, the learning is likely to be severely constrained. Negotiation of meaning needs to be appreciated as an interactive process in which the student benefits most when they engage fully in debate and discussion, contribute their ideas and understandings, rather than simply accept unquestioningly as fact what is supplied by others. Without the intended interaction and communication the possibilities for constructing deep understanding are reduced.

There has been a lengthy debate in the literature regarding the expert *versus* the non-expert tutor. Barrows (1985) was clear that non-experts (with regard to content expertise, not facilitation skill) may be preferable since they would be less inclined to teach and would thus stimulate more self-directed learning. Schmidt *et al.* (1993) re-evaluated Barrows perspective and concluded that optimal learning results when the facilitator is both competent in the group process function and also has content expertise. They showed that often only an expert knows what questions to ask and how to direct the discussion. Particularly in the earlier years of study, contrary to expectations, students who were facilitated by content experts demonstrated more, not less, hours of self-directed learning. More recently Steinert (2004) showed that the most important attributes of an effective facilitator were promotion of problem solving and critical thinking, creating a non-threatening atmosphere and emphasis on clinical relevance and integration. Although content expertise is not an essential component, it is unlikely that non-clinicians, particularly the less experienced facilitators, will be as able to direct the students in clinical reasoning and know what is more or less clinically relevant. Newman and Peile (2002) emphasise the

WitsETD

importance of matching the role of the facilitator to the needs of the learner and that in an adult learner environment the learning model should create a partnership between learners and educators. In a curriculum such as the GEMP which has dual access routes (i.e. graduate and matric entrants), the diversity of learning styles displayed by the students is likely to create a more challenging environment

5.4.3 Developing a professional identity

Related to the students' desire to have facilitators who provide information and explanations is the different value which is attached to a facilitator who is medically qualified as opposed to one who has a basic sciences background or is a member of an allied health discipline. The focus groups clearly showed this:

> *"Some facilitators are experts in the [discipline] field and just brush over things. Others are GP's but they understand the issues and draw out the important things."* (Group 2)

> *"I agree with [the student above] – I've had 3 divine groups. I've enjoyed every one of my groups but the facilitator you have determines the entire tone of the PBL so when you have somebody like we've had, a nurse or somebody who can't do more than read what's on the page you tend to get a little bit stuck, especially when on a Monday none of you know what's going on, whereas when you have an expert in the field it's just so amazing, the clinical tips that you get, for me it's just so good."*

> *"Often the facilitator guide will have question that they throw out there. If you have a facilitator who knows about that topic they can discuss it with you or if there's a written answer. But if there's a two-line answer or if the facilitator has no idea what's going on they will read it to you. We had a facilitator with a degree in sociology – she could barely pronounce the words that were on her thing so she would read the two lines that were there and there was no chance to put it all together rand you've never heard it before on Monday morning."*
>
> (Group 3)

There is little doubt from the above that students value a facilitator who has good facilitation skills, but they have also developed a perception of the medical practitioner as having a different identity from that of the non-practitioner. As a member of the practice which has been recontextualised for learning, the medical facilitators are priviledged by having insights into the ways of thinking and understanding that characterise insiders of the practice (Wenger, 1998). The facilitators who are most favoured are thus those with whom the students are able to identify as professional role models. Sometimes it is not their knowledge of the content of the week's case that is valued but other insights and behaviours which the facilitator, possibly unintentionally, contributes that establish him/her as valuable. In this way students will be learning the "hidden curriculum" which Coles and Grant (1985) define as "not intended, not enacted formally, but experienced" (see Figure 2, section 5.1). The PBL group observation confirmed this perception. The facilitator was an experienced

WitsETD

medical practitioner who not only was very knowledgeable about the subject matter, but took responsibility for ensuring that the students gained professional insights that were actually beyond the scope of what the week required. The group was clearly keen to learn from him and at no stage was there any suggestion that the subject matter was not in the objectives or would not be in the exam – learning that contributed to their own trajectories into the practice was valued for its own long-term benefit.

5.4.4 The role of language and culture in learning

Since the medium of instruction in the GEMP is English and many of the students have home languages other than English, it is possible that language plays a role in the student's ability to understand and construct meaning from the course materials. A previous unpublished study on this same population of students showed a high correlation between English language ability and performance in the examinations. Of the 119 questionnaire respondents who had identified their home language, 58% selected English (including four who chose English and another language as equal), 18% Afrikaans and 21% one or more African languages. One student each chose Taiwanese, Malaysian, Tamil and French. The percentage of English first language (EFL) speakers in the class is probably slightly higher than the 58% reflected here because the Indian students are under-represented in the study sample and, with one exception, all the Indian respondents identified themselves as EFL. While we do not have an accurate number for the percentage in the whole class whose first language is not English, we can probably assume it to be in the region of 35 to 40%. The point here is that a considerable number of students in the class are learning in a language which is not their home language.

The students in the focus groups were asked if they saw language as an impediment to their learning. Some of the English students identified "technical" or non-scientific language as difficult initially.

> "*The only barrier is when it gets too technical*."
>
> "*The legal jargon in topics on legislation is confusing – we need "lay" language.*"
>
> (Group 1 – English)
>
> "*Sometimes we get technical terms I don't understand and I have to look them up in the dictionary*".
>
> (Group 2- English)

The repeating students who were African language speakers all expressed experiencing some difficulty with the English language in the GEMP:

WitsETD

"Understanding at the level of the English is sometimes a problem not always in the learning but in the exams – sometimes I'm not sure what the question is really asking."

"The English is a problem for me because I always think in my home language so I have to translate what I am learning into my home language before I understand it."

"Reading the course pack is a problem for me. When I first read it I don't understand it and then I have to think what it means in my home language." (Group 2 – African language)

The Afrikaans students did not all have the same experiences:

"I study the same whether I study in Afrikaans or English. I was at an Afrikaans university for a year before I came here where I studied in Afrikaans but the text books are in English so you go to the lectures in Afrikaans but you still have to study in English."

"It was not the same for me. In the beginning it was very difficult for me to understand the language - in the sentence constructions and the meanings of the learning topics I didn't really understand especially in the exams what they wanted. I could understand the question but I didn't know what they wanted so I had to get a broad overview of what it was about. Now it's much better- maybe not in my marks (laughter) but I feel it's much better. And I think studying in English is really a very big advantage for us because all the literature is in English and if ever we go overseas we can practise in English as well as in Afrikaans so we've got that opportunity."

" I found it quite difficult adjusting in first year, it was quite difficult in small things like the word that they use in class, everyone knows what it means but like I remember "inertia" – I had no idea what that was; and stupid little things just to get the idea across. Little phrases that everyone expects you to understand and you've got no idea. It's not important stuff but you can't understand what they are without that. It took a while to get used to it. I remember in the beginning I would translate it into Afrikaans to understand it and then translate it back into English. But you do get used to it eventually. I hadn't had a lot of English exposure before I came to university at all and I didn't have any English friends so all of a sudden. – I really think this is the best thing that could have happened coming to an English university and speaking English. People think you'll lose your own language but English is the universal language so if you study in your own little world with your own language –how are you going to survive?'

(Group 4- Afrikaans)

If difficulty in understanding the language of the course content is an impediment to learning, it is likely to have the greatest impact in the learning topics and lectures which provide the students with large amounts of factual information which has to be learnt for examinations. Questions 3.1 and 4.2 of the questionnaire addressed this aspect of the course content.

Question	Statement	Mean	% A	% D
3.1	*I find the content of the learning topics easy to understand*	5.0	87	9
4.2	*I am able to understand the content of most of the lectures*	5.7	86	8

Although the scores for question 3.1 and 4.2 appear fairly similar, the higher mean of 5.7 for question 4.2 (lectures) compared with that of 5.0 for question 4.2 (learning topics) reflects the 30% who strongly agreed in question 4.2 and only 6% who strongly agreed with question 3.1. These results imply that students find the learning topics more difficult to understand

than the lectures. If we look at the scores for these two questions according to the different language groups, surprisingly there is no difference for the means across the three groups for question 3.1 while for question 4.2 the African-language students have a slightly higher mean (6.0) than both the Afrikaans students (5.6) and the English students (5.5). The African-language students thus do not appear to perceive themselves as excluded from access to what Wertsch (1991) calls "text-based realities".

Question 7 of the Biographical section of the questionnaire attempted to discover how students rated their skill in English. With one exception, all of the English speakers rated their command of English in all four domains (Understanding, Reading, Speaking, Writing) as either excellent or good (Table 3 below). More of the Afrikaans students rated themselves as good rather than as excellent in all domains, while the African-language students rated themselves as predominantly good, with fewer as excellent and more as fair than those in the other two groups.

Table 3. Students' perceptions of their command of English

A. English–speakers (n=69)

	Fair	**Good**	**Excellent**
Understanding	1%	13%	86%
Reading	-	14%	86%
Speaking	-	14%	86%
Writing	-	20%	80%

B. Afrikaans-speakers (n=15)

	Fair	**Good**	**Excellent**
Understanding	-	53%	47%
Reading	6%	61%	33%
Speaking	-	53%	47%
Writing	-	53%	47%

C. African language speakers (n=26)

	Fair	**Good**	**Excellent**
Understanding	4%	73%	23%
Reading	-	54%	46%
Speaking	15%	69%	26%
Writing	8%	65%	27%

How are we then to make sense of the contradiction where ESL students have identified the fact that their command of English is not as good as that of EFL students but believe they have less of problem in understanding the texts, while our previous research has shown a correlation between English ability and exam performance? Slonimsky and Shalem (2004:86) may be useful here. They addressed the issue of 'under-prepared students' (a term

from Craig, 1996) whose orientations to knowledge were 'antithetical to the forms of thinking and operations entailed in academic practices', yet students *thought* that they were responding to the tasks appropriately. Slonimsky and Shalem (*op. cit.)* suggest that in addition to a psychological epistemic orientation of under-prepared students to learning, there is also a significant "social logic underlying these orientations".

Not only may the language of instruction *per se* be restricting access to meaningful knowledge construction, but the sociocultural practises that underpin the structure of the curriculum may be alienating them from accessing that knowledge or responding appropriately to assessment tasks. Craig (1996) describes the conflict in moving students from familiar to unfamiliar content or form and suggests that conflict in form is more difficult to address. Slonimsky and Shalem (2004:90) argue that under-prepared students who are not afforded an appropriate way of "prising apart the form and content of their experiences" may remain disempowered.

In addition to its English medium content, the curriculum has been constructed within an English-speaking culture. The original curricular framework from which the GEMP was derived was obtained from the University of Sydney, Australia and the majority of the persons who have been responsible for its planning, modification and reconstruction have been English-speaking White South Africans. It is possible that the organisation, inner logic, norms and values as expressed by the curriculum will be more closely aligned with those of this cultural group and the knowledge codes and activities which they take for granted in terms of their experience and socialisation in academic practice.

As was shown in section 5.3 above, the questionnaire did identify differences between ways in which the different sociocultural and language groups approached their learning. In particular the Afrikaans-speaking students reported what may be interpreted here as a more focussed and responsible attitude to their studies. Since the White Afrikaans culture of South Africa is traditionally seen as conservative and authoritarian, the students in focus group 4 (Afrikaans-speaking) were asked if they were aware of the possibility of such a cultural model in their approach to their learning.

> ***DM: Do you think there is such a thing as an 'Afrikaans work culture'?***
> *"Not that we know of…"*
>
> ***DM: Do you think you display a more responsible approach than other students?***

WitsETD

"I think it does depend on your upbringing and things like that but everyone I know – we're all like that. We all [Afrikaans students] go to every single lecture, every single theme session; we never miss a thing - PBL tutorials and so on.'

"I think we'd feel so guilty if we didn't [go]."

(Group 4)

Although the students were not explicitly aware of the impact of such a cultural model of being a student on their learning, their responses indicate that one does in fact exist.

The analysis of the research findings presented in this chapter suggests that students are working in a number of different ways which both conform to, or deviate from, the assumptions made about the planned curriculum. The conclusions which may be drawn from these findings as well as their implications will be discussed in the following chapter.

WitsETD

Chapter 6
CONCLUSIONS, IMPLICATIONS and RECOMMENDATIONS

As established in Chapter 1 the aim of the study was to explore the approaches to learning which the GEMP sets out to promote and the approaches the students are in fact adopting. The planned GEMP curriculum aimed to change the way in which medicine is taught and learned to better equip medical graduates in the domains of knowledge, skills and attitudes to act as professional practitioners able to meet the needs of their patients, society and themselves in a rapidly changing knowledge environment. The curriculum logic makes assumptions about the students, the form and content of the intended learning and how the curriculum might bring these into a relationship to each other. This chapter aims to draw on the findings presented in the previous chapter and to relate them to the design principles of the planned curriculum.

6.1 Conclusions

The conclusions in relation to the curriculum goals as described in Chapter 1 are summarised below, grouped according to the themes of curricular structure, access and approaches to learning.

6.1.1 Theme 1: Integrated Curricular Structure

The integrated curriculum and PBL model are intended to be a recontextualised form of the practice of medicine which will promote the integration of the biological, psychological and social domains for a holistic approach to the understanding and management of patients.

- *Curriculum goal: Reduction of information overload and promotion of an understanding of concepts, principles and underlying mechanisms*

Conclusions

If the volume of information to be mastered has been decreased students are not aware of it. Although over 60% felt that the work load was manageable, focus group discussions indicated that the volume was considerable and several different coping strategies were identified. Some of these showed that the students had developed their own ways of restructuring the knowledge to create an understanding of the principles inherent to the disciplines. For some disciplines (Anatomy and Pharmacology were specifically mentioned)

WitsETD

the volume that had to be learnt was seen as excessive in relation to the time available and perceived assessment criteria. Learning was thus curtailed in these areas. This was confirmed in the questionnaire for Anatomy but less so for Pharmacology

- *Curriculum goal: Promotion of knowledge which is transferable to clinical practice*

Conclusions

This area was not explored in any depth because the study population consisted of students who had not reached the clinical years. Indications are that although students have a limited opportunity to transfer learning to understanding the patients to whom they have been exposed at this stage, many of them have realized the longer term need to develop professional competence for the future and are directing their learning at this goal as well as at the immediate hurdle of passing examinations.

- *Curriculum goal: Foster an integrated, holistic approach to patient care*

Conclusions

While the GEMP I and II students are not yet responsible for patient care, the recontextualisation of a patient-based problem as an authentic task is intended to create an opportunity for appropriate learning according to an integrated bio-psycho-social model. The research suggests that while the students are aware of the need for a holistic approach to patient care, the structure, delivery and assessment of the PD-CD-PPD components as a group have resulted in these components being seen as less important than the biological domain and overall less attention is paid to them. Having said that, between 64% and 83% of students still say they learn all or most of the content of these three themes. Students generally feel confident that they are in fact able to bring together the different contributing disciplines to construct an integrated understanding of the cases they study. However, although 63% of the respondents agreed that they could integrate effectively, 25% were neutral – neither agree not disagree. It thus appears that many students are in fact not sure whether they have or have not reached an integrated understanding of the content or not.

The aim of developing a holistic approach to patient care essentially implies the development of a professional identity as a medical practitioner-in training. The findings suggest that while most students are focussed on the long-term goal of professional practice, a smaller percentage is more oriented towards passing examinations. A further finding that

WitsETD

the identity of the PBL facilitator is an important role model for professional practice further emphasises importance of the sociocultural context in which the learning occurs.

- *Curriculum goal: Provide earlier clinical exposure and skills development*

This aim relates to the one day per week which students spend in the Hospitals and Clinical Skills Unit. This component of the curriculum did not form part of the current research and is being evaluated by a separate study.

6.1.2 Theme 2: Access

The graduate entry provides access to graduate students who will be competent and mature learners, whose range of life and educational experience will also contribute to the diversity of the class in ways that enhances the learning of all the students.

- *Curriculum goal: Increase student diversity*

Conclusions

The biographical data confirms the diversity of the class with regard to age, race, language, and educational background. The data analysis shows that the attitudes and approaches of the students to learning do reflect this diversity in that the different groups often express different views. The PBL group composition intends to draw on the richness of experience which this diversity brings to the discussion. Students were generally supportive of the diversity and appreciated the increased opportunities for the learning which it promotes. The observation that it is generally the African-language students who are the quietest in the group suggests that the potential for maximizing this asset is not always realised and some students may experience constraints to knowledge building through their cultural models of learning.

6.1.3 Theme 3: Student Approaches to Learning

The GEMP curriculum opens the pedagogic frame to promote an approach to learning through which the students will become motivated, reflective and self-regulated by having more control over selection, sequence and pacing of learning. It is assumed that the collaborative learning in small groups with a facilitator will lead to the acquisition of appropriate knowledge, skills and development of professional identity as medical practitioners.

WitsETD

- *Curriculum goal: Encourage responsible, self-directed, life-long learning*

Conclusions

The weaker pedagogic frame created by the curricular structure and the cognitive dilemmas arising from the PBL tutorials are intended to encourage students to become aware of gaps in their understanding and to develop the competence to seek knowledge with which to fill these gaps. Unscheduled time is provided in the timetable and students are expected to seek out information from sources such as text books, websites and journal articles. Indications from the research point towards students making use of the lectures and notes provided and supplementing these with prescribed books. Many regard the unscheduled time as social time and those who do use it for working (50% of respondents) relate using it for learning, revising, summarising and not for actively seeking information. The development of a responsible attitude is best displayed by the older graduates and the Afrikaans language students.

- *Curriculum goal: Develop competence in the use of electronic media and information technology and skills in information retrieval, analysis and evaluation.*

Conclusions

The ability and tendency of the students to use computer facilities to access information was not specifically addressed in this study since it forms the basis of other research in the Faculty. If the self-reported use of the internet and journal articles as a source of information is an indication of this activity, then it is clear that only the older graduates are using these resources to any appreciable extent. The assumption that the PBL curriculum would stimulate such self-directed learning behaviour is clearly not being met by all the students.

- *Curriculum goal: Promote appropriate learning through congruency between objectives, learning and assessment*

Conclusions

In a learning environment which deliberately aims to promote self-directed learning, the learning objectives which students are given were intended to provide a set of criteria according to which the assessments would be structured. The research findings have shown that less than half the students are using these objectives as intended, generally relying on the course materials to provide the evaluative criteria. The content is thus an important message system for what counts as knowledge. Students also reported using the assessment to indicate what knowledge was valued and ignoring both the objectives and the content

WiSETD

presented. It thus appears that for certain disciplines the three message systems of content, pedagogy and assessment may not be well aligned.

6.2 Implications of the research findings

Implications may be drawn from the conclusions above by interpreting these findings in relation to several key theories on curriculum and learning.

6.2.1 The structure of knowledge and the integrated curriculum code.

The problem-based medical curriculum presents the student with an integrated curriculum code (Bernstein, 1975) with the expressed purpose of promoting a form of learning which is authentic. The learning is structured around cases requiring a holistic response which involves identifying, recruiting and applying appropriate discipline-based knowledge. In an integrated curriculum such as the GEMP both the classification and framing of the knowledge are weakened. Bernstein (*Ibid*: 107) is concerned that the order created by the integrated code may be problematic and that weak framing may exclude participants from access to learning unless four conditions are met. Briefly, there should be a high level of ideological consensus among the teaching staff around the integrating idea, the link between the integrating idea and the knowledge should be explicit, a committee structure is required to monitor, provide feedback and socialise the participants into the code, and clear evaluative criteria are required, particularly in view of the weak framing. These are all important implications for the role of the teaching staff involved in the programme. Since the current study was focussed only on the students' experiences of the GEMP curriculum, further study is required to better understand the attitudes and approaches of the Faculty staff and the implications for the success of the curriculum.

Muller (2001; 2006) is critical of integrated curricula for much the same reason that Bernstein is wary of them. Muller suggests that the weaker classification of an integrated code distances the student from the grammar of the disciplinary knowledge i.e. the ability of the content to communicate the criteria for what counts as knowledge. Muller (2005:240) argues that in South Africa it is particularly those students with an educational disadvantage (what Craig, 1996 termed 'underprepared') who will be further disadvantaged if an integrated code prevents access to the knowledge structure. The one discipline which students specifically identified as fragmented and thus potentially less accessible was Pharmacology.

WitsETD

The implications for the Faculty of changing from a collective curriculum code to an integrated code are numerous and may help to explain resistance on the part of educators as well as students. Not only do the two codes structure educational knowledge differently, but they organise social relationships differently, with consequences for the distribution of power and control (Bernstein, 1975:103-104). Collection codes with strong classification and strong frames have strong vertical relationships within each discipline, but usually only the most senior members develop interdisciplinary horizontal relationships. In contrast, integration codes with weaker classification and weaker frames require educators at all levels to enter into relationships with members of other disciplines arising out of the need to cooperate in the common task. The change to an integration code is likely to provide conditions for strengthening of horizontal relationships and allegiances between disciplines as well as between educators and students. Such a change in code thus results in disturbances in power structures, ownership of the curriculum and educational identity. Resistance to change, which is communicated to students explicitly or covertly by a negative attitude to the process, serves to undermine students' confidence in the curriculum and opportunities available for them to develop an appropriate consciousness and professional identity.

Students, on the other hand, who have to switch code, are challenged by having to 'unlearn' (Cornbleth, 1990:12) previous approaches and strategies for making meaning and create new ways of negotiating in the practice. Access to knowledge through participation in the small PBL groups may be predicated on the social identity of the student and their ability to relate to the learning context.

6.2.2 Curriculum as socially contextualised activity

The findings reported here suggest that the possibilities for learning in the GEMP require a concept of curriculum which extends far beyond what Cornbleth (1990) calls a technocratic plan. The socially situated activities of problem-based learning and culturally diverse environment call for a critical conception of curriculum as a contextualized social activity (*Op. cit.).* Kelly (1989:34) suggests an understanding of curriculum in which knowledge is socially constructed.

The medical education literature emphasises the importance of the PBL learning process as "collaborative" and "contextual" (Dolmans *et al*., 2005). In this sense 'collaborative'

WitsETD

indicates that students work together and that the resultant learning is synergistic in that their various contributions to the discussion stimulate, challenge and reinforce each other's learning – what Schmidt (1983;1993) refers to as 'elaboration'. The contextual element of PBL refers to the learning taking place in the context of a medical problem, with the intention that transfer of relevant information and problem solving skills to 'real' patients at a later stage will be facilitated. Schmidt calls this 'encoding of specificity'. In fact Norman and Schmidt (2000) admit that this claim for PBL may have been oversold, that the contextual learning may be of marginal significance and that the development of reasoning skills may be more important. The design assumption that the GEMP curriculum would produce learners who were better able to transfer knowledge gained in GEMP I and II to understanding patients in GEMP III and IV will need to be investigated.

The findings in this study suggest that more attention may need to be paid to a further interpretation of 'contextual', where the context is not only the context created by the case and the associated learning content, but the social context of the group process. The research findings suggest that the group members, and more particularly the role played by the facilitator, were of fundamental importance in determining the success or otherwise of the intended interaction. Indeed, if the social benefit is minimal, the students might gain as much benefit from working on the problems alone. Gee (1996) has explained the importance of scaffolding collaborative cognitive development while simultaneously promoting proficiency in academic literacy. For ESL group members who are reluctant to contribute to group discussions the possibilities for building both academic robustness and language proficiency are constrained.

The phenomenographical work of Marton and his associates may be useful to understand the importance of the PBL group interactions. Marton and Booth (1997:206) foreground learning as arising from *experience* which they define as a relationship between the individual and the world around them. Phenomena may be experienced in a number of different ways and they emphasise the importance of learning as developing a capacity for awareness of variation. Effective learning then becomes the ability to be aware of a number of different aspects at the same time. This idea resonates well with Biggs and Collis's (1987) SOLO taxonomy which evaluates the ability to move from the unistructural and multistructural to the more complex relational and extended abstract levels. In applying Marton and Booth's concept to the PBL group activities it is clear that successful group

WiSER

interaction between members with diverse cultural models of learning and experience should bring about an increase in the awareness of the possibilities for variation.

Bowden and Marton (1998:140) comment on PBL as an approach which is consistent with the idea of learning through an experience of variation and that of experience occurring as a contextualization of the professional circumstances in which the graduates will work. They do, however express concerns about PBL (*Ibid: 141*). They agree that the PBL approach is likely to be both more supportive of appropriate learning and more responsive to the need for dynamic change than a traditional lecture-based curriculum. However, they do not believe that PBL will provide an appropriate setting for all educational needs and therefore advocate a combination of PBL, lectures and web-based learning. The PBL concept to which they refer is most likely the "pure" form of PBL in which there are no lectures or course notes provided and students are expected to be exclusively self-directed. It is interesting that Bowden and Marton's suggested model conforms very closely to the Wits version of PBL which was always intended to be a "hybrid". Indeed, more recently even the most ardent purists of PBL such as the University of Maastricht have moved away from this extreme form and now offer limited numbers of lectures.

The learning environment, including the interaction with others in that space, creates the possibilities for learning. Marton *et al.* (2004:230) provide some valuable insights into some of the factors which may enable learning and foreground the role of language in learning:

> "*Language plays a critical role in learning by bringing about the necessary conditions for learning. One such condition is that students focus on the object of learning and discern its critical features. Because language makes meaning, the ability of students and teachers to negotiate meaning and construct meaning collaboratively through language, makes qualitative differences in the semantic dimension of the space of learning that is being constituted.*
> *Another condition for bringing about learning is that the space of learning is shared by students and teachers. Language plays a crucial role in establishing as well as in widening a shared common ground.*
>
> *There is a difference in the classroom discourse between student learning in mother tongue and learning in a second weaker language: they do not have the necessary resources for making meaning"*

Although Marton *et al*. are making these points in relation to school children in Hong Kong, the conclusions they draw may be equally applicable to South African students in general and learning in the GEMP in particular. All three research instruments used in this study showed that the African-language students remain more peripheral as participants than both

WitsETD

the Afrikaans and English students. If participation is an important component of learning then it is likely that some of the African-language students may have acquired institutional access which has not necessarily been translated into epistemic access.

Lave and Wenger (1991) are useful for insights into the possibility of learning being a socially determined activity in which students are operating as participants in a community of practice. Wenger (1998:173) identifies the dimensions of belonging to a community as engagement, imagination and alignment. Engagement represents the intersection between ongoing negotiation of meaning, trajectory formation, and shared histories of learning. Students who fail to engage with the practice will thus be separated from full discovery of meaning, from developing personal trajectories in the practice and contributing to the growth of the practice. Imagination provides opportunities to extrapolate from personal experiences to future possibilities, and alignment allows coordination within a broader context (*Ibid*: 173-174). These modes all offer powerful opportunities for creating deeper knowledge, but students who have not developed a personal identity of belonging to the group are less likely to benefit from the goods produced by mutual engagement in the enterprise. A number of authors have described the importance of students gaining belonging access to the conventions of academic discourse, learning how to "crack the code" (Ballard and Clanchy, 1988) and knowing the "rules of the game" (Lea and Street, 1998). Gee (1996) relates access to the discourse as a necessary requirement for producing a particular interpretation or response in a discipline. In an integrated curriculum students not only have to learn the conventions for participation in integrated activities such as PBL tutorials, but have to learn the specific discourses of the many individual disciplines which constitute the curriculum.

Membership of a community of practice is determined by the landscape of that practice: the boundaries of the practice define what activities take place, who belongs and who does not, where there is continuity, discontinuity and overlap with other practices (*Ibid*: 119-120).
Lave and Wenger (1991:105), however, challenge the centrality of the role of language in learning:

> "*Issues about language may well have more to do with legitimacy of participation and with access to peripherality than they do with knowledge transmission.*"

Jordan (1989, cited in Lave and Wenger 1991) argues, "learning to become a legitimate participant in a community involves learning how to talk (and be silent) in the manner of full

WitsETD

participants". In the observed tutorials some students asked questions and others did not. Scribner and Cole (1981) speculate that in educational institutions such as school, asking questions forms part of learning how to "do" school appropriately and may be a major part of what school teaches. The same authors (*Ibid*:235) describe a "practice account of literacy" according to which exposure to the patterns of speaking and reasoning in formal educational settings gives rise to a particular set of discourse and cognitive tools which represent a particular form of literacy practice. The implication of this is that students who have not been exposed to the literacy practice in which question asking is valued will be disadvantaged in situations which require this form of linguistic communication. Lave and Wenger (1991:107) argue further that

> *"Didactic instruction creates unintentional practices. There is a difference between talking about a practice from outside and talking within it. Thus the didactic use of language, not itself the discourse of practice, creates a new linguistic practice which has an existence of its own. Legitimate peripheral participation in such linguistic practice is a form of learning but does not imply that newcomers learn the actual language the language is supposed to be about."*

The implication of the above seems to be that those students who have learnt the conventions of PBL will participate in appropriate communication modes such as asking and answering questions, but that this form of communication does not necessarily grant them access to the practice of medicine unless the context of PBL is an authentic approximation to the practice of medicine.

PBL groups should thus be seen as far more than a group collaborating for the common purpose of learning from the problem: the group is community, but the extent to which all members will be able to create a common identity will depend on the engagement in what Gee (1996: viii) calls a common "Discourse". In Gee's terms Discourses are far more than languages: they are "ways of behaving, interacting, valuing, thinking, speaking and often reading and writing that are accepted as instantiations of particular roles by *specific groups of people*" (author's italics). The role of the facilitator thus goes far beyond that of facilitating the students towards an understanding of the content but creates unique opportunities for moving the student towards forming an identity around the Discourse of the medical professional. The implications for the non-medical practitioner are that their peripheral position may prevent them from them from engaging as fully legitimate members and thus make it more difficult for them to engage the students. Bruner (1996:20) elaborates

WiSER

on the passing on of knowledge and skill as involving a 'subcommunity in interaction'. It is through interaction that learners discover the culture of the activity. In a 'community of mutual learners' the role of the educator is to 'orchestrate' the proceedings. To extend this metaphor, it would be unusual to find the conductor of an orchestra who is not also a musician.

6.2.3 Research on problem-based learning in medicine

The literature related to PBL in medicine tends to emphasise the knowledge that the individual is able to construct. The last 15 years has produced an intense debate in the literature on the benefits or otherwise of PBL curricula. In the early 1990's, when PBL had been in common use in medical curricula for a decade or more, there was great interest in evaluating its success, particularly in comparison with the so-called traditional curricula. Albanese and Mitchell (1993) and Vernon and Blake(1993) carried out meta-analyses of a number of these studies and suggested that although there was no conclusive evidence that students educated in PBL were superior (i.e. performed better in high-stakes clinical examinations) there was evidence for it being a more nurturing and enjoyable form of learning.

More recently Colliver (2000) has proposed that the inability of the research to demonstrate that PBL is a more effective process for producing knowledge and clinical skills is because the link between the educational theory and the research is too loose. Norman and Schmidt (2000) disagree, saying that while they concur that PBL has not delivered on its promises for the acquisition of knowledge and skills, it does produce a more challenging and motivating educational approach, but that progress in understanding why this is so will only be achieved through theory building and a rigorous, systematic research approach which captures all possible interactions and variables. Albanese (2000) agrees that the theory underlying the claim for contextual learning theory facilitating transfer to the clinical setting is weak and argues for more research to understand what is really happening in PBL. He suggests that the context of the case in the PBL tutorial has more in common with other unrelated PBL cases than with the patients in the wards. Dolmans *et al*. (2005) have supported Norman and Schmidt in the view that randomized control trials are not the most appropriate method for evaluating educational interventions, and call for more research studies which focus on the theoretical concepts underlying PBL and which aim to understand how it does or does not work, and in which circumstances. They refer to this as "design-based" research, in which

WitsETD

mixed methods and triangulation of multiple sources of data will help to create bridges between theory and practice.

The current study speaks to the literature on PBL research by supporting the position of Dolmans *et al*. (2005) and of Norman and Schmidt (2000) in calling for more research that links theories of learning to observations of the outcomes from PBL curricula. The interpretations of the current findings suggest that evaluating and understanding the learning that occurs in a PBL environment is a far more complex process than drawing conclusions from performance in examinations and that the importance of the sociocultural context of the learning needs to be investigated in greater depth.

6.3 Limitations

The conclusions which it is possible to draw may be constrained by several factors. Firstly, the questionnaire response was 60% of the study population and since those who responded were self-selected, their willingness to be included may be reflective of a general attitude to studying in general and the GEMP in particular. Their views may thus not be representative of the class as a whole. The respondents also did not accurately reflect the demographics of the class accurately: the White and graduate students were over-represented and the Indian and matric entrants were underrepresented. It is worth noting that the groups which were better represented overall appeared to be those students with a more positive attitude and to the curriculum and tendency to change and to engage with the intended approaches to learning.

There was a close alignment between most of the findings from the three research instruments which could be triangulated, thus affording the study validity in terms of method. However, although the students invited to participate in the focus group interviews were randomly chosen from the study population, not all of those chosen did in fact participate and again, the participation may have been a reflection of their attitudes.

Since the study was intended to be predominantly a qualitative study there was no attempt to establish the statistical significance of variations in the data. Numerical data generated by the questionnaire analysis were used to identify broad trends and show where apparent differences and similarities were most likely to exist and these became areas of interest for further exploration and deeper understanding in the focus groups. The absence of statistical

WitsETD

quantitative analysis does limit the conclusions which can be drawn about the significance of the differences identified between some of the groups. It must however be remembered that the purpose of the study was *not* to compare the various different groups in the GEMP, but where variations were detected it was more important to establish why differences occurred rather than their extent. There was also no attempt to correlate the findings with the results of student assessments and thereby determine how effective the different approaches and strategies for learning adopted by students might in fact be.

A further limitation of the questionnaire was that it was designed and distributed to the students prior to the completion of the full literature review presented here. Had the questionnaire design drawn more on concepts such as those relating to cultural models of learning, curriculum codes and the social context of learning, the study may have produced additional useful information and insights.

Since the programme, the participants and the conditions studied formed the elements of a unique study, the scope for generalisation to other settings may be limited. Nevertheless, several other South African universities have similar programmes and student bodies with similar demographic profiles. Elsewhere in the world there are also schools grappling with many of the same issues around problem-based and integrated curricula, self-directed learning, language and cultural diversity. The results from the study will probably be of interest to a wider audience than just the University of the Witwatersrand community.

6.4 Recommendations

The conclusions drawn above suggest the following recommendations:

1. Given the robustness of the argument for the crucial role played by the facilitator in creating the opportunities for learning in a PBL curriculum, more attention should be paid to ensuring that facilitators understand the process and act to stimulate and scaffold the intended learning in the ZPD.
2. Students should be encouraged to create professional identities as medical practitioners and trajectories into the practice by using competent facilitators who are medically qualified and by helping non-medical facilitators to develop deeper insights and ways of thinking which are better aligned with the clinical reasoning process.

WitsETD

3. The provision of substantial course materials to students in the form of the learning topics needs to be reconsidered: if the intention is for students to be seeking information as directed by the learning objectives there needs to be an incentive to access information more independently.
4. Students whose cultural models of learning may constrain participation and access to learning need additional support and encouragement towards fuller participation. The importance of this role by facilitators and faculty support structures needs to be emphasised.
5. Since the integrated curricular code may be denying students access to the logic and verticality of the constituent disciplines, the ways in which the disciplines are developed and communicated need to be considered and strengthened.
6. The identity and message systems of the Patient-Doctor, Community-Doctor and Personal and Professional Development themes need to be reviewed.
7. Where possible the organization of the timetable should be reconsidered to create larger blocks of unscheduled time available which are more conducive to promoting learning.

6.5 Future research directions

One of the insights gained from the current research is that the biopsychosocial model of learning in the GEMP curriculum may in fact serve as an analogy for understanding that learning. The curriculum content can be likened to the biological domain, the learning of the individual to the psychological domain and the sociocultural context of the learning to the social domain. Just as the students are encouraged to develop a holistic approach to understanding patients by integrating all three domains, so medical education researchers need to take a holistic approach to understanding the possibilities for learning, by attempting to integrate perspectives on the knowledge, the student and the learning environment.

The current research was intended to be an exploratory study which would highlight which assumptions about learning in the GEMP curriculum were fulfilled and which were enacted in practice. Since the research points to the importance of the PBL tutorial context and particularly the role of the facilitator in learning, further research into the practices, attitudes and opinions of the Faculty staff related to the GEMP curriculum is indicated. The findings regarding Afrikaans students were unexpected and suggest that further research might reveal equally interesting insights into other groups who display learning approaches which may be

WitsETD

understood in terms of their cultural models of learning. A further area of interest which requires deeper investigation is that of the factors which might enable and constrain the development of the students' identity as medical professionals in training. Finally, more information is needed on the ability of the students to apply knowledge gained in the recontextualised practice to the clinical setting and the management of real patients.

WitsETD