THE PHYSICS SECONDARY EDUCATION CERTIFICATE EXAMINATION: A MALTESE CASE STUDY

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TO MY PARENTS

who started me off on my educational journey

and

TO STEPHEN AND LUKE

who accompanied me part of the way

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Abstract

This thesis investigates whether examinations are fair and just for all students in Maltese schools within the context of the Physics Secondary Education Certificate. It explores what teachers and students think of the Physics SEC examination, how the teachers' and students' views were reflected in the kind of teaching and learning taking place in the schools and how the examinations impacted on the lives of students and whether there were any differences in gender and class which limited the experiences of students.

The data was obtained from observations and interviews carried out with teachers and students in six Maltese schools representing a girls' and boys' Private School, Junior Lyceum and Area Secondary School. Examination results obtained from the MATSEC Support Unit were also statistically analysed. The study uses these multiple sources of data to explore the complex patterns involved. It is reflective and reflexive throughout and tries to intertwine the subjectivity of the researcher with both the data being collected as well as with the research process itself.

The evidence from the data suggests that assessment practices in Maltese classrooms are still very much grounded within an examination culture. This leads to teaching to the test and shallow learning. While there are no significant gender differences in achievement, type of school related to the differentiated paper system emerges out of the data as being very influential in determining the performance and future opportunities of students.

This indicates that examinations are not fair and just for all students in Maltese schools and points to the need for a new model of educational assessment focusing on positive achievement rather than selection and control. The study suggests how this new model can be implemented within the context of Maltese classrooms taking into consideration the views of the teachers and students involved in assessment.

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Glossary

Area Secondary School: A State run school. Caters for students who fail to pass the common entrance examination.

Assessment: Ways of obtaining information about students' learning using multiple methods such as class and home work, project work, portfolios and multiple assessors including the teacher.

BERA: British Educational Research Association.

Criterion referenced assessment: The measurement of achievement according to whether an individual can perform a specific or range of tasks.

Differentiation: The use of more than one paper in an examination. The papers are usually of different level of difficulty and a choice of paper has to be made prior to the examination. In Malta the examination consists of a common core Paper I taken by all students. Paper II is then of two types. A more difficult Paper IIA and a less difficult Paper IIB. Candidates opting for Paper IIA could qualify for grades 1 to 4 or else remain Unclassified while candidates opting for Paper IIB could qualify for grades 4 to 7 or else remain Unclassified.

Educational Assessment: A model of assessment based on the formative assessment of students in order to encourage learning and positive achievement.

Examinations: One form of assessing students' learning usually taking place in a pre-determined time and place and under comparable conditions for all students.

Formative assessment: Provides information to teachers and students about the kind of learning which is taking place in order to improve learning.

GCSE: The General Certificate of Secondary Education which is the assessment of students at sixteen in the United Kingdom.

GCE: The General Certificate of Education which can be taken at Ordinary or Advanced Level and which has been replaced by the GCSE in the United Kingdom but is still offered by some British Examinations Boards for Maltese students.

HMI: Her Majesty's Inspectorate.

Junior Lyceum: A State run school. Entrance into Junior Lyceums is determined by means of a common entrance examination when students are eleven years old.

MATSEC: The term used to describe the Maltese examinations made up from the two words MAT for matriculation or advanced level examinations and SEC for secondary education certificate or examinations held at the end of secondary schooling.

MATSEC Board: The Board deals with all the policy making regarding the examinations. It makes recommendations regarding all the regulations, syllabuses, and financing and appoints syllabus panels to develop syllabuses, paper setters to set the examination papers and markers to mark the examination.

MATSEC Support Unit: Implements the policies outlined by the MATSEC Board, administers the examinations and creates a link between the Board and teachers in schools.

National Minimum Curriculum (NMC): Describes the aims of education, the subject content to be taught and the methods in which they should be taught.

Norm referenced assessment: The measurement of student achievement as compared to other students.

Performance assessment: The assessment of learning within a real context usually based on a range of skills actually carried out as part of the assessment.

Private School: Schools run by independent bodies, in the case of the study the Private Schools considered are Church Schools.

SEC: Secondary Education Certificate which is awarded to students who pass examinations taken at the end of their secondary schooling.

State Schools: Schools funded by the State which offer free education for all Maltese citizens from age three to post-sixteen.

Student profiles or records of achievement: A way of presenting information about a student's achievements including a range of assessments carried out by a range of assessors.

Summative assessment: Reports the overall achievement of students at the end of a course of study.

Teacher assessment: The assessment made by teachers of students' achievements.

PART ONE

SETTING THE SCENE

CHAPTER ONE

The Research Problem

1.0 Introduction

This research began with two primary research questions which were :

> How are examinations impacting on the lives of students? and
> Are the best students ending up with the best grades ?

As the research proceeded and I began to place these questions within a context and within a research framework I realised that these two questions were very much related and could easily fall within the umbrella of a more comprehensive question which then became the main research question:

> Are examinations fair and just for all students in Maltese schools?

The main focus of the research was therefore centred about issues of equity which as defined by Gipps and Murphy (1994), "implies that assessment practice and interpretation of results are fair and just for all groups" (p. 18) and of social justice which is defined by Griffiths and Davies (1995) as "the empowerment of the individual...and the righting of structural injustice due to race, class, gender and special educational needs..." (p. 4). In the case of Malta it is only class and gender which will be considered since as yet there are no racial differences, and Maltese classrooms are generally very homogenous in terms of race. Classrooms in Malta tend to be homogenous especially at the Secondary level because there has been very little immigration into Malta. Therefore in Malta it would be very difficult to speak of multicultural or racial differences.

This focus of the research on assessment, equity and social justice therefore took into account not only current assessment practices in terms of their relevance to the teaching and learning taking place in Maltese classrooms but also recognised that other factors such as student motivation and esteem,

teacher behaviour and expectations, gender and type of school, could play an important role in determining student achievement and life opportunities.

1.1 Why did I do the research ?

The next question which had to be asked was why it was important for me to carry out the research and what I hoped to end up with. I therefore needed to place the research question within a context in order to provide a background for the research. My concerns about issues of equity and assessment developed while I was working as a teacher in a Maltese Area Secondary School and reading for a Masters degree in Education. As part of my studies I was working with adolescent girls and interviewing them about their interests in science. During an interview one of the girls said to me:

> *...but can students like us go to University...because I'm not clever...the exam tells me so...I only get five...seven or ten...*

This comment remained with me for quite a while and it started the train of thought which led me to the initial research questions. Could it be that examinations really had such an impact on the lives of students that it influenced their life chances and if examinations had such a big influence then what kind of students were making it through this gateway and achieving the best grades. This led me to the first of my primary questions, "How are examinations impacting on the lives of students ?"

I continued to reflect upon my own experiences with examinations and I realised that they had actually played an important role in my own life. My parents had always pushed me to do well in examinations because they thought that having good results would increase my career opportunities and allow me to have a better life than they had. I achieved well and went through my years of secondary schooling in a Catholic girls' private school with flying colours. However, as I reflected back I realised that not much knowledge remained with me after all those years of learning things by heart. I had obtained the best grades but did not know all that much. This feeling of not knowing much came through my every day contact with things which I had studied for my O' and A' levels but which I could not remember when I needed to teach them to my students. I had obtained the best grades in school, but this still did not give me a better understanding of the subject. I

started to think that even students who were obtaining good grades in the public examinations did not know that much after all. This brought me to the second of my initial questions, "Are the best students obtaining the best grades ?"

1.2 Getting more Focused - Formulating the main research question

With all these ideas in mind I started to work at the University and part of my responsibilities were with the MATSEC Support Unit which administered the examinations held locally. The MATSEC examinations were in fact introduced in 1994 in order to replace the examinations which had previously been set by the English examination boards. As Ventura (1997) points out "a general air of scepticism accompanied the innovation...schools and the general public aired their concerns through the media, and also some members of the board entrusted with the implementation of the innovation were not sure that it was a wise decision to substitute foreign examinations with the local ones" (p. 2).

It was in this general atmosphere that I started to work with the syllabus panels, teachers, parents and students. Every day I would hear some comments or criticism of the system by teachers in schools, parents and anxious students who were very uncertain and confused about the outcome and significance of the SEC examination. Doubts were continually expressed about the credibility of a locally based system of examinations. Parents were afraid that the marking would not be sufficiently objective and anonymous in a country where everyone seemed to know everyone else. Teachers were concerned with the expertise of the individuals who were preparing syllabuses and setting and marking examination papers and both parents and teachers were concerned about the international recognition of the examinations. These were all very justifiable concerns but to me they seemed to be dealing very much with the day to day running of the examinations, with what the examinations could provide, that is, grades and certification. I was much more concerned with the impact of examinations on the lives of the students.

As I talked to the people involved in the examination system and as I reviewed the literature on assessment, I found that much had been written about assessment and assessment issues in other countries, much had been said verbally and in the local newspapers about the new SEC examination system, but very little had been actually written by local educators about the philosophy and influences of the new examination system. In 1996 an evaluation was written by Sultana as part of a Commonwealth Secretariat project and this gives a very good overview of how the new system was set up, how it was functioning and its impact on the educational system. However, it did not consider how the examinations were actually being implemented in the schools and how they were affecting the students. A more recent paper by Ventura (1997) tries to discuss the examinations in terms of equity and while he gives a clear picture of what is happening in terms of student achievement and differences in achievement, it is only a quantitative view, with little indication of why there are apparent differences in the achievement of the students. As I reviewed the literature I realised that there was more to examinations than simply quantifying achievement and that a much broader view including issues of equity, gender and social class had to be considered when analysing any type of assessment system.

I also realised that in a country which was as examination oriented as Malta, examinations were determining the life chances and opportunities of the students. In a research seminar I heard about how in the United Kingdom students could follow an alternative route in Higher Education by obtaining National Vocational Qualifications. I heard how students who had done very badly in their GCSE's then continued with their NVQs and managed to enter Higher Education, and become very successful in their chosen careers. My concern was that in Malta the only route into Higher Education was through the SEC examination and that students who did not make it through this route had lost their opportunity of ever being able to enter Higher Education.

I began to question this selective system of education and began to question which students were being given the greatest opportunity: Was it the students who knew the most about the subject ? Was it the students who had the most supportive family background ? Was it the boys more than the girls ? Did the type of school one attended increase or decrease opportunity? Bernstein (1971) wrote, "How a society selects, classifies,

distributes, transmits and evaluates the educational knowledge it considers to be public, reflects both the distribution of power and the principles of social control" (p. 47). As Bernstein aptly puts it, those who determine what knowledge is of most worth are those who hold the reins of power in a society. And those who hold the reins of power try to ensure that it is their children who are the most successful. The examination syllabus and the student's capacity to respond to it become a major identification of what counts as knowledge and "those who determine the knowledge requirements of the examination hold major power positions in society" (Eggleston, 1984, p. 22). This made it even more essential that students be allowed equal opportunity of access into Higher Education and that the examinations which provided this passport for entry should be fair and just for all students.

In a Maltese system where education is highly differentiated and selective, my primary concern was that it was not necessarily the best students who were making it through the system but those who had the most supportive background. It was also not very clear what was meant by the best students. Were the best students those who knew most about the subject or were they those who learnt how to read the system and were coached to do well on examinations. In my interactions with students in schools I came across boys in an area secondary school who had no chance of passing their examinations but could tell you how to take a car engine apart and put it back together again. These students had a great deal of practical knowledge and yet the system considered them to be failures. This led to my main research question which was, "Are examinations fair and just for all students in Maltese schools ?"

I was reading more and more about assessment practices and I was particularly influenced by the writings of Gipps & Murphy (1994); Murphy (1990), Nuttall (1978), and Broadfoot (1990). I was impressed with the focus of these writers on equity and social issues, on formative assessment rather than summative assessment and on the development of student profiles or records of achievement. These theoretical perspectives helped me to view assessment practices in a different light. They helped me go beyond looking at assessment in terms of examinations, the development of syllabi and the setting of papers which were the concerns of the individuals at the Matsec Support Unit. In my work at the Matsec Support Unit I was immersed in

empirical and anecdotal data. I looked at examination results and heard the complaints of parents and teachers. This enculturation into the world of examinations led me to start thinking and questioning all the data around me in terms of the theoretical perspectives which I had begun to develop. It led me to question the narrow outlook towards examinations. There was a large gap between what administrators, teachers and parents were saying about examinations and the philosophical and theoretical frameworks which were being developed in other countries about assessment practices.

I was coming to a point of view which was triggered off by my previous research and which became informed by the theoretical perspectives and empirical data which I had been considering throughout my work. All these perceptions emerged from my own personal experience with examinations, from my work as a teacher in the schools and from my work as an official at the MATSEC Support Unit and together with the readings enabled me to perceive pieces of evidence in a particular light. It struck me that the whole view of examination practices was narrow and concerned with administrative rather than academic interests. The individuals involved in the development of the examination system were too concerned with the day-to-day survival strategies which would keep the examinations running regardless of whether they were functioning well or not. There was also a large gap in the questions which were being asked by the individuals involved in the administration of the examinations and the kinds of questions being asked by educators in the field. I wanted to broaden this outlook towards examinations in order to include other issues which I felt had to be considered if examinations were to provide a fair and just evaluation of students.

1.3 The Context

Once the research question was developed I had to decide where and how I was going to carry out the research. This was a methodological question. In my readings about methodology I became very interested in feminist epistemology and methodology. I was not of the view that there was one objective "truth" out there which I could discover. Rather I came to the view that the research should be a collaborative piece of work which included the multiple subjectivities of all the participants involved. I did not want to distance myself from the research but felt that I had to become part of the

research process. I had to make my own views and personal experiences explicit so that they could form the background and the context from which the main research data could emerge. My aim was to make the views of students and teachers heard in an area where it was normally the voice of authority which was the most predominant.

Because of these views I chose to do a qualitative study which was based on classroom observations and interviews with teachers and students. Some statistical data was included in the study, however this was used mainly as descriptive data, to illustrate a point and act as a starting point for discussion within the qualitative data. This was an epistemological issue. Like Porter (1994) I decided to use both quantitative and qualitative data but did not treat them equally: when I interpreted the data I gave much greater weight to the qualitative data. I decided to focus on a single science subject at SEC due to limitations of time and resources. I chose to look at the physics examination since until 1996 physics was compulsory for entry into post-secondary education and most of the students in secondary school were studying physics.

The research was carried out in six different schools in the Maltese Islands. The schools were representative of different kinds of schools and included a Girls' and Boys' Private school, a Girls' and Boys' Junior Lyceum, and a Girls' and Boys' Area Secondary School. The schools were chosen in different areas of the Island so as to try and get as wide a cross section of students as possible. Initially observations were carried out in a single fifth form class taking physics, physics being the only compulsory science subject taught in these schools. Fifth Form classes were chosen since I was mainly interested in the Physics Secondary Education Certificate examination which students sat for at the end of Form Five. Interviews were then carried out with both teachers and students. Access into the schools was relatively easy and teachers and students on the whole participated with enthusiasm and interest in the research project.

1.4 Broadening out the Issues

As I started the research and gained access into the schools, I started talking to teachers and students about the examinations, I realised that there were

actually three main strands to my main research question. The main issue was about equity and fairness and this could be considered in terms of three major areas which were different and separate yet interrelated and connected. The main research question was therefore broadened out to include three main areas:

1) the examination;
2) the school;
3) the student.

I wanted to explore in terms of the main research question what teachers and students thought of the examinations, what they thought was fair and unfair about the examinations and whether they had any suggestions for any alternative models of assessment. I realised that the views which the teachers and students had of the examination were reflected in the kind of teaching and learning which was taking place in the classrooms. I therefore wanted to observe what kind of teaching and learning was taking place. Finally I wanted to explore how these views of the examinations and the kind of teaching and learning which was taking place impacted on the lives of students and limited their future opportunities. I therefore formulated three additional research questions which were:

What did teachers and students think of the Physics SEC examination ?

How were the teachers' and students' views reflected in the kind of teaching and learning taking place in the schools ?

How did examinations impact on the lives of students and were there any differences in gender and class which limited the opportunities of students ?

These additional questions helped to shape the background of the research. They emerged from my experience, from the reviewing of the literature and from the research process itself. These additional questions became the three main strands from which I then tried to answer the main research

question "Are examinations fair and just for all students in Maltese schools ?" The two initial questions which triggered off my thinking were therefore incorporated into this main question.

1.5 The Content of the thesis

The thesis is divided into five main parts. Part One of the thesis sets the scene in which the research takes place. It starts off with Chapter One which defines the research questions and how they were formulated. It sets the main focus of the thesis as being assessment and examinations with particular reference to the Physics Secondary Education Certificate examination. It is followed by Chapter Two which gives a background to the Maltese educational system. This is considered important since the research took place in a Maltese context and some background is necessary in order to enable the reader to place the research within the context and framework in which it was carried out.

Part Two of the study looks at the literature available regarding assessment and examinations with particular reference to an international as well as a Maltese context. It creates a theoretical framework from which the actual research could evolve. Part Two is made up of an introduction and four chapters. The introduction gives a definition of assessment and tries to distinguish between assessment and examinations. Chapter Three goes on to discuss examinations, their development, main functions and their effects together with a critique of examinations. This provides the reader with the theoretical underpinnings which form an important part in the later development and analysis of the data. Chapter Four gives some background on assessment and the development of an alternative assessment paradigm to replace the traditional emphasis on examinations. Chapter Five places the issues within a Maltese context and describes the development and impact of examinations in Malta. The final chapter in this part of the thesis discusses the issue of equity which is described as being one of the main focuses of the research in Chapter One. It looks at issues of self-esteem, gender, and social class and how these are important in the development of a new assessment paradigm.

Part Three of the research discusses the epistemological and methodological underpinnings of the research. Chapter Seven develops a theoretical framework from which the way in which the research was carried out could be developed. The position taken is that there is no given out there waiting to be discovered but that all facts come trailing a number of values with them. One of the main positions taken is the importance of the subjectivity of the researcher and continually throughout the research I try to be as reflective and reflexive as possible about my own position within the research and the research process itself. This line of thought is continued in Chapter Eight where I describe my own position within the research and the way in which the research was carried out with emphasis on the observations and interviews which were the main research tools used in this research. In Chapter Nine, I try to draw on my experience as a researcher and reflect on the issues and ethical considerations which arose throughout the research process.

Part Four of the research includes a description and initial analysis of the data. For organisational purposes and to make the data more readable the data is again divided into four chapters. Chapter Ten sets the scene in which the actual research took place giving a description of the schools, teachers and students who participated in the research. Chapter Eleven looks at assessment and the teaching of physics in Maltese classrooms while Chapter Twelve looks at assessment and the learning of physics. The emphasis is on the teaching and learning of physics for the examination. Chapter Thirteen then looks at the actual physics SEC examination in more detail and considers the issues of differentiation, gender, class and type of school and the way in which they influence students' achievement and future aspirations.

In the final part of the thesis Part Five, I try to look forward and departing from the actual data try to make suggestions for an alternative form of assessment. In Chapter Fourteen, I look at the actual research process as a learning experience. In Chapter Fifteen I look at the actual data and its embeddedness within an examination culture. Finally in Chapter Sixteen I look forward towards ways in which a new assessment culture can be developed and implemented in Maltese schools.

This research is founded in a number of theoretical underpinnings about the issues of equity and assessment. It is a journey which draws on my own personal experiences as a student, teacher and researcher, on the experiences of the teachers and students in schools, and on the research process itself. It attempts to situate the context of the examinations in Malta within a broader theoretical framework. Hopefully the experiences of the participants of the study will give rise to more questions about current assessment practices and act as a springboard for national debate about assessment and result in assessment practices which take into consideration the rights of all students regardless of gender or social class.

CHAPTER TWO

The Maltese Educational System

2.0 Introduction

The research was carried out in Maltese schools and this chapter tries to give a background to the Maltese Islands and the Maltese educational system. This was considered important to enable the reader to place the research within the context and framework in which it took place. It sets the scene and creates a background from which the reader can then embark on the research journey and traverse its length reflexively and reflectively.

The Maltese Islands are a group of small islands situated in the centre of the Mediterranean at latitude 35° North and longitude 14° East. The Islands lie approximately 96 km from Sicily and 290 km from North Africa. The Maltese archipelago consists of three main islands, Malta, Gozo and Comino and a number of small uninhabited islets. The larger island of Malta covers an area of 246 square kilometres with a population of 325, 000 while the smaller island of Gozo covers an area of 67 square kilometres with a population of around 25, 000.

Malta's position and its natural harbours have invited a number of colonial powers - the Carthaginians, the Romans, the Byzantines, the Arabs, the Normans, the various houses of Spain, the French, and finally the British to take possession of the islands. Malta obtained its political independence from Britain on the 21st of September 1964, and was declared a republic ten years later. The various Mediterranean and other peoples that occupied the Maltese Islands over the centuries left their mark on the life of the inhabitants. Their heritage is evident not only in the architecture and culture of the Islands but in the education of the people which is closely related to, inseparably intertwined with and strongly conditioned by their political, cultural, social and economic development (Camilleri, 1995; Sultana, 1996; Zammit Mangion, 1992).

2.1 The Maltese Educational System

Farrugia (1988) argues that the Maltese Islands have very little known natural resources apart from the people. He points out that because of this Malta's educational policy has its roots in the awareness that the economic and social progress of the inhabitants depend much more on the initiative and ingenuity of what Farrugia describes as the nation's manpower (here of course Farrugia is implicitly ignoring half the population of women which form part of that manpower). Successive governments have therefore developed an education system based mainly on a general and vocational education which is intended to reduce our dependence on richer and bigger countries. The main aim of education is thus intended to foster people's social and moral maturity, their cultural enrichment and their national identity (Farrugia, 1988). In this sense education is used as what Griffiths (1997) calls a "positional good" both on an individual as well as on a national level.

Due to its exchange value as a "positional good" education has always since its compulsory introduction in 1946, been given top priority both by individuals as well as by governments. Sultana (1996a) points out that education was initially available only to the higher social classes who were born into their positions and considered able by virtue of their class. It was only much later that this was replaced by an educational system which selected individuals on the basis of merit rather than class. Farrugia (1988) describes this as the evolution of the education system from an elitist to an egalitarian model where the credentials for academic advancement are one's ability and merit rather than family background or material wealth. While I agree with both Sultana and Farrugia that the education system in Malta has evolved greatly and is mainly based on a meritocracy accessible to all individuals independent of social class, based on the research carried out, I would argue that there are still many underlying class factors which influence the type of education obtained by individuals. While at the surface education appears to be egalitarian based on merit it is still very strongly influenced by class and position in society.

The widespread belief that education and access to higher positions in society is based on merit, has led in Malta to a large pre-occupation with

certification based on ability. This pre-occupation with ability and achievement has been largely influenced according to Sultana (1996a) by practices in the area of psychology and based on work done on intelligence and developmental stages. I agree with Sultana that psychological practices have greatly influenced the Maltese educational system. In an island as small as Malta, educational policy is usually determined by one or two key individuals with expertise in a particular area. Initially, most educators were trained as psychologists and brought with them into the field of education various ideas used in psychology. In more recent times as more individuals developed their area of expertise in different areas, more contributions to educational research have been made from different areas such as those of sociology and philosophy. This still leaves a large gap in educational research carried out by subject area specialists or individuals who have specialised in education. The long standing debate is whether educational research and policy making can be considered as a body of knowledge in its own right or whether it is simply an offshoot of psychology, sociology or philosophy carried out by psychologists, sociologists or philosophers who have become interested in education.

The psychological influence has led to the development of an educational system preoccupied with measuring, predicting performance, selecting and channelling children, practices which Sultana (1996a) believes still constitute the key distinguishing characteristic of the Maltese educational system. As I continued to review the literature it became ever more and more apparent that Sultana was very justified in making this statement. I came to the view that parents considered education to be very important for their children. Zammit Mangion (1992) argues that parents try to give young children a head start as early in life as possible lest they be disadvantaged or find themselves behind others in the competition that exists for places in prestigious schools or for entry into University. Zammit Mangion argues convincingly that parents place great value on education and go to great lengths to provide the best education and the most expensive education in order to ensure that their children will have a better future than they themselves have had.

The key features which are characteristic of the Maltese educational system are therefore the emphasis on vocational education to cater for the industrial needs of the country, the emphasis on merit rather than class for certification,

and as a result the focus on education as a good which can be exchanged for societal benefits. These characteristics have been developed through a number of different theoretical frameworks and educational philosophies and are the result of a number of factors which have greatly influenced the Maltese educational system.

2.1.1 Factors influencing the Maltese educational system

The educational system in Malta has evolved from one based completely on the British educational model to one which is more oriented towards European models. This shift in educational thought and culture has been brought about mainly by political influences rather than educational ones. Sultana (1998) argues that the key features which have played an important role in determining the shape and function of the system are an overwhelming reliance on the United Kingdom for educational models, a centralised state education system, a stratified and selective state school system, extensive educational services, a strong private school system and a culture of competitive achievement. While these features have all played an important role in the Maltese educational system, one key feature which is missing from the description given by Sultana is the role played by local political parties in the development of educational policies and the influence of the current political agenda on the evolution of differing educational philosophies. The development of the Maltese educational system is therefore clearly linked to influences from the British system, the Catholic Church and Political Parties.

2.1.1.1 The influence of the British.

Historically Malta has had very strong links with Britain. As a British ex-colony Malta developed strong centralised administration systems. This was necessary in order to govern the local population and at the same time provide the support services required by the military. This led to an educational system which is described by several authors (Farrugia, 1988; Zammit Mangion, 1992; Sultana, 1996) as being highly centralised and heavily based on British educational models, policy making strategies, textbooks and expertise. Curricula and textbooks, the posting of teachers and their transfer as well as any school requisites are centrally determined. Positions of power are given according to seniority and not dependent on

merit, leaving no room for decentralisation, sharing of power or autonomy. I completely agree with Sultana (1996) that this leads to a great deal of bureaucracy and red tape which often kills the initiatives of Heads of Schools and teachers.

Recently, attempts have been made to move away from this British model of education towards a more decentralised system based on European models. This shift in philosophical ideas is closely linked to the shift in political ideas with Malta attempting to join the European Union and hence forming closer links with European ideas and ideals. Sultana (1996) describes how School Councils have been created and teachers are now being promoted on the basis of merit rather than seniority. In my view, while this has led to a number of improvements such as more teachers continuing their training and the development of closer links with parents through the School Councils, traditional values still prevail. This is mainly due to the persistent colonial mentality that anything British must be better.

2.1.1.2 The influence of the Catholic Church.

One of the main aims of Maltese education is the formation of a Catholic character and as such the Catholic religion plays an important part in the whole atmosphere, ethos and life of the school (Zammit Mangion, 1992). The teaching of the Catholic religion is in fact compulsory in both State schools and Church run schools. However, in my opinion the greatest impact which the Catholic Church has had on Maltese education has been the creation of a strong Private school system run by various religious orders.

Zammit Mangion (1992) describes many reasons for the development of a strong system of private education starting from colonial times where the education facilities provided by the Government were not always sufficient to cater for all the needs of students and Church Private schools filled this gap. There was also the need to ensure that a Catholic education was available in the period of a British rule. What Zammit Mangion fails to mention is that nowadays the preference for Church Private Schools has become a cultural need, again tied to the British mentality that a Private system especially one for which you have to pay very dearly is likely to give better results than one which is obtained for free.

Through its schools the Church has created its own ethos ensuring that its schools are enshrined with prestige and distinction associated with a traditional, formal education which is highly examination-oriented. This gives, according to Zammit Mangion (1992), a more "sheltered" education and one that tends to be more "stable" than that available in State schools. I would argue that the reason why the Church schools have remained so popular is not because they provide a Catholic education (which in any case is also given in State schools), and not because they provide a more sheltered and stable education but rather because they have always been associated with the elite who could afford to pay for their education and the Church has always been happy to keep it this way. At present admission into Church Private schools has become more accessible since they are heavily subsidised by the State and entry is by lot at primary level or by examination at secondary level. However, the attitude that Church Schools cater for a privileged few is still prevalent.

The separation of Private Church Schools and State Schools creates a large differentiation between students and individuals. Sultana (1995) and Darmanin (1996) argue that while the Church Private School system offers a great contribution to the education of many individuals, most of whom end up taking top positions in the country, they also offer a hindrance to the development of the State School system. Sultana points out that policies adopted in Church Private Schools severely constrain the latitude of the State education sector in developing its own educational vision and have generally contributed to the intensification of inter- and intra- school streaming, selection and channelling. This argument is taken further by Darmanin who indicates that the existence of a dual system contributes to the perpetuation of difference among students. According to Darmanin the existence of a Church Private School system has a differentiating effect on the lives of students and any attempt to reduce selection and streaming in State Schools will have a limiting effect because the Church Private School system continues to act as a device selecting for and against students.

The work of these authors highlights the great influence of the Church Private Schools on the Maltese educational system. The Church Private Schools create what Sultana (1996) describes as "a culture of competitive

achievement which exalts testing and examinations above the needs and development of the child" (p. 6). However, in agreement with both authors, I would argue that this should not mean that the Church Private School system should be eliminated, as it has a great deal to offer, but rather it should work hand in hand, collaborating with, rather than competing with State Schools.

2.1.1.3 Political Influence.

The Maltese educational system has always been greatly influenced by "party politics". In a country where for a long time there were only two main political parties, education has often been taken up as a bone of contention by the party in Government and by the party in Opposition, education often becoming the battle ground over which political rather than educational issues can be fought. As Zammit Mangion (1992) points out, politicisation has tended to result in that educational decisions and educational solutions are often taken and launched on political party lines and according to political party policies, while the advice and warnings of professionals and/or research studies may often not be taken into account at all, or ignored or even ridiculed. Committees and commissions appointed by Ministers are often one-sided and do not always reflect national opinion. Policies and decisions implemented by one party in Government tend to be changed or reversed when another party takes over and education tends to develop spasmodically.

Sultana (1992) offers a different point of view and suggests that despite the apparent chasm that differentiates the educational policies and ideologies of the Labour Party from those of the Nationalist party, "a study of the root structures of that ideological discourse and those policies displays what is ultimately the same language: a belief in the important role that education can play in the Island's economy" (p. 2). While Sultana's view might be justified if one digs very deeply into the ideological roots of both parties, at surface level it would seem that the two parties have a very different philosophy of education and that each political party has to make its mark on education by changing educational policy.

Unfortunately there is very little research evidence which explores the relationship between party politics and educational decisions. The only evidence lies in the sudden changes made in educational policy as each party

takes up government. This is very evident in the two main education acts passed in recent years. The 1974 Education Act passed by the Labour Government intended to do away with a number of social and educational injustices, which led to the attempt to develop a comprehensive school system. Failure of the comprehensive system led to the development of Junior Lyceums which encourages the system of streaming and selection and led to a further centralisation of the system. The 1988 Education Act passed by the Nationalist Government continued on the line of the bipartite system but tended to give more power to the schools by the creation of School Councils. This was in line with the political agenda of the Nationalist party, which sought to de-centralise governmental authority as much as possible.

Other political decisions which influenced education included the introduction of compulsory Arabic and Physics in schools, a decision taken by the Labour Government as an attempt to bring us closer with the Arab world and also because of the lack of qualified technical people. The Nationalist government quickly removed Arabic as a compulsory subject when elected into Government, as it was the policy of this government to have closer ties with Europe rather than with the Arab world.

The problem with this is that these educational decisions tend to be taken for political ends rather than for educational ones. This results in a complete turn about in education every time there is a change in government and instead of building on what is established, the established is often broken down and something new started from the very beginning. There is therefore little continuity between one Government and the next and this keeps education from developing at a steady pace. The political see-saw which seems to hit the Island every ten to fifteen years is reflected in the see-saw of educational policies which swing from one ideology to another leaving no sense of direction for education as a whole.

2.2 Secondary Education in Malta

Secondary education for all was introduced in 1970. Ventura (1996) describes how prior to 1970 secondary education was highly selective and intended as a general preparation for the traditional professions or executive

positions in the civil service of both government and colonial administrations. With the introduction of secondary education for all, the aims of secondary education changed to cater for a larger and more mixed population. The perceived aim of secondary education became the need to prepare all students for the General Certificate of Education (GCE) examinations with little provision for the low achievers.

The re-election of the Labour Party into Government in 1971 brought about radical changes to the state secondary sector. Wain (1994) and Sultana (1992) describe how the new educational philosophy became one based on the principle of equality of opportunity for all. Sultana (1992), himself very sympathetic with this new ideology, quotes the then Minister of Education, Agatha Barbara who describes the reformed system as one which would do away with a number of educational and social injustices and be based on:

> humanitarian principles: justice with everybody, equality of opportunities, social mixing, democracy, the possibility of full development of every person, a wise and smooth transition between primary and secondary education, a stimulating environment, happy children...and a generation brought up in a true educational system...(p. 193).

These ideological goals were linked to the need to build an independent economy based on industrial development. In practical terms these ideals led to the State Grammar Schools and Technical Schools being closed down to be replaced by a common system of secondary schools that followed the British comprehensive system. Wain (1994) and Zammit Mangion (1992) are highly critical of this comprehensive system which abolished secondary school entrance examinations so that students proceeded "en masse" from their local primary school to the school of the area assigned to them on the successful completion of their six year primary course. At the same time, in 1972, the government also introduced a trade school system which was intended to upgrade trade skills and produce new generations of skilled workers in line with the emerging economic needs of a newly independent country.

This new system was in fact not well received by parents, teachers and students. Several reasons can be given for the failure of the system.

Darmanin (1989) argues that one of the reasons was lack of planning for the implementation of the new system, multiplied by inadequate equipment, inappropriate curriculum, untrained teachers and unmotivated children. For Zammit Mangion (1992) the system broke down because it retained its traditional demanding curriculum, classical methods of teaching and an old-fashioned school set-up; secondly the middle class looked at it as a threat to their own aspirations for their children's future; and thirdly parents simply removed their children to private schools which acted as a selective device leaving State Schools with the lower ability students. In fact, one of the repercussions of the introduction of comprehensive schools was the increased demand for private education. Farrugia (1991) describes how most parents transferred or attempted to transfer their children from State to Private schools where the demand soon greatly exceeded the supply and the education process became even more selective, competitive and examination oriented. In a more recent study, Zammit Marmara (1997) gives two additional reasons for the failure of the comprehensive system. Apart from the reasons suggested by the other authors he suggests that the comprehensive system failed due to lack of information given to the public and sabotaging by teachers who did not encourage a cumulative assessment system.

I would argue that there can be no single reason to explain why the comprehensive system of education which was based on sound ideological principles should have failed so miserably. However, from all the reasons stated I would agree that the system failed because of two major obstacles. As usually happens in Malta any educational decision taken by the Party in government is strongly opposed by the party in Opposition which is backed up by almost half the Maltese population. Any innovation introduced by the Labour government was seen as a threat by the Nationalist party which is traditionally considered to be made up of more middle class individuals. I would agree with Zammit Mangion, that these individuals saw comprehensive education as a threat to their own aspirations for their children and also they were worried about the mixture in schools of students with different abilities and coming from different social backgrounds. They wanted to retain the highly selective examination system which would bring their children out on top. Combined with this attitude the second major obstacle was provided by the teachers themselves. Here I would agree with Darmanin and Zammit

Marmara that the teachers were inadequately trained and not prepared to deal with mixed ability classes. Teachers preferred to retain the prestige of teaching streamed classes which they could prepare for examinations without the need to cater for the different abilities of students.

All of these reasons created such public discontent, that in 1974, only three years after its introduction, the comprehensive system was dismantled and the Labour Government was constrained to reverse its egalitarian policy on secondary education (Wain, 1994). In 1974 national examinations were re-introduced to the secondary schools and in 1981 the government set up selective grammar schools called "Junior Lyceums" which would provide a highly academic education able to compete with private schools in their excellence. Entry into these schools would be by means of a selective examination which would select the more able students who could profit from a more academically exacting curriculum. This decision was well received by both parents and teachers who were selected to teach in these schools (Zammit Mangion, 1992).

The historical evidence shows that the only attempt ever to introduce an egalitarian system of education and do away with a traditional system of selection and promote greater equality among individuals failed. Rather than blame the comprehensive system of schooling I would argue that the system failed because it was badly introduced by the administration of the day. One of the main reasons for the failure of the system was the removal of the system of examinations. In a culture where education and examinations are viewed as a capital resource to better one's future, a system where selection is no longer perpetuated is not likely to be taken very well both by parents and students who want the best for themselves as well as by teachers, who latch on to examinations as the main motivator of students and the best judge of their performance as teachers.

2.2.1 The Structure of the Schooling system

The schooling structure of the educational system in Malta is currently divided into a State and Private sector. The State schools cater for about 70% of the students while the Private schools which include independent schools and

Church schools cater for about 30% of the students. Education in all State institutions, at whatever level is free of charge, and students within the compulsory school age also receive free text books and free transport to and from school. The Church schools are heavily subsidised by the State and donations from parents, while independent private schools usually have an established fee for students. In this study only Church Private Schools will be considered, since Independent Private Schools have only been recently introduced and are not so well established as the Church Private Schools.

2.2.1.1 The State school system.

The State school system is described by the Consultative Committee on Education (1995) as being divided into the following stages:

Kindergarten: ages 3 and 4.	
Primary:	ages 5 to 10.
Secondary:	ages 11 to 16 with three routes, two academic junior lyceum and area secondary) and one technical (trade school).
Post-Secondary:	ages 16 onwards.

In Government State schools, secondary schooling is differentiated. In Year 6 students sit for a national examination and success or failure in these exams which include Mathematics, English, Maltese, Religion and Social Studies, will determine whether they are selected to attend a Junior Lyceum or an Area Secondary School. This examination is highly competitive and in the last years of their primary schooling students are coached for this examination without being given the chance to enjoy learning just for its own sake. Students who pass the examination move into Junior Lyceums with a promising educational future, while those who fail move to Area Secondary Schools where they are immediately labelled as failures and their educational motivation is extremely lowered. In Malta both Junior Lyceums and Area Secondary Schools are single sex schools and students are further segregated according to sex. Students who obtain less than an average of 15 marks in all subjects are sent to Opportunity Centres.

Zammit Mangion (1992) states that apart from academic and social motivation, the difference between the education imparted in Junior Lyceums and in Area Secondary Schools is not wide. In this instance I would disagree with him and argue that the difference in education is in fact enormous. At a superficial level the differences do appear to be very slight. The same curriculum is offered in both types of school, the only difference being that option choices are made at the end of Form III in Area Secondary Schools and at the end of Form II in the Junior Lyceums. Another difference, is that students in Junior Lyceums tend to sit for the SEC examinations while students in Area Secondary Schools end up with a school leaving certificate. However, these differences are only superficial and it is the deeper differences which are of more concern. The ethos, self-esteem and motivation of students in the different types of school are very different. Students who attend Junior Lyceums are labelled brighter because they have passed their examinations, therefore to some extent they believe they can make it and have a number of opportunities in front of them. Students in Area Secondary schools are labelled failures at the onset and go through schooling with a complete lack of belief in themselves which is often emphasised by the attitudes of teachers and the resources available in the schools.

This differentiated, selective system has been challenged on a number of occasions. In 1995 a Consultative Committee was set up by the then Minister of Education and Human Resources to review and evaluate current educational policies. Regarding the school structure the Consultative Committee on Education (1995) identify a number of characteristics which influence the whole educational system. Starting from the primary schools they identify a number of policies which include the implementation of streaming, the transition into secondary school by means of an 11+ examination, the preparation of national syllabuses and the holding of nationally based examinations and entry into the post-secondary sector which strongly influence what is taught in secondary schools.

These policies result in a number of outcomes which make teachers, parents and students more examination conscious and anxious about examination results. They encourage teachers to teach to examinations to the detriment of a holistic curriculum and they encourage traditional modes of teaching which focus on memorisation and storage of information. The Consultative

Committee (1995) propose a number of alternatives to these policies. Amongst other proposals they suggest that national examinations and streaming should be abolished together with the entrance examination into secondary education. A common curriculum should be implemented through secondary school and a more comprehensive education re-introduced. These conditions could provide the best available learning conditions for the individual. In my opinion these policies are among some of the best suggestions which have been made in education for a number of years. Unfortunately, as yet, these proposals have remained just proposals and are very difficult to put into actual practice.

2.2.1.2 The Private School system.

The Private School system both Church run and independent caters for the education of students at Nursery, Primary and Secondary Level. Traditionally, only parents who could afford it sent their children to Private Schools. Starting from 1989, children have been admitted into Church schools on common national criteria established by the Bishops. These criteria include:

a) a percentage of the intake is to be made up of brothers or sisters enrolled in and attending the schools;
b) another percentage of the intake is to consist of children living in Church orphanages and children coming from disadvantaged homes;
c) the rest (about 70%) are selected by lot from among other applicants (Zammit Mangion, 1992).

In church schools which cater for both primary and secondary education the students enter primary school based on the above criteria and are then promoted from primary to secondary schooling on the basis of the end of the year examinations taken at Year 6 of primary school. The primary and secondary schools are usually located in the same building, so the change is merely one of grade with the philosophy of the school remaining essentially the same. The major difference may be the addition of specialised topics and having different teachers to teach different subjects rather than the one teacher teaching all the subjects as in the primary classroom. Schools which cater only for secondary education prepare an entrance examination with the best students being selected for entry.

The main difference at present between Church Private schools and State schools is that Church Private Schools have greater liberty in developing their own ethos. Traditionally, they employ a more formal and traditional type of instruction and discipline in their schools - a matter which is greatly favoured and appreciated by the parents. They also tend to be more "examination-conscious, although the more progressive ones play down the importance given to school tests and examinations by parents" (Zammit Mangion, 1992, p. 196).

Church Private schools generally have developed a school identity which is then transmitted to the staff and the students. Teachers and students are proud to belong to a particular school and greater emphasis is placed on academic success and extra-curricular activities such as sport. A study by Mifsud (1994), shows how students in Private schools feel that their school is the best school and that they feel proud that they belong to that particular school. Routines and rules are particularly well established in Private schools and discipline is also much more strict. Mifsud (1994) concludes that Private schools in Malta socialise students into a particular form of life. Like Mifsud I would argue that the rituals, symbols and everyday interaction in the school construct a particular ethos of the school which is taken up by the students to construct their own social positioning.

2.3 The National Minimum Curriculum

The re-election of the Nationalist Party into Government in 1987 brought about a number of new changes in education. One of the first tasks of the new government was the publication of the Education Act in 1988. Wain (1991) states that this Act was intended to provide a comprehensive law and statement of policy which would revise and update the provisions of education in all the different sectors. The Act conferred professional status on teachers, reformed the University and empowered the Minister of Education to publish a national curriculum and a code of teachers' ethics.

The first National Minimum Curriculum for Secondary Schools in Malta was published in 1990. The National Minimum Curriculum describes the main aims of secondary education as being:

(a) the further development within widened dimensions of each student's intellectual, affective and physical abilities and potentialities;

(b) the training of the young mind in the pursuit of knowledge and reason, and the provision of a sufficient body of notions which would form each individual's basis for right judgement and proper value formation;

(c) the initiation into the process of qualification at a later stage for a working life (Education Act, 1988).

The emphasis is on an education for life which will prepare individuals to continue with their own education even after they have left formal schooling.

The purpose of such a system is to provide:

(a) a workforce, in greater proportion literate and trained, qualified and specialised as well as able and flexible to retrain, re-specialise or specialise later in a narrower field;

(b) a citizenry adhering to a wide ethical and cultural consensus on an increasingly higher level.

The importance of education is seen in terms of the trained individuals it can produce in order to enhance the Island's economy and utilise to the full the human resources which have been described as Malta's main resource.

The National Minimum Curriculum is outward looking in its proposals. It proposes progressive methods of teaching moving towards more self reflection and self learning rather than simple transmission of knowledge and it advocates the teaching of a number of core subjects which include the normative (religion, civics, and sport); communicative (Maltese, English and mathematics); cognitive-scientific (science with a physics base and geography); cultural accretion (Maltese history, literature, art and music); and an action-work oriented (life-skills and technical design) core. However, in my opinion, this educational philosophy has not yet been translated into

classroom practice and very few teachers have really understood what the National Minimum Curriculum is all about.

In fact, one of the main critiques levelled at the National Minimum Curriculum by Wain (1991), has been that it was established without any consultation either with the public in general or with professionals. This has led to most teachers in schools barely knowing what is contained in the NMC let alone implementing it in the schools. I would go as far to add that regardless of what is stated in the National Minimum Curriculum, teachers have continued to teach in a traditional manner. The National Minimum Curriculum controls what is taught in the classrooms but not how it is taught. Furthermore a number of issues such as issues of language, gender and equity are completely left out. The work of the Consultative Committee for Education (1995) highlights a number of things which are missing from the current National Minimum Curriculum. These include a lack of continuity between the different levels of education, a lack of a clear language policy, and a lack of normative aims which outline policy about equity, entitlement, effectiveness and economy. These issues would necessarily have to be considered for the National Minimum Curriculum to be more comprehensive.

More recently a review of the National Curriculum was published by the Ministry of Education and National Culture (1998). This review was based on feedback obtained from teachers, parents and students. The emphasis of the reviewed National Curriculum is on a holistic education for all students regardless of their social differences or ability. The new Curriculum tries to move away from an emphasis on examinations to more formative modes of assessment and it proposes the removal of Junior Lyceums and Area Secondary Schools and the re-introduction of a comprehensive system of education. This review was only published in March 1998 and an evaluation of its impact is still being carried out. However, initial negative reactions to the removal of the bipartite system, caused the Minister of Education to publicly state that the Curriculum Review was only in draft form and that the comprehensive system would not be introduced. This provides further evidence for the argument made previously that educational decisions are strongly influenced by political decisions. In this case a document prepared by educators based on feedback from all the parties involved in education, was shot down by the politicians under pressure from parents (mainly middle

class parents) who feared that the return to a comprehensive system would be of detriment to their children.

2.4 Science education in Malta

Students in State Schools and most Church Private Schools follow the National Minimum Curriculum. One of the compulsory core subjects is the cognitive-scientific core which includes Integrated Science with a Physics base. The emphasis on physics stems from an earlier political decision which resulted in physics becoming compulsory for all students in 1986-1987 and was a requirement for entry into the government sixth form where students were eligible for the monthly allowance of a pupil-worker (Ventura, 1991). The requirement of physics for entry into the government sixth form continued until 1995. In 1995 regulations for entry into what is now known as the Junior College changed, and now students can obtain any science to enter the Junior College. In State schools, physics is still to date taught as a compulsory subject while some Church Private schools are now allowing students to choose among any of the science subjects.

Traditionally science has always been considered to be a very difficult subject, a subject to be studied if you wanted to take up a professional career such as medicine. In schools, science, did not really catch on very much. White (1996) describes how science was taught in a "chalk and talk" manner with very little practical experience. The teaching of science was very much examination oriented, and the important thing was to pass the examination and not to learn practical science, that could be obtained by experience at a later stage, or by apprenticeship. With the onset of secondary education for all, something had to be done about science and technical education. The then Labour government, realised that if Malta was to progress in an economical world more and more dominated by science and technology it needed more qualified technical people.

In 1979 therefore, physics was introduced as a compulsory subject in all secondary schools. White (1996) argues that this was a hasty decision without the necessary preparations. Further because it was enforced the decision was very much opposed. There were also great difficulties with

material and human resources. The material resources were solved because funding was made available, but the human resources were very limited and the lack of physics teachers exists to this very day. I agree with White that like many other educational decisions in Malta, physics was introduced without the necessary preparation and training of teachers. I myself was one of the many teachers who graduated from University with a specialisation in Biology and yet was forced to teach Physics in the schools. Furthermore, the schools were not equipped to cater for the increased number of students taking up physics in terms of laboratory space and equipment. This meant that physics was taught in a theoretical and abstract manner which again did nothing to enhance student motivation and interest in physics.

The introduction of compulsory physics has had many repercussions. In a previous study where I looked at girls' interests in science (Chetcuti, 1992), I observed that many students have developed a dislike for the subject which is still taught in a very abstract manner. They feel that it is not relevant to their lives and that it is not interesting. They also feel that being necessary for entry into post-secondary education, physics is limiting the choices that they can make regarding their future studies. Another side of the story is however presented by Darmanin (1991), who argues that compulsory physics has also had a positive repercussion in that it has resulted in an increase in the uptake of physical sciences by girls. The number of girls who take physics at Ordinary and Advanced level and then take up scientific courses at University has increased. However, as Darmanin (1991) continues to point out, this does not necessarily mean that girls have changed their attitudes towards science and teachers still perceive girls as "not motivated" for science. In fact the attitude of girls to physics is still very negative. A study by Bartolo (1987) shows that girls have a much lower positive attitude towards physics than boys. I would agree with Darmanin, that although the enforced choice of physics has encouraged girls to study physics and shown them that they can perform just as well as boys in physics, the taboos together with stereotypes that physics is masculine are still very widespread. Although, girls do well in physics at SEC level their attitude towards physics hinders them from taking up physics for further studies. However, more research in the area of science education needs to be carried out, as there is very little research so far.

The Maltese educational system has gone through many changes, from a system completely dominated by the British system of education, a system completely centralised and under the control of the Minister of Education, to one which appears to be moving more towards European models of education, a decentralised model based on consultation with the various stakeholders in education. The system is still strongly influenced by the political ideologies of the Party in Government, but slowly and surely it is being evaluated and changed and hopefully will evolve into a system which functions to the advantage of all those involved in education.

PART TWO

EXAMINATIONS AND ASSESSMENT

INTRODUCTION

The Difference between Examinations and Assessment

Everyone is familiar with testing and assessment. A common image evoked by the mention of assessment is that of a paper-and-pencil test, an examination room lined with rows of desks and students sweating over an examination paper, and the daily grind of home-work and revision of work. Testing and assessment form an integral part of daily school life which no one can escape. One problem which I encountered when I started to read the literature on assessment was the apparent interchangeable use of the two terms "examinations" and "assessment". The two words are used freely and interchangeably, yet they have very different meanings.

Linn and Gronlund (1995) define a test or examination as "a particular type of assessment that typically consists of a set of questions administered during a fixed period of time under reasonably comparable conditions for all students" (p. 5). Examinations involve mainly measurement which is limited to quantitative descriptions of students. They usually do not involve any qualitative descriptions or judgements about the value or worth of the results obtained. Brown (1990) points out that tests and examinations were traditionally given so much importance as they provided objective, reliable and precise measurements of achievement. The term assessment, on the other hand, is a much more broad and inclusive term than testing or examining. It goes beyond the definition of testing and according to Linn and Gronlund, "requires the use of a number of techniques for measuring student achievement...It is a process, a systematic process, that plays a significant role in effective teaching. It begins with the identification of learning goals and ends with a judgement concerning the extent to which these goals have been attained" (p. 3).

Therefore, according to Linn and Gronlund, the main difference between examinations and assessment is that examinations are a single technique for

collecting information, whereas assessment is a process involving a number of techniques rather than a single one. Although this definition includes a more modern view of assessment as a process and includes a variety of techniques rather than only examinations. In my view it still focuses on an objective and quantitative view of assessment: a view which focuses on the technical aspects of assessment, on a set of goals and objectives which can be measured in order to make judgements. Like Murphy and Torrance (1990), I would criticise this focus on the technical and measurable aspects of assessment and agree with their suggestion that in assessment, the emphasis should be as much on the impact of educational processes and experiences as it is on the technical attributes.

A broader definition of assessment than the one given by Linn and Gronlund is therefore needed. The traditional view of assessment as a vision of tests or examinations, certificates, and grades or lists of marks (Brown, 1990) is no longer valid. Like Harlen (1994), I would argue that assessment in education is inherently inexact and it should be treated as such. We should not expect to be able to measure pupils' abilities with the same confidence as we can measure their heights, and the term assessment can no longer be used interchangeably with the term examinations. This view of assessment has led to what Gipps (1994) calls a paradigm shift, "from a testing and examination culture to an assessment culture" (p.1). Within this new assessment culture, assessment is defined as "a wide range of methods for evaluating pupil performance and attainment including formal testing and examinations, practical and oral assessment, classroom based assessment carried out by teachers and portfolios" (Gipps, 1994, p.1).

Trying to answer the initial question of the difference between examinations and assessment, it can be seen that a number of definitions can be used. In some cases, the meanings of the two words are taken to be very similar and in others they are considered to be completely different. For the purpose of this study, examinations will be viewed as a sub-set of the all encompassing assessment process. While examinations will be viewed as one method of obtaining information about a student's achievement, usually in a fixed and predetermined manner, assessment will be used to include much more, it will

be used to describe multiplicity and variety, multiple ways of collecting information and a variety of tasks to collect this information.

Within this framework, assessment is being increasingly seen as having an important and significant role to play in leading educational reform (Torrance, 1991). As Murphy and Torrance (1988) argue, assessment has been viewed for far too long as a formal process, which normally involves the administration of formal tests and examinations through procedures that are totally divorced from the educational process to which they are supposed to relate. This can no longer be the case if assessment is to become an integral part of any educational process. Like Murphy (1990) I would argue that "assessment which provides information about pupils' perceptions, knowledge, understanding and feelings and how these relate to their learning and achievements in school is an essential aspect of the curriculum" (p. 186).

This does not mean that examinations have no role in assessment policy but like Gipps (1994) I would argue that we need to design assessment programs that will do what is required of them and have a positive impact on teaching and learning. This leads to a broader view of assessment which fulfils multiple purposes and assesses a variety of qualities, is carried out in a number of contexts, describes rather than summarises and is carried out by a number of individuals rather than by a single examiner. This new philosophy leads to the development of a new model of educational assessment. In this model, "assessment does not stand outside teaching and learning but stands in dynamic interaction with it..." (Gipps, 1994, p. 15).

The development of this new philosophy of educational assessment, has occurred over a period of time, and evolved out of various ideas about learning, evaluation and achievement. It has evolved from a psychometric tradition of testing and measurement to one of positive achievement and allowing students to show what they know and can do. This second part of the thesis tries to trace the development of this new assessment paradigm, starting in Chapter 3, with the development of tests and examinations within a psychometric tradition and moving on to the development of alternative frameworks of assessment in Chapter 4. This development is then explored

within the context of the Maltese situation in Chapter 5, moving on to issues of equity in assessment and the question of whether a fair test can exist in Chapter 6.

CHAPTER THREE

Examinations

3.0 The Introduction of Examinations

Traditionally examinations have exerted a powerful influence on educational practices. Nuttall (1975) describes how examinations were first instituted in the Chinese Empire in the days of the first millennium BC in an attempt to stamp out nepotism and bribery. The first examinations were practical examinations involving horse-riding, archery and other such skills. Over the years the focus turned more to academic skills through the medium of written papers. In England the exact date of the introduction of the examination is not known. Ball (1990) attributes the introduction of the examinations to the twelfth century together with the introduction of the University, while Foucault (1977) and Nuttall (1975) attribute their introduction to the eighteen and early nineteenth centuries for reasons similar to the reasons why they were introduced in China, namely to eliminate nepotism and unfair practices.

Gipps and Stobart (1993) describe how prior to the existence of examinations, entry into the professions and University was determined by family history and patronage. As the industrialist, capitalist economy flourished there was an increased need for trained middle class workers. The expanding middle classes realised that education was a means of acquiring social status and they could see that it was in their children's interests to encourage them to aim for the professions. However, there had to be a way of selecting those who were deemed suitable for training as well as certificating those who were deemed to be competent. Therefore, the examination was invented.

According to Broadfoot (1986) the ideologies behind the increasing focus on examinations were two. "The first was meritocracy - the selection of people for occupational roles not on the basis of birth and connections but on a new, more rational basis of individual ability and effort. The second ideology was that it was appropriate for schooling to provide for this selection by teaching

particular competencies and then measuring who had and who had not reached a given standard" (p. 57).

Gipps and Stobart (1993) stress that "examinations did not develop in a vacuum: examinations developed in response to the particular needs and requirements of the time" (p. 3). Taking this argument one step further, I would argue that the continued development, changes and evolution of examinations to fit in within a new assessment paradigm is also taking place in response to the needs and requirements of the present day. Although examinations have retained much of the characteristics of their initial introduction, the move into the twenty-first century and changes in educational practices are also demanding changes in the way examinations are viewed and made use of.

3.1 The Development of Examinations within a Psychometric Paradigm

Another important factor which played a central role in schooling and the development of examinations was the development and use of intelligence testing. Gipps and Stobart (1993) describe how the first intelligence test was published by Binet in 1905. This was a practical approach intended to identify children with special educational needs. At the same time psychologists had been trying to identify "the essence of intelligence". Again this was triggered off by the need to identify feeble minded children who were thought to be ineducable. The tradition of psychometrics developed from this work done on intelligence and intelligence testing. The main assumption of psychometrics was that intelligence was fixed and could be measured. This meant that individuals could be classified into groups or streams. Scores obtained could be interpreted according to norms or standards and hence individuals could be compared to one another (Gipps, 1994).

Psychometrics brought with it a number of concerns. These included concerns about reliability which Gipps (1994) defines as "the extent to which an assessment would produce the same, or similar score if it was given by two different assessors, or given a second time to the same pupil using the

same assessor" (p. 2). Since the main issue was that of comparing individuals, one had to ensure that examinations were carried out and interpreted in the same way. This was done, argues Gipps, at the expense of the validity of the test, which she defines as "the extent to which an assessment measures what it purports to measure" (p.2).

Another issue which according to Gipps, is associated with psychometrics is that of objectivity. Tests were supposed to be objective and the scores produced accurate and meaningful. Like Gipps (1994) I would argue that because of this belief in a fixed entity of intelligence which can be measured accurately by means of examinations, examinations have assumed a very high labelling potential. I agree with Gipps and Murphy (1994) who suggest that "the aura of objectivity surrounding IQ tests meant that there was little attempt to question them. The emphasis on using detailed statistical techniques to produce reliable tests meant that issues of validity both in relation to the construct of intelligence and in relation to the tests' appropriateness for different groups - could be ignored" (p. 90). Therefore, within the psychometric paradigm examinations flourished and gained the important status they have today. Students, teachers, parents and employers trust examinations because they believe them to be fair, reliable and objective, all characteristics acquired by examinations within the psychometric paradigm.

3.2 The Functions of Examinations

Examinations have a multiplicity of purposes, both educational and social (Nuttall, 1975). Most authors describe several functions of the examination. These functions can be grouped together under three main functions: the examination as a means of motivation; the examination as a means of selection; and the examination as a means of disciplinary power.

3.2.1 The examination as a means of motivation

In 1969, Holt described the function of testing. He stated that teachers say that they test children to find out what they have learned so that they can

better know how to help them to learn more. Holt argues that this is about ninety-five percent untrue. In his view there are two main reasons why we test children: the first is to threaten them into doing what we want done, and the second is to give us a basis for handing out rewards and penalties. The threat of a test makes students do the assignment. The outcome of the test enables us to reward those who seem to do it best.

This extrinsic motivation is considered to be one of the key functions of examinations. Gipps and Stobart (1993) also discuss motivation as one of the main functions of examinations. They argue that examinations provide students with a powerful motivation to work and suggest that this motivation to do well in examinations was correlated to finding a job. However, for Gipps and Stobart, motivation is not the only function of examinations. They go one step further than Holt and suggest that another function of the examination is as a means of controlling the curriculum and making sure that the teachers teach the curriculum. This function also involves motivation, this time of teachers rather than students.

These views are similar to those stated in an HMI report (1980) which states that the main purposes for which examinations were designed was "to record the level of pupils' achievements in certain subjects and to provide qualifications necessary for the pupil's career in further or higher education or in employment" (p. 248). Examinations thus provide a stimulus for pupils and teachers and the opportunity for the school to set its own performance against national standards. While in my view, this motivation of students and teachers is one of the functions of the examination, it is not the most important function. Like Nuttall (1975) I would argue that pre-eminent among the purposes of examinations is selection.

3.2.2 The examination as a means of selection

One of the most comprehensive descriptions of the functions of examinations is given by Nuttall (1975). He argues that one of the main functions of examinations is "to assess the attainment of an individual at the end of a course of study...Linked with this function is that of the maintenance

of educational standards and...the licensing function of examinations" (p. 36). All these three inter-linked functions bear an important influence on the control of the curriculum. However, Nuttall's main pre-occupation was with the selective function of examinations.

In the papers he wrote in the seventies, Nuttall argues that selection will always be with us as long as jobs and professions have a different attraction and forces of supply and demand continue to act. At this early stage, though later his views change drastically, Nuttall argues that examinations, serve a useful function in education and society and are likely to do so for some time to come. Nuttall (1975) in Murphy and Broadfoot (1995) states:

> If public examinations were to be abolished, it is difficult to see what would take their place. The danger is that each employer, professional body, institute of higher and further education would establish their own selective procedures. Young people would perhaps go from employer to employer, taking battery after battery of tests - and the end result might well be anarchical (p. 41).

While I agree with Nuttall that some form of selection needs to take place, I do not agree with his view that this selection purpose can be served only by examinations. Rather I would argue that the over-emphasis on the selective function of examinations has adverse effects on teaching and learning and curriculum development.

In fact, Nuttall himself questions whether a middle course can be taken between the elaborate machinery of a public examination and no public examinations at all. He believes that this middle course can be found when assessment becomes part and parcel of the teaching process. Yet, at this stage he is still uncertain about this and continues to emphasise that examinations have a necessary and valuable part to play in education. While I would agree with Nuttall that examinations have a part to play in the educational process, I would minimise their role and importance. While the functions of motivation, educational standards and selection are all important, they should not be allowed to assume a dominant role in education. In fact, at a later date Nuttall (1978) admits that tests and examinations do not provide all the answers. In my view the functions of examinations as agents

of curriculum control, as a motivating device, as a licensing mechanism and as a means of selection developed within a certain context and within a certain era and now need to be reviewed and redefined.

3.2.3 The examination as a means of disciplinary power

While the previous authors look across the multiplicity of purposes of the examination, Foucault (1977) analyses the examination in greater depth and looks at the examination in terms of disciplinary power and its role in social control. For Foucault, the examination plays a key role in the emergence of the individual as both subject of knowledge and object of power. Ball (1990) describes Foucault's pre-occupation with individual differences and the measurement of these differences by means of the examination. For Foucault, therefore one of the main functions of the examination was social organisation which depended on the classification of the individual by means of disciplinary power.

Foucault (1977) describes three instruments of disciplinary power: hierarchical observation, normalising judgement and the examination. In schools, Foucault describes hierarchical observation as continuous surveillance in the form of monitors, tutors, observers, officers and so on. He describes normalising judgement as the role of "micro-penalties" for areas of human behaviour such as lateness, disobedience, idle chatter and so on. This results in the creation of a standard or norm against which all behaviour can be judged. It leads to the need for the examination which is defined by Foucault (1977) as a "normalising gaze, a surveillance that makes it possible to qualify, to classify and to punish. It establishes over individuals a visibility through which one differentiates and judges them" (p. 175).

Within this definition the examination has three main functions:

1. as an exercise of power where individuals are inspected and reviewed without favour or prejudice in an objective way;
2. as a means of documentation where records are made for future reference and decisions are committed to writing;

3. as a means of description of each individual as "a case". Lives are lived through the accumulation of documentation, careers are collated, pinning down each individual in his own particularity (Foucault, 1977, p. 180).

For Foucault, therefore, the function of the examination is one of control. It describes and classifies individuals according to differences and creates a distribution among the population. For Foucault (1977), the examination is at the centre of the procedures that constitute the individual as effect and object of power, as effect and object of knowledge. Broadfoot (1990), echoes Foucault's theory and suggests that examinations make it possible to generate a history of each individual and simultaneously to classify individuals "en masse" into categories and eventually into "populations" with norms. Broadfoot (1990) states that "examinations provide a key source of social control through a form of disciplinary power embodied in the pervasive discourse of accountability" (p. 206).

The view of examinations as a means of disciplinary power and social control presented by Foucault gives a frightening and dangerous picture of examinations. While reading Foucault's definitions of the examination I felt very much as though "Big Brother" was watching. While I agree with Foucault that there is a danger in examinations being used as a form of social control, especially when examination results are used for selection purposes, I felt worried by the description of each individual as a case and the use of examinations to document and classify individuals. It seemed to create a cold and sterile environment, where individuals no longer remained unique but became a case or a number in a file. While I agree with Foucault that individual differences do exist, I would argue that these differences can be used to bring out the best potential rather than to compare or create a normalising judgement.

Like Foucault, I would view the examination as a result of the political, economical and institutional regime in which it is created. The danger as Foucault points out is that institutions are justified in using examinations as a selective device. As Foucault in Rabinow (1984) states, "the real political

task in a society such as ours is to criticise the workings of institutions which appear to be both neutral and independent; to criticise them in such a manner that the political violence which has always exercised itself obscurely through them will be unmasked, so that one can fight them" (p. 6).

3.3 The Effects of Examinations

Examinations are still perceived to be the most objective and fairest way of allocating restricted opportunities between competitors (Broadfoot, 1992), but they are widely acknowledged to have a number of shortcomings and adverse effects on curriculum, teaching and learning. Satterly (1994) argues that examinations have little impact on the teachers' day-to-day decisions about teaching and learning. However, I would disagree with Satterly and argue the very opposite, that examinations play a very important role in the day-to-day decisions taken by teachers about what to teach and how to teach it. In fact, research carried out by the British Educational Research Association (BERA) Assessment Policy Task Group (1992) shows that when stakes are high for students, teachers or institutions there may be a number of adverse effects such as lack of student motivation, teaching to the test and laundering of test results.

In my opinion, examinations have two major impacts: on the student and on the teaching, learning and curriculum. As stated by the British Educational Research Association (BERA) Assessment Policy Task Group (1992):

> There is no doubt that assessment can be a force for good in the classroom, particularly if it concentrates on supporting students' learning on a day to day basis...On the other hand, there is much evidence that assessment can inhibit students' learning and depress their motivation, particularly when the standards are set beyond the reach of many of them (p. 2).

3.3.1 The effect on the student

Research in the United States has shown that examinations have a

number of adverse effects on the students: they create test anxiety, categorise and label students, damage students' self-concepts and create self-fulfilling prophecies (Linn and Gronlund, 1995). One of the most adverse effects on students is however, caused by the labelling of students. As Gipps and Stobart (1993) point out "test scores and exam passes can determine ways of thinking about children...They can affect teachers' views about what children are capable of doing (i.e. labelling can set an unconscious limit on what children are perceived of being able to do)" (p. 24) .

The issue of labelling is also discussed by the BERA Assessment Policy Task Group (1992) who feel that labelling can have very harmful effects on children's learning. Like the BERA Assessment Policy Task Group one of my main concerns during this research process has been the labelling of underachievers who are repeatedly discouraged by the way their efforts are judged. As the Group points out, children from underprivileged backgrounds begin at a disadvantage which they have no chance to overcome before being labelled as low achievers. I fully agree with the Group's statement that labelling of students should be discouraged and that children should be able to approach learning as equals and not with a perception of themselves as failures. This can be achieved only when less importance is given to examinations and success in examinations.

3.3.2 The effect on teaching, learning and curriculum

The examination also influences the kind of teaching and learning taking place in the classroom. Like Gipps and Stobart (1993), I would argue that "exams have always emphasised recall of factual information; they do not assess beyond the cognitive domain; they may be inaccurate (due to marker fallibility); and they may not be a true reflection of what a pupil can do (since performance is measured once on a single occasion)" (p. 24). Examinations emphasise extrinsic motivation rather than a desire to learn for its own sake. This view is also reflected in an HMI report (1980) which suggests that the effect of the dominating pursuit of examination results is to narrow learning opportunities.

I agree with Gipps (1994) that this kind of testing has a powerful effect on the way that teachers construe the nature of their work. As she points out the test influences the behaviour of students and teachers because students want to do well and teachers want their students to do well. Because of this a great deal of time and effort is spent in learning and teaching what tests measure and because the amount of time available is fixed, decreases efforts to learn and teach skills which are not measured by the test. It also leads to what Gipps (1994) describes as shallow learning. This takes place when "students are able to manipulate complex formulae and to work through involved exercises while not understanding fundamental principles...It is the acquisition of principles from a teacher or other instructor without commitment or deep consideration. The principles are often discarded as soon as the need for them is gone, for example, after a test or exam" (p. 23). Like Gipps I have come to believe that a great deal of this kind of teaching and learning, which she calls "measurement-driven instruction" (p. 32) takes place in the classroom, and because of this influence of examinations many students leave school without having grasped a certain number of basic principles.

In the United States, Madaus (1988) describes this kind of testing as "high stakes " testing, in comparison with "low stakes" testing. He defines a high-stakes test as one whose results are seen, rightly or wrongly, as being used to make important decisions. A low-stakes test, by contrast, is one that is perceived as not having important rewards or sanctions tied directly to test performance. The most important impact of high stakes testing is, according to Madaus, that teachers start to teach to the test, use past examinations to define curriculum and adjust their teaching to the kinds of questions asked on the examination. I agree with Madaus that in this way the control of the curriculum is transferred to the agency which sets or controls the examination. In this way the curriculum is defined by the examination and the major goal of schooling becomes success in the examination.

3.4 A Critique of Examinations

There are differing views about the importance of examinations. Satterly (1994) and Linn and Gronlund (1995) argue that the persistence in Britain and the USA of external assessment and testing owes something to the belief that the information it provides is in some way more dependable and valid than corresponding internal assessment. However, examinations have also been critiqued by several authors. As Murphy and Torrance (1988) point out, the examination system can be seen at best as a fairly narrow and minimally meaningful guarantor of excellence, at worst as a crude and restrictive barrier placed in the way of both pupil achievement and curriculum development.

Torrance (1995) gives a comprehensive summary of the main critiques of examinations. He points out that traditional paper-and-pencil tests can have a narrowing effect on the curriculum in terms of both curriculum content and the teaching methods employed, and that such an approach to learning can result in children coming to know certain things without understanding them and without being able to generalise from specific examples to similar problems in different contexts. Worse still repeated failure can lead to increased truancy and drop-out. It can also be argued that examinations do not take into account higher-order skills and competencies such as problem solving, investigation and analysis and do not involve "authentic" or realistic tasks.

These criticisms can be separated out under three main issues: technical issues concerning the nature and quality of the examination; equity issues and the effects of examinations on individuals belonging to different groups; and the function of examinations as a selective device and predictor of future success.

3.4.1 The nature of the examination

As pointed out previously examinations emerged and developed within

a psychometric tradition. Within this psychometric paradigm most of the emphasis has been placed on the reliability, standardisation and comparability of examination results. This over emphasis on the technical issues of the examination has been carried out at the expense of the validity of the examination and at times the curriculum itself. The psychometric paradigm also makes two other assumptions which have been strongly criticised by Gipps (1994). The first is the assumption of universality which means that a test score has essentially the same meaning for all individuals. The second is that of unidimensionality which assumes that items in a test should be measuring a single underlying attribute. These assumptions are also criticised by Nuttall (1978) who argues that one of the most serious criticism of examination results is their lack of comprehensiveness, that they do not attempt to assess social or moral development, physical education or the whole range of extracurricular activities that play such an important part in the life of the school, and problems of comparability between schools, subjects and over time. Following these views, like Gipps (1994) I would criticise examinations on the basis that:

1. tests were measuring limitations in the child and his or her home background rather than considering problems of teaching, curriculum, etc.
2. issues of standardisation and reliability were being considered at the expense of validity and usefulness to the teacher.

Other issues regarding the technicalities of examinations are discussed by Satterly (1994) and Broadfoot (1986). Satterly points out that problems with examinations arise because they lack the flexibility to allow students to show what they have learnt in a variety of ways and to the best advantage, policies and practices for selecting exam items and sequencing of difficulty are rarely stated, alternative response modes to given problems are seldom allowed, and the conditions of external assessment inevitably differ from the circumstances under which the relevant learning took place. Broadfoot highlights some of the major questions brought forward with regards to examinations. These include the considerable inaccuracies in marking. Broadfoot argues that differences between examiners such as speed of reading, fatigue, competence, the order and speed of marking, or even the

examiner's personal and social situation may effect the marking process with the result that there may frequently be considerable variation in the marks awarded for the same piece of work. While I agree with Broadfoot that all of these are important issues, I would argue that more important is the context of the task itself. Like Nuttall (1987) I would argue that "the way in which the task is presented, the presenter and the perceived significance of the task can all have a major effect on the performance of the person presented with the task" (p. 154). Nuttall in fact criticises paper and pencil tests taken under formal and standardised conditions because they are unlike real life.

Nuttall (1989) continues to argue that the context and the circumstances greatly influence performance. He argues that there are three main context factors which influence performance:

> First of all, motivation to do the task and interest in it, which will be influenced by the personal experience of the student and the instrumental value of performing the task. Secondly, the relationship between the assessor and the individual being assessed and generally the physical conditions under which the assessment is made. And thirdly, the way in which the task is presented, the language used to describe it and the degree to which it is within the personal experience of the individual being assessed (p. 194).

Therefore, one of the main criticisms which can be placed against examinations is that too much concern with the reliability and comparability of the examination has occurred at the expense of the validity of the examination. The context in which the examination takes place is often ignored and this results in a number of discrepancies and unfair situations.

3.4.2 The fairness of the examination

For Murphy and Broadfoot (1995), examinations can at their worst, contribute to inequality and disadvantage, and at their best make a valid contribution to the process of attempting to provide equal opportunities in education. As pointed out previously the main purpose of the introduction of examinations was as a counter to nepotism and other unfair practices.

However, like Gipps and Murphy (1994) I would argue that in the ensuing period they have resulted sometimes inadvertently in the introduction of other forms of unfairness, bias and disadvantage.

As pointed out previously by Nuttall (1987) and by Gipps and Murphy (1994) achievement, in its definition and its assessment is heavily culturally and context dependent. Therefore the examination in the types of questions it asks, in its format and in its context can be biased in favour of one individual or another, one group or another. Broadfoot (1986a) states that it has been shown that "examinations are biased in favour of particular social and cultural groups and do not provide the equality of opportunity which is their chief raison d'être" (p. 55). This has led according to Broadfoot to an "over emphasis in the curriculum on that which is relatively easily measured - knowledge and intellectual ability - at the expense of that kind of educational progress which is almost impossible to measure, such as attitudes, skills and personal qualities" (p. 55). While this is an important deficiency in examinations, my main concern would be in the unfair treatment of individuals or the disadvantaging of one individual over another, again due to the context of the examination.

3.4.3 The selective function of the examination

One of the main functions of examinations has been its selective function (Murphy and Torrance, 1990). However, there is no research which suggests that success in work or further studies is correlated to success in examinations. Therefore, like Nuttall (1983) I would criticise the continued reliance on exams which are known to be unreliable predictors of future success. Nuttall (1983) argues that despite the widespread use of examinations in selection for employment, evidence about whether they do really help the employer pick out the best applicants is hard to come by and the general conclusion has to be that exams are very poor predictors of subsequent educational success. Nuttall suggests a number of reasons for this: "people mature at different rates, their interests and enthusiasms change and the subjects themselves make different intellectual demands at different levels" (p. 71).

Therefore, in my opinion, one major criticism of examinations is that they do not serve the function they were meant to in the first place. Like Murphy and Broadfoot (1995), I would take the position that examinations rarely provide a completely adequate picture of individual learners' aptitudes and achievements and their ability to predict future achievements is even less dependable. Such simplistic systems for determining important life choices lie at the root of social injustice. Those failing to gain access to higher education or employment may have just as much potential for success as those who gain entry.

Therefore it can be seen that examinations serve multiple purposes, and have numerous effects on students, teaching and learning and the curriculum. This critique of the examination has shown that the examination is no longer serving its original functions and the danger is that as described by Foucault (1977) it will become a means of social control, a means of classifying individuals into categories and dehumanising education. Like Nuttall (1987) I would argue that the examination system has become a monster and therefore needs to be changed. This critique of the examination leaves no doubt that new and authentic assessment systems are required. As Nuttall (1987) in Murphy and Broadfoot (1995) states:

> Many young people are very dissatisfied when they come out of the examination hall realising that all they were able to do was a bit of one question and a small part of another. We want to give them an opportunity to feel they have achieved something worthwhile (p. 381).

CHAPTER FOUR

Assessment

4.0 Defining Assessment

As I have argued in the previous section, the traditional view of assessment as a system of testing and examinations is no longer valid, and I have taken the position that a new definition of assessment is required. This new definition of assessment has developed due to what Eisner (1993) calls a disillusion with examinations and the realisation that measurement of outcomes on instruments that have little predictive or concurrent validity is not an effective way to improve schools. This has led to what Gipps (1994) calls a paradigm shift from a "testing and examination culture to an assessment culture" (p. 1). With this shift assessment has become a valuable and essential part of the educational process (Gipps & Stobart, 1993), having multiple purposes and uses within education.

4.1 The Purposes and Uses of Assessment

The main functions of the examination have been described in the previous section as being a means of motivation, a means of selection and a means of disciplinary power. While assessment can also be used for these purposes, I will argue that it can also be used for a variety of other functions. While in examinations the emphasis is on selection and social control, in assessment the emphasis is much more on the improvement of teaching and learning. Gipps and Stobart (1993) identify six uses of assessment:

1. screening which is the process of testing groups of children to identify individuals who are in need of special help;
2. diagnosis which involves using tests to identify individual children's strengths and weaknesses;
3. record keeping so that they can provide information for someone else;
4. feedback on performance about both the child's progress and the teacher's success;

5. certification to provide a student with a qualification which signifies that he or she has reached a certain level of competence or knowledge;
6. selection into different institutions for further and higher education (p. 15-17).

They further classify these uses as professional where the assessment helps the teacher in the process of educating the child and managerial where the test and assessment results are used to help manage the educational system. In this sense screening and diagnosis have professional uses; certification and selection managerial uses, while record keeping and feedback can operate on both levels. Like Gipps and Stobart I would argue that if the main beneficiary of assessment is the child, then professional uses are the more important. As they point out, "certification and selection are only artefacts of our social system and the assessments which support them are not central to the teaching and learning of the individual child" (p. 18).

While like Gipps and Stobart (1993) I have argued in favour of the professional uses of assessment, and that certification and selection should not play such an important role in assessment, I have come to the view that in reality this is an idealistic view of assessment, a view which we should strive to achieve but which is not actually happening at present. Like Broadfoot (1990) and based on the evidence which will be presented in this study, I would argue that in most cases at present, assessment is used as a means of educational control, mainly due to the dominating influence of examinations.

Thus for Broadfoot, assessment, as the examination for Foucault, is a powerful form of control and a means of comparability and accountability. Assessment is used to compare individuals, select individuals and hold individuals accountable. However, although Broadfoot sees the main function of assessment as being one of social control, she does not believe that this use should be perpetuated. Like Gipps and Stobart she argues for a new assessment paradigm which focuses on the attempt:

> to provide more comprehensive, constructive, meaningful and relevant assessment procedures; assessment which can be used to promote greater student motivation and teacher morale and stimulates schools and teachers to examine the curriculum and organisational provision in relation to students' opportunities for learning (p. 210).

Like Gipps (1994), I would argue that the support of the teaching/ learning process should be the main function of assessment. The role of assessment needs to be shifted from what Torrance (1995) describes as product-based assessment which involves the use to which the products of assessment, the results, are put in managing or even driving schools to a process-based assessment which sees assessment as a process almost wholly integrated with teaching such that improvement in assessment means improvement in the process of teaching and learning at the classroom level. Drawing on these arguments, therefore, the position which I will take is that the main purpose and role of educational assessment should be the improvement of teaching and learning with the involvement of both teachers and students in the process.

4.2 Types of Assessment

The different and at times conflicting purposes of assessment have led to the development of different types of assessment based within different theoretical frameworks and often in tension with one another. The different types of assessment include, norm referenced and criterion referenced assessment, formative and summative assessment, and performance and teacher assessment. Whether one makes use of one type of assessment or another depends on the philosophical framework, which determines the role and purpose of assessment within education.

4.2.1 Norm referenced and Criterion referenced assessment

One of the main types of assessment which developed within the psychometric paradigm is norm-referenced assessment. According to Cohen, Manion and Morrison (1996) and Gipps and Stobart (1993) a norm referenced assessment measures a student's achievements as compared to other students. All the students' scores are put into a distribution table (or graph) and a certain percentage assigned each grade. The grade a student gets depends on the performance of other students. An example of a norm referenced assessment is the standardised intelligence tests. Norm-referenced assessment has been widely used and also highly criticised. In my view, the major criticism of norm-referenced assessment is that it can cause negative labelling of students as failures and give rise to the self-fulfilling prophecy.

A different form of assessment is criterion referenced assessment. Gipps (1994) defines criterion referenced assessment as that which looks at the individual as an individual rather than in relation to other individuals. It uses measurement constructively to identify strengths and weaknesses individuals might have so as to aid their educational progress. "Criterion referenced assessments are designed to reflect whether or not a student can do a specific task or range of tasks, rather than to measure how much better his or her performance is in relation to others" (Gipps and Stobart, 1993, p. 32). A common example of criterion referenced assessment is that of the music performance examination where marks for successfully completing different levels of the examination are aggregated. One major criticism of criterion referenced assessment is that in the search for clarity and objectivity the criteria are specified in greater and greater detail (BERA Assessment Policy Task Group, 1992). This results in what Cohen et al (1996) describe as the assessment of the observable and often superficial, trivial aspects of education.

When making a choice between norm referenced and criterion referenced assessment, like Gipps and Stobart (1993) I would argue that any

assessment practice which emphasises good educational principles should focus on criterion referenced assessment and move away from the comparison of individuals by means of norm referenced assessment. I have come to the view that individuals should be allowed to develop their full potential and show what they know, understand and can do without being compared to others. This can be achieved by means of establishing a number of criteria which students can achieve at their own pace and at their own time. The criteria can represent a wide field and balance specificity with generality in order to avoid becoming too technical. This will ensure fairness and authenticity of the assessment while at the same time eliminate the deleterious effects which comparisons and labelling might have on students.

4.2.2 Formative and summative assessment

The BERA Assessment Policy Task Group (1992) defines formative assessment as that which provides information for teachers to use in discussing progress with pupils and in planning appropriate next steps in learning. For Harlen (1995) formative assessment helps the process of learning. It must therefore be positive, take into account the progress being made by individual pupils, the effort put in and the other aspects of learning which are unspecified in any curriculum. A further characteristic of formative assessment is the involvement of pupils who play an important role in their own assessment. This involvement of students in their own assessment is called *ipsative assessment* by Cohen et al (1996). They describe this kind of assessment as the process whereby students identify their own starting points, set targets for future learning and achievements. This allows students to reflect on their own learning and gives them some degree of ownership over their assessment. Harlen (1995) sums up the main characteristics of formative assessment as assessment which:

- takes place as an integral part of teaching;
- relates to progression in learning based on judgements which are child referenced;
- leads to action supporting further learning;
- uses methods which protect validity rather than reliability;
- uses information from pupils' performance in a variety of contexts;

- involves pupils in assessing their performance and deciding their next steps (p. 15).

In contrast to formative assessment is summative assessment which is described by the BERA Assessment Policy Task Group (1992) as being concerned with reporting overall achievements of pupils at certain stages to parents and other teachers and of reporting on the performance of groups of students to school boards and the general public; the reported assessment concerns an individual pupil but there is no direct link with supported learning. Harlen (1995) sums up the characteristics of summative assessment as assessment which:

- takes place at certain intervals;
- relates to progression in learning against public criteria;
- produces results for groups of pupils;
- requires methods which are as reliable as possible;
- involves some quality assurance procedures;
- should be based on evidence from the full range of performance relevant to the criteria being used (p. 16).

For many authors (Gipps, 1994; Cohen et al, 1996, BERA Assessment Policy Task Group, 1992, Murphy, 1990a), formative and summative assessments exist in tension with one another. Like these authors, I would argue that the formative and summative functions of assessment are in conflict and contradiction, mainly because they have different purposes. The tension arises because formative assessment is used to inform teaching and support learning and summative assessment is used to provide for control and comparisons between schools. As stated by Cohen et al (1996), "the more assessment can serve one purpose the less it can serve another, the more we move towards summative grade related examinations, the more we move away from formative, diagnostic assessments that require detailed often qualitative comments" (p. 375).

Like Harlen (1995) and based on the evidence presented in this study, I would argue that real formative assessment does not occur because summative assessment dominates all assessment activity. As stated by

Harlen "if formative assessment is allowed to become synonymous with assessment for summative purposes it will continue to narrow and distort teaching" (p. 16). Like Cohen et al (1996), I would therefore argue that we need to move away from the tension between formative and summative assessment to a diagnostic formative assessment which provides useful feedback to students allowing them to improve their learning and allowing them to reflect on their learning and to plan for future action.

4.2.3 Performance assessment and teacher assessment

Gipps (1994) describes performance assessment as a term currently in use by those who move away from traditional multiple choice testing. It aims to model the real learning activities that students engage in such as written communication skills and problem solving activities so that assessment does not distort the instruction. In the United States the term may be used to include portfolio assessment and teacher assessment although Gipps distinguishes between the two and uses performance assessment to exclusively describe assessment with tasks which are performance based.

Gipps (1994) also distinguishes between performance assessment and authentic assessment which is "performance assessment carried out in an authentic context. While not all performance assessments are authentic it would be difficult to imagine an authentic assessment which is not also a performance assessment" (p. 98). For Gipps (1994) the strengths of performance assessments are that they are real examples of the skill or learning goals rather than proxies, they support good teaching by not requiring teachers to move away from concepts, higher order skills, in depth projects to prepare for the test; the focus is on thinking to produce an answer rather than eliminating wrong answers as in multiple choice tests. The weakness of performance assessment occurs when they are used for accountability purposes because such assessment is time-consuming; tends to provide detailed multi-dimensional information about a particular skill; scoring is complex and involves the classroom teacher and standardisation of performance is not possible and therefore reliability in the traditional sense is not high.

Despite its limitations like Gipps (1994) I would argue that "performance assessment is a powerful tool for assessing a broad range of skills in various modes" (p. 122). In fact the idea of performance assessment has led to the introduction and use of course-work in all types of public examinations. Daugherty (1994) argues that the new importance which is being given to course-work has been advocated "because of the gains in validity which can be expected when students' performance on assessed tasks can be judged in a greater range of contexts and more frequently than is possible within the constraints of time-limited examinations" (p. 100). The assessment of performance by means of course-work therefore helps to increase the validity of the assessment.

Another form of assessment is teacher assessment. This is described by Gipps (1994) as the "assessment made by teachers of pupils' attainment, knowledge and understanding" (p. 123). It is essentially an informal activity and may be carried out over a period of time and in a range of contexts. This allows the teacher to build up a solid and broadly based understanding of the student's attainment which can be used in a formative way.

Like Gipps (1994) I would argue that "teacher assessment is more professionally rewarding (in terms of enhancing teaching and learning) and valid (because of the range of skills and processes which may be included and the range of contexts in which assessment may take place) than external assessment in which the teacher has little involvement" (p. 142). Nuttall (1993) also argues that teacher assessment "is bound to be richer, more varied and more comprehensive" (p. 239) than any kind of externally set task or test and provides real support for learning or formative assessment which is the most important type of assessment in the classroom. The only difficulty with teacher assessment according to Gipps is that if it is to be used outside the classroom in reporting to parents or for accountability and certificating purposes, then there must be some assurance to those receiving and using the results that there is comparability across teachers, tasks and pupils.

According to Harlen (1994) one way of ensuring this quality of teacher assessment is through moderation procedures which support professional development. Like Gipps (1994a) and Nuttall (1993) I would argue that the coming together of teachers to discuss their assessment practices broadens the scope and dimension of the assessment and has a direct impact on teaching and learning. As argued by Nuttall, teacher assessment backed by appropriate quality assurance of both the process of assessment and the product, can offer both high quality formative assessment and a contribution to summative assessment.

A number of different types of assessment have been described and the main argument which threads throughout this section is that the different types of assessment exist in tension with one another and they cannot all be used in conjunction in the classroom. The main problem appears to be the purpose for which the assessment is used rather than the type of assessment used. I will therefore, take the position that the best form of assessment is a formative type of assessment based on performance criteria which are assessed by the teacher in an authentic setting involving the ipsative assessment of students which allows them room for reflection and a certain degree of ownership over their own assessment. This position calls for an alternative assessment paradigm built on the principles of educational assessment rather than educational measurement.

4.3 An Alternative Assessment Paradigm - Educational Assessment

Assessment is an important part of education. As Gipps (1994) points out:

> ...assessment is a powerful tool: it can shape curriculum, teaching and learning; it can affect how pupils come to see themselves both as learners and in a more general sense as competent or not; through labelling and sorting pupils (certificating and selecting) it affects how pupils are viewed by others; it controls access into further education and high stakes careers (p. 144).

Given the importance of assessment in influencing the lives of individuals, it is important to ensure that assessment practices are fair and just and play a

role in creating a more equitable society. However, Gipps and Stobart (1993) argue and I would agree, that assessment systems are currently unwieldy, judgmental, summative, fragmenting, high stakes and instruction driving. They suggest that because of this an alternative assessment paradigm is needed.

4.3.1 Philosophical foundations of the new model of educational assessment

The development of a new model of educational assessment needs to be grounded within a theoretical framework. Gipps (1994) argues that the paradigm shift in assessment practice from psychometrics to educational assessment is a result of the change in "our underlying conceptions of learning, of evaluation and what counts as achievement" (p. 158). Like Gipps I would argue that within a psychometric paradigm assessment was treated as an exact science which could be measured and described in a quantitative manner. However, within a model of educational assessment this can no longer hold true and assessment is seen to be inexact. Like Gipps I would continue to argue that while the modernist stance suggests that it is possible to be disinterested observers, the post-modernist stance indicates that such detachment is not possible. Within this view we are social beings who construct the world according to our values and perceptions. Post-modernists and constructivists do not accept that reality is fixed and independent of the observer but rather that reality is constructed by the observer and that there are multiple constructions of reality. Therefore this paradigm would deny the existence of such a thing as a true score.

Within this paradigm, I would argue that educational assessment needs to be based on a number of principles which are different from those associated with psychometrics. Drawing on the work of various authors (Gipps, Gipps & Stobart, Nuttall, Murphy and Torrance) a number of ideas emerge. These include:

- the use of a single overall test figure is no longer valid and students' performance needs to be looked at across and within domains.

- since there are multiple constructions of reality, then student performance cannot be measured by means of a single assessment technique. Multiple methods of assessment need to be used.
- since reality is constructed by the observer and is not fixed, assessment needs to form a continuous and integral part of the teaching and learning process.
- since subjectivity forms an important part of this new paradigm, then effective ways of communicating this subjective reality need to be found.

Within this framework, the main guiding principle of educational assessment is no longer the comparability and maintaining of standards. Rather educational assessment is based on what Gipps (1994) calls trustworthiness. All educational assessment should be trustworthy and based on:

> Credibility: which involves a regular on-going assessment during the course of study involving dialogue between teacher and student.
> Transferability: in which the assessor specifies the context in which a particular achievement was performed. This will allow other individuals to determine whether the particular achievement can be transferred to another context.
> Dependability: which makes all assessment practices open to scrutiny and subject to an audit process and quality control.
> Authenticity: which involves the extent to which the relevant constructs are fairly and adequately covered in the assessment (Gipps, 1994, p. 168).

The philosophy of the new model of educational assessment is that "assessment does not stand outside teaching and learning but stands in dynamic interaction with it" (Gipps, 1994, p. 15). As pointed out by Gipps and Murphy (1994) "educational assessment has a constructive focus where the aim is to help rather than sentence the individual and it emphasises the individual's achievement relative to him or herself rather than to others or in relation to defined criteria" (p. 261). These ideas stem from the post-modern ideas of multiple realities, subjectivity and individual construction of reality, which lead to the development of new characteristics of educational assessment.

4.3.2 Characteristics of the New Model of Educational Assessment

These changing patterns of educational assessment are based according to Broadfoot (1986) on the principal concern of trying to "humanise" the assessment procedure; to abolish pass/fail and the fear of failure; to replace one-off examinations by continuous teacher assessment; to extend the scope of assessment to include not only formal and written work but oral and practical work too, and in some cases personal qualities; to provide for assessment that will be diagnostic and detailed, increasingly cumulative and integrated with the learning process and only culminating in, not solely oriented to a terminal evaluation.

Gipps (1994) describes the characteristics of educational assessment. A summary of her suggestions include the ideas that in educational assessment:

- domains or constructs are multidimensional and complex;
- clear standards are set and feedback emphasises mastery and progress;
- encourages pupils to think;
- elicits the individual's best performance;
- assessment criteria are more holistic;
- assessment is carried out by teachers and then moderated;
- descriptions are given rather than a single score;
- teacher assessment plays an important role;
- teachers have to understand what they are assessing;
- the assessment is not high stakes.

According to Gipps (1994) and Broadfoot (1995) two important aspects of this new model of educational assessment are the involvement of the teachers in the assessment process and differentiation.

4.3.2.1. Teacher involvement.

The importance of teacher involvement is backed by an amount of research evidence. Torrance (1995) shows that evidence from a number of different initiatives in the U.K. over the last ten years or so consistently points to the

need for teachers to understand the curricular and pedagogic implications of their becoming involved in new approaches to assessment in order that the benefits of their involvement can be maximised.

Gipps (1994) also stresses the importance of teacher involvement. She argues that "any assessment model, policy or program will only be as good as the teachers who use it...It is the teachers who teach the concepts and skills, prepare pupils for the assessments, give feedback to pupils and parents and move learners in the appropriate direction" (p. 176). Like Gipps I would argue that no assessment model can be effective without the commitment and involvement of teachers. "To limit the role of teachers in assessment would be the ultimate misconstrual of the process of teaching and learning. To embrace educational assessment, with the professional involvement of well trained teachers, will be to harness a powerful tool for learning" (Gipps, 1994, p. 176).

4.3.2.2 Differentiation.

Broadfoot (1986) argues that one of the characteristics which has had an important influence in current assessment practices is differentiation. Differentiation mainly occurs in examinations rather than in assessment practices, however since it is a common characteristic of present day examinations, and is a result of the new philosophy of positive achievement it merits some form of discussion.

Gipps and Stobart (1993) highlight the ideas behind the introduction of differentiation. They suggest that the idea stemmed mainly from a concern with positive achievement and producing examination papers which would allow all students "to show what they know, understand and can do" (p. 83). The focus was that assessment should be a positive experience for all rather than a dispiriting one, and therefore that candidates should not be presented with tasks that were too difficult.

One of the models proposed and the one which has been adopted by the MATSEC Board in Malta, is the three-in-line model which consists of one common paper and a choice of an easier or harder second paper. The

easier route offers grades G to C and the harder route grades A to D; if candidates opting for the harder paper do not reach grade D they remain Unclassified. According to Stobart (1987) this model has two technical problems, the first relates to increments of difficulty since the assumption is that there will be equivalent increments of difficulty from the easier alternative to the common paper and from the common paper to the harder alternative. The second issue is the equivalence of grades, since it may be slightly easier to reach a grade via the easier route than the harder route.

Like Good and Cresswell (1988), I would argue that one of the major difficulties with the use of differentiated papers is that a choice of paper has to be made prior to the examination. In my view, this leads to a narrowing of opportunity. If candidates are entered at too low a level, they will not have access to the highest grades that might appropriately reflect their achievements; if they are entered at too high a level they may be ungraded though capable of achieving a grade in a lower level of the examinations. This is also related to the equivalency of the grades with some students tending to obtain better grades at the lower level.

Since a choice has to be made, when using differentiated papers a great deal depends upon the accuracy of the prediction of grades by teachers and students. Murphy (1979) reports a reasonably high level of agreement between the teachers' predictions and the actual grades obtained by their pupils especially if variations of up to one grade were accepted. Other research suggests that teachers are able to predict examination grades correct to plus or minus one grade for approximately 85% of the students. Because of this Good and Cresswell (1988) recommend a safety margin of two overlapping grades when using differentiated papers.

The positive aspect of using differentiation is to ensure that pupils are stretched and challenged in order to show what they know, understand and can do. The major criticism of differentiation, is that as pointed out by Grant (1989) differentiation "serves to perpetrate a divisive system of examining rather than support a common examination where teachers would select pupils according to their judgements of pupil ability" (p. 135). In my view,

while differentiation helps to provide the least motivated students with tasks which they can at least tackle without becoming discouraged, the main danger of differentiation is that teachers and schools will return to an official or unofficial streaming or setting of students according to ability, leading to labelling and classifying of students which goes against the philosophy and ideology of an alternative paradigm of educational assessment.

Therefore, the main characteristics of the new model of educational assessment is a focus on formative, continuous assessment based in an authentic and relevant setting and requiring the involvement of teachers. The question which needs to be asked is how these characteristics can actually be put into practice and implemented in the classroom.

4.3.3 Suggested Framework for the Implementation of the new model of Educational Assessment

As Broadfoot (1992) argues, the novel characteristics of such approaches to assessment embody recent thinking about the need for a more positive approach to assessment and also emphasise the role assessment can play as a pedagogic and curriculum device. Where pupils become involved in the process of target setting and regular review and are encouraged to reflect on their achievements and development needs, they are being taught the skills of self-appraisal, self presentation and self-management, which are increasingly being recognised as core skills, not only in schools but in the world of work as well. Thus in many European countries there would appear to be a growing consensus that all young people need to be provided with a learning environment which allows them to make maximum use of their potential and with a form of assessment which gives them the best possible chance of being happy and satisfied in their future working lives.

This can be achieved in a number of ways and several authors have suggested ways in which the new model of educational assessment can be implemented in the classroom. Gipps and Stobart (1993) suggest that the main emphasis of the new model should be on a system in which the educational and formative purposes of assessment are paramount, and in

which teachers have a key professional role. This system would be one where competence is established largely by continuous assessment with teachers provided with both exemplar materials and agreement trials to standardise their assessment. Nuttall (1993) also calls for an assessment model which is based on formative, teacher assessment. He concludes that "teacher assessment backed by the appropriate quality assurance of both the process of assessment and the product, can offer both high quality formative assessment and make a contribution to summative assessment" (p. 239).

In my view, the best proposal for implementing the new model of educational assessment has been made by the BERA Assessment Policy Task Group (1992). They propose "a portfolio of work, jointly selected by teacher and pupil to provide both evidence of achievement, progression and a way in to fruitful, formative dialogue between teacher, pupil and parents as the basis for identifying individual strengths and weaknesses and future learning targets" (p. 10). In my view this idea of portfolios encompasses and embodies all the philosophical underpinnings and characteristics of the new model of educational assessment and should be one of the major proposals considered in all future assessment policies.

4.3.3.1 Student Profiles and Records of Achievement (Student Portfolios).

Fairbairn (1988) defines a profile or record of achievement as a method of presenting information on a student's achievements, abilities, skills, experiences and qualities from a range of assessments and often from a range of assessors including the students themselves. The portfolio can contain a record of all the work carried out by the students during each year of their course and kept on record from year to year. The portfolio can be used by the students for reflection, for their own evaluation and for the development of their own philosophy of teaching and learning. It can be used by teachers to evaluate the growth and development of students from year to year. It can be used to show what results the students have obtained in other areas, what their strengths and weaknesses are and above all it will form a continuous link from year to year and between one teacher and another.

A summary of the main aims of profiles as described in a draft policy statement (Broadfoot, McMeeking, Nuttall, & Steiner, 1988) includes the need:

- to recognise, acknowledge and give credit for what pupils have achieved and experienced in a variety of different ways.
- to provide encouragement and increase pupils' awareness of their strengths, weaknesses and opportunities in order to enhance motivation and personal development.
- to help schools support and encourage the development of pupils' diverse talents and skills through a consideration of how well their curriculum, teaching and organisation serve these ends.
- to provide a summary document for school leavers which will be valued by potential users for the wide picture of a young person's qualities and achievements that it portrays.

However, like Goldstein and Nuttall (1986) I would argue, that the main appeal of profiling is to the notion of "education for the whole person, to a desire to give positive value and status to affective and other non-academic achievements. It is also appealing to the teacher and most of all to the student himself or herself , giving teacher and student control over assessment" (p. 139). According to Hargreaves (1990), the importance of records of achievement is that they "offer the possibility of placing young people at the centre of their own learning, giving them increased responsibility for their own development and assessment, empowering them with the capacity for self determination" (p. 130).

Another important aspect of portfolios is that they have both a formative and summative component which according to Fairbairn (1988) and Broadfoot (1992) eliminates the tension between formative and summative assessment. However, in my view the formative aspect of portfolios should remain the most important. Otherwise as Broadfoot (1986) herself argues, portfolios simply become just another fashionable way of doing the same thing. Other criticisms of portfolios have been put forward. Broadfoot (1986) and Hargreaves (1990) both argue that despite their many advantages one has to be careful with the use of portfolios as they can be highly intrusive and

discipline and control students through the power of a pervasive and intrusive pattern of personal assessment.

However, despite these criticisms I would argue that if the purpose of profiles is kept formative in nature and based on the positive achievement of students, then they can be a useful and effective way of recording student achievement for the purpose of improvement and the development of students' potential to the full rather than as a competitive means of selection. Like Nuttall (1989) I would argue that formative profiles make comparison to others less important, the record concentrates on what the student has done and under what conditions so that the context is specified. The record can be cumulative so that development of skills or their application in new contexts can be observed and discussed, the comparison is with the individual's own past and not with others' current performance. This is important as very aptly described by Nuttall, "it would leave plenty of space for the rest of the curriculum to blossom and flower, for true formative assessment to underpin and help children's learning, and for individualised assessment and individualised action planning to contribute to the creation of a full and worthwhile record of achievement" (p. 197).

4.4 A Critique of Assessment Practices

Throughout this section it has been argued that assessment has a very important role to play in education and that assessment is a powerful tool which can be used to shape curriculum and influence educational policy. Eisner (1993), for example, states that if authentic assessment is accepted by the public at large, assessment will not only contribute to better schooling for children, it will contribute to a broader and more generous conception of education itself. Hildebrand and Allard (1993) also argue that by changing assessment practices it is possible to change what is taught and how it is taught.

Like these authors and from the research process itself, I have come to the view that assessment does have an important role to play in education and it can influence educational policy. However like Broadfoot (1986a) and

Torrance (1995) I will argue that changes in assessment on its own cannot change educational practices. The two have to be carried out together and most important of all they have to be carried out with the consensus and involvement of teachers who have to implement the new assessment policies and bring about changes in education. What changes in assessment can do is to bring about superficial changes in the curriculum. For example, in Malta the introduction of practical course work in the examinations for science subjects has superficially led to an increase in the amount of practical work carried out in schools and even to the building of laboratories in some schools. However, when one looks at this important change in some greater depth, one can observe that in cases where the teachers did not believe in such a change they continued to teach in the same traditional manner, dictated experiments to their students and so the initial aim of introducing practical work was lost.

Torrance (1995) is very emphatic in his critique of assessment practices. He argues that while governments may aspire to use assessment to reform the curriculum, and while educationists may try to use such policy opportunities to develop new and more valid or "authentic" approaches to assessment, such aspirations are difficult to accomplish and moreover the traditional role and purposes of examinations in facilitating selection, and in particular in controlling entry into higher education remains very significant indeed.

In a similar manner, Broadfoot (1986a) argues that the policy of making educational assessment suitable for the very different needs and interests of the whole range of young people can be read as a step forward in the struggle to overcome educational inequality. However, it can also be argued that "the continued existence of traditional assessment procedures - notably public examinations - alongside more novel policy initiatives is likely to continue to reinforce divisive and inegalitarian educational experience" (Broadfoot, 1986a, p. 209). For Broadfoot:

> radical changes in educational practice, without an associated and similarly radical change in educational ideology stemming from the larger society in which those educational practices are embedded cannot by themselves lead to any significant reduction in social

> inequality. Assessment policy, can and is being used as a powerful and convenient gearing mechanism with the educational system but ultimately it is only a means of communicating values; it cannot by itself transform them (p. 222).

Like Torrance (1995), I will take the position that improvements in assessment may be necessary but are by no means a sufficient condition to bring about improvements in teaching. The new model of educational assessment is certainly an improvement on the narrow and selective mechanism of examinations. However, as has been argued this new model needs to be viewed within the wider theoretical frameworks underpinning educational ideology. The most important aspect of a new paradigm of educational assessment is the involvement of teachers and students within the assessment process. If students and teachers are not involved in the assessment process then the danger is that the new model of educational assessment will just be a more fashionable and apparently more equitable way of selecting and classifying individuals. This, in my view is not however, the true purpose of educational assessment. The true purpose is to allow each student to develop to the full potential without being threatened or labelled and this can be achieved by a continuous dialogue between teacher and student, who discuss the strengths and weaknesses of performance in order to improve learning and not to compare or select. This is the hope for the future of educational assessment.

CHAPTER FIVE

Assessment and Examinations in Malta

5.0 The context

Since the research was carried out in a Maltese context it will be useful to explore the significance and importance of assessment practices in Malta. Drawing on the international literature it has been argued that assessment practices have seen a shift in focus from an emphasis on examinations within a psychometric paradigm based on objectivity, reliability and comparability to a new model of educational assessment based on formative, teacher based, authentic assessment used for the improvement of teaching and learning.

In Malta assessment practices have been closely linked to assessment practices within the U.K., mainly based on the traditional G.C.E examinations. More recently in 1994, Malta introduced its own examination system. The question which needs to be asked is whether this new examination system reflects the international trends and moves towards a philosophy of educational assessment or whether the traditional practices of examinations still predominate. This can be determined by looking at the historical development of examinations in Malta, the development of the new examination system and exploring the impact of this new examination system on the Maltese educational system.

5.1 Examinations in Malta

Drawing on my own experience as a student and as a teacher, I would argue that examinations exercise a great deal of influence on Maltese education and are given great importance by the schools as well as by the parents and the public in general. Like the Consultative Committee for Education (1995) and from my observations in the schools of the study, I would argue that examinations encourage teachers to teach to the examinations in a very traditional manner which privileges memory and the storage of information creating a stagnant system which is dominated by examinations rather than

by the dynamic process of curriculum development. This is also pointed out by Zammit Mangion (1992), who states that Maltese parents encourage these examinations, they demand that their children be trained for these examinations from an early date and they demand frequent school examinations in order to assess their children's progress towards these key examinations. Like Sultana (1990) and Zammit Mangion (1992) I would argue that this takes place because examinations are considered to better one's life chances and are used as the yardstick by which one measures one's educational, cultural and intellectual ability.

5.1.1 Historical development of examinations in Malta

School examinations in Malta may be of two kinds, that is, internal or external examinations. Internal examinations are prepared by the school itself and include a "School Leaving Certificate" issued by the Education Department and signed by the Head of School. This certificate testifies the progress of the student during his or her school career. However, I agree with Sultana (1996) that this certificate has very little weight or prestige in the labour market, or in giving access to post secondary education. Much more prestigious and influential are the external examinations which are set by bodies external to the school and generally taken at the end of secondary schooling. The most common of these are the examinations run by foreign (mainly UK) examining boards and institutions.

There are a number of reasons why foreign examinations play such an influential role in determining the academic future of Maltese students. Zammit Mangion (1992) describes some of these reasons. First of all it was realised that the British examinations were more expertly devised and corrected than the Malta Matriculation Board could ever do. They were also backed up by extensive research in curriculum development. Secondly, there seems to be a widespread distrust of any form of local examinations on the grounds that Malta is a very small island, that everyone knows everyone else and that foreign examinations due to their anonymity are therefore fairer and more reliable. Thirdly, the foreign examinations have an international value which is recognised almost world wide. This enables easy recognition for

students who want to study overseas. In my view, the reasons pointed out by Zammit Mangion are all very valid and realistic. However, like Sultana (1996), I would argue that one of the main reasons why foreign examinations have been so influential is the colonial mentality that "British is best" and the general feeling that only those examinations set and marked abroad can be reliable and valid. In my view, this stems from a strong belief in the psychometric principles of objectivity, reliability and comparability which take on an important dimension in an Island as small as Malta, where it is thought that standards need to be established and maintained in comparison with International standards, especially U.K. standards.

5.1.2 Changes in the local examination system

For a long period of time, the external examinations were the recognised credentialling system of the Islands. Even though they were becoming very expensive for some Maltese families, they were still considered to be the only recognised system of certification. This was mainly due to the fact that external examinations provided standards, fairness and were internationally recognised. This situation changed as a repercussion of the changes which took place in the British examination system. Zammit Mangion (1992) describes how in 1984, the examination system in the U.K saw a merging of the General Certificate of Education (GCE) with the Certificate of Secondary Education (CSE) to form the General Certificate of Secondary Education (GCSE). The CSE had never been adopted in Malta, but the GCSE brought with it a number of changes. Sultana (1996) describes how this new examination "was not quite consonant with educational policy and practice in Malta. The GCSE for example shifted from norm to criterion reference testing, it introduced course-\work and teacher assessment as part of the examination system and it reformed syllabuses and curricula to make them more responsive to perceived UK needs, and it ensured that each student would leave school with some record of achievement" (p. 9).

In discussions held with the examining bodies which catered for Malta and after an intensive study by Education Department officials of the implications behind the new UK examination system, it was decided that it was not wise to

switch to the new UK system. It was ascertained that the UK examining boards would continue to offer GCE examinations to Maltese students and the problem was solved in the short term (Zammit Mangion, 1992). In my view, the Maltese educational system was not yet ready for the paradigm shift which was taking place in educational assessment. It preferred to remain embedded in the traditional psychometric paradigm which was known and could be handled.

However, the need to set up a local system of examinations was felt more and more. A system which reflected the needs of the local education system was necessary. This need was felt even more in the light of the 1988 Education Act which propagated a new philosophy for examining students. The National Minimum Curriculum for Secondary Schools closes with a section on examinations which refers to the need to play down the negative effects of examinations by introducing more cumulative assessments, and refers also to the need to include an oral element in languages and in the core subjects, and a component of practical testing in the sciences and action oriented options. The result was the establishment of the Matriculation and Secondary Education Certificate Examinations Board which was charged with the task of developing an examination system which would later replace foreign external examinations (Sultana, 1996).

There were many reasons why a local examinations system was needed. Some of the reasons for this reform were outlined in a speech given by the then Minister of Education. He described one of the main reasons as being the need to have examinations which were locally oriented and based on subjects familiar to Maltese students and the needs of the country. He emphasised the need to move away from the colonial mentality and recognise examinations set by Maltese for Maltese. Another important factor was the fact that large sums of money left the country to finance examinations set abroad, while through having local examinations the money would remain within the country and the examinations would not be so costly. Finally, the work done by the MATSEC Board would be of such high standard that it would be internationally recognised and bring Malta up to the same level as other countries. In my view, the reasons for setting up the MATSEC

Board were far from educational. There was in fact very little choice in the matter, the establishing of the GCSE with greater emphasis on teacher assessment was something which was still very far from the conception of educators in Malta. The highly centralised system and the major control by the Minister did not leave much room for the professional involvement of teachers, who were simply not trusted to be able to carry out a fair and reliable assessment. Therefore something new had to be introduced, which would be based on an apparently new philosophy but which in reality would be simply a replica of the original GCEs.

Despite this criticism, in principle at least, the new examination system tried to reflect the shift in educational philosophy. The new examinations would therefore as described by Sultana (1996):

- privilege achievement rather than selection;
- give more importance to subjects that did not make up the core "academic curriculum";
- cater for a wider ability range of students;
- widen access to post-secondary and tertiary education to bring Malta on par with European levels (p. 10).

The question which remains to be answered is how far this philosophy is actually being achieved in practice.

5.2 The present examination system

The Education Act of 1988 states that there shall be Matriculation Examinations held at two levels: Advanced and Intermediate and the Secondary Education Certificate Examinations. These examinations are run by the Matriculation and Secondary Education Certificate (MATSEC) Board which sees to the policy making of the examinations. The policies established by the MATSEC Board are then implemented by the MATSEC Support Unit which sees to the day to day running of the examinations.

5.2.1 The MATSEC Board

The new examinations are run by the Matriculation and Secondary Education Certificate (MATSEC) Board. The Board was set up in 1989 under the Chairmanship of the Rector of the University. It includes as members the Registrar of Examinations, members of the academic staff of the University, officials from the Education Division, and a member of the Private Schools Association. The Malta Union of Teachers is represented by a member in an observer's position. The equal number of members from the University and the Education Division tries to encourage collaboration between the two sectors and provide further links between the two main bodies which determine educational policy.

The function of the MATSEC Board is mainly one of policy making. It oversees the general running of the examinations, set up panels to create syllabuses, prepare examination papers and mark examinations. The Board also makes recommendations to Senate regarding all regulations, syllabuses, and all matters related to the examinations. It is also responsible for the financial running of the examinations. One of the first tasks of the MATSEC Board was to set up a Support Unit which would see to the day to day running of the examinations. It also appointed a number of subject (syllabus) panels to develop syllabuses; paper setters' panels to prepare examination papers; and markers' panels to mark the examinations.

5.2.2 The MATSEC Support Unit

The MATSEC Support Unit is made up of an Administrative Division and an Academic Division. The main functions of the MATSEC Support Unit are to implement the policies outlined by the MATSEC Board, to administer the examinations and to co-ordinate the development of syllabuses. It is the main link between the Board and the teachers, candidates and the general public. The Support Unit is run by a Co-ordinator who takes care of the administrative part of the examination. This is aided by the Academic Division which is run by the Head of the Academic Division, aided by a Principal Test Construction Officer and two Principal Subject Area Officers

(Arts and Sciences). The Principal Test Construction Officer monitors all matters concerning assessment, ensuring validity and reliability of the setting and marking of papers. The Principal Subject Area Officers co-ordinate the syllabus panels, the development of new syllabuses, maintain links with other examination boards and carry out research in the area of assessment and examinations.

5.2.2.1 Subject (Syllabus Panels)

The syllabus panels or as they were originally called the subject panels were established for each subject or group of subjects offered within the Matriculation Examination at Advanced and Intermediate Level and the Secondary Education Certificate Examination. The syllabus panel is mainly responsible for encouraging curriculum development in schools and for the drawing up of a syllabus in the subject for which it is appointed.

Each syllabus panel is made up of members from the academic staff of the University together with teachers and officials from the Education Division and the Private Schools. The idea was to create a partnership between all the organisations involved. However like Sultana (1996) I would argue that this experiment has not been a complete success. Sultana in fact describes how when interviewed members of the Education Division felt that despite their strong representation on the official bodies of the examinations, all they could do was to "air their views" and that in many cases their opinions were in fact ignored. On their part some University academic staff felt that the Education Division had never been too enthusiastic about the local examinations and that rather than working with teachers they found themselves working with senior education officials who, they felt, could not draw on direct contact with students and classrooms when they came to develop syllabuses. This has created a tension which often hinders the implementation of innovations and the development of up to date curricula.

5.2.2.2 Paper Setters' Panels

According to the regulations of the examinations, the Paper Setters' Panel is responsible for the preparation of the question papers and a mark scheme in a subject for each session of the examination. The question papers meet the

requirements and assessment objectives, and should cover the subject content specified in the syllabus. They are submitted to the Registrar for printing by not later than three weeks before the examination is due.

5.2.2.3 Markers' Panels

The Markers' Panels are responsible for the marking of the examination scripts allotted to them by the person chairing the Panel according to a mark scheme agreed to by the Paper Setters' Panel. The person chairing the Panel does not mark any scripts but reads a representative sample and acts as moderator to ensure that all the markers are adhering to the same standards. In subjects where assessment by teachers is provided for, Markers' Panels take into account assessments of projects, assignments and oral proficiency submitted by authorised teachers.

Like Sultana (1996), I would say that the main problem with both Paper Setters and Markers is that they are very difficult to find. Sultana describes how Paper setters and Markers are difficult to find given the extremely stringent criteria that have to be satisfied in order to ensure reliability, fairness and confidentiality. The criteria stipulate that, given the close networks between people on the islands, paper setters and markers related to or who teach (or give private tuition to) candidates sitting for the examination session in question are excluded from the task. Another difficulty is an administrative one in that remuneration for the setting and marking of papers is not very high, and takes a long time to reach setters and markers. This definitely puts off many prospective paper setters and markers. In my view, this problem could easily be solved by having consensus group marking of examination scripts in an open and transparent environment.

5.3 The Secondary Education Certificate Examination

Since 1994 the MATSEC Board has been offering examinations in twenty-eight subjects including the basic subjects such as English, Mathematics, Physics and Maltese and various other subjects ranging from Accounting to Arabic, and from Greek to Home Economics.

There were two main innovations with the new examination system. The first change shown in the regulations states that only candidates who complete their studies in Form V or who have reached the age of 16 years by the end of the year will be allowed to register for the examination. This change was introduced in order to avoid the widespread exodus of students from schools at the end of Form IV. These students who were allowed to sit for the GCE O' levels when they were still in Form IV, would not bother with attending school in Form V. In my view this was a positive change, since the new regulation ensured that the whole five years of secondary schooling would be completed.

The second major change in the new examinations was the introduction of differentiated papers. The introduction of differentiation was approved by the MATSEC Board and introduced in all subjects. Each examination would therefore consist of a common core Paper I which would be taken by all students and would include an oral, practical or course-work component. Paper II would be of two types. Paper IIA would include questions which were more difficult than Paper I and was intended for the more academically able students. Paper II B would include questions which were easier than Paper I. Candidates would have to indicate which Paper II they wished to sit for on registration and no change in the choice of paper would be allowed after the registration period. Candidates sitting for the different papers would only be allowed to obtain a certain grade. Candidates sitting for Paper I and Paper IIA could qualify for grades 1, 2, 3, or 4 or else remain Unclassified. Candidates sitting for Paper I and Paper IIB could qualify for grades 4, 5, 6 or 7 or else remain Unclassified. Grades 1 to 5 are eligible for entry into Sixth Form and subsequently University. Grades 6 and 7 provide students with a certificate and can be used for employment (Appendix to Minutes 3 1992-93, MATSEC Board, 21st December 1992).

This system is similar to the three-in-line model described by Stobart (1987). I would argue, that on the positive side the system has led to the inclusion of a wider range of candidates taking the examination, on the negative side differentiation has led to students opting for the easy way out by choosing the easier paper and to some extent to unofficial streaming of students.

These changes indicate that an attempt to change the philosophy and approach to examinations was being made. One of the main philosophies adopted was the idea that the examinations would emphasise positive achievement rather than failure and to widen the cohort of students who would be able to sit for the examinations. This was in fact the idea behind the introduction of the differentiated paper system. The idea was to give students of a wider ability range the opportunity to obtain some form of certification which could then be used in the labour market. The Secondary Education Certificate also gives greater importance to the practical component in the form of practical work and projects in the science subjects and in the form of oral assessments in the language arts. Practical work in fact contributes 15% of the total marks of the examination. This change also signals the greater involvement of teachers in the assessment process.

5.3.1 The Physics Secondary Education Certificate Examination

This research looked mainly at the Physics Secondary Education Certificate Examination as a case study of the changes and innovations made in the new system of examinations. As explained in Chapter Two, Physics was chosen since until 1996, physics was compulsory for entry into the State Sixth Form where students were eligible for the monthly allowance of a pupil worker.

The secondary school curriculum of both State and Private Schools who teach physics is based on the requirements of the Secondary Education Certificate syllabus. In 1992 a physics syllabus panel was appointed by the MATSEC Board to prepare a new syllabus for 1994 when the differentiation of papers would be introduced. The new syllabus for 1994 which is still applicable with minor changes for 1998 was organised into three sections: Matter, Energy and Interactions between Matter and Energy. These were to be presented in an integrated way in order to outline the inter-relationships between the various phenomena in the physical world. Emphasis was also to be placed on the practical work of students.

The examination would consist of two written papers and a practical component. Paper I would be answered by all students and consist of ten compulsory short questions. Students would also be required to present a set of fifteen experiments carried out in schools. Students would then choose between Paper IIA which would be more difficult than Paper I and Paper IIB which would be easier than Paper I. Both Paper IIA and IIB would consist of five compulsory questions, two of which would involve the design, planning and analysis of simple experiments (Physics Syllabus Panel, Minutes 9, 5th February 1993).

5.4 The impact of the new examinations on the educational system

There were many reactions to the introduction of the local examination system. Most of these reactions were reported in the local newspapers but very little research by educators or teachers has been carried out. On the positive side, an editorial in *In-Nazzjon*, 6th July 1993, pointed out the advantages of having a system which catered for more students and which would allow students who previously left school without any certificate to at least be able to obtain a certificate. It emphasised that the new examinations gave credit to students who did not excel but still had a certain amount of knowledge and it gave schools which catered for students who were usually labelled "unmotivated" the opportunity to help their students obtain some form of certification.

However, the new system was mostly criticised. Teachers were not very receptive of the introduction of the new examination system mainly because they thought that the local examinations would not reach the required standards, would not be fair and reliable and would not be recognised by foreign institutions (*Il-Gens*, 4th June 1993). There were also problems with the Malta Union of Teachers regarding the introduction of practical work, since the Union felt that teachers should be remunerated for the extra work in the marking of course-work. This according to the *The Times, 23rd May 1996*, created some antagonism with the MATSEC Board.

Most of the criticism was levelled against the introduction of the differentiated papers. I agree with the report in *In-Nazzjon*, 6th July 1993 that teachers and parents felt that a two paper system would lead to students choosing the less difficult paper in order to play it safe even when they were capable of doing better. Other concerns included the stress created on students, parents and teachers who would have to make a choice of paper. Sultana (1996) also points out that both teachers and guidance personnel expressed their dissatisfaction with the system of choice. These concerns were also discussed by Darmanin (1996). In view of the evidence presented later on in the study I would agree with Darmanin that the choice between papers traps students into making choices. Students labelled as poor achievers will tend to self select and be channelled by parents and teachers to opt for the easier paper irrespective of their real potentials. This leads to a closing of options rather than to the intended opening of opportunities.

Apart from these complaints which have been expressed verbally and in local newspapers, the only evaluation of the new examination system has been carried out by Sultana (1996). As yet the system is still too new to explore the whole range of implications of the new examination system, however Sultana draws on interview material to draw a few conclusions about the new examination system. He concludes that with the SEC examination there have been important repercussions on educational practice in schools. In summary these repercussions include:

(a) More importance and attention being given to course work as a legitimate component in the continuous assessment of students. This has led to the establishment or better resourcing of laboratories in schools.

(b) The syllabuses are set locally and students can relate much more to the curriculum which includes themes and concerns which they encounter in their everyday life.

(c) A wider range of assessment techniques is being used.

(d) The school based assessment presents teachers with the unique opportunity of becoming professionally involved in the educational process.

(e) Examinations can only be taken at the end of Form V which ensures that students complete their five years of secondary schooling.

(f) A large range of curriculum subjects is offered to students.

(g) Schools can become more pro-active in the development of curricula, syllabuses and pedagogy.

(h) The new examinations have led to an increase in the publication of Maltese text-books and books.

Sultana concludes that the new system of examinations has therefore resulted in the inclusion of Maltese culture into curricula and examinations, teachers have been able to expand their professional role and become more actively involved in the assessment process, and the new examinations will most probably influence teaching styles away from the traditional authoritative approach towards more modern methods involving greater interaction with students.

Sultana argues that the new examinations have resulted in the inclusion of Maltese culture into curricula and examinations. In my view, this is true only to a certain extent. While some examination questions appear to be set in a local context, using Maltese situations and Maltese names, the type of questions asked and the way in which they are asked do not in any way reflect the needs and interests of Maltese students. Secondly, Sultana argues that the new examinations have helped teachers to expand their professional role and become more actively involved in the assessment process. Again this is only a superficial change and while apparently teachers are involved in the assessment process, the reality is that in most cases their assessment mark is not valued and does not play a very large part in the final assessment of students. Thirdly, Sultana argues that the new examinations will most probably influence teaching styles away from the traditional authoritative approach towards more modern methods involving greater interaction with students. Unfortunately, though I would agree with Sultana that this would be a highly desirable outcome as a result of the new system of examining, the teaching which is taking place in the classrooms has not changed or evolved, but rather as is very evident later on in the data

presented in the study, the new system of examinations has been adapted to fit in with the traditional methods of teaching.

Thus, while Sultana suggests that the new system of examinations has had a great impact on the Maltese educational system, my argument is that the changes which have taken place are only superficial and much more work needs to be done to bring about a shift in educational thinking. As argued in the previous section the changes in the system of examining in Malta, have tried to follow the philosophical shift in educational thinking taking place internationally. However, the theoretical framework for bringing about this shift is not present. In my view, the assessment practices in Malta are still very much rooted within a psychometric paradigm, the major concerns being comparability and the use of assessment results for selection. This creates a competitive system which leaves no room for the formative aspect of assessment, which forms an integral part of any new model of educational assessment.

Within this traditional philosophy there is no room for the post-modern ideas of subjectivity and multiple realities. There is no room for the involvement of students and teachers who are not trusted to give a fair and just indication of their own potential and ability. Because of this any changes in the assessment or examinations practices of the Island will remain just that, changes in assessment practices and are not followed by changes in educational philosophy and ideals.

The argument made by Torrance (1995) and discussed in the previous section, that improvements in assessment may be necessary but are by no means a sufficient condition to bring about improvements in teaching, I think holds very true in the case of the Maltese situation. What is needed is greater emphasis on the involvement of teachers and students and this will hopefully achieve the goals which are stated so clearly in the philosophy of the new assessment system, but which as yet have not managed to be actualised within the classroom and school context.

CHAPTER SIX

Equity Issues in Assessment

6.0 Defining Equity in Assessment

The main question of this research is "Are examinations fair and just for all students in Maltese schools ?" My main concern was with how examinations and assessment practices are impacting the lives of students and whether any difference in gender and class limit the opportunities of students. As described in the introduction this is an issue of equity and social justice. For the purpose of this study equity will be defined as "assessment practices and interpretations of results which are fair and just for all groups" (Gipps and Murphy, 1994, p.18). The focus is on fairness and "the righting of structural injustice due to race, class, gender and special needs" (Griffiths & Davies, 1995, p.193). Like Gipps and Murphy (1994), I will argue that "assessment is intimately linked with the whole area of equality and equity" (p. 14). Assessment is therefore as important to the equity debate as equity issues are to assessment.

The debate on equity issues emerged from studies carried out with regards to equal opportunities in education. According to Gipps and Murphy (1994), in 1987, Woods defined equal opportunities as having to do with:

1. Equal life chances;
2. Open competition for scarce opportunities;
3. Equal cultivation of different capacities;
4. Independence of educational attainment from social origins.

These definitions are criticised by Gipps and Murphy (1994) and I would agree with these authors that offering equal life chances is impossible as one cannot counter for home and family background. Natural innate and environmental characteristics make open competition unrealistic as some individuals already start out with a disadvantage. Furthermore, it is impossible to cultivate equally different capacities if one does not know what

the capacity is. Making education accessible to all does not necessarily ensure that it is accessible in the same manner to all groups.
These criticisms make it clear that this definition of equality was inexact and the definition of equality therefore shifted from equality of opportunity to equality of outcome which could be easily measured quantitatively as performance in public examinations. According to Scarr (1984) the idea was to give all students the opportunity to compete at an equal level and provide an identical treatment regardless of initial differences. Critics of examinations however argue that rather than achieving this aim examinations can in fact disadvantage certain groups on the basis of gender, race, class or special needs.

Gipps and Murphy (1994) therefore, come to the conclusion that the focus on equality of opportunity and equality of outcomes is no longer valid. Like them I would argue that equality is impossible to achieve as different groups may have different qualities, abilities and experiences. They therefore define equity in terms of fairness rather than equality of outcome and identical experiences. This stems from a postmodern approach which denies the existence of a real, standardised, objective truth. Gipps (1996) describes how within a postmodern approach, "meanings are socially constructed; texts are "read" or interpreted by individuals and groups according to their cultural and social backgrounds, their experience of power relations and their individual biographies" (p. 3). I agree with Gipps that within this framework, the most important aspects of curriculum and assessment are individual differences and the context-bound nature of individual views and beliefs. Like Gipps and Murphy, I have come to the view that within this framework there can be no such thing as a fair test but that we can only work towards assessment practices which are fair to all groups.

Thus, it seems that the most important characteristic in ensuring equity is fairness. This is described by Griffiths and Davies (1995) as being made up of two strands one of which deals with the empowerment of individuals and the other with the righting of structural injustice due to race, social class, gender and special needs education. According to Griffiths and Davies, fairness in education first means that each individual child grows up

empowered to work out her or his own wants and needs in life and to have the skills, attitudes and knowledge to reach for them. Secondly, a fair educational system will be one in which all children achieve to the best of their potential. Like Griffiths and Davies, I would argue that a cause for concern that the system is not fair would be if one group of children marked by gender, race or social class were not doing as well as an equivalent group or if the same group of children have much less self-esteem than the equivalent group. One would however, have to look deeper into what Griffiths and Davies mean when they discuss "doing well" as doing well for one individual might not be the same as doing well for another.

Like Gipps and Murphy (1994) and drawing on the definition of fairness by Griffiths and Davies (1995), I have come to the view that there are many psychosocial variables which affect how boys and girls come to view themselves, how they are viewed by others and how achievement is defined. These variables include:

- the self-esteem of students in relation to their achievement;
- gender differences which again may advantage or disadvantage boys or girls; and
- social class background including language and type of school, which influences the aspirations and self-image of students.

An exploration of these issues from an international and a Maltese perspective is therefore necessary before trying to develop an assessment programme which is fair and equitable for all students.

6.1 Assessment and Self Esteem

One of the main issues regarding assessment has always been the self esteem of students and how they come to view themselves and believe that others view them. In 1967, Coopersmith defined self-esteem as:

> ...the evaluation which the individual makes and customarily maintains with regard to himself - it expresses an attitude of approval or disapproval and indicates the extent to which an individual believes himself to be capable, significant, successful

and worthy (p. 4-5).

This view of oneself is closely related to relationships with other individuals and like Gipps (1994) I would argue that feedback from significant others such as parents, teachers and peers play an important role in determining self-esteem. Success in school and in examinations and achievement have therefore been closely linked with self-esteem (Renshaw, 1990 and Cohen, Manion and Morrison, 1996).

Griffiths (1993) explains how two strands of self esteem theory have been related to achievement by educational researchers: the first suggests that high self-esteem causes high achievement and the second that high achievement causes high self-esteem. In the case of low self-esteem again there are two ideas, the first that low self-esteem causes low attainment, the idea of the self-fulfilling prophecy and the second, that low self-esteem is caused by low attainment, the idea of learned helplessness.

This close connection between self esteem and achievement results in the belief that self identity is dependent on performance. This results in what Miller (1987) describes as conditional love which gives the child the impression that he or she has to be "good" in order to feel loved and accepted. This accommodation to parental and teacher needs often (but not always) leads to an "as-if personality" and a sense of inauthenticity where the child feels valued for his or her achievements rather than for whom he or she really is. It places children in what Griffiths (1993) describes as "a double-bind" situation in which no achievement can be good enough.

Griffiths (1993) argues against this and suggests that self-esteem is not caused by or causes achievement but rather that self-identity and esteem is created as a result of a process of constructing narratives of ourselves - of constructing an autobiography which is created in relation to connections with other people and developing a sense of belonging - a sense of love and acceptance or of resistance and rejection. It results in a situation where the child argues "I am loved and valued, therefore what I do is good" rather than "What I do is good, therefore I am loved and valued". This sense of

belonging is also formed according to Griffiths (1992) through the relationships which individuals have with groups of people. These include at the most intimate level, the family and other people personally close, the face-to-face groups (who may or may not be personally close) who are encountered as soon as the social circle extends into school or work and those groupings with which the individual may identify according to race, gender or class even though the members may remain personally unknown to each other.

However, while I agree with Griffiths, that children should be valued and loved for what they are, I would argue that in a situation where achievement is valued above everything else the message which is in actual fact given to children, is that they are valued because of what they can do. I reached this conclusion by reflecting on my own personal experiences, from my interactions with the participants of the research and from the reading of the literature. I started out believing that self-esteem was very closely linked to achievement. From my experience teaching low achieving girls in a Maltese area secondary school, I was very much influenced by the ideas of "learned helplessness" and the "self-fulfilling prophecy". I believed that the girls I taught perceived failure to be inevitable, their teachers thought that failure was inevitable and this created a vicious circle where low self-esteem resulted in low achievement and this low achievement perpetrated the idea of the students' low self-esteem. This is very much in line with the traditional ideas of self-esteem and achievement described by Griffiths (1993). I believed that remedial action could be taken and like Cohen, Manion and Morrison (1996) and Gipps (1994) I believed that the teacher could enhance positive self-esteem by helping the students to believe in themselves and their capabilities and that this would automatically result in higher achievement.

As I started to read Griffiths (1993) I began to realise that this was a very simplistic view and that the correlation between self-esteem and achievement was not so clear cut. Like Griffiths I began to understand that self-esteem is not caused by or causes achievement but rather is created through the development of our own self-identity. I came to this view by reflecting on my

own personal experience, and the experience of the students with whom I interacted as part of the research process. My initial argument had been that low self-esteem caused low achievement and that increasing self-esteem would increase achievement, or that vice versa helping students to increase their achievement would result in an increase in their self-esteem. However, in my own case this did not actually come about and there seemed to be no correlation between my self-esteem and my achievement. While I had always been a high achiever in school, I did not have a high self-esteem. Reflecting back I think that this was due to the fact that I did not have a clear sense of direction about who I was and where I was going. I was in the situation described by Griffiths where I thought that I was loved and valued by my parents and teachers because I achieved well and not because of who I was. This created a sense of inauthenticity where I strove to belong on the basis of my achievements, but because this had nothing to do with the development of my identity, it still did nothing to increase my self-esteem. From my research, I have come to the view, that in a Maltese educational system where examinations and achievement are valued above everything else, many students find themselves in the same predicament.

This development of self-esteem and identity however does not take place in a vacuum and as pointed out it depends very much on interactions with other individuals who all form part of a community and a society. Like Griffiths (1993) I would argue that the feelings of acceptance and rejection described in the previous section cannot be understood without reference to the structures of power in the society in which the self finds itself. I agree with Griffiths and Davies (1995) that it is in social groups that children find themselves and that if particular groups experience unfairness of particular kinds, then this unfairness contributes to their sense of self-identity. This brings out the importance of race, gender and class in determining self-esteem. This is also emphasised by Renshaw (1990) who points out the individual learns simultaneously about the self and society. Thus, if the social groups to which one is attached are relatively low in status and power, then the concept of self which develops from growing up in such groups will include feelings of self-derogation and powerlessness.

Achievement and self-esteem can therefore no longer be regarded solely in terms of the individual and providing remedial action for the individual, but have to be seen within the wider framework of society at large where other factors such as race, gender and social class come into play. Like Griffiths and Davies (1995) I would argue that all these factors contribute to the creation of an individual's self identity and contribute to their particular self-esteem and their achievement. Self-esteem is formed by what Griffiths (1997) describes as a patchwork made over time, of patches upon patches, continually worked over but with no possibility of being thrown out or erased in order to start afresh. These patches, are not built in a vacuum but are affected by politics of gender, race, disability, social class and sexuality. Therefore when trying to develop assessment programs which enhance achievement and self-esteem all of these factors have to be taken into consideration.

6.2 Gender and Achievement in Science

The concept of equity in assessment does not presume identical experiences for all but seeks to (i) ensure that assessment practice enables individuals and groups to reveal their achievements and (ii) that interpretations of results are valid and just for all groups (Murphy, 1993). In order to achieve this kind of equity I agree with Elwood and Comber (1995) that we have to acknowledge that "teaching, learning and assessment are gendered processes" (p. 3) and that this has to be kept in mind when considering any form of assessment and hence achievement. Like Murphy (1991) I would argue that a lack of understanding of the sources and effects of gender differences in assessment means that many students' positive achievements go unrecognised.

Therefore, like Elwood and Comber (1995), I would argue that before any effective changes in assessment practices can be brought about one has to take into consideration "the relative experiences of males and females, the expectations they and their teachers have about what they are capable of and the way in which assessors choose to assess and examine subjects" (p. 13). As argued by Hildebrand (1996) "assessment has the power to endorse

or challenge the ways in which fields of knowledge, school subjects and understandings about learning and gender are constructed through the delivered curriculum" (p. 149). In my view, it is only when these factors are understood and acknowledged that one can move on to developing assessment programs which are more fair and just for all students.

I will also argue that issues of gender and science education can no longer be viewed solely as a problem having to do with girls. Murphy (1997) describes how many of the gender interventions carried out in the 80s were concerned with giving value to female experiences and approaches to learning. She describes some of these interventions as including:

- activities set in a social context with explicit purposes and relevance to students', that is, girls' lives;
- practical active engagement in tasks to allow tasks to be reformulated from students' perspectives;
- teacher-learner relationships which involve students in negotiating learning and taking responsibility for it;
- targeted activities to support students' areas of expertise; and
- teaching strategies that allow deeper and hence longer exploration of problems and students' thinking about them (Murphy, 1997, p.20).

Here the emphasis is mainly on changing girls and changing the curriculum to suit girls, what is described by Kristeva (1981) as radical feminism.

Changing feminist critiques of science are moving away from this interventionist approach and as pointed out by Murphy (1997) focusing more on the deconstructions and redefinition of the curriculum and teaching and assessment practices, what Hildebrand (1996) describes as post-structural feminism. Within this framework, like Allard, Cooper, Hildebrand, & Wealands (1995) I have come to the view that understandings about appropriate versions of femininity "vary across different cultures, are informed by social class, and change over time both individually and collectively. They can be endorsed, negotiated, challenged, reconstructed and resisted on an individual and collective basis" (p. 21). Within this frame of reference, it is no longer appropriate to explore equity issues simply in terms of gender but

gender issues need to be considered together with other issues such as class in order to challenge the dominant paradigm of assessment practices and develop a more equitable definition of assessment. Traditionally, however as described by Murphy (1997) initial research on gender was concerned with establishing whether any gender differences existed in achievement between boys and girls, what was causing these differences and how they could be overcome. An overview of these initial research initiatives is important before any deconstruction and redefinition of curriculum and assessment practices can be carried out.

6.2.1 Gender differences in achievement in science

There is in fact a great deal of research evidence (Hacker, 1992; Gipps and Murphy, 1994; and Murphy, 1997) which shows significant differences in science achievement. Research results based on a number of international studies such as the first and second studies of the Internal Association for the Evaluation of Educational Achievement and the surveys carried out by the Assessment of Performance Unit show that these differences are in favour of boys, increase with age and are greater in the physical than in the biological sciences. The second IEA study showed significant reductions in the performance gap between girls and boys. This could be due to a real difference brought about by the introduction of effective programs to overcome gender differences (Keeves, 1992) or due to changes in the actual examination such as the elimination of multiple choice questions which seem to favour boys (Gipps and Murphy, 1994).

Current research in the U.K seems to suggest a reversal in this trend. Elwood and Comber (1995) report that at sixteen, girls are outperforming boys in a range of subjects and leave school better qualified than their male counterparts. Elwood (1994) and Cresswell (1990) also report that girls perform much better than boys on course-work and in Australia, Hildebrand (1996) argues that changing assessment practices have led to girls performing just as well as boys in physics. This research evidence was also picked up by sensational journalism and *The Guardian Weekend, 22nd October 1994* reports that the GCSE results of that year showed that in

physics 73.7% of girls were getting A to C grades while only 69.2% of boys achieved these grades.

Several reasons can be given for this apparent change in performance. Harding (1996) and Elwood (1996) argue that the introduction of a broad and balanced science has led to just as many girls choosing the sciences as boys and has led to girls performing slightly better than boys in a domain which has previously been shown to be favourable to boys. Like, Murphy (1997), however, I would argue that these "changes in the trends and patterns that have emerged depend on the definition of science achievement and on the assessment instruments used. The broader the definitions of achievement particularly in relation to the practical aspects of scientific activity and fewer multiple choice items, the more likely it is for females' superior performance" (p. 7). I would also argue, that a greater awareness of gender issues among teachers has led to girls gaining greater confidence in their scientific abilities.

However, I would also be very cautious in my interpretation of the significance of the current research evidence in terms of equity issues. The evidence presented suggests that girls are outperforming boys in physics, but in my view this does not necessarily mean that this is opening up more opportunities for girls. In fact, as Murphy (1997) points out despite the superior performance of girls in physics, the proportion of females taking up the subject has remained low in comparison to boys. Elwood (1996) also provides evidence which suggests that girls are obtaining more of their grade Cs from the middle tier which prevents them from taking mathematics any further. This means that while girls are apparently outperforming boys, more boys have the opportunity to take up physics at A' Level.

In Malta, very little research has been carried out in the area of gender and science. Initial research by Ventura (1991) showed results similar to international research. According to Ventura (1991) research showed that in GCE O' Level physics more boys sat for the physics examinations and the pass rate was much better for boys than for girls. The introduction of compulsory physics, slightly improved the performance of girls since more girls were forced to study physics, however at least until 1990, the

performance of girls still did not match that of boys. Ventura suggests that these differences in achievement of boys and girls in physics is independent of educational content and probably due to intrinsic differences between the two sexes and to different socialisation patterns.

In more recent studies, Ventura (1997), Borg (1996) and Ventura and Murphy (1998) show that this gap between boys and girls have been closed and unlike what has been reported in the international literature there is no significant gender difference in the performance of boys and girls in Physics SEC. These results are also similar to the results which will be presented in this study. As stated previously by Elwood, however this does not mean that girls are better off than boys. In fact, Darmanin (1991) states that "despite the increasing number of girls taking physics at Ordinary Level, this has not increased the number of girls subscribing to scientific courses such as engineering at the University" (p. 131). In my view, as stated previously differences in achievement cannot be based and attributed solely to differences in gender. They have to be considered together with other factors such as class, type of school attended and special needs before any specific conclusions can be drawn.

6.2.2 Factors which influence gender differences in achievement

Initial research concerning gender differences in achievement tried to establish a single factor which determined this gender difference. The first theories were mainly biological theories which tried to establish a biological explanation for sex differences in cognitive ability. These explanations included genetic or chromosomal differences (Maccoby and Jacklin, 1974) which are inherited; hormonal differences (Whyte, 1986 and Halpern, 1992); and the use of the left and right hemisphere of the brain in a different manner (Erikson and Erikson, 1984). Drawing on the reviews of these biological explanations which are also described by Gipps and Murphy (1994), I am of the view that there is not enough research evidence to support these biological theories. Like Peltz (1990), I would argue that environmental and cultural differences have a much greater impact on determining achievement

in science. I will also take the position that although these environmental factors have been mostly researched in isolation, they cannot be treated as such. Recent post-structural feminism suggests that gender differences are multidimensional and based on a number of factors. In my view, therefore gender differences are influenced by a variety of factors and change across cultures and over time.

Drawing on a number of sources (Gipps and Murphy, 1997; Harding, 1996; Johnson and Murphy, 1986; Murphy, 1997 and Murphy and Elwood, 1997), there are a number of factors which are commonly cited as determining gender differences in achievement. These factors include:

- differences in the experiences of students;
- different interests in science;
- the image of science as "masculine";
- teachers' expectations and students' confidence in science;
- different styles of learning and working;
- single-sex or mixed schooling.

6.2.2.1 Differences in experiences.

Many research findings (Murphy, 1991; Kelly, 1985; Stobart, Elwood, & Quinlan, 1992 and Johnson and Murphy, 1986) show that girls' and boys' experiences with science differ both outside of school as well as in school. The research shows that from infancy girls are discouraged from playing with mechanical or scientific toys while boys are encouraged to engage in these activities. Johnson and Murphy (1986) show how the play activities of boys include dismantling mechanical objects, assisting with car maintenance and playing with constructional and electrical toys. Girls on the other hand are more frequently involved in domestic and nature study activities such as cooking, sewing, caring for animals, gathering flowers and so on. These play activities give boys a more concrete basis from which they can assimilate new scientific knowledge and understanding when they enter school. Like Murphy (1997), I would argue that the students take these initial experiences with them to school and continue to develop them both within and without of school.

6.2.2.2 Different science interests.

The differential play experiences of boys and girls both in and out of school also result in different interests in science (Murphy, 1997). Studies (Jones and Kirk, 1990, Sjoberg, 1989, and Johnson and Murphy, 1986) have shown that girls are more interested in issues concerning health, nutrition and reproduction while boys are more interested in technical and technological applications. Girls are also more interested in science which is placed in a social context (Chetcuti, 1993 and Harding, 1996). While boys are more interested in those aspects of science which correspond to their intended careers and anticipated needs, girls are more interested in the relationships science helps them to build with other people (Peltz, 1990). In my view, these different science interests also result in different attitudes to science.

6.2.2.3 The image of science as "masculine".

Murphy (1990) argues that "how students interact with science also depends on the image of science which is represented to them in their culture. The uniformity of gender differences across countries gives support to the contention that science has a masculine image in many countries" (p. 2). Kelly (1985) states that there are at least four distinct senses in which it can be argued that science is masculine. The most obvious is in terms of numbers - who studies science at school, who teaches it, who is recognised as a scientist. Secondly there is the packaging of science, the way it is presented, the examples and applications that are stressed. Thirdly, there are the classroom behaviours and interactions whereby elements of masculinity and femininity developed in out-of-school contexts that are transformed in such a way as to establish science as a male preserve. Finally there is the suggestion that the type of thinking commonly labelled scientific embodies an intrinsically masculine view.

The view that science is a masculine endeavour is very widespread. In a study which I carried out in 1992 (Chetcuti, 1992), I asked a group of girls to draw a scientist. Invariably they drew a scientist who was male, wore glasses, stood close to a laboratory bench, held instruments, wore a lab coat and had a beard or a moustache. When asked why they drew all male scientists they replied that they thought that men were more suitable to be

scientists and that the media presented scientists as being male and the women when they appeared only seemed to be helping the men rather than doing things themselves. Drawing on this research evidence, like Gipps (1996a), I would argue that in the current technological age, the influence of television, videos, computer games and reading material have a very significant impact on what young people learn about their gender identity, and the view of science as being masculine.

6.2.2.4 Teachers' expectations and students' confidence.

Murphy (1997) argues that "the expectations of teachers have been found to have a direct impact on students' beliefs about their competence" (p. 12). The fact that according to Murphy, the majority of teachers did not feel that female students had the confidence to succeed in physics and to pursue a career involving physics has a direct influence on the way girls look at their ability in physics.

Other research carried out by Elwood (1996) shows how teachers' expectations influenced girls performance in science. Elwood describes how boys in comparison with girls were seen to be relatively self-assured, anxiety free and unperturbed by exams. Girls on the other hand were perceived to be more motivated and conscientious. In another study, Elwood and Comber (1995) point out that teachers agreed that females were less confident in verbal expression of their ideas and less self-assured about success, while males were seen as more likely to participate in class discussions and less anxious about failure in the subject. Gipps (1996) also suggests that boys' failure tends to be attributed to something external to them (poor teaching, inappropriate method) while girls' failure is attributed to something in them (their intellect or their work).

6.2.2.5 Different styles of learning and working.

Murphy (1997) argues that teachers' views of students have also been found to be influenced by students' styles of response. She describes how the APU surveys of English showed that girls' preferred style of written response was extended, reflective exposition, while boys' style of response

was more often episodic, factual and focused on commentative detail. Other research (Gipps and Murphy, 1994) has shown that the type of question for example multiple choice question also disadvantages girls and that girls perform much better on extended answers where they can communicate their views. In my view this difference in style of response is a result of different learning experiences outside of school and early reading patterns developed while children are growing up.

Research (Murphy, 1989; Hildebrand, 1996 and Harding, 1996) also shows that girls value the circumstance in which tasks are set more than boys and that the girls perform competently and with more enjoyment in tasks where they can use their knowledge in a practical context, in an open task which allows them to determine what is relevant to the solution. Boys on the other hand tend to consider issues in isolation and judge the content and the context to be irrelevant. This means that when constructing assessment tasks, one has to take into serious consideration, the context of the task and allow for multiple and subjective responses to be given.

6.2.2.6 Single-sex and mixed schooling.

A number of authors (GASAT, 1997; Forrest, 1992; and Gipps and Murphy, 1994) suggest that girls in single-sex schools appear to be at an advantage in comparison with their counterparts in co-educational establishments. The evidence suggests that girls benefit in a variety of ways from working without the distraction of boys, although mere segregation is not an automatic guarantee of success. In Malta, Darmanin (1991) argues that the combination of single-sex schooling and compulsory physics has increased the number of female students taking up science in secondary schools, and the performance of girls in these subjects.

Other authors however feel that research about single-sex schooling is still inconclusive. Young (1994) argues that when student achievement in single-sex and co-educational schools has been compared, studies often neglect to account for other factors such as home background and attitudes. He points out that "the higher achievement of students in single-sex schools could simply be an artefact of the higher performance of students from upper class

backgrounds attending private schools" (p. 315). While in Malta, the evidence shows that this is not the case, since all schools not only private schools are single-sex, drawing on my experience with the research, like Young I would argue that other factors besides single-sex or co-educational settings play a role in determining educational achievement. In my view, the home background and socio-economic status of the students and the type of school itself, that is, whether it is private or state interact with single-sex or mixed schooling to influence the achievement of students.

Murphy (1997) sums up the factors which influence gender differences in achievement very concisely. She states that:

> Young children's learnt gender preferences lead them to pursue particular interests which provide them with different learning opportunities and importantly align them in different ways to schooling and to subject learning. The combination of girls' and boys' differential learning and interests out of school and teachers' and students' treatment of those in school lead to differences in performance between boys and girls, often unrelated to students' ability. They also, as the evidence has shown, lead to underachievement as many children channel themselves away from certain learning experiences. Furthermore, teachers often unwittingly compound this by interpreting aspects of students' behaviour and styles of learning and communication in terms of their ability when they actually reflect differences in opportunities to learn (p. 22).

This continues to provide further evidence for the idea that gender differences in science achievement can no longer be conceived in terms of gender alone. As pointed out initially views of gender have now changed considerably and are informed by factors such as class and type of school, vary over time and across cultures. This is even more evident later on in the data presented in this study which shows that all these factors interact with each other and have to be considered together in order to redefine assessment practices and develop a more equitable definition of assessment. As stated by Lewis (1996) "to treat all girls and women as a single category is

to deny the diversity of class and ethnic backgrounds of women and girls" (p. 211).

6.3 Social Class, Achievement and Educational Life Chances

As I have argued previously gender differences cannot be viewed in isolation since other factors such as class, race, type of school and special needs are intertwined with it. As pointed out by Meighan (1981) the same thing can be said of social class especially since there are strong correlations between class and various other factors such as parental attitudes and intelligence. "It has therefore become almost a commonplace to say that classes are gendered and that gender relations are class-specific" (Bradley, 1996, p. 19). In my view, explanations about social class need therefore to be stated with much care since the number of complex variables as described by Meighan (1981) "so tortuously interconnected" (p. 290) make any direct relationship fluid and uncertain. In fact as pointed out by Bradley (1996) most research on class was carried out in the 1950s and 1960s with interest switching to other aspects of inequality in the 1980s.

6.3.1 A definition of social class

Bilton, Bonnett, Jones, Skinner, Stanworth & Webster (1996) define social class as a term widely used in sociology to differentiate the population into unequal layers or strata based on income, wealth, gender, ethnicity, power, status, age, religion or some other characteristics. These inequalities are according to Hamilton and Hirszowicz (1993) characterised by three basic concepts, (a) *differentiation* which means that no two human individuals are alike in every respect, in either their personal characteristics, behaviour or experience; (b) *ordering* which refers to the fact that individuals can be placed in relation to one another on a scale with respect to one or more differences; and (c) *evaluation* which means that these differences are ranked according to some form of criteria and which may give privilege and power to certain individuals over others.

This has led to a definition of class on the basis of occupational position. In this way individuals are ranked according to their occupations as Class I and II which include the professionals, administrators, managers and proprietors; Class III, IV and V which include the non-manual workers, self-employed artisans, technicians and foremen; and Class VI and VII which include all manual workers (Halsey, Heath and Ridge, 1980). These can also be referred to as middle-class occupations and working class occupations.

According Bilton et al (1996) this idea of class has been strongly criticised by feminists and like them I would argue that this idea of class completely ignores the class position of women in households and assumes that the female partner shares the same class position as the man. As argued by Bilton et al, this division according to occupation is no longer valid and has to be reviewed. Unfortunately most of the studies carried out with regards to class and achievement have been based on boys and men and on this kind of stratification.

Bradley (1996) also argues that the definition of class as a social category which refers to the lived relationships surrounding social arrangements of production, exchange, distribution and consumption is no longer valid. She argues, that this is only a narrow conception of class and that class should be seen as referring to a much broader web of social relationships including for example, lifestyle, educational experiences and patterns of residence. Bradley therefore gives a more comprehensive definition of social class which is more fluid and fragmented. She states that class:

> ...is a label applied to a nexous of unequal lived relationships arising from the social organisation of production, distribution, exchange and consumption. These include: the allocation of tasks in the division of labour (occupation, employment hierarchies); control and ownership relationships within production; the unequal distribution of surplus (wealth, income, state benefits); relationships linked to the circulation of money (markets, shareholding, investment); patterns of consumption (lifestyle, living arrangements); and distinctive cultures that arise from all of these (behavioural practices, community

relations). Class is a much broader concept than that of occupational structure although the latter is often taken as a measure of it (p. 46).

Like Bradley I would argue that within this framework class affects numerous aspects of the lives of individuals and can no longer be seen simply in terms of occupational status.

6.3.2 Social Class in Malta

In Malta, social class is still defined on the basis of the father's occupation, though there are differing views about whether this is an actual realistic picture of the situation. Darmanin (1991), for example, argues that a sharp sense of class exists in Maltese society. A survey carried out in 1979 on patterns of occupational and residential area prestige shows how social class was in fact related to area of residence, attendance at private schools and level of education. Class and prestige was also very strongly related to attendance at private schools.

Baldacchino (1993) however, argues that while class distinctions do exist in Malta, the classes cannot be clearly defined or outlined. He points out a number of characteristics which are peculiar to Maltese society. A summary of these characteristics includes:

(a) the importance of kin and friendship networks which enable individuals to circumvent institutions, laws and procedures to maximise their interests;

(b) the importance of partisan political sympathy/antipathy as an institutionalised network. The reds and the blues are each armed with a particular set of economic, religious and moral values and vocabulary, each with a fully fledged cultural industry geared to ensure the preservation and social reproduction of die-hard supporters;

(c) small scale enterprises which generate distinct employer-employee relationships;

(d) "perverse" distribution of income where skilled manual labour is a better source of income than any blue collar profession;

(e) the resort to moonlighting, part-time work, do-it-yourself jobs and multiple jobs;

(f) the relative ease with which some individuals can develop expertise; and

(g) the difficulty of classifying public sector jobs.

As Baldacchino points out, in Malta "it is not what you do (that is, occupation) or what you know (that is, formal qualification) which matters, but more importantly, who you know and who you are, as well as who you know well and who would therefore not just promise but will, at the end of the day, deliver the goods" (p. 26). This relates to the fragmented definition of class given by Bradley (1996) where it is apparent that class is multi-faceted and depends on "a much broader web of social relationships" (p. 19) than occupation on its own.

I would argue that in Malta individuals tend to place themselves within specific classes and identify themselves as upper, middle or working class to create the class structure described by Darmanin (1991). This structure is however closely related not only to education and educational achievement but also to the web of social interconnections described by Baldacchino (1993). This creates a class structure based on a variety of lived relationships and inequalities.

6.3.3 Class and educational achievement

The relationship between class and educational achievement as stated previously was the focus of research carried out in the sixties and seventies. The focus of such research was the debate of whether schooling actually brings about social equality and equity or whether it serves to produce privilege from one generation to the next. According to Sultana the concern of educational theory and research with class and education has been the idea of social mobility and the use of education as a means of bettering one's position in life. Sultana (1991) argues that "the promise that education holds out for many parents is that through a sustained effort and investment in school work on the part of their children, these can hope for a better quality of life than they themselves had" (p. 206).

The debate which led to most of the research about class and educational achievement was therefore mainly concerned with whether the school influenced educational achievement or whether regardless of the school the initial backgrounds which students started off with influenced achievement. Initial studies carried out seemed to indicate that schools made no difference. Tyler (1977), for example reports that differences between schools and classrooms in environmental variables such as teacher/pupil ratios, teaching methods, facilities and ancillary services, streamed versus non-streamed grouping apparently had only marginal effects and that "school environments make little difference to achievement, credentials and to life chances" (p. 74). In my view and based on the evidence presented later on in this study, the interaction between class and school does in fact play an important role in determining achievement and future life chances.

There are a number of studies which try to show that there is a clear link between class and educational achievement. For example in Malta, Sultana (1991) argues that "there is a clear link between educational achievement and occupational success" (p. 215). He argues that in Malta, a student's origins influence if not determine educational achievement. In other words the higher the social class background of a student is, the more likely she or he is to remain in school and do well.

In the U.K. a study carried out by Halsey, Heath and Ridge (1980) established that boys from a privileged school or from a privileged social background had a much higher chance than his unprivileged contemporary of gaining a place at University. Meighan (1981) also argues that upper and middle class children tend to have better educational life chances in terms of examination results and full time further education. A review of the literature by Kelsall and Kelsall (1971) also shows that children from lower classes enter school with initial handicaps when compared with middle and upper class children. The studies reviewed indicate that schools maintain the social position of their students, so that working class students obtain working class jobs and so on.

Another study by Ryrie (1981) shows that there is a clear link between the level of the father's occupation and the success of students in O' level examinations and that the schooling system results in life chances being offered to young people largely according to the social class to which their parents belong. A more recent study by Hildebrand (1996) also shows that both in enrolment patterns and achievement patterns girls from low socio-economic backgrounds are well behind girls from areas with higher proportions of the population having tertiary qualifications and higher status occupations.

While these studies have played an important role in establishing that class and school type do influence educational achievement, I would argue that the main problem with these studies is that the focus is on the disadvantaged child rather than on the curriculum, pedagogy or forms of assessment and on the underlying assumption that class can be looked at as a single category without taking into consideration all the other factors which can influence educational achievement. Therefore, I would criticise these studies on the basis that (1) they were carried out mainly with boys; (2) they had a predominant focus on the sociological rather than the pedagogical and educational aspect and (3) they try to establish a unilinear link between class and educational achievement rather than acknowledging the multifaceted dimensions of the interactions between class and achievement.

While they can be criticised these initial studies all seem to point to the view that the class organisation of society is reproduced by the school. This is the main argument put forward by Bourdieu and Passeron (1990) who argue that "the organisation and functioning of the school system continuously and through multiple codes retranslate inequalities in the social level in inequalities in the academic level and vice versa" (p. 158). This argument is also put forward by Bradley (1996) who states that members of the privileged classes are able to pass on to their children both material advantages and cultural advantages which give them a headstart in life. I would agree with Bradley and like her argue that middle class parents can buy into the expensive private education system which offers smaller classes, better resources and a more firmly academic atmosphere, while working class

children are often handicapped from the start by their parents' lack of resources for educationally useful expenditure and lack of knowledge in the system. In the light of the large differences in achievement between students who attend Private Schools and those who attend State Area Secondary Schools observed in the present study, I would tend to agree very strongly with Bradley.

Like Baldacchino (1993) I would therefore argue that while in some cases education does help one better one's life chances, in most cases the school helps to ingrain class location by acting to reproduce the given social structure ensuring that the working class kids get the working class jobs and so on. In my view however, this does not depend only on social class, several other factors such as type of school and language interact with social class to determine educational achievement and future life chances. Baldacchino argues that certification and educational achievement are not the only factors which determine future educational opportunities but that "the vital contacts and the formative interactions and impressions built up at school, and within a particular school or class may be even more powerful assets at the end of the day" (p. 29). While I agree with Baldacchino that all these factors are influential, I would disagree that certification and achievement are not also important. As will be shown later on in the study certification forms an integral part of the vital contacts and formative interactions described. What I would argue is that the type of school and the class positions associated with the schools interact with success in examinations to secure personal and social classification within a society.

6.3.4 Type of school and educational achievement

While as shown in the previous section some authors would argue that the school has no effect on educational achievement, Hopkins, Ainscow and West (1994) argue that in the past fifteen years, a vast amount of evidence has been accumulated to support the common sense notion that the internal features of individual schools can make a difference to pupil progress. This research on effective schools consistently shows that "schools can also contribute differentially to pupil achievement. The school a child goes to does

matter" (Hopkins et al, 1994, p. 44). This does not mean to suggest that class differences and initial disadvantages can be eliminated but rather that the school can in some way make a difference. As stated by Riddell and Brown (1991) "the educational attainments of middle class children in a particular school are still likely to be higher than those from a working class background. But in a school which serves a deprived area, the progress of children from a working class background may be greater than the progress of middle class children in a less effective school" (p. 2).

While most of the research on effective schooling has been carried out with regards to the effectiveness of individual schools, this study has also established that the type of school, whether private or state or whether Junior Lyceum or Area Secondary is also important. These results are similar to earlier research carried out regarding class and achievement in the U.K. Halsey et al (1980) show that in a tripartite system, pupils entered a relatively inflexible institutional structure; once allocated to a grammar or secondary modern school, intelligence had little effect on one's future career. The able working-class boys selected for grammar schools indeed had a good chance of doing well (at least as far as O' levels); but equally able boys (from whatever social class) selected for secondary modern schools had very little chance. Therefore the type of school does matter.

In my view, the importance of the school effectiveness research has been the move from concentrating on the disadvantaged child and trying to find reasons to explain those disadvantages to a concentration on the curriculum, pedagogy and assessment practices of schools. As stated by Hopkins et al (1994):

> Not only did the effective schools research conclude that schools do make a difference, but there was also agreement on two further issues. First, the differences in outcomes were systematically related to variations in the school's climate, culture or ethos. Second, the school's culture was amenable to alteration by concerted action on the part of the school staff. Although this is not an easy task, the evidence suggested that teachers and schools had more control than they might have imagined over their ability to change their situation

(p. 44).

Within such a context, the implementation of a pedagogy which is fair for all groups becomes even more important. I would argue that because class is related to so many other factors, it is very difficult to establish a direct relationship between class and educational achievement. Furthermore, if the focus is on the child and trying to help the child achieve his or her best potential independent of the class and family background, then it is useless to try and eliminate these differences. Differences in class and background exist and will continue to exist, however as argued by Bradley (1996) within a postmodern society these distinctions of class are becoming more free-floating and individuals are better able to choose who they would like to become. This personal and social identity can be better developed within schools which provide an effective pedagogy for all students and an assessment system which encourages positive achievement rather than failure.

6.3.5 Language and educational achievement

Another factor which is closely related in the Maltese context to both class and type of school is language. Like Baldacchino (1993), I would argue that the widespread use of the English language in Private schools for example, provides a wider socio-economic capital compared to parochial Maltese. Camilleri (1995) also shows that students in area secondary schools are taught mainly in Maltese with English considered to be more appropriate for students in Junior Lyceums who are considered to be more able.

In another study carried out by Ventura (1991a), the results of a postal questionnaire sent to science teachers in area secondary schools showed that teachers used more Maltese with the less able classes than with the more able ones and with boys more than with girls. The teachers also felt that students would perform better in a science examination in Maltese irrespective of ability but that the less able students were expected to gain more than the able ones. This prediction was tested by preparing a science examination in both Maltese and English and administering the test in thirteen

classes. Each class was divided into two equal groups with one half taking the test in Maltese and the other half in English. The results of this test showed that the performance of the more able in science was independent of the language of the test, but the less able students obtained far better results if they took the test in Maltese although their performance was still very weak. This seems to confirm the idea that performance in certain subjects particularly in the science subjects is related to the language of instruction. It also establishes the need for a specific language policy when considering the development of an effective pedagogy and assessment system which is fair for all students.

6.4 Equity and the development of a new assessment paradigm

In the previous sections, it has been argued that in order to ensure that assessment practices are fair for all students irrespective of, in this case, gender and class, one has to recognise that assessment practices are gendered, are informed by social class and vary over time both individually and collectively. Like Hildebrand (1996) I have come to the conclusion that the way in which we select "particular assessment tasks and techniques we are giving clear messages to students about what is valued as knowledge and which ways of learning are rewarded" (p. 170). Therefore, in my view, we should not be looking at the deficiencies of girls or boys or class deficiencies or how to get individuals to perform on an equal footing but like Hildebrand I would prefer to focus on "effective pedagogies for all students which deconstruct and redefine the implicit gendered and class dualisms which act as powerful stabilisers of current paradigms" (p. 170).

Hildebrand (1996) advocates an effective pedagogy for both boys and girls based on a more equitable form of assessment. A summary of these characteristics includes:

- *Rewarding holistic learning:* as shown in the previous section many students prefer to learn concepts situated in their social context rather than abstract theories. Therefore assessment tasks ought to be set

within a social context and reward synthesis of ideas where theory and practice are clearly interconnected.

- *Encouraging qualitative understanding:* many students want feedback on their work that goes beyond a quantitative grade. Therefore oral and extended written feedback should be provided to students.

- *The means should effect the ends:* all forms of working styles such as research and co-operation should be valued by assessors.

- *Intrinsic motivation should be encouraged through explicit guidelines:* teachers and assessors should co-operate with students by providing clear guidelines and criteria for evaluating student work.

- *The knower is not distanced from the known:* recognition of the interactions between the knower and the known would suggest that more equitable forms of assessment would use negotiation of starting points for learning, multiple data collection techniques and a variety of assessors.

- *Multiplicity provides higher quality of information:* again this involves multiple assessors, multiple collection devices and allowing the students more ownership over their own assessment.

- *Valuing values:* this implies that there can be no such thing as value-free gender constructions, value-free science or value-free assessment. Our values are implicit in all the choices we make.

These characteristics are very similar to the characteristics of a new assessment paradigm presented in Chapter Four. In my view, Hildebrand focuses more on the gender issue and the post-structural issues of gender, science and curriculum as being a social construction. However, the basic tenet remains the same and in my view these ideas are challenging and innovative and open up new horizons in the world of assessment.

The underlying view which I have presented is that gender is a social construction which can be shared across cultures and vary between them, can change over time and is neither neutral nor value free (Murphy, 1997). Within this framework, I would argue that the question is no longer one of trying to equalise the scores of boys and girls or middle-class and working class individuals but rather ensuring a fair assessment where individual students can show what they have learnt and understood regardless of whether they are male or female, middle-class or working class. Gipps (1996a) sums this view very aptly in her suggestion that we should "not simply enhance the performance of girls, or only promote equity in the classroom...but we should encourage a society in which both genders can work together in mutual respect" (p. 270).

PART THREE

METHODOLOGY

CHAPTER SEVEN

Developing a Theoretical Framework

7.0 Situating the Research

Once the research questions had been identified, the second step was to determine what information would best answer these research questions and which strategies would be the most effective in obtaining this information. This involved preparing a plan of action or research design which is described by Merriam (1988) as being similar to an architectural blueprint, a plan for assembling, organising and interpreting information. According to Merriam the selection of the particular design then depends on how the problem is shaped, by the questions it raises and by the type of end product desired. This appears to be a simple enough matter, however the development of a research design is in reality more complicated than simply choosing a number of research strategies to obtain information. As pointed out by Denzin and Lincoln (1994), "a research design describes a flexible set of guidelines that connects theoretical paradigms to strategies of inquiry and methods for collecting empirical material" (p. 14).

Therefore, the first part of developing a research design appears to be situating the research within a particular paradigm and within a particular theoretical framework from which specific methodological practices can then be developed. As pointed out by Denzin and Lincoln (1994) each of these strategies is connected to a complex literature; each has its separate history, exemplary works and preferred ways for putting the strategy into motion. As I started to delve into this complex literature, I was immediately faced with a number of dichotomies and dualisms.

The literature seemed to imply that the different paradigms, which is defined by Maykut and Morehouse (1994) as "a set of overarching and interconnected assumptions about the nature of reality" (p. 4), were in direct conflict with one another. The debate about "quantitative" versus "qualitative"

research was widely depicted in the literature. Polinghorne (1995), for example, states:

> In the quantitative approach to research categories are often selected prior to the collection of data. Researchers spell out in advance the operations of measurement and observation that determine whether an event or thing is to be considered an instance of the categories of interest. In contrast with the preselection of categories of quantitative approaches, qualitative researchers emphasise the construction or discovery of concepts that give categorical identity to the particulars and items in their collected data (p. 10).

The implication of all of this seems to be that research has to be either completely quantitative or completely qualitative. Furthermore, a number of strategies of inquiry exist within each field, namely symbolic interactionism, phenomenology, ethnomethodology, critical inquiry, constructivism and feminist theories. Each seemed to be established within the literature as a separate school of thought with a separate identity and I initially felt that my research had to be situated within a particular school of thought. However, though I tried very hard to identify myself with a particular school of thought I found it almost impossible. There were issues which I agreed with and issues I disagreed with within each paradigm and I could not honestly categorise myself within a particular paradigm.

Therefore, I decided that I had to create my own theoretical framework from which I could then justify the choices made in my research design and provide an argument for the selection of the tools with which I would embark on my exploration of the questions which I was asking in the study. As I continued to read the literature other words continued to crop up, words like ontology, epistemology, methodology and research methods. At first it was very difficult to distinguish between these technical terms, however, I realised that I had to resolve this difficulty before I could start the research. I therefore returned to the literature for some enlightenment.

Harding (1987) distinguishes between research method, methodology and epistemology. She describes a research method as a technique for gathering evidence, a methodology as the theory and analysis of how

research does or should proceed and an epistemology as a theory of knowledge which answers questions about who can be a "knower" and what kind of things can be known. Stanley and Wise (1990) give a similar definition of epistemology as a theory of knowledge which addresses central questions such as who can be a knower and what can be known, what constitutes and validates knowledge and what the relationship should be between knowing and being. They then go on to describe methodology as a perspective or broad theoretically informed framework and method as the techniques or specific sets of research practices such as surveys, interviews and ethnography.

These definitions are fairly similar and suggest that epistemology has to do with knowledge and methodology with the execution of this knowledge. The definitions given by Harding and Stanley and Wise are adequate but in my opinion are still a bit vague. In my view a more detailed description of these terms is given by Griffiths (1998) who explains these terms in greater depth. She states that "epistemology encompasses a set of questions and issues about knowledge, what it is, how we get it, how we recognise it, how it relates to truth, how it is entangled with power" (p. 37). She then describes methodology as an offshoot of this set of questions which "refers to the theory of getting knowledge, particularly in research contexts and provides a rationale for the way that a researcher goes beyond a simple account of techniques and provides reasons for using such techniques in relation to the kind of knowledge that is being collected" (p. 37). Griffiths argues that methodology is of particular importance in research about human beings. She argues that unlike the physical sciences, "educational research is always on/for/with other people and getting knowledge on/for/with other people is a complex matter because of three main reasons, human agency, social relations and ethics" (p. 37). Since my study was about people, I tried to follow Griffiths and considered epistemological and methodological issues to be of extreme importance in the success of the research. For the purpose of this study, I will therefore use ontology in relation to questions about reality, epistemology in relation to questions about knowledge and methodology about how this knowledge can be acquired.

7.1 Epistemological and methodological Implications

Using the above definitions, a number of conflicting ontological and epistemological assumptions can be found in the literature. Where one aligns oneself within these divisions then determines the kind of methodology one will use to carry out the research. The kinds of questions asked are well described by Cohen and Manion (1994) who use the work of Burrell and Morgan to define a number of assumptions of an ontological and epistemological kind. The first assumptions are of an ontological kind and ask questions about the very nature of the social phenomena being investigated. The authors ask whether social reality is external to individuals imposing itself on their consciousness from without or whether it is the product of individual consciousness. They ask whether reality is of an objective nature or the result of individual cognition, whether there is a given "out there" in the world, or whether it is created in one's own mind.

This leads to the second set of assumptions made by Cohen and Manion which are of an epistemological kind. They concern the very basis of knowledge - its nature and forms, how it can be acquired and how communicated to other human beings. The authors ask whether it is possible to identify and communicate the nature of knowledge as being hard, real and capable of being transmitted in tangible form, or whether "knowledge" is of a softer, more subjective, spiritual or even transcendental kind, based on experience and insight of a unique and essentially personal nature. How one aligns oneself in this particular debate profoundly affects how one will go about uncovering knowledge of social behaviour. The view that knowledge is hard, objective and tangible will demand of researchers an observer role, together with an allegiance to the methods of natural science; to see knowledge as personal, subjective and unique, however, imposes on researchers an involvement with their subjects and a rejection of the ways of the natural scientist.

According to Cohen and Manion these assumptions have direct implications for the methodological concerns of researchers since the contrasting ontologies and epistemologies will in turn demand different research

methods. They conclude that building from an epistemological and ontological framework we come to the methodology of the research which describes and analyses the methods used in the research in order to throw light on their limitations and resources and to help us understand the research process. On reading Cohen and Manion, I started to develop my own theoretical framework which was mainly that while there is an existing reality, it is not accessible in the same way and that all knowledge is highly subjective and interspersed with values. This led me to a qualitative methodology. However, this is very simplistic and I felt that I had to ask three main questions in order to situate myself within a particular theoretical framework. These were:

(1) the ontological question: what is the form and nature of reality and what can be known about it, do facts have their own reality or are they created depending on the values of individuals;

(2) the epistemological question: what can be known and who can be a knower, can the knower objectively obtain knowledge or does the subjective positioning of the knower influence what is known; and

(3) the methodological question: how does the "knower" go about getting knowledge.

7.1.1 The Ontological Question: Facts or Values

Guba and Lincoln (1994) argue that historically there has been a heavy emphasis on quantification in science as well as in the social sciences. They describe this emphasis on quantification as "positivism" which is based on realism, the idea that reality or facts exist driven by immutable laws and mechanisms. Research within this paradigm can therefore discover a given truth or reality. This kind of research is generally known as quantitative research and is based according to Jackson (1991) on the fundamental premise that the social world exists and can be measured as an object independent of individual social actors and of the researcher. Validity of this research is said to depend upon maintaining this separation. As pointed out by Griffiths (1998) the aim of these methods is to produce a kind of "god's eye view" or a formulation of knowledge which corresponds to an external

reality. The aim continues Griffiths is to stick to the facts; to ascertain the facts of the case before making a judgement on it; to discover what really happened regardless of what particular individuals might think and independent of a particular observer and her value positions.

This traditional view of reality has in more recent times been highly contested and the debate about whether facts can exist independently from values is still very widespread. Griffiths (1998), describes four positions taken by researchers regarding facts and values:

> From the first point of view, researchers expect to just stick to the facts - where facts are value free (not just interpretation free). From the second point of view, researchers or users expect that value judgements will always bias research, but that the more such bias can be eliminated the better the research. Yet a third point of view is taken by those (Griffiths included) who argue that all facts and information are value laden but this is not helpfully described as "bias" since the term "bias" depends on there being a possibility of a neutral view. This group, according to Griffiths, argues that "perspective" is a better description than "bias" since knowledge of human beings gets its meaning from the value system of the knowers. A fourth point of view (again including Griffiths) takes this further. Holders of this view are impressed by the political and social dimensions of individuals' value systems. Thus for this group, knowledge gets its meaning from the political position of the knowers, as well as from other value systems (p. 50).

For Griffiths, therefore, facts cannot be separated from values. This position is also taken by Elbaz (1988). For Elbaz "the traditional division between facts and values rests on the assumption that facts are verifiable while values are not" (p. 29). This according to Elbaz is based on the view that reality is "a homogenous consistent and non-changing phenomenon that can be verified" (p. 29). However, Elbaz disagrees with this view and argues that this division between fact and value does not allow for the complexity of our sociality. For Elbaz a fact is already an interpretation and interpretability is sine qua non to the possibility of language and communication. Like Griffths and Elbaz I have

therefore come to the view that facts are always value-laden and that even in the pure sciences, facts cannot be separated from the values brought into them by individuals. Like Du Bois (1983) I would argue that "knowledge is made up by scientists and both we and our science-making are shaped by our culture" (p. 105). Even two hard scientists such as Einstein and Heisenberg pointed out that what we see is not what we see but what we perceive. The knowledge that the world yields has to be interpreted by men and women who are a part of that world. What we call information always involves an act of human judgement (Kincheloe and McLaren, 1994).

The argument which I shall try to make is that all facts are open to human interpretation. No one can deny for example that "the sky is blue", but how blue the sky is depends on one's experience of a blue sky, the temperature associated with a blue sky, the mood created by a blue sky and so on. This is described by Berger and Luckman (1977) as the objectification of the reality of everyday life. For them the language used in everyday life provides individuals with the necessary objectifications and posits the order within which these make sense and give meaning. The reality of everyday life is therefore socially constructed and depends on the shared meanings given to it.

This is also the position taken by constructivists, who are very committed to the idea that knowledge is constructed by the individual. Schwandt (1994) describes one of the main exponents of this theory as being Clifford Geertz who believed that there is no world of social facts "out there" waiting to be observed, recorded, described and analysed by the inquirer. Rather the inquirer constructs a reading of the meaning making process of the people she or he studies. According to Schwandt (1994):

> constructivists are deeply committed to the contrary view that what we take to be objective knowledge and truth is the result of perspective. Knowledge and truth are created not discovered by mind. They emphasise the pluralistic and plastic character of reality - pluralistic in the sense that reality is expressible in a variety of symbol and language systems; plastic in the sense that reality is stretched and shaped to fit purposeful acts of intentional human agents (p125).

Like these constructivists and Eisner (1993a) I would therefore argue that knowledge is always constructed relative to a framework to a form of representation, to a cultural code and to a personal biography. Like Eisner, I would conclude that insofar as our understanding of the world is of our own making, what we consider true is also the product of our own making.

These ideas are also taken up by critical and feminist postmodernists who believe according to Kincheloe and McLaren (1994) that "facts are no longer simply 'what is'; the truth of beliefs is not simply testable by their correspondence to those facts" (p. 154). According to Griffiths (1995a) postmodernists and poststructuralists challenged the supposed neutrality of traditional ideas by arguing that the fundamental categories of "truth" and "knowledge" were not only irreducibly complex and ambiguous but also saturated with politics. Like Lennon and Whitford (1994) I would argue that all our interactions with reality "are mediated by conceptual frameworks or discourses, which themselves are historically and socially situated. We have to give up the project of providing a totalising theory of the nature of reality and recognise that we cannot unify into a coherent whole the multiple and diverse experiences which derive from the multiple situations in which knowledge producers are placed" (p. 4). The implications of all these ontological considerations include the ideas that:

(1) there is no one "true" knowledge because it is particular to the discourse (s) in which it is produced;
(2) there can never be explanatory meta-theories or meta-narratives;
(3) dualisms which structure western thought are inadequate to understand a world where such a multiplicity of causes and effects shift and interact in a complex and non-linear way (Haw, 1995, p. 142).

Therefore, like Haw (1996) I have come to the conclusion, that the truth does not exist outside of us as some kind of moral or physical absolute. As she very rightly points out, truths exist but we are responsible for the "truths" from which they are constituted. As Haw continues to point out it is through discourse that meaning and human subjects are produced and power

relations are maintained and changed. I would therefore argue that science is not "value-free".

Drawing on the work of these authors I will therefore, take the ontological position that there is no one "true" knowledge out there ready to be apprehended and observed; multiple realities co-exist and are created within the discourse of the individual and can be altered . These multiple realities are temporally, socially and culturally created and constantly shift and interact in a complex and non-linear way. This position will of course influence the epistemological and methodological considerations within the research.

7.1.2 The epistemological question: Objectivity versus Subjectivity

The main epistemological questions concern knowledge and the knower, who can be a knower, the characteristics of the knower and the relationship between knowledge and the knower. The main questions which arise in this situation are mainly about the objectivity and subjectivity of the knower. Traditionally in empirical science, the knower has assumed an objective stance. The knower remains external to the situation and observes facts or information which can be collected separately from the knower. However, as stated in the previous section in my view, this cannot be applied to educational research and research about individuals. The stand which I have taken suggests that facts cannot exist separately from values, and therefore the knower or the researcher must necessarily form part of the research process and the values and subjectivity of the researcher necessarily influence the research process.

This epistemological position is taken by many feminist researchers, especially postmodern or poststructuralist feminists. Again while this research cannot strictly be described as feminist research, it is greatly influenced by feminist epistemologies. The main influence is from feminist postmodern theories which according to Hawkesworth (1989) reject the very possibility of a truth about reality. According to Hawkesworth "feminist postmodernists use the situatedness of each finite observer in a particular

socio-political, historical context to challenge the plausibility of claims that any perspective on the world could escape partiality" (p. 536). This indicates the importance of the self or subjectivity which Griffiths (1995) describes as the subjective consciousness of an individual. Griffiths argues that none of the feminist epistemologies assume or argue that the perspective of individual human beings can be superseded by the objective view from nowhere or by a "god's eye view". All of them assume that the self as subjectivity is a starting point.

But what are the self and the subjective self ? Lyotard (1979) describes the self as existing within a fabric of relations that is complex and mobile. For Lyotard, "young or old, man or woman, rich or poor is always located at "nodal points" of specific communication circuits and no-one is entirely powerless over the messages that traverse and position him or her" (p. 15). As argued by Flax (1992) "the social self comes to be partially in and through powerful, affective relationships with other persons" (p. 203). Flax (1992) describes:

> These relations with others and our feelings and fantasises about them, along with experiences of embodiedness as being mediated by such relations which come to constitute an "inner" self which is neither simply fictive nor natural. Such a self is simultaneously embodied, gendered, social and unique. It is capable of telling stories and of conceiving and experiencing itself in all these ways" (p. 203).

I would agree with Flax that the "inner self" is created not only through itself but also through its relationship with others and by interactions which can be defined and refined by gender, class and society to form a unique self. This brings us to the definition of subjectivity as "the conscious and unconscious thoughts and emotions of the individual, her sense of herself and her ways of understanding her relation to the world" (Weedon, 1987, p. 32). This subjectivity is not fixed but is "constantly in process, being constantly constituted and reconstituted through the discursive practices each person has access to in their daily lives" (Davies and Banks, 1992, p. 2).

The importance of subjectivity within the research process is that since the research is carried out by the researcher within a specific temporal, cultural

and social milieu the researcher and the research process cannot be separated from the actual information obtained. Like Stanley and Wise (1990) I would therefore argue that individuals do not exist except as socially located beings and therefore the researchers' understandings are necessarily "temporarily, intellectually, politically and emotionally grounded and are thus as contextually specific as those of the researched" (p. 23).

The presence of the subjective self within research is highly problematic. Within traditional research, the introduction of subjectivity is thought to make the research unreliable. Griffiths (1995) points out that the upholders of the traditions argue that the subjective, in the sense of personal, anecdotal and individual has been thought to detract from the certainty, reliability and usefulness of knowledge. In response to these charges of bias, like Olesen (1994) I would argue that the term bias is completely misplaced. To the contrary the subjectivity of the researcher is a powerful resource which can be used to guide data gathering and allows the researcher to understand her own interpretations and behaviour in the research. According to Oakley (1981) what is required is sufficient reflexivity to uncover what may be deep seated but poorly recognised views on issues central to the research and a full account of the researcher's views, thinking and conduct. Following Olesen (1994), I have tried to be as reflexive as possible all throughout the research process. This is because, in my view as has been argued by Weiner (1994), "the work that we do and the perspectives that we hold are the products of the interrelationship between personal biography, our place in the social structure, and the cultural milieu and historical period in which we live, reason is value-laden and the truth socially produced" (p. 10).

Therefore, like Spender (1983), I have tried to work from the assumption that theories and perspectives do not fall from the air, ready-made and like her I try to reconstruct how I come to "know" and "theorise" the way that I do. Like Spender I have tried to keep everything open to challenge, and subscribe to a view that there are no absolutes, that meaning is socially constructed and that any theory or conceptualisation is arbitrary. This does not mean simply stating my own position and situation in the research but like Opie (1992) I have tried to engage in a fluid process of identifying and questioning ideology

(my own and that of others), my location within the literature, the personal and political implications of my own experiences and values in the choice of methodology. Like Opie I have come to the view that "it is not just sufficient to posit one's ideological position but it is necessary to continually re-examine the extent to which that ideology contributes to a failure to see beyond it and to question particular truths which adhere to it and the stereotypes which develop from it" (p. 58).

Previously, I have argued that "facts come trailing their constituent values and cannot be separated from them" (Griffiths, 1995a, p. 13). This implies that ways of knowing are inherently culture bound and that researcher values permeate inquiry (Lather, 1992). In simpler terms this means that the epistemological stand which I shall take is that the researcher is located within the research process itself and that the researcher (hence myself) brings into the research her own values, experiences and subjectivity. I felt that it was important to make the reader aware of where I was coming from, my own experiences with assessment, as my experiences would necessarily influence any values I have built and have social and political implications for the methodological choices made and for the research process as a whole. Like Haw (1995) I therefore stress the importance of the researcher's own preoccupations as a researcher. This will enable the reader to place the researcher within the text for it gives an indication of the assumptions made about what there is to be known and what is knowable. In this way the research becomes a "product of the interplay and relationship between personal biography, positioning in society, historical period and cultural context" (Haw, 1995, p. 185).

7.1.3 The methodological question: Quantitative versus Qualitative/ Insider versus Outsider

The ontological and epistemological issues discussed so far all have an important influence on the methodology of the research and the way in which the "knower" goes about obtaining information. The main points of view which I have come to hold throughout the research process are that there are no facts out there waiting to be collected by the individual and that facts are

necessarily influenced by values, values of both researcher and researched. Thus the researcher brings with her into the research her own subjectivities which are embedded in cultural, social, historical and political discourses. These ideas have implications for how the research will proceed. In my view the two most important implications are the kind of research used, whether qualitative or quantitative, and the way in which the researcher positions herself within the research situation as an insider or as an outsider.

I have already described the research as drawing a great deal on ideas from feminist theory and postmodernism. The next step was to decide whether the research would draw on qualitative or quantitative methodologies. The literature as already stated, presents the two as being diametrically opposed and the different epistemological considerations make it extremely difficult to endorse qualitative methods if one believes that there are facts out there waiting to be collected in an objective manner with no subjective influence of the researcher or vice versa. It is very difficult to accept a research made up completely of numbers and statistics if one's epistemological standpoint leads to the view that knowledge is socially constructed and dependent on the values and subjectivities of the individual.

I was therefore faced with a dilemma. My ontological and epistemological framework leaned towards the choice of a qualitative methodology, yet at the same time the nature of my research on assessment included certain statistical analysis of examination results which I believed would not provide a complete picture of the situation, but could provide a descriptive account of what was happening in the area of achievement and trigger off a number of important questions and issues. I therefore decided that I could make use of both the qualitative and quantitative methodologies in my research, however the justification for the use of each methodology would be different. Like Hammersley (1990), I felt that to insist that only qualitative data be used in case-study research is just as misguided as the rejection of qualitative data as unscientific. As Hammersley states, "one should use any data that are available, of whatever type, if they allow one to develop and test one's theory effectively" (p. 113).

Like Riddell (1989), I felt that my use of quantitative as well as qualitative methods could be justified on the grounds that far from being mutually exclusive, they could be used in a contemporary fashion. In my view, the data gathered quantitatively could be used to establish a number of descriptive statements which could then be linked to individuals' lived experiences in a qualitative manner in order to explore in greater depth the multiple realities of the situation. In methodological terms, like Porter (1994) I did not treat the quantitative and qualitative data equally. When I interpreted the data, I gave greater weight to the qualitative data. Again, like Porter I tried to build on existing methods to meet my own needs, and particularly to meet the needs of the research and the research questions. Some of these questions needed to be answered on a wider level in order to get a more global picture of what was taking place, for example of the way in which students were performing at physics SEC. A clear picture of this could only be obtained through the statistical analysis of the examination results. However, this was not enough. The statistical analysis acted as a springboard from which more in depth questions could be asked of the data and used in the interviews with teachers and students to get a more holistic and in depth view of what was actually taking place.

The main research therefore draws on a qualitative methodology mainly a qualitative feminist methodology. Denzin and Lincoln (1994) describe qualitative research as "multimethod in focus, involving an interpretive, naturalistic approach to its subject matter. This means that qualitative researchers study things in their natural settings, attempting to make sense of, or interpret phenomena in terms of meanings people bring to them" (p. 2). This is based on the view stated by Hammersley and Atkinson (1990) that "human actions are based on, or influenced by social meanings: intentions, motives, attitudes and beliefs and that in order to understand people's behaviour we must use an approach that gives us access to the meanings that guide that behaviour" (p. 7). Qualitative researchers therefore:

> ...stress the socially constructed nature of reality, the intimate relationship between the researcher and what is studied, and the situational constraints that shape inquiry. Such researchers emphasise the value-laden nature of inquiry. They seek answers to

> questions that stress how social experience is created and given meaning (Denzin and Lincoln, 1994, p. 4).

Therefore, an important aspect of qualitative research, situated according to Denzin and Lincoln (1994) within poststructuralism and postmodernism is the understanding that "there is no clear window into the inner life of an individual. Any gaze is always filtered through the lenses of language, gender, social class, race and ethnicity" (p. 12). Like Denzin and Lincoln I would argue that "there are no objective observations, only observations socially situated in the worlds of the observer and the observed. This means that subjects or individuals are seldom able to give full explanations of their actions or intentions; all they can offer are accounts or stories about what they did and why" (p. 12). According to Denzin and Lincoln, no single method can grasp the subtle variations in ongoing human experience. They suggest that qualitative researchers should display a wide range of interconnected interpretive methods, always seeking better ways to make more understandable the worlds of experience that have been studied. Therefore, in my study I tried to use a number of different methods including some statistical analysis of data, which would enable me to explore as best I could the questions which I was asking.

Another important aspect of qualitative research is what Hammersley and Atkinson (1990) describe as the reflexive nature of qualitative researcher. This has already been described in the previous section. However in methodological terms it implies that rather than engaging in futile attempts to eliminate the effects of the researcher we should go about understanding them. The role of the researcher therefore becomes central to the analysis of the research. This means according to Delamont (1992) that the researcher values the views, perspectives, opinions, prejudices and beliefs of the informants, actors or respondents she is studying and is going to take them seriously. Delamont describes each researcher as her own best data collection instrument, "as long as she is constantly self-conscious about her role, her interactions, and her theoretical and empirical material as it accumulates" (p. 9). In my view, this idea of reflexivity is important so as to

enable the reader to identify with all that has been done throughout the research process.

Closely related to this idea is another methodological issue, the issue of whether the knowledge obtained can be obtained by an insider or an outsider. Being an insider implies that the researcher is actually part of the research process, participates in the research and has a certain amount of inside knowledge by virtue of being familiar with the research context. For example, a teacher carrying out educational research will have a certain amount of preconceived ideas about education even though she may be carrying out research in a different setting. An outsider, would necessarily be the researcher who comes in from the outside and examines a particular social setting. Like Griffiths (1998) I would argue that no-one in educational research is a complete insider or outsider. However it is possible to recognise that some people are relative insiders or outsiders in specific research contexts.

As Lather (1988) points out, "through dialogue and reflexivity, design, data and theory emerge with data being recognised as generated from people in a relationship" (p. 572). The individual necessarily exists in interaction with other individuals and this enables them to create common-sense knowledge which enables them to become insiders in any situation. This is described by Berger and Luckmann (1977) who state that everyday life presents itself as an intersubjective world, a world that is shared with others. According to Berger and Luckmann we cannot exist in everyday life without continually interacting and communicating with others, these others have a perspective on the common world that is not identical to mine, but we all live in a common world, and share a common sense about its reality.

7.2 Implications for the Research

The issues discussed in the previous sections all had serious implications for the way in which I carried out my research. I started out with trying to situate the research within a specific paradigm but found that this was almost impossible to do. Like Griffiths (1998) I concluded that the best that could be

done was to look for knowledge from different perspectives in the context of the social and historical situations in which it was discovered, interpreted and constructed. The knowledge was therefore situated within a context and always subject to revision. This did not mean that I just followed my instinct in carrying out the research, most of the epistemological and methodological implications draw very strongly on feminist postmodernism. However, while I draw very heavily on these constructions of knowledge I would hesitate to call the research feminist or postmodern. It is based on many ideas derived from these paradigms but it is also inextricably intertwined with other ideas and with personal experience. The basic assumptions which have important consequences on the research are taken from Griffiths (1998), Lather (1988), Stanley and Wise (1983) and Usher and Edwards (1994). In summary, the basic assumptions made are:

(1) there is no stable and unchanging knowledge which can be objectively observed from without and there is no search for a "God's eye" perspective;

(2) all knowledge is contextual, historical and discursive. All ways of knowing are inherently culture-bound and perspectival. This implies that the subjectivities of the researcher and the researched are necessarily part of the research process, which points to the importance of the researcher's autobiography and lived experiences;

(3) the reflexivity of the research process itself which involves grounding the research within the individual perspectives and positions of the researcher and subject. This is important to connect the individual experience of the researcher with the relevant theoretical and political positionings of the researcher;

(4) knowledge is in a continual state of flux and therefore, the researcher will have to be prepared to continually reflect and re-think her understanding of the experience over time.

The consequences of these implications when translated in terms of how they influenced the research include the idea of trying to ground my research within a theoretical framework based on a number of epistemological and methodological considerations which include as described by Griffiths (1995)

attention to the politics of the research process including the insider/outsider dilemmas, and the constraints on the discourse between the researcher and the researched, and the way that all this influences the finding out of "truth" and whose truth this is. This I have been trying to do in this chapter.

In the next Chapter of Part Three, Chapter Eight I try to deal with the issue of reflexivity. Like Stanley and Wise (1983) I have come to the view that the personal is political and this meant starting the research from my own experiences and autobiography as an individual and as a researcher. The situating of myself within the research will I hope enable the reader to locate myself the individual within the research and understand why as a result of my experiences and values I have come to the positions which I arrive at within the research. I also try to be reflexive about the research process itself try to give an account of how I arrive at certain choices and certain decisions. This involved what Usher and Edwards (1994) call finding out about or researching ourselves in the sense of recognising our immersion in the historical and the social, the writing of the self in the practices, language, discourses and interpretive culture which constitute the practice of research.

In my view all these epistemological and methodological issues lead to a number of ethical issues which are discussed in Chapter Nine. All throughout the research I have tried to work from the basic tenet that the research is for and about individuals and therefore my first responsibility was towards the participants of the research. Like Clandinin and Connelly (1994) I believe that when we enter into a research relationship with participants and ask them to share their stories with us, there is the potential to shape their lived, told, relived and retold stories as well as our own. These intensive relationships require serious consideration of who we are as researchers in the stories of participants, for when we become characters in their stories, we change their stories. As researchers we are also changed, but because we enter the relationships with certain intentions and purposes and, as the ones most often initiating the research relationship, our care and responsibility is first directed towards participants.

CHAPTER EIGHT

The Research Process

8.0 Biographical Journey

Stanley and Wise (1983) argue that research should start from the experience of the researcher as a person in a situation. This autobiography is according to Weiner (1994) "a selection, an ordering, a shaping and a complex interplay between the present self and the self recalled at various stages of personal history" (p. 11). As argued in the previous chapter, the basic tenet which I feel underlies the whole research process is the epistemological idea that facts do not exist separately from values and each researcher brings with her into the research her own baggage and values. I wanted to make these values as explicit as possible, knowing that something will always be left out, so that the audience could make their own judgements about how much my own experiences have coloured my understanding of the research. The first thing which I therefore tried to do before embarking on the research was to sit down and try to describe an autobiographical journey of my experiences with assessment, since the basic research questions concerned fairness in assessment and I felt that my own experiences with assessment in school, as a teacher, and as a University official would necessarily influence the ways in which I would interpret any readings of the literature, and any discussions with the participants of the research. I therefore wanted to make explicit to the reader my own experiences so that both I, the researcher, the reader and the participants of the study could position me the researcher within the research context. The danger of this is of course that the readers will make their own conclusions about my values and experiences with which I might not agree or which I myself might not have seen. However, it is still worth the try.

Early School Years

I started attending school when I was five years old. I attended a Private Catholic Girls' School. From early days the atmosphere was very competitive with tests and end-of-the-year examinations at which students would be

awarded a placing for each subject and an overall placement in class. My parents were very strict with me. I had to score the best marks because according to my father education was the best thing in life. My parents were working hard just to pay for me and my sisters' education and so I felt that I had to live up to their expectations. I did do well but there always seemed to be something wrong - I would get 99 instead of 100, come second instead of first, and only the ultimate, a first all around would get praise out of my parents. Thus my own identity at this stage was very much influenced by these end of the year results and conditioned on achievement rather than on any intrinsic value.

Secondary School Years

Secondary school was very similar to primary school. The target became the O' levels and continuing to study. This I think resulted from my father's obsession with education. In secondary school I remember spending hours learning things by heart and then regurgitating everything for the test. I did do well but now I question how much it was that I learnt. My understanding of geography and history for example is practically non-existent because what I learnt, I learnt for the test and forgot everything soon after. This made me later on start to question the validity of an exam-oriented curriculum.

Post-secondary School

Post-secondary school was my first form of rebellion against rote learning and examinations. It was the first time in a mixed school as twelve years of my life had been passed under the sheltered protection of the nuns in convent school. Now there was a new element in my life - boys, and my priority became socialising and making new friends. I did work but I gave up learning things by heart and did make an effort to understand what I was doing. The compensation for actually trying to understand what was happening was failure in my A' levels. So for three months it was back to learning by heart and regurgitating everything word for word with the result of getting my usual high grades which enabled me to enter University.

University

There was no question of not going to University. This idea had been so ingrained in me from when I was young that I never questioned whether I could get a job or do anything else with my life. For my father this was the ultimate goal. He had missed out on this opportunity since he had to go to work to provide for his family and so he wanted for his children the opportunity which he felt cheated out of in his own life. University was just the same as post-secondary school. I was not going to make the same mistake again and try to understand. Of course we had teaching practice and this was something I really got into without having to study by rote. At times we had assignments and I enjoyed doing these but again I kept strictly to the formula by doing what was expected out of me by my tutors.

At this point results in examinations began to give me double messages and this time it was my gender which was at stake. While good results in examinations continued to bring the praise of my parents, they brought on to me the disapproval of my male fellow students. They derided my good grades and made me feel bad that I was getting better grades than them. To some extent they offered friendship but made it clear that they would not consider going out with someone who got better grades. At that time I thought that there was something wrong with me, that I was crazy to want to continue studying at the expense of a husband and a family. Now I understand that it was just a power struggle and chauvinistic men trying to get their own way and dominate me. So I used examinations to establish myself and yet in a way I began to despise examinations as they were singling me out as being different from the norm.

A Masters' at McGill University, Montreal, Canada

My attitude towards assessment began to change at McGill University in Canada where I spent two years doing my Masters. Here most of the courses were assessed by assignment and to my surprise I found that assignments and grades could be negotiated. I did not have to stick with a grade but could negotiate with my tutor the grade I wanted to achieve. This was a revelation to me as I had always thought of grades as being fixed judgements which could not be altered. Also I found that with assignments I

could be assessed without having to learn everything off by heart, that my own ideas were valued and that I did not have to regurgitate everything I had read in a book. The rote learning might have prepared me for better understanding, but it was a disadvantage for me and left great gaps in my knowledge which I still suffer from today, and this experience has especially coloured all my ideas about assessment and examinations making me a firm believer in the assessment rather than examination of individuals.

My role as a teacher

When I started off as a teacher, assessment and examinations meant a great deal to me. I spent hours calculating means and standard deviations, plotting graphs and trying to fit everyone to a normal distribution curve. However, this did not prove to be very successful. I was teaching in an Area Secondary School and I was teaching science to lower streams. Their marks at the end of the year exam which was a nation wide test were very poor and this did not seem to bother them very much. They seemed to accept these low marks as a matter of fact. So I decided to ignore the end of the year examination, stop teaching to the test and start teaching science in a way that was fun and could be easily understood by the students. I used home-works and simple tests and a journal to guide their learning and at the end of the year what the students were left with was not a mark on their report book but with a science journal which reflected all the work they had done and learnt throughout the year. The girls loved these science books and even the least motivated girls made an effort to keep their book up to standard. They took an interest in their work much more than any test or examination could have induced them to.

At this point I also became seriously worried about what tests and examinations were really doing. Since I taught in an Area Secondary School, the girls had all failed the selective Junior Lyceum entrance examination. Because of this they considered themselves failures and incapable of continuing their studies or going to University. I asked one girl why she thought this and she replied that it was because she only got low marks in her exams. So examinations seemed to be acting as a selective device and putting labels on students. I began to question whether these girls would

ever overcome the stigma associated with their low performance in examinations. At the same time the tests and examinations were not serving their purpose well as a selective device. I had students in my Form I and Form II classes who could barely read and write and yet they had passed through an examination system which was supposed to give a fairly good indication of what a student could do. Yet these students were passing through the system without any form of remediation and for all the tests and examinations leaving school practically illiterate.

My role as an assistant-lecturer and a MATSEC official

When I started to teach University students, I had high hopes that they would look at assessment and examinations in a different way, that their motivation to work would be intrinsic rather than dependent on examination results. However, I was very much in error. I found that the students at University still looked at assessment as the final grade, that mark which would make them or break them. I tried to give assignments rather than tests and give specific criteria on which marks would be awarded. However, students tended to ignore these criteria and very rarely included what was expected of them in their assignments. They were only interested in the final grade and rarely paid attention to any other form of feedback given.

In my work at the MATSEC Support Unit, I came to realise how exam oriented Maltese society is. Students pushed by their parents tried to sit for as many examinations as they could. They sat for a subject with two or three different Boards, re-sat the examination if they got a B instead of the desired A, and there was a continual sense of failure in students and parents if the required certificates were not obtained as if all opportunity had ended and all doors closed by failure in the SEC examination.

This is where I stood when I started out the research, very convinced that my own experience with rote learning and examinations had left me with very little tools to actually learn how to learn. My own work as a teacher and as a University official had convinced me that examinations were selecting against a number of individuals, namely individuals from a lower socio-economic background and I wanted to explore more what individuals namely teachers

and students thought about examinations and assessment. My own experiences with quantitative and qualitative measures had also led me to believe that my own inclinations especially when dealing with students were grounded in qualitative measures rather than numbers.

8.1 Starting out the research

In the previous chapter I argued that in any research process an important aspect is reflexivity, where the researcher makes explicit the way in which the research was carried out. This according to Ball (1993) provides methodological rigour and recounts the processes, problems, choices and errors which occur throughout the fieldwork and the research process as a whole. In this section, I therefore try to be reflective and reflexive about the research process and I try to describe and analyse, how I carried out the research process, why I made certain choices and the problems which I faced in carrying out the research.

As pointed out by Janesick (1994), once the research questions were defined, and once the theoretical framework of the research was established, the next step was to decide on the most appropriate data collection strategies, and how they could be used. The research tools used in this study were observation in the classroom, individual interviews with teachers and group interviews with students. I knew that I wanted to observe teachers and students doing physics and to talk to them about their views of physics, so the first thing which I had to decide, was where I would carry out the research and which schools would be involved in the study. I decided to carry out the research in six different schools in the Maltese Islands. The schools were representative of different kinds of schools and included a Girls' and Boys' Private school, a Girls' and Boys' Junior Lyceum, and a Girls' and Boys' Area Secondary School. The schools were chosen in different areas of the Island so as to try and get as wide a cross section of students as possible. Initially observations were carried out in a single fifth form class taking physics, physics being the only compulsory science subject taught in these schools. Fifth Form classes were chosen since I was mainly interested in the Physics Secondary Education Certificate examination which students

sat for at the end of Form Five. Interviews were then carried out with both teachers and students.

8.2 Gaining Access

Gaining access into each school was one of the first difficulties which had to be overcome. According to Delamont (1992) access negotiations are the first stage of the research journey. She describes the access process as being made up of four stages which include, initial approaches, first impressions, persevering in the face of difficulties and gatekeepers. In my case, the first stage of access negotiation was by means of a letter which I wrote to the Director-General of the Education Division asking for permission to carry out research in the schools. In the letter I gave a brief description of the research and specified the schools which I wanted to observe in. This meant that I was being very open about the kind of research, who I was and what I wanted out of the research from the very start. This is described by Maykut and Morehouse (1994) as an overt way of gaining access to research participants and settings.

Following this initial contact, I obtained written permission from the Director General of the Education Division to be able to carry out research in the schools. I then made contact with the Head teachers of the schools I wanted to carry out the research in and made an appointment to visit the schools. The Heads of school were therefore the initial formal gatekeepers. It was the Head teachers who then indicated which teachers and students I could work with. The Heads all differed in their approach to the research, some were helpful and co-operative and others dismissive of the research. Through the Heads of school I started to make my first impressions about the way in which the research would proceed and I was faced from the start with one of Delamont's stages, that is persevering in the face of difficulties.

One of the first schools I visited was Sant' Anna Girls' Secondary School. I was very nervous as this was my first attempt at starting off the research, I wanted to make a good impression since Delamont (1992) describes first impressions as being of extreme importance. I wanted to make the

importance of my research felt but ended up being very nervous instead. To make matters worse, the Head left me waiting for twenty minutes before seeing me. When I explained the scope of my research and my interest in examinations the Head immediately went on the defensive. She explained that in her school physics was not a very strong subject because the students were not very enthusiastic about learning physics and she thought that none of the students were going to sit for their SEC examination. She tried to discourage me from carrying out research in the school but I explained that it would still be interesting to explore why the students were not sitting for the examinations in the first place. So then she reluctantly introduced me to the physics teachers who were on their part quite helpful and interested in participating in the research. The teacher was very eager to voice his opinions about what he thought of physics teaching and the physics examination but again before allowing me complete access he felt that he had to warn me *"that the achievement of the girls in the school was very low and that their main problem was their lack of expression"*.

The next school I visited was San Mikiel Boys' Secondary School. Similarly since this was an Area Secondary School the Head teacher was also in my view on the defensive trying to protect the teachers and students before I had even met them and trying to vocalise his needs for the school. However, he was still quite co-operative and eager to make his own views about physics teaching heard. He explained that the teachers meant well but they could not work well due to lack of apparatus and outdated laboratories. He went on to tell me that in the previous year out of the five students who had sat for physics SEC, two had passed and that this was quite an accomplishment for a school with no resources and with little backing from the Education Division. I was introduced to the physics teacher and access to the school proceeded fairly easily.

Thus in the Area Secondary Schools, access was relatively easy though not very much encouraged. The schools are considered to cater for students at the lower end of the spectrum and the impression I got was that the Head teachers tried to apologise for this fact, got on to the defensive and were not too keen to find out what was really wrong with the system or with their

school. Their philosophy was one of survival from day to day without any major disruptions or disciplinary problems.

I then proceeded to visit the Junior Lyceums. These are also run by the State but catered for students who had passed an examination at the end of their primary school years. I first went to Dun Karm's Boys' Junior Lyceum. Here I was met by a caretaker who insisted that I explained what was my business in the school to him. I told him that I needed to speak to the Head teacher and after a discussion with the Head who I suspect used him to get rid of undesirable visitors he came back and told me, *"...you'd better tell me...you're here to do some kind of survey no..."*. I could hardly imagine myself explaining what I wanted to do to him and so I insisted on meeting the Head who eventually came out of the sanctuary of his office and said that he had too much to do and shifted the responsibility of my access to the Head of Department of Physics. I eventually met the teacher who was very helpful himself but admitted that he was a bit uncertain about how the other teachers would receive me as they were not too keen when someone came in from the outside to observe them and criticise them. I explained that this was not the scope of my research and he agreed to work with me himself. He was then really keen to air his own views about physics and started talking and talking about what he thought of the whole situation without even giving me the chance to fix an appointment for some other day when I could be better equipped for the interview. This I found was a symptom of teachers especially in State schools who felt that they were not given the opportunity to air their views especially about the MATSEC examinations. I was therefore initially viewed as an outsider since I was coming in from the outside and from the University but I also had insider qualities in that I had been both a student as well as a teacher of physics.

The next school was Santa Maria Girls' Junior Lyceum which was the only school where I found access difficult. I was introduced to the eight physics teachers by the Head teacher. This was done in a very formal manner with the Head and myself sitting in front of the teachers. This formal introduction set the tone of the whole encounter, which did not proceed very well. Like Maykut and Morehouse (1994), I strived very hard to achieve a relationship

with all the participants of the study. Rather than research subjects I viewed them as described by Maykut and Morehouse as collaborators who together with me would shape and determine what I would come to understand about them and their situation. However, apparently the teachers were so used to outsiders coming in and telling them how to do their job that they found it very hard to accept the idea that I would be different. The teachers were therefore, very stiff and not very eager to help. They were completely against observations in the classroom and did not commit themselves to any one class but agreed to discuss among themselves which class I would be able to observe. They took the attitude that my research would not change anything and that anything they said would be a waste of time. The teachers were very resistant to the whole idea of the research. They were very much against the MATSEC Board and the way in which decisions were taken by the Board. Their frustrations and sense of powerlessness were therefore reflected in their resistance to what I was proposing. At first I thought that I would change schools as I did not want to force myself upon anyone, but then I thought that it would be important to explore why these teachers felt so badly about MATSEC and so I decided to reach a compromise. This introduced me to another important aspect of any research process, what Maykut and Morehouse call "negotiation". We agreed that they and the students could be interviewed but that I would forgo the observations and carry out only one observation in the class of the more experienced teacher. This seemed to lessen my image as a figure of authority and seemed to pacify them.

The problem in this school was again one of covert and overt research. I had been very open about who I was as an individual, stating that I was doing research for my Ph.D. but they also knew that I was employed by the MATSEC Board and this seemed to colour all my dealings with them. Perhaps if I had tried to hide my identity and presented myself only as a student doing some research, their reactions would have been different, because then they would have felt in a greater position of authority. However, despite the negative effect on the teachers I was certain that I would be completely above board with all the participants about what I was doing. I believed strongly that if the participants were to be part of the

research, active participants rather than subjects, then I would have to be completely honest about who I was and what I was doing.

This raises an important methodological issue about how impressions, how the researcher and the relationship between the researcher and the researched influence the research process. In the epistemological section, I argued that researchers enter the research process trailing with them all their baggage, views and values and this became even all the more apparent to me in my interactions with the teachers at Santa Maria Girls' Junior Lyceum. I could not escape who I was as a person and this became necessarily entwined in all the further interactions I had with the teachers, in my observations of them and in my interviews with them. In this instance the personality which dominated was the Matsec official, however I was also a number of other things, I was a woman, I was relatively young and with little experience compared to some of the teachers, I already had a position at University and I myself had an elite schooling in my background. All these multiple characteristics showed up at one time or another during the research process, during my interactions with individuals and this is one of the main reasons why I have tried to be as reflexive as possible both on a personal as well as a professional level so that the audience will not be left in any doubts as to the way in which the multiple "I's" are reflected in the research.

The visits to the Private Schools were the most pleasant for me. Again this is a highly subjective opinion, which may have been influenced by the fact that I myself had attended a private school and these visits brought back memories of my own schooling. Another important factor was the environment and organisation of these schools, which the perfectionist side of my character applauded and leaned towards. At St. Peter's College I was met by the Fifth Form co-ordinator and the physics teacher who I would be working with. They were very interested in the research and immediately I noticed the difference in attitude. Here the concern was all for the boys who were referred to as *"the St. Peter's boy"* and what the teachers were doing to introduce innovations and how this influenced the planning of the school. They wanted to participate in the research because they felt that anything which might come out of the research would be useful for them to know about

and perhaps be of benefit to the school. This was in direct contrast with the teachers at the Girls' Junior Lyceum who felt that any kind of research was useless, as it was just talk but did not change things.

The Head at St. Cecilia's School was also very co-operative. I was a bit more familiar with this school and with the Head since I had been a student at this school and the Head had been my own Head teacher. So she was very interested to hear about what I was doing in my personal life as well as in my research. For her I was a symbol of the kind of girl which only St. Cecilia could produce. I was then introduced to the two physics teachers. I knew one of the teachers since she had been my physics teacher. Both teachers felt that it was important to carry out research as they felt that it would perhaps help them in the teaching of physics. This created another methodological issue, which I have previously described as the insider/outsider dilemma. I have previously argued that all researchers are insiders or outsiders in specific research contexts. In my case, the issue was even more complex. I was an insider in all the schools since being a teacher I was familiar with the classroom situation, and in this particular school I was even more of an insider as I had been a student in the school and had personal connections with the teachers in the school. Some researchers would argue that this was extremely subjective, that my experience with the school would not enable me to be objective about what I was observing. However, I felt that my personal experience within the school would be an asset rather than a disadvantage and that it would give me greater insight to what was happening in the school. Like Pollard (1985) I decided that "I could positively use the shared experience and rapport which I had built up previously to the advantage of the research" (p. 227).

So all in all access to the schools proceeded quite smoothly. My entry into the schools was an eye-opener to the different research situations which can be created. Even the access situation was a learning experience and helped me to start formulating ideas about the research process itself and about the kinds of environments and attitudes which could be found in the schools in which I would be carrying out the research. I went from being completely received and accepted with teachers giving their full collaboration and

showing interest in the research, to teachers being interested in the research but being slightly wary of me as an outsider and giving me all sorts of warnings before I proceeded, to teachers who resisted me completely, felt that I was an intruder, a representative of a Board with whom they did not see eye to eye and therefore they felt that research was simply a waste of time because nothing in the system would ever change. These were only a few of the ways in which I believed that the participants of the study were viewing me, however they could have had other ideas about me, as a woman, as a young woman, as a student from a private school. As stated by Delamont (1992) "whatever role one takes, it is important to think hard about how one is being judged and evaluated and to make detailed notes on how one is received and how this may be interacting with the data being collected" (p. 133). This is what I have tried to do in this section.

The access situation also gave rise to a number of methodological issues. The first important issue which arose and which I discussed in some detail previously was that of my own subjectivity and experience and who I was as a researcher. I realised immediately, that what I had been theorising about was actually happening in the research situation. I could not detach myself from who I was as a person, as a woman, as a teacher and as a University official. All of my own experiences were carried with me into the research process and influenced the way in which the research proceeded. The second issue which was also important was that of being an insider or an outsider. As I had argued previously, I felt an insider as well as an outsider in the research process. My position as a University official made me an outsider. But my own experiences as a student and as a teacher made me completely familiar with the situation. However, this in my opinion was a great benefit as it gave me greater insight to what was actually happening and it helped me to formulate the right questions and develop unique relationships with the participants of the study. As stated by Delamont (1992):

> ...it is during access negotiations that the research site beckons like untrodden sand, waiting for the footprints of the investigator. At the beginning one's preconceptions are clearest, and some of the best insights can be gained (p. 92).

8.3 Adapting to the Situation

After I had gained access into the schools, I started planning my observations and interviews in the different schools. I found that each school was a unique situation and I could not carry out everything identically in each school. I had to adapt to each situation accordingly and could not use a single framework for each school. Practical situations such as time-tables, availability of teachers and students, and unforeseen circumstances all had to be taken into consideration.

But the basic premise which I always used was that the research was based on a relationship between the teachers, students and myself and therefore the needs of the teachers and students always had to come first before any research plan. I felt that I was dealing with people and not with objects and therefore I had to take into consideration their feelings, needs and ideas and not only consider my own agenda. I wanted the teachers and students to feel that it was their research and not only mine, and therefore I had to take many on-the-spot decisions to accommodate as much as possible the needs of the teachers and students. I tried to interact with the teachers and students as much as possible and explain to them what it was that I was doing. Perhaps because of their prior experiences with research the students and teachers still looked at the research as my research and although the agendas of the teachers and students were a priority they did not really become involved in the research process apart from stating their views and ideas. However, although they did not view the research as their research, the teachers and students were still eager to share their views and ideas with me in as honest a way as possible. Therefore, in my view the fact that they remained only participants rather than collaborators did not have an adverse effect on the research. It is these unpredictable situations which crop up which make the research exciting, richer and closer to the unpredictability of life. This is described by Ely (1991) as flexibility. Ely states that this flexibility is extremely important and one is frequently called upon to be spontaneous and to improvise during the research process.

8.4 The Research Methods

The purpose of the study was to explore whether examinations were fair and just for all students in Maltese schools. Because I wanted the study to "lay stress on the study of everyday life and on the actors' own interpretations and definitions of the situation" (Delamont, 1978, p. 60), I decided to use a number of qualitative research methods. Because of my epistemological and methodological standpoint, and my belief in the multiple realities created by the unique social, cultural and political characteristic of each situation, I decided to use different research methods in order to explore my research question in greater depth. Since different "lenses" or perspectives result from the use of different methods, often more than one method may be used within a project so that the researcher can gain a more holistic view of the setting. This is traditionally known as "methodological triangulation" and is described by Hammersley and Atkinson (1990) as the most effective manner in which reactivity and other threats to validity can be handled.

According to Richardson (1994) however these methods carry the same domain assumptions, including the assumption that there is a "fixed point" or object that can be triangulated. Richardson argues that in postmodernist texts, "we do not triangulate; we crystallise" (p. 522). Richardson therefore proposes that the central image for "validity" for postmodernist texts is not the triangle - a rigid, fixed, two dimensional object. Rather, the central image is the crystal which combines symmetry and substance with an infinite variety of shapes, substances, transmutations, multidimensionalities, and angles of approach. Crystals grow, change and alter but are not amorphous. Following Richardson, I have tried to use multiple methods both of collecting, interpreting and presenting the data, not only to validate the data as is the implicit understanding behind triangulation but rather to present a more holistic picture, a more entwined and interrelated narrative of the research process. This "crystallization provides us with a deepened, complex, thoroughly partial, understanding of the topic. Paradoxically, we know more and doubt what we know" (Richardson, 1994, p. 522).

The multiple methods which I have used in the text included observations in physics classrooms mainly to allow the teachers and students to familiarise themselves with my presence in preparation for the interviews which would follow; interviews with teachers and students; and keeping a reflective journal in which I jotted down notes about the research process and the way in which my ideas were developing with the collection of the data.

8.4.1 Observations

Observations were carried out in the six schools. The main purpose of the observations was to familiarise myself with the classroom, the students and the teacher. But most of all I wanted the teacher and students to familiarise themselves with me, so that it would be much easier to carry out the group interviews. I thought that if they had been seeing me in their classroom for a few times I would not be a complete stranger coming in to interview them and going back out. The observations were not intended to provide any answers, but rather they raised a number of questions which I would be able to follow at greater depth during the interviews. When I entered the classroom I was usually introduced by the teacher. Generally the teachers explained that I was interested in what they thought about physics and examinations. Some teachers also said that I worked for MATSEC. I would have preferred that they did not do so, but some teachers felt safer introducing me in this way, and since my position at MATSEC was public I did not want to hide this from the teachers themselves. I wanted to be as honest as possible about my position and hoped that they would reciprocate by being honest about their ideas. As usual when I first entered the class there would be a lot of whispering, *"who is she ? ...is she going to be our teacher ?"*. Yet after a while the students would get used to me and the whispering would stop.

My presence in the classroom did affect the students to some extent. In the State schools it did not seem to make that much of a difference, but in Private schools the difference was felt. At both the girls' and boys' private schools the students were forewarned prior to my visit to be on their best behaviour. The teachers felt that the students needed to be on their best behaviour so that I would get a good impression both of themselves and of the school. In

fact one teacher told me after one observation, *"...this class is usually a very difficult class...today they were much more quiet...perhaps it was because you were there..."*. In an interview with one group of boys at St. Peter's College they too admitted that they had been warned to be on their best behaviour by the teacher. So perhaps the observations were not really typical of the normal everyday situations encountered by the teacher. This creates something of a problem, since as a researcher it is difficult to know when a situation is typical or when it is being created for one's own benefit. As stated by Bloom (1996) respondents tell certain stories and not others because of the focus of the research and the intersubjective dynamics of a specific research relationship. Respondents are also often invested in representing themselves in particular ways and will tell some stories rather than others and will tell these stories in particular ways. Like Opie (1992) I believed that the accounts would be selective and incomplete. However I felt that this would not really be detrimental to the research as the observations were not the main source of information and only used for familiarisation.

Another problem with the observations was that at times the teachers took on the role of performer for my benefit. Again this raises the issue of what is "true". Was what I was actually seeing the everyday situation and if not was my interpretation of its being created for my benefit accurate. For example one teacher wanted to impress me with his knowledge of examinations, he geared each lesson towards the examination, constantly mentioning the examination and the fact that he was a friend of the London examiners, *"...I got this advice from the London examiners...they come here every two years and I talk to them in the Board room..."*. Following Opie (1992) I have argued for the production of texts which incorporate multiple voices and multiple interpretations. However, this according to Opie raises a number of issues including the selection and interpretation of situations. In order to overcome this difficulty I have tried to be as accurate as possible in my reproduction of verbatim quotations and descriptions of situations. I have also tried to be as reflexive as possible when it came to the interpretation of situations. Most importantly I tried to verify these interpretations during the group interviews. So while observations have their own uses and they did help me to break the barriers with both teachers and students, in a way they

are also very open to interpretation and can be manipulated by the teachers to construct the ideal image of the classroom. As one boy put it *"...we were acting Miss..."*. The question of how to deal with these multiple perspectives remains one of the most important methodological issues of any research process. There can be no solution to this problem except for the recognition of the limitations of the reading of the participants texts, what Opie (1992) calls "the writing in of voices" (p. 58) and being as reflexive about this as much as possible.

Another methodological issue which arose during the observation period concerned my role as an observer within the classroom. Gold (1958) outlined four modes through which observers may gather data: the complete participant, the participant-as-observer, the observer-as-participant and the complete observer. These have evolved into what Adler & Adler (1994) call the complete-member researcher, the active-member researcher, and the peripheral-member researcher. Like Adler & Adler (1994) I would argue that the current span of observational research roles includes some combination of these two groups of typologies.

In my case, the role which I took alternated from that of observer-as-participant to peripheral membership. This meant that I was involved in the observation of the classroom processes during the teaching of physics and interacted only casually and non-directively with the teachers and students in the classrooms. I tried to establish a friendly attitude with the teachers and students without participating actively in the physics lessons. I was an insider because I was a student and a teacher and I was honest about who I was to make my position in the classroom as overt as possible, I was also an outsider belonging to the University. Generally it would be the teacher who introduced me to the classroom who influenced the role which I would take up in the classroom. In some cases I would be the official observer noting down everything that was taking place and even quoting verbatim some of the things said by the teacher. At other times however without realising it at the time I would take on a different role. In one case, the teacher was a young casual teacher who simply had no idea of teaching methodology, so automatically I put on my teaching practice cap and critically observed all that

he was doing as if he were one of the student teachers out on teaching practice. In another case, the teacher was making the lesson so interesting and so simple that I found myself taking on the role of a student. I forgot about what I was supposed to be observing and instead became absorbed by the lesson itself. I was able to follow what was going on and became excited when I understood something which I had never managed to understand before. This established me as a member of the classroom, as an insider who could look at the situation from different perspectives and this was in line with my epistemological standpoint that there are multiple perspectives to every situation. In my own role as researcher I was taking up these multiple perspectives and giving them voice in my own reflections and fieldnotes.

8.4.2 Interviews

Delamont (1992) describes the interview as the most commonly used qualitative method. I chose to use interviews as the main research tool because like Fontana and Frey (1994), I believed that interviewing is one of the most common and most powerful ways in which we can understand human beings because it involves interaction between individuals. The interview provides the "re-creation of relationships, cultural meanings, standards, roles and beliefs that constitute the active living culture of the students," (Davies, 1982, p.3). Like Seidman (1991), I was of the view that the in-depth interviewing was not to get answers to questions, nor to test hypothesis and not to evaluate. "At the root of the interviews was an interest in understanding the experience of other people and the meaning they made of that experience" (Seidman, 1991, p. 3). I wanted to access the context of teachers' and students' views and believed that the best way to do this would be through interviewing. The interviews were carried out with individual teachers and with groups of teachers when more than one teacher was available in the school. I also carried out interviews with the students, these were usually carried out in groups of about five, and two or three different groups of students were interviewed according to the number of students in the schools.

8.4.2.1 Unstructured interviews.

Cohen and Manion (1994) describe four kinds of interview that may be used specifically as research tools: the structured interview, the unstructured interview, the non-directive interview, and the focused interview. They describe the structured interview as one in which the content and procedures are organised in advance. This creates a closed situation where interviewer and interviewee are allowed very little leeway. In contrast the unstructured interview is an open situation having greater flexibility and freedom. The non-directive interview follows the psychiatric interview and allows the interviewee to be as subjective and spontaneous as possible while the focused interview focuses the interviewee's subjective responses to a known situation.
Because I started out from the premise that the interview re-creates everyday situations, I used mainly unstructured interviews. I started out with a number of issues which I wanted to explore but then I allowed the participants to lead me and guide me into the areas which they felt were more important to them. I established the main focus of the interview as being examinations and assessments but then I allowed the participants to voice their opinions on anything which they felt was important to mention. Like Fontana and Frey (1994) I attempted to use the interview to understand the complex behaviours and opinions of individuals without imposing any prior categorisations that would have limited the field of inquiry.

The interviews I carried out with the teachers were therefore very open-ended. I had a number of areas which I knew I wanted to go into, but then I very much allowed the teachers to follow their own train of thought and talk about what they felt was important to them. I felt that this was very important as my concerns about the teaching of physics and examinations might not be the concerns of the teachers. I knew what I thought about these issues and now I wanted to hear what the teachers had to say. With the students I went in with a tentative set of questions which I wanted to ask. However, I did not follow these questions scrupulously and often I went into the directions in which the students themselves led me.

8.4.2.2 Group interviews.

I also decided to make use of group interviews, especially with the students. Like Powney and Watts (1987), I felt that the group interview would allow a discussion to be developed so that a wide range of responses could be collected. As stated by Fontana and Frey (1994) the group interview has the advantage of being inexpensive, data rich, flexible, stimulating to respondents, recall aiding, and cumulative and elaborative over and above individual responses. The group interview helped the students to relax, it made them feel less shy and uncomfortable and they could really be themselves in a more natural setting. As Woods (1979) points out:

> The company of like-minded fellows helped to put the children at their ease. The bond between them and the way it was allowed to surface shifted the power balance and the discussion in their direction...they also acted as checks, balances and prompts to each other. Inaccuracies were corrected, incidents and reactions recalled and analysed. Many of the conversations became part of the experience rather than a commentary on it (p. 265).

A number of problems may arise in the carrying out of group interviews. Powney and Watts (1987) for example, state that group interviews are sometimes difficult to manage and that a single tape-recorder in the centre of a group of people might capture all that is said but it is then difficult to separate comments and attribute them to particular individuals. I found that this was very true. Sometimes the groups were a bit difficult to handle as I had to make sure that all the students in the group were participating in the discussion. At times one or two or the more confident students would try to take over the discussion and not allow other students to air their views. Following Fontana and Frey (1994), I tried to overcome this by directing questions to individuals so that they too would be able to make their contribution. In fact these authors suggest that a person conducting a group interview must possess a number of skills. First, the interviewer must keep one person or a small coalition of persons from dominating the group; second, he or she must encourage recalcitrant respondents to participate, and third, he or she must obtain responses from the entire group to ensure the fullest possible coverage of the topic. The interviewer must also be able

to manage the dynamics of the group being interviewed. Keeping in mind, these suggestions, I tried to manage the group interviews as best as I could. The interviews were all very different, however in most cases I managed to establish a certain rapport with the students and created a comfortable atmosphere in which they could be able to talk.

8.4.2.3 The interviewer / interviewee relationship.

My main concern when carrying out the interviews was the participants of the study and how I could best establish a relationship and rapport with them which would enable me to explore the research questions and allow participants to give voice to their views and opinions in as honest and in depth manner as possible. I felt that I had a great responsibility while carrying out the interviews since as stated by Maykut and Morehouse (1994), "the responsibility for establishing and maintaining a positive interviewing climate rests with the interviewer" (p. 98). According to these authors, an interviewer who listens more than talks, and who is genuinely curious about the topic and what the interviewee has to say about it will maximise the chances of a good interview. Like Maykut and Morehouse (1994) I tried to communicate through words and behaviours that the teachers and students were "collaborators" in the research process in order to try and reduce the power differential which was balanced in my favour as the interviewer. I tried to be as natural as possible and expressed my feelings and answered questions whenever they were asked. This would I believed, make "the interview more honest, morally sound and reliable" (Fontana & Frey, 1994, p. 371) because it treated the respondents as equals, allowed them to express personal feelings and therefore presented a more realistic picture. I tried to be "a reader, a listener, a scribe, that is an audience for a performance which may allow the narrator to make new or deeper sense of his or her own trajectory" (Huberman, 1995, p. 129).

However, the reality of the research interview is always very subjective. I was very concerned about being able to represent the interview situation as very much as it happened as possible. As stated by Powney and Watts (1987):

> Each interview is dependent on the skills of the interviewer and the willingness of the interviewee. The interview is just one incident of social interaction which depends on the co-operation of all the participants. In the end the limitations on the information collected in an interview are those imposed by the interviewee. They are the levels of truth that person is willing to disclose to that interviewer on that occasion (p. 51).

Like Clandinin and Connelly (1994), I believed that the way an interviewer acts, questions, and responds in an interview shapes the relationships and therefore the ways participants respond and give accounts of their experiences. Like Huberman (1995) I also believed that as an interviewer I would always be part of the interview and that inevitably I would intrude, thereby shaping some of the resulting material. I recognised that the meaning of the interview was to some degree a function of my interactions with the participants of the study (Seidman, 1991). These concerns are also echoed by Opie (1992) who states that if one is to consider multiple voices, then a number of questions need to be raised about the criteria for the selection of quotations; the question of whether including extracts from interviews is a sufficient means of weaving other voices into the research report; and the question of whether the researcher should be solely responsible for the interpretation.

I tried to overcome these problems by making sure that I established a positive, trusting relationship with the teachers and the students. I tried to be constantly "critically aware and to keep up antennae for pointers which led into the meaning of what was being said" (Measor, 1985, p. 9). I tried to be as honest as possible about what I was doing and who I was. I also wanted the teachers and students to know that their concerns were the first and foremost in my mind and that I would do nothing to harm them. Therefore, the first thing that I stressed before carrying out each interview was the confidentiality of the research and that everything would be said in confidence and names changed in the writing up. The students were in fact more concerned about confidentiality than the teachers as they feared that perhaps their teachers would get to hear what they had to say. However when I reassured them that the teachers would not listen to the tape-recordings they

were very happy to continue with the interviews. In fact one group of boys whom I interviewed tested me out to see whether I had really kept my word and they asked their teacher *"...is she going to show you what we said...?"* The teacher told them that she was not interested in what they had said and this established the trust between the students and myself. This establishing of a positive relationship between myself and the participants is according to Burgess (1989) the main basis of any qualitative research process. These are in fact the main ethical issues surrounding interviewing. Fontana and Frey (1994) state that because the objects of inquiry are human beings, extreme care must be taken to avoid any harm to them. For the authors it is important to obtain informed consent after he or she has been carefully and truthfully informed about the research, allowing the participants privacy and protecting their identity and protection from any other emotional or physical harm.

I also tried to ensure that the teachers were happy with what I would quote from their interviews. All the interviews were recorded on a small tape-recorder and later transcribed. The teachers' interviews lasted about an hour and student interviews about half-an-hour for each group. All the teachers were interviewed and in some schools all the students in the class. When this was not possible students were asked to volunteer. Student interviews were carried out during break time or when students happened to have a free lesson. Transcriptions of the teacher interviews were sent to the teachers for their comments. This was done following Opie (1992) in order to avoid misrepresentation and stereotype and to try and include the teachers in the process of discussion and analysis of the text. According to Delamont (1992) this is done as a political act by people who believe that the respondents own the data, it may be part of the bargain struck when access was negotiated; or it may be a validation strategy or all three at once. In my case this was not done in order to validate the text and create a one true picture of what had happened as this is according to Opie highly problematic if one believes in multiple interpretations of the text. Rather it was done, again following Opie (1992) not to achieve a consensus but "to highlight the points of difference and the tensions between competing accounts as well as shared interpretations" (p. 62). It was done as I believed that the participants owned

the data and should have a say in the way in which I was interpreting it. Unfortunately, teachers generally responded by telling me that everything was okay and they did not give any feedback on what they had actually said. This was in fact done only by the teachers in one school. I think that teachers are not used to being consulted very often and so when they were consulted they did not react to the opportunity given. Therefore they did not feel that they owned the data. However, this was not detrimental to the present research since they still made their views clearly heard. The teachers and students were not treated as research subjects but they did not become part and parcel of the research process. They can therefore be better described as participants in the research rather than collaborators.

The students in the Private schools both boys and girls enjoyed the interviews. They enjoyed making their voices heard and being given the opportunity to contribute with some of their own ideas. At St. Peter's College the boys felt so good about airing their views that they told their teacher that they would like to arrange a meeting with parents and teachers to create a forum for discussion:

> *...after the interview with you they said...that's really good...you know what Miss...now we're going to ask the co-ordinator to have a meeting for students, parents and teachers...so we can change the school system...they were a bit apprehensive to come down...you know...what's she going to ask us...but is she going to test us in physics...I said no...but afterwards they said...good ta...miss...it was really good...*

The girls at St. Cecilia's also enjoyed the interviews. They too had been apprehensive that I would question them about their knowledge of physics but by the end of the interview they felt that they had aired their views and as their teacher told me they did not feel threatened in any way by the interview. This indicated that I had managed to create some form of relationship with the students even though I only interacted with them for a very short while.

Within the relationships which I developed with teachers and students, the students especially and to some extent the teachers though they were more

cautious and suspicious of the research, they actively sought to help me to see things their way. They enjoyed being listened to and they enjoyed the opportunity to clarify and make sense of the ways in which they thought of examinations. During the relationship which I built up, I also changed the way in which I was looking at things. Like Fontana & Frey (1994), I no longer remained the objective, faceless interviewer but started to disclose myself, learning about myself and my views as I tried to learn about others. Like Seidman (1991), I was of the view that the strength of interviewing was that through it I could come to understand the details of teachers and students experiences from their point of view. More importantly like Seidman interviewing led me to respect the participants, to relish the understanding that I gained from them and to take pleasure in sharing their stories.

8.4.3 Research Journal

During the whole research process I kept a research journal. In this journal I recorded the transcriptions of the tape-recorded interviews with teachers and students. I also kept a record of my own feelings and ideas as they were evolving throughout the research process. This would help me when it came to the analysis of the data as it made me more aware of the way in which my ideas were developing and it enabled me to be as reflexive as possible about the research process and my role as a researcher.

As suggested by Ely (1991), I tried to write in this journal as soon as possible after the observations or interviews since as stated by Ely, forgetting begins as soon as the experience ends. The transcriptions of the interviews were also if possible transcribed on the same day or at least within the same week so that the interview would still be fresh in my mind when I did the transcriptions. I preferred to do the transcriptions myself as I believed that this would immerse me much more within the data and the process of analysis started with the transcriptions themselves.

Following Delamont (1992) I then read and re-read the field-notes and journal in order to start teasing out recurrent patterns and themes which made up part of the data analysis. The journal also enabled me to look at the data as

something dynamic and constantly changing rather than a static written document which once written could not be changed. In my journal I could reflect upon the ways in which my ideas were constantly changing. Like Ely (1991), I was of the view that the process of writing was continually creating and re-creating the data and my views of it. This reflexivity is aptly described by Ely (1991) who states:

> In our writing and particularly because of it, we now see in our mind's eye that the endless journey of 'circles within circles' of qualitative research makes a three dimensional whole - a world. But it is a world always reconstructing, always spiralling...(p. 232).

8.5 Data Analysis

Coffey and Atkinson (1996) state that "there are multiple practices, methods and possibilities of analysis that qualitative researchers may employ" (p. 3). What to them links all the approaches is a central concern with transforming and interpreting the data in a rigorous and scholarly way. The authors state that "analysis is not about adhering to any one correct approach or set of right techniques; it is imaginative, artful, flexible and reflexive" (p. 10). As I did all throughout the research process I tried to find the way which worked best for me when carrying out the analysis and I tried to be as reflexive as possible about the way in which I carried out the analysis.

I started the analysis of the data while I was actually doing the observations and carrying out the group interviews. As stated by Coffey and Atkinson (1996), "analysis should not be viewed as something that is tagged on to data collection, given little time, care and attention. Throughout the research process analytic ideas and issues should be thought about, discussed, documented and tested against the data" (p. 191). Like Coffey and Atkinson, I was of the view that "analysis is not a separate set of tasks and not a self-contained phase of the research" (p. 192). Therefore, in my case analysis took place concurrently with the observations and interviews being carried out. During the observations I took extensive field notes and the interviews were tape recorded and later transcribed. These were then included as part of my research journal. I tried to transcribe the interviews soon after they

were carried out so that they would still be fresh in my mind. I left a wide margin when printing out the observations and transcriptions. I would then read and re-read what I had written, writing down notes and reflections in the margins. This was the start of the data analysis.

Later on when all the observations and interviews were carried out and transcribed I again read and re-read through these notes and started to form themes and patterns in my mind. Like Delamont (1992) I developed several categories and started to fit the data into these categories. These categories were then searched for what Seidman (1991) calls patterns and connections within the categories which he describes as themes. Following Hammersley and Atkinson (1990) I made several copies of the data. I then used a manual system of cutting and pasting the appropriate sections from the data into each category since some sections were overlapping and fitted into more than one category. I then coded each piece of data according to the date it took place, the school, and whether it was with teachers or students. This code was later useful for cross-referencing with the complete data later on. Creating the categories triggers the construction of a conceptual scheme that suits the data. This scheme helps a researcher to ask questions, to compare across data, to change or drop categories and to make a hierarchical order of them. "The process of establishing categories is a very close, intense conversation between a researcher and the data that has implications for ongoing method, descriptive reporting and theory building" (Ely, 1991, p. 87).

Once the categories had been established a clear picture started to form in my mind about what was happening. I therefore sat down and started to write the story of what I thought was happening. The reading and re-reading of the data allowed me to start what Delamont (1992) calls interrogating the data, which meant exploring systematically what the data was saying. Initially the analysis was highly descriptive and represented almost word for word what had happened during the interviews and observations with some of my own views interwound in the narration. As stated by Coffey and Atkinson (1996), the important analytic work lay in establishing and thinking about linkages between the categories rather than the coding and categorisation itself. I then started to form some links between the categories.

This happened because I was very conscious of whose voice was being heard in the interpretation of what was happening. I wanted the voice of the teachers and students to be heard very much as they had been spoken and therefore I tried not to intrude so much in their story. I also tried to be as reflexive as possible, all throughout this whole chapter and throughout the analysis so that the audience would know where I was coming from. I acknowledge that the selection of the quotations and the way in which the data will be presented is open to interpretation and has its limitations, however I have tried to be as open as possible about the choices made and I hope that this will make the reading of the data as authentic as possible. I continued to constantly reflect upon the data and went back to the analysis a number of times, finding new insights and new reflections every time. Thus the analysis continually evolved in a spiral manner and rather than offering any form of conclusions it raised even more questions. I tried to represent what the teachers and students were telling me as fairly as possible. This is what Ely (1991) calls being trustworthy. She describes being trustworthy as "carrying out the research fairly and that the products represent as closely as possible the experiences of the people who are studied" (p. 93). As stated by Coffey and Atkinson (1996):

> Our influences on the sort of data we collect and what we do with them, and our hypotheses about what our data are telling us, pervade the conduct of research. That is, in essence, what using theory is. We are making explicit what we all do implicitly. We are integrating our ideas with our data collection and data analysis, generating new ideas and building on existing ideas. Having these ideas and theorising about our data are central to the research endeavour (p. 141).

Acknowledging my role in the interpretation of research is in my view one of the most important aspects of qualitative analysis. Like Clandinin and Connelly (1994), I would argue that the search for patterns, narrative threads, tensions and themes that constitutes inquiry that shapes field texts into research texts is created by the writer's experience. And the researcher's

experience, like experience generally, has internal and existential conditions. Just as the researcher's relationship to participants shaped the field text, the researcher's relationship to the inquiry and to the participants shapes the research text. What I hoped to achieve in carrying out the analysis is what Denzin (1994) calls a "multi-voiced, reflexive, open-ended, emotionally based text" (p. 510). Like Davies (1982) the analysis enabled me to pay more careful attention to what I had learned in my relationship with teachers and students. It also enabled me to extend my understanding beyond that which I had learned in this relationship towards a theoretical statement about the participants' views on examinations.

CHAPTER NINE

Reflections on the Research

9.0 My role as a researcher

One of the main problems which I encountered when establishing my role as a researcher was that the teachers in the schools knew that I worked for MATSEC. I wanted the research to be owned by the participants as well as by myself and I tried my best not to appear as the outsider coming in to gather information. I tried to create an atmosphere of discussion where I could sit down with the teachers and in an informal way we could talk about our concerns. I had been a teacher too, and I wanted teachers to relate to me as a colleague rather than as an outsider. Most of the times I did manage to establish this relationship, however MATSEC kept cropping back up in the interviews and teachers looked upon me as a figure of authority who could provide answers about the questions they had regarding MATSEC. Since the teachers had very little contact with the MATSEC Board they wanted to take the opportunity of getting some information from me once I was available. Thus my role continually alternated between being an insider and an outsider. This helped to give me greater insight to what the teachers and students were telling me since on the one hand I could empathise with them by virtue of having been in their same position and at the same time I could also look at things from a different point of view.

At the beginning of the interview, teachers also tried to establish their role viz. a viz. my role. Since I am about their age or at times much younger than them, and I was coming from the University, some teachers felt that they had to establish themselves in my eyes as an equal. As one teacher told me, *"...I am not an expert and I have only just started out but I try to do my best...I even had the external examiner come into my classroom because I was a borderline between an A and a B...but then everything was okay..."*. In this way the teachers established themselves and then they seemed to feel much comfortable with carrying out the interview. I tried as much as possible to

listen to what they had to say, talk very little but respond honestly when they required me to air my own views.

Most of the teachers looked upon me initially as an outsider, coming in to observe, get information and get out which is what they are normally used to. They were a bit nervous of me initially and looked upon me as the inspector who would judge their performance. One teacher even questioned me about this, *"...I would appreciate some points...how do you think it went...?"*. I tried to explain that I was not there to judge but like them was just a learner and that together we could learn something which would perhaps make the life of students a bit better. After a while the teachers realised that I was sincere about my wish to work together with them rather than demand, and this made them always in my view comfortable during the interviews. Again this is only my limited perception of what was happening based on my interpretation of the situation and on the interview data. However, what is left unsaid in the data is how the teachers and students situated me due to my gender, age and class.

I did not hold myself aloof and felt that I had to become part of the research as much as the teachers and students were part of the research. In fact at one point during the interviews with students at Boys' Private School, I found that the boys had a very wrong idea about the Paper A and Paper B system. In fact the boys were telling me that in order to get a 4 in Paper B, you needed to get almost 100% which was not the case. I felt that I could not let such a thing go by and in the interview with the teacher I told her what the boys had said. Initially the teacher thought that I was trying to catch her out on something, but she realised that I was sincerely telling her about something which the boys were confused about it and felt that, *"...it was good that you told me...so I can speak to them about it..."*. So while in some cases I was trying so hard not to be the MATSEC official in a particular case, I felt that things had to be cleared up as I could not let such a misconception which would affect the choice of students and perhaps their success pass by without intervening. As described by Kelly (1989) my position lay uncomfortably between that of the internal evaluator whose main loyalty is to colleagues and the school and the external researcher for whom informal

comments and small incidents could provide revealing data. Therefore, again I had to be flexible and reflexive throughout the whole research process. While I could not be a complete insider, or a complete outsider, the research was pulling me more strongly into the situation and whether I liked it or not, I was becoming involved in the classroom life of the teachers and students. I was becoming what Griffiths (1998) calls an insider in a specific context.

One other factor which emerged in the process of the interviewing, was my own personal biases and experiences which at time came into the way in which I was looking at things. My personal experience has been outlined elsewhere, but it cropped out during a particular discussion, after my observations at the Boys' Private School. I had been very favourably impressed by the school, by the building itself, the teachers and their attitudes to the students. The school seemed to have a particular identity and both teachers and students seemed to be proud of belonging to the school. Discussing this with a colleague, he insisted that since I myself had gone to a Private school I was biased in favour of Private schools. However, at this point I felt that yes I had been a private school student but that this time my conclusions were based on personal observation and not on personal bias. The distinction between the two is I realise very fine, and anyone could argue the opposite with me. However I feel that yes, subjectivity does come into the research but certain facts are so obvious that they are beyond any personal considerations and should be just stated as such. The views are then very much open to interpretation.

9.1 Some Ethical Considerations

Punch (1994) describes three developments that have affected the ethical dimension of research especially within feminist research:

> First, the women's movement has brought forth a scholarship that emphasises identification, trust, empathy and non-exploitative relationships. In this sense the personal is related to the ethical, the moral and the political. Second, action research has developed to a phase where "subjects" are seen as partners in the research process. To dupe them in any way would be to undermine the very processes

> one wants to examine. Rather they are seen as "respondents, participants, stakeholders" in a constructivist paradigm that is based on avoidance of harm, fully informed consent and the need for privacy and confidentiality. Third and last, the concern with harm, consent, confidentiality and so on has led to some government agencies to insist that financing of research be contingent upon an ethical statement in the research proposed (p. 89).

I tried to uphold these values all throughout the research process.

Like Punch (1994) I tried to ensure that a specific code of ethics was maintained throughout the whole research process. I tried to develop my own code of ethics which included:

(a) Obtaining the consent of the participants to carry out the research in their classroom.

(b) I was completely honest about the nature of the research, who I was as a researcher and why I wanted to carry out the research.

(c) I ensured the participants that any disclosures would be confidential, all names of schools and participants would be changed in the writing up of the research.

(d) I allowed participants (namely the teachers who were more sensitive about being interviewed) the right to view any transcripts and make any changes if they felt that my interpretations did not represent accurately what they had said.

(e) I established a relationship of trust with both teachers and students ensuring them that I could be trusted with any information.

(f) I tried to treat all participants with respect, listened to their views even when they were completely different from my own, and thanked them for their time and patience promising them a shorter version of the research when it would be finally written up.

Throughout the research I always tried to place the participants first and foremost in the study. As stated by Cohen and Manion (1994) whatever the specific nature of their work , social researchers must take into account the effects of the research on the participants, and act in such a way so as to

preserve their dignity as human beings. Following Griffiths (1998) I tried to work on the principles of equal respect and appreciation of every individual, a recognition that persons are constructed and interpret themselves in relation to power relations in society, and they have real choices about how to do this; and an understanding that there are no hard and fast rules or certainties to be had, so moral decisions are always judgements in particular contexts.

Another issue which arose out of the research was the issue of collaboration and the fine line between participation in a research project and collaboration. Initially I started out wanting the research to be collaborative. Like Griffiths (1998) I felt that collaboration leads to better knowledge and was ethically desirable and that it led to the improvement of teaching and learning and the education of students. However, the teachers and students had other views of research. Their experience of research was simply as a subject and they found it very difficult to make the transition to become co-owners of the research. They felt very much that the research was mine and not theirs. Even when I tried to involve them as much as possible by sharing with them transcripts of the interviews, my own views, and allowed them complete freedom to give any form of input which they wanted they still did not feel that the research was their own. In terms of the present research this lack of ownership did not make that much of a difference since the teachers and students were still very honest about their views and in sharing information with me which helped me to answer some of my initial questions.

One of the problems in carrying out successful collaborative research is described by Griffiths (1998) as being the fact that there is very little empirical evidence which describes the characteristics of collaboration. In my view for a project to be based on collaboration all the participants of the study have to be clear about what collaboration means and clear about how this is going to be brought about within the specific context and taking into consideration all the diversities of the situation. As suggested by Griffiths (1998a), "understanding the processes of collaboration will help generate the kinds of mutual support which develop better forms of knowledge: information, facts, understanding, reasoning, skills, and wisdom available to help us all, not just a few, come to terms with our worlds" (p. 8).

9.2 Reflections and Reflexivity

If I had to describe the research I would describe it as a piece of educational research, carried out with the aim of trying to find out more about a particular educational issue, namely that of assessment and examinations by exploring an in-depth view of teachers and students' opinions about this issue. But what do I mean when I say educational research. Like Lomax (1994), I have always been of the view that educational research is different from the disciplines approach to education and from social science. Therefore like her I have tried to develop an appropriate methodology with which to investigate an educational situation. I tried to use the categories described by Lomax to make the research tentative, ethical, self-developing practical, authentic, democratic, rigorous, holistic and influential. Specifically, I tried to make use of what is very succinctly described by Lomax (1994) as:

> ...relevance, to be able to conceptualise one's values in theories that are lived in practice; emancipation, to retain ownership of one's values, theories and practices so that they are not appropriated by academic hegemonies; democracy, to value others' interpretations and recognise their right to participate in the definition of shared reality; and collaboration, to be able to work with and for others to work with and for you (p. 21).

This was especially important for me, since I believed that the research should have some value, especially in an area where very little research had been carried out, I valued what the teachers and students had to say about the issue and I wanted to work with the teachers and students on an equal level rather than from an outsider position. I hoped that the research would throw some light on the assessment debate and open up a forum for discussion about assessment in Malta based on research evidence. I hoped that my research would act as a springboard from which debate about assessment would start and result in changes in assessment practices in Maltese classrooms.

As far as possible, I have tried to make the research authentic and trustworthy. Trustworthiness according to Ely (1991) means that the processes of the research are carried out fairly, that the products represent

as closely as possible the experiences of the people who are studied. According to Ely:

> The entire endeavour must be grounded in ethical principles about how data are collected and analysed, how one's own assumptions and conclusions are checked, how participants are involved and how results are communicated. Trustworthiness is thus, more than a set of procedures. It is a personal belief system that shapes the procedures in process (p. 93).

In this text I have tried to be as reflexive as possible both about my own socio-political position and interests as well as my beliefs, values and traditions and how they have become incorporated in the research process. The text I have tried to write makes no claim to being authoritarian and judgmental about the research process and the data. I tried to present as clear and authentic a picture as possible, leaving this open to multiple interpretations and multiple voices. I try to situate the research in a gendered, classed text which allows the reader to see the way in which any choices and decisions were made. In certain instances I appear as an insider, completely participating in the research, while in other cases my role as an observer from the University makes me out of necessity an outsider. I try to overcome issues of bias and reliability through being reflexive and by trying to build a trusting relationship with the participants of the study based on ethical principles to which I tried to adhere to very strictly. The participants were always first and foremost in my study, I was completely honest with them and this I think helped them to be honest as much as they could with me. I felt that this relationship with the participants was based on a mutual relationship of trust. I never tried to deceive them or betray their trust, they were always clear about what I wanted to do with the views they shared with me, and I shared with them the way in which these views had been interpreted. I trusted their honesty and they trusted that I would present their views in as authentic a manner as possible. The picture presented therefore, has its many limitations, has its many omissions but provides a glimpse into the views of teachers and students about examinations and assessment. As stated by Griffiths (1998):

A political strategy for educational research for social justice is not to be found in any one methodology or in any over-arching grand plan. Rather, the strategy is to do what you can, and to keep your wits about you, and your ears open, and still be able to live with yourself (p. 179).

PART FOUR

THE ANALYSIS OF THE DATA

CHAPTER TEN

Setting the Scene: The schools, the teachers and the students

10.0 Introduction

The research was carried out in six different schools which were chosen to represent the different types of school in Malta with the exclusion of Independent schools. They included:

- St. Peter's College (a boys' private school).
- St. Cecilia's Girls' School (a girls' private school).
- Santa Maria Girls' Junior Lyceum.
- Dun Karm Boys' Junior Lyceum.
- San Mikiel Boys' Area Secondary School.
- Sant' Anna Girls' Area Secondary School.

The schools all had their own particular characteristics which made them unique and at the same time there were characteristics which were common to all the schools.

10.1 First impressions of the schools

My impressions of each school were recorded in my research journal together with the observations of a number of lessons and practical sessions. These observations help to set the scene from which further analysis of the teaching and learning of physics in each of the schools later emerged.

10.1.1 St. Peter's College (Boys' Private School)

Thursday 5th October 1995

As soon as I entered the school I was struck by the cleanliness and orderliness of the school. The walls were newly whitewashed and in the different corridors there were posters and paintings which had been made by the students themselves. Being a school run by a religious order there were also a number of statues of saints in every

corridor and a crucifix in every classroom. The atmosphere was enhanced by a number of plants which created a pleasant atmosphere. The classrooms were quite spacious and the physics laboratory was also large and well equipped. I was introduced to the physics teacher, Mrs. Borg whom I would be working with and she was very enthusiastic about the study. She showed concern for the boys whom she described as "a St. Peter's boy". She talked about their aim to build a community among the boys and the importance of educating the boys for life rather than just academically.

The teacher

Mrs. Borg had a degree in science rather than a degree in education. However she had followed a course for teachers held by the Education Division. Mrs. Borg described herself as a dedicated and committed teacher who loved physics and found satisfaction in helping her students to understand difficult physics concepts and to pass their exam.

The students

Mrs. Borg describes the students at St. Peter's as being divided into two, the science students and the non-science students. She describes the science students as being more motivated to learn and the non-science students she calls the rebellious group, the grumpy type who are all the time complaining about everything. She also divides the students according to ability, describing some of the students as the higher average group and some of the other students as the lower average group.

10.1.2 St. Cecilia's Girls' School

Monday 13th November 1995

Today I visited my old school. The Headmistress greeted me affectionately and wanted to know all that I was doing and had been doing. She was enthusiastic about what I was doing and pointed out that "that's the stuff that St. Cecilia girls are made up of... ". The

number of girls in each class was more than thirty and they were fitted very tightly into small classes with very little space in which to move. The laboratory however was quite spacious and there was room for the students to carry out their experiments, equipment was available and stored in cupboards. The atmosphere in the school was pleasant, again with statues of the Virgin Mary enhancing the corridors and small altars with flowers in every classroom. Evidence of student work was present in every classroom in the form of charts and posters. The students also had their own personal lockers in each classroom.

The teachers

The teachers were Mrs. Camilleri and Mrs. Sant. They were dedicated and committed teachers and took part in the school's extra-curricular activities. They were very concerned about the students and were preoccupied with being fair with their students.

The students

At St. Cecilia's the teachers also distinguish between the science and the non-science students. They think that the science students are more capable of learning science and also more interested in it as a subject. They also distinguish between what they call the bright and the weak students and imply that the bright students are found mainly in the science class while the non-science class is made up of weaker students.

10.1.3 Dun Karm's Boys' Junior Lyceum

Wednesday 4th October 1995

At Dun Karm's Boys' Junior Lyceum I was met by the caretaker who insisted that I explain what I needed to him. I asked to speak to the Headmaster. He went into the Head's office and came back still wanting to know what I was there for. I insisted on talking to the Head who eventually came out and told me to look for the Head of Department of Physics. Mr. Mizzi told me that he and the other physics teachers were very busy but that I would be welcome to carry

out my research with them. What first struck me about this school was the largeness and bareness. The corridors were huge and the classrooms were also large but they were completely bare and there was nothing to adorn the walls of the corridors or classrooms. The laboratory was large and spacious and well equipped.

The teachers

The teachers at the Boys' Junior Lyceum were Mr. Mizzi and Mr. Galea who were both college trained teachers. They were experienced teachers and had been teaching in a Junior Lyceum for a number of years. Their main preoccupation was with school standards and their main worry was that the school standards were dropping and that they were no longer catering to the good students.

The students

The students are described by the teachers as being of low standard and that the students had entered the Junior Lyceum with Cs rather than with As or Bs as had been the case previously. They are described as being incapable of being left to work on their own and need constant pushing from their teachers. A distinction is also made between the science and the non-science students, the science students being described as more motivated to learn science.

10.1.4 Santa Maria Girls' Junior Lyceum

Thursday 5th October 1995

My entry into this school was very formal. The Headmistress wanted to see the written permission I had obtained from the Director General of Education and she then introduced me to the teachers in a very formal manner. The teachers were not very enthusiastic about the research as they felt that it would be all for nothing. The school was made up of separate blocks of buildings set in spacious grounds. The classrooms were large and spacious with charts on the walls. Pictures of old presidents of Malta and the Maltese flag adorned the corridor of

the administration building. The physics laboratory was small and adequately equipped.

The teacher

Mr. Buhagiar who is one of the physics teachers at the Girls' Junior Lyceum is an experienced teacher who had been teaching physics for a number of years. His main concern is motivating the girls to learn physics and to try and prepare the students for the examination while making the physics lessons relevant to their daily lives.

The students

The teachers describe the students as being a mixture. They have two good classes which they describe as the upper streams and the rest are the lower streams which they describe as really low streams. They describe the girls however as hard working and that they try hard even when they do not have a big potential.

10.1.5 San Mikiel Boys' Area Secondary School

Wednesday 4th October 1995

The first thing which struck me on my arrival at this school was the amount of noise. The noise came out of the classrooms and corridors and in this school I observed quite a number of students walking and running about in the corridors. The classrooms were visibly dirty with papers lying on the floor and unclean floors. The furniture in the classroom was old and I was warned not to sit on a chair as it was broken. Mrs. Zammit the teacher whom I would be working with took me to the laboratory which was situated in the basement. There were no windows and the laboratory had a dank and musty smell. It was bare and there was no equipment visible on the benches.

The teacher

Mrs. Zammit is the only teacher interviewed who had graduated from the University with a B.Ed (Hons.) degree. She describes herself as hard working and conscientious and her main aim is trying to motivate

the boys and get them to do some work in physics in whatever way she can. Her main belief is that in Area Secondary Schools the focus should be more on work done in class through worksheets rather than on any formal manner of assessment.

The students

The students are described by their teacher as having a number of problems. They come from problematic family backgrounds and have a negative attitude towards schooling and towards physics which they see as very irrelevant to their lives. They are described as having a low attention span and create a number of problems during the lesson. The teacher also distinguishes between those who are interested in learning physics and those who are not interested.

10.1.6 Sant' Anna Girls' Secondary School

Wednesday 4th October 1995

Today I also visited the Girls' Area Secondary School. I was a bit nervous and was left waiting for about twenty minutes before I could see the Headmistress. The school had been newly whitewashed and there was a clean and fresh atmosphere about it. The fifth Form classrooms were in a new wing of the building and they were pleasantly decorated with charts and posters. The laboratory was also spacious but not so well equipped.

The teachers

The teachers who taught physics at the Girls' Area Secondary School were both male. Mr. Bezzina and Mr. Micallef were college trained teachers and they were experienced in the teaching of physics. They felt that it was important to teach physics through a context which was relevant to the students they were teaching.

The students

The teachers explained that the quality of the students in the Area Secondary School was very low and that very few of the students would

be sitting for the examination. They described their students as having a great deal of difficulties especially with expressing themselves. However according to one of the teachers the students who also took Chemistry with Physics could express themselves better. These are of course general statements, which cannot be applied to all the students in the school.

While the schools all followed the same physics curriculum and the students all sat for the same examination, a number of differences could also be observed among the schools. The most clear differences were visible between the Private schools and the State Schools in which the observations were held. Other differences were also visible between the Boys' and the Girls' State Schools. This does not mean that any general statements can be made about Private Schools or State Schools or about the students who attend these schools. In Part Three of the study (Chapter Seven, Section 7.1 and Section 7.2), I take the position that the subjectivity of the researcher is an important part of the research process and that the important thing for the validation of this subjectivity is being continually reflexive about the research process. Therefore, while I recognise that the descriptions presented in this section are context specific, I felt that it was important to make the first impressions of the schools visible, since although broad generalisations cannot be made in the first observations of the schools in which I visited there was plenty visible to raise questions and discussion.

The actual buildings of the Private Schools were well kept and maintained and the emphasis on religious identity of the school visible throughout. The State Schools though at times more spacious and more well laid out than the Private Schools were not so very well maintained and needed repair. In the State school sector a difference could also be observed between the Boys' and Girls' Schools. The Boys' schools both the Junior Lyceum and the Area Secondary School were bare and there were no pictures or posters in the corridors or classrooms. In the Girls' Schools on the other hand an attempt was made to liven up the place by including charts and posters especially in the individual classrooms. While several reasons such as lack of funding, lack of student interest, or lack of teacher interest can be given to explain this bareness, the evidence seems to point to a gender difference in the

establishment of a positive school environment. This gender difference could be in the students themselves or in the Heads of School with female students and female Head teachers being more motivated to create a pleasant atmosphere in the school than their male counterparts.

Another difference was observed in the laboratories. In the Private Schools the laboratories were well equipped and paid for by funding from the parents. In the State schools laboratories were equipped by State funding and therefore most of the apparatus and equipment was quite old and had been in the schools for some time. Modern equipment such as that seen in the Private schools was not visible in the State Schools. However in terms of quantity the State Schools had more of everything as the Private Schools were still building up their resources. In the State Schools the main difference was seen between the Junior Lyceums and the Area Secondary Schools with the Junior Lyceums being much better equipped than the Area Secondary Schools and Boys' Junior Lyceums being better equipped than Girls' Junior Lyceum. While I was looking at the evidence through the lenses of different types of categories, this again points to a gender difference in the allocation of resources.

10.2 The teachers

The teachers who were interviewed for the study as shown in the excerpts above all come from different backgrounds. They included both male and female teachers and teachers with different backgrounds in education. The teachers had different views and ideas about the teaching of physics and examinations but they all agreed that the physics curriculum and the physics examinations were very influential in determining the nature of their work.

10.3 The students

10.3.1 Family Background

The literature points to differing views about the division of class in Maltese society. In Chapter Six (Section 6.3.2) these differing views are visible in the work of Baldacchino (1993) who argues that class in Malta cannot be clearly defined and Darmanin (1991) who argues the opposite and states that there

is a sharp distinction of class in Maltese society and that class is strongly related to attendance in private schools. Darmanin (1996) also shows that private schools take an intake of students with parents from Service Class A and intermediate business and professional middle class fathers, while State schools serve mainly a working class clientele. This according to Darmanin (1996) creates an elitist atmosphere in Private Schools and selects against the students in State Schools who are considered to be what Zammit Mangion (1992) describes as "second-class citizens".

While I have argued in Chapter Six (Section 6.3.2) that social class cannot be so clearly defined in a Maltese society, some evidence for this division by class in the different schools was visible in a small survey which I carried out among the students whom I interviewed. Because the numbers are very small no general statements can be made about the students attending the schools which participated in the study. However the results based on father's occupation which is still the main criterion indicative of social class in Malta (**Table 1**) are similar to those stated by Darmanin.

School	Number of Students with fathers in:					
	Class I & II		Class III, IV & V		Class VI & VII	
	Actual No.	%	Actual No.	%	Actual No.	%
St. Peter's College	17	77	5	23	0	
St. Cecilia's GS	32	73	12	27	0	
Dun Karm's BJL	2	10	15	71	4	19
Santa Maria's GJL	10	23	27	63	6	14
San Mikiel BSS	1	9	7	64	3	27
Sant' Anna GSS	1	4	14	48	14	48

Table 1: Father's occupation according to school (Note: Shading indicates the predominant fathers' occupation for the different schools.)

Class I & II: professionals, administrators, managers and proprietors
Class III, IV & V: non-manual workers, artisans, technicians, foremen
Class VI & VII: manual workers

From this table it is very evident that students attending the Private Schools in the study have parents who are mainly professional, the fathers' occupations ranging from directors and managers to business men and journalists. Students in Junior Lyceums of the study have parents who are mainly non-manual workers or technical persons but not professional, the occupations ranging from electricians and clerks to policemen and fitters. Finally, students attending Area Secondary schools in the study have parents who are mainly working class with occupations ranging from skilled jobs to unskilled manual work such as panel beaters, mechanics and farmers. As stated previously the numbers in this study were too small to make any general conclusions about all schools and I acknowledge that not all students who attend these schools fit into the stated categories, however this evidence provides a starting point for possible directions to probe further, never losing sight of the individual students.

In Malta it is still the father's occupation which is indicative of social class, however a look at the mothers' occupation is also interesting. Across all the schools most of the mothers are housewives with only very few of them venturing out into the world of work. A list of mothers' occupation according to school is shown in **Table 2**. As can be seen in this table, the mothers who do have a career, are very much in careers which are traditionally considered to be female occupations such as teaching, nursing and hairdressing.

Unfortunately, it was not possible to identify the mothers' occupations prior to their marriages. This table therefore shows that most of the women prefer to stay home after they get married but not their level of education which would influence the type of upbringing they would give to their children. What is interesting is that the largest number of women stay at home regardless of whether their husbands are professionals or working class and regardless of whether they send their children to a Private or State school.

School	Mother's Occupation	Number of Mothers	%
St. Peter's College	Housewife	13	61
	Teacher	4	19
	Salesperson	2	10
	Computer Design	1	5
	Secretary	1	5
St. Cecilia's Girls' School	Housewife	27	60
	Teacher	8	17
	Clerk	5	11
	Manager	2	4
	Hairdresser	2	4
	Beauty Therapist	1	2
	Lab Technician	1	2
Dun Karm's Boys' Junior Lyceum	Housewife	24	92
	Clerk	1	4
	Cook	1	4
Santa Maria's Girls' Junior Lyceum	Housewife	28	70
	Teacher	4	10
	Nurse	3	8
	Clerk	3	8
	Shop owner	1	2
	Sales girl	1	2
San Mikiel Boys' SS	Housewife	9	100
Sant' Anna's Girls' Secondary School	Housewife	25	84
	Care Assistant	2	7
	Nurse	1	3
	Security	1	3
	Kindergarten assistant	1	3

Table 2: Mothers' occupation according to school

10.3.2 The teachers' perceptions of student ability

The teachers interviewed give a number of impressions of their students and their perceptions of the students' ability. While no generalisations can be made about all teachers and all students, the teachers interviewed all tended to divide the students on the basis of (1) subject choice and (2) ability. In fact it was clear from what the teachers interviewed said that they looked at their students depending on whether they were science or non-science students and on whether they were bright or weak students. As shown in the excerpts above, the teachers also imply that the science students are more bright than the non-science students. These teachers are also under the impression that the students in the State Schools especially those in the Area Secondary Schools are low ability students. They make very general statements about the ability of the students they teach. However these are only the teachers' perceptions and have to be treated as such. The actual student ability in the different schools will be explored further later on.

Thus my first impressions of the schools, teachers and students provided me with a starting point from which further analysis of the data could be carried out and it established three major categories, the type of school, gender and class. While my main interest was in exploring issues concerning assessment, my first impressions in the schools provided me with other lenses from which to view the data.

CHAPTER ELEVEN

Assessment and Teaching physics

11.0 Introduction

The initial research questions focused on what the teachers and students thought of the physics SEC examination and how these views were reflected in the kind of teaching and learning taking place in the schools chosen to participate in the research. The data raises a number of questions about the influence of examinations on the teachers, the way in which they teach and hence the type of learning taking place in the classroom.

11.1 Defining Assessment

In the introduction to the second part of this study I distinguish between assessment and examinations. Using definitions by Linn and Gronlund (1995) and Gipps (1994) I define examinations as being only one form of assessment, while assessment is taken in its broader sense to include different methods of collecting information about the performance of individuals. In the interview data with the teachers, however, all the teachers interviewed talk about assessment and examinations interchangeably the main focus being on the formal written examination taken by students in an examination room and marked by external examiners.

11.1.1 The written examination

When the teachers interviewed talked about the examination, in all the cases they meant the Secondary Education Certificate which was the high status examination taken by students at the end of the five years of secondary schooling. All the teachers interviewed regardless of their sex, their educational background and the school they were teaching in, agreed that the examinations were extremely important and as Mr. Galea from Dun Karm Boys' Junior Lyceum says, "*...God forbid that there were no exams...*".

The teachers interviewed however give different reasons why they think that examinations are so important. Mrs. Borg from St. Peter's College feels that Malta is too small a country and that if there were no examinations this would give rise to nepotism and favouritism. She says:

> *...we are an exam oriented country unfortunately...it's a tricky question and a tricky situation...it's a small country if you do away with exams...what happens then...*

While this definition of examinations relates only to Mrs. Borg and it is not suggested that it has any wider applicability, it is similar to what in the literature is described by Nuttall (1975) as the main reason for the introduction of examinations in China and which is described in Chapter Three (Section 3.0). Nepotism is also described by Zammit Mangion (1992) as one of the main reasons why foreign examinations and examinations by external bodies are given so much importance in Malta.

Another reason given for the importance of the examination by the teachers who were interviewed is the motivation of students. All the teachers interviewed considered motivation to be an important justification for having examinations. Mr. Galea from Dun Karm's Boys' Junior Lyceum expressed the views of other teachers. He expressed it in this way:

> *...the children work for the exam...they don't study to increase their knowledge...absolutely not...the children today they just work for that piece of paper...that's why examinations are so important because otherwise they wouldn't study...*

This idea is also related to the idea of standards and the need for examinations in order to maintain school standards because otherwise says Mr. Buhagiar from Santa Maria Girls' Junior Lyceum, *"...the level will fall like what happened...it frightens me because we all know what happened..."*. A similar argument is made in the literature by Gipps and Stobart (1993) see Chapter Three, Section 3.2.1. They argue that examinations provide students with a powerful motivation to work and a means of motivating teachers to maintain standards and teach to the curriculum.

It must be remembered that these views relate only to the views of the teachers interviewed and it is not suggested that they necessarily have any wider applicability. However, the observations and interviews with teachers

indicate that the teachers interviewed give examinations a great deal of importance and that for these teachers the main function of the examination is motivation. Motivation is in fact one of the main functions of examinations described in Chapter Three (Section 3.2.1). Chapter Three (Section 3.2) also indicates selection and discipline as two other main functions. At this point however neither of these two functions is mentioned by the teachers interviewed.

11.1.2 Course Work / Practical Work

Course work in the form of practical work is part of the physics SEC examination. In Chapter Four (Section 4.2.3), I argue that course work and teacher assessment increase the validity of the examinations and that teachers find this form of assessment more professionally rewarding. All the teachers interviewed agreed that practical work was an important aspect of any science subject because as pointed out by Mrs. Borg, *"...you cannot teach a science subject unless they have hands on experience..."*. Also, explained Mr. Micallef, *"...the students enjoy themselves during the practical work and they understand more..."*. However while they all agreed that the practical work was important the teachers interviewed were not very happy about the way in which it was being assessed and they did not find this form of assessment professionally rewarding. In the interviews they expressed two major concerns, (1) about the resources available to carry out the practical assessment and (2) about issues of reliability and uniformity which they thought undermined the use of course work and teacher assessment.

11.1.2.1 Resources.

One of the major concerns of a number of the teachers interviewed was that for practical work to be carried out well, the necessary resources in the form of apparatus, chemicals, and so on would be available. From the observations and interviews with the teachers it could be seen that resources were adequate in five of the schools observed.

In the Private Schools which participated in the study my observations showed that there did not seem to be a problem with resources. In fact the teachers interviewed state that *"...now we don't have that problem..."*. They

continued to tell me that they obtained funding for the laboratory from the parents and the organisation of a number of fund-raising activities organised by the parents and teachers in the school, such as a Christmas Bazaar.

In the other State schools observed, the situation is not so drastic and Mr. Bezzina at Sant' Anna Girls Secondary School describes the resources as *"adequate"*, while at Santa Maria Girls Junior Lyceum, Mr. Buhagiar says that, *"with resources I don't grumble so much...it's not an ideal situation...but it's not bad..."*. The school with the most resources among the four State Schools observed is the Boys' Junior Lyceum. Mr. Mizzi the Head of Department of Physics in this school says:

> *No, over here we are lucky and we have three labs, and all have apparatus. There is only one class which does not do practicals because the teacher refuses to do the practicals since his classes have not been divided. Otherwise all classes have two periods a week of practicals.*

And Mr. Galea another teacher in the same school feels privileged at the amount of resources available in the school:

> *...maybe in this school...we're a bit privileged...in this school...because what I hear from other schools they find it difficult to do the practicals...we're a bit privileged...because we have the apparatus and technicians...*

The major problem with resources is found in the Boys' Area Secondary School. Evidence of this problem was seen in my observations and was also reflected in the amount of comments made by the teacher who teaches in this school and the students. In all the schools visited none of the students commented about the resources, but in the Boys' Area Secondary School the students state, *"...it's dirty and there is a lot of rubbish...we don't have any apparatus and we're going to appeal to the Mayor..."*. This situation is confirmed by the teacher, Mrs. Zammit who has a great deal to say about the lack of resources in the school:

The biggest problem which I am finding is with the practicals. There is no equipment and no apparatus. And for example when I go into the laboratory I do not find anything prepared. I have to prepare things myself. The cupboards do not open and we have to stay looking for the apparatus ourselves...the lab is just benches and stools...we lack a lot of resources...

The views of these teachers seem to indicate that there is some discrepancy in the allocation of resources. The Boys' Junior Lyceum is in fact privileged over both Girls' Junior Lyceums as well as both boys' as well as Girls' Area Secondary Schools. This raises a number of questions about the hierarchical positioning of the State Schools in which the research was carried out, with the Junior Lyceums observed being privileged over Area Secondary Schools observed and Boys' Junior Lyceum being more privileged than the Girls' Junior Lyceum. This seems to indicate that while I have organised the data according to school type, it can also be organised in terms of gender and that both gender and type of school influence the adequacy of resources and hence the opportunities being offered to students.

11.1.2.2 Issues of reliability.

One of the main reasons which the teachers give to explain their distrust of course work and teacher assessment is the issue of reliability and uniformity. One of the main difficulties encountered by the teachers interviewed when it came to considering practical work as a form of assessment is the authenticity of the work presented. As pointed out by Mr. Buhagiar, "*...what guarantee can you have that they have done the work ?...like when we say what guarantee do we have that they did their own homework...*".

Another difficulty described by five out of the nine teachers interviewed is the way in which the practical work is to be marked. The students are in fact expected to present their fifteen best experiments as course work. The practicals are carried out in school and marked by the teacher. Initially teachers were expected to follow a detailed marking scheme which allotted

marks for the kind of work done in the laboratory as well as the written work. This however was discarded as too time consuming and teachers usually simply give an impression mark. This creates a number of difficulties with how many marks to allow for the actual written work presented and for student effort and if marks are to be given for effort how to quantify this effort. It also creates wide differences in marking between teachers and across different schools.

Mr. Micallef from the Girls' Area Secondary School explains his difficulty:

> *...but how can you give a girl in an area secondary school a two or a three even if you know that her experiment is not perfect...this will discourage her even more...so you give her an eight or a ten...but what does that really mean...*

Mrs. Sant from the Girls' Private School expresses a similar difficulty:

> *...that's what worries me...because in the practical they clean up really well...I never had a group like that...and so I give them a good mark...but it doesn't mean that when it comes to expressing themselves they can express it...*

The dilemma of these teachers is how reliable the marks for the practical really are and what they are actually representing. According to Mrs. Camilleri another teacher at the Girls Private School the practical marks do not give any indication of the level of performance of the students:

> *...the marks do not always correlate...it has helped them to like the subject and for them to enjoy it better but it hasn't helped them in the overall performance in an exam or test...*

This relates closely to the issue of uniformity, which was another issue raised by all the teachers interviewed. Mr. Mizzi from the Boys' Junior Lyceum says:

> *...I think that in the course-work there should be much more uniformity...for example in our school we do about thirty practicals but I know that in some other schools they only do five. Some can be copied and the way in which I mark is not the way in which another teacher marks...there is a lot of teacher subjectivity...*

This concern about uniformity among the schools and teacher subjectivity is also expressed by Mrs. Camilleri at the Girls' Private School. She says:

...it is clear that there are different ideas among both teachers and examiners...we're the type to follow the rules and then we realised that in the end our girls were disadvantaged in the sense that they get lower marks...and they get to know because they have friends, brothers and cousins in other schools...

These issues are described in the literature by Gipps (1994) (see Chapter Three (Section 3.1), who argues that they stem out of the psychometric paradigm and intelligence testing where the emphasis is on the production of examinations which measure the same thing if they are marked by different individuals, at different times and in different places. The data indicates that the views of the teachers interviewed in the study are very much rooted within this psychometric framework and this seems to be the reason why they appear to be very wary of new and alternative forms of assessment. They are still very much especially wary of teacher assessment and the issue of teacher subjectivity. This difficulty of ensuring comparability across teachers, tasks and students is described by Gipps (1994) (see Chapter Four, Section 4.2.3) as the main difficulty with teacher assessment.

11.1.3 Other forms of assessment: Oral Examinations

Two of the teachers interviewed, Mrs. Camilleri from the Girls' Private School and Mr. Micallef from the Girls' Area Secondary School suggest that one other way in which students could be assessed could be through the use of an oral examination. The concern of Mrs. Camilleri is that the students do not do well in their examination because of the problem with expressing themselves and this would be avoided if they were examined in an oral manner. She argues:

...I sometimes say that it should be oral for those who do not express themselves well...maybe if they could speak it out rather than write it ...because when you speak you don't need to see how the verb is conjugated...

In a similar way Mr. Micallef stresses the importance of allowing the students to show what they have understood:

...I feel that like there is an oral in many subjects there should also be an oral in science...the teacher or someone in charge gives the students something practical and from this he can deduce the results and he sees what the students are capable of doing using their hands...this way they know how to answer...but if you put the question down on paper even though I am asking them the same question they are completely lost...

While these are only the views of two individual teachers and it does not mean that all teachers believe in such a system of assessment, the introduction of an oral examination to assess students raises the issue of how much the written examination is actually assessing what the students actually know and the issue of the validity of the examinations. This is in fact one of the major critiques levelled against examinations in Chapter Three (Section 3.4).

There seems to be a strong emphasis in the perceptions of the teachers interviewed on the examination whether in written or oral form, all the teachers interviewed felt the need to examine their students in one way or the other. With regards to practical work which is the only form of course work mentioned by the teachers interviewed, the teachers show great distrust about the way in which it is actually being carried out. Again the teachers all felt that while idealistically, continuous assessment and teacher assessment were desirable in reality they did not function very well. Mrs. Borg echoes the views of all the teachers interviewed and expresses her view that for different forms of assessment to be used effectively in the physics classroom, "*...the whole educational system will have to change...*". Until that happened, the teachers interviewed continue to be driven by the external examination and this is reflected in the type of teaching taking place in the classroom.

11.2 Teaching Physics

My second research question focused on the way in which the teachers' views affected the kind of teaching and learning taking place in physics classrooms. I was working with the view based on my own experiences described in Chapter Eight (Section 8.0) and the reading of the literature

discussed in Part Two of the study, that examinations directly influenced both the teaching as well as the learning of physics. However, I continued to acknowledge the importance of gender, class and school type and tried to view the data through these lenses, continually checking and rechecking the issues.

11.2.1 Teaching to the test

In the previous section, the teachers' views of the examination indicate that they rely very heavily on the examination. In the literature review (Chapter Three, Section 3.3.2), like Gipps (1994) I argue that the examination influences the type of teaching and learning taking place in the classroom. Gipps in fact states that examinations influence the way in which teachers construe the nature of their work and that because of this teachers spend a great deal of time and effort teaching what tests measure. This results in what Madaus (1988) calls "teaching to the test".

I found that this teaching to the test was very predominant among all the teachers observed. As stated by Griffiths and Davies (1995) nothing definite can be said about schools in general or about girls and boys in general or even about boys and girls in specific schools. However, there is a great deal which is thought provoking and raises questions about teaching and learning and examinations. As shown in the excerpts from my observation notes, all the nine teachers in the schools observed regardless of whether they are male or female, regardless of whether they are teaching boys or girls and regardless of the type of school they are teaching in, make constant references to the examination. I tried to see whether other factors were influencing the type of teaching taking place in the classroom. However, while I observed the different teachers use different methods to teach, had different approaches to teaching and used different resources, the only theme which was common to all the six classrooms was the strong emphasis on the examination.

In the classroom observations the teachers constantly referred to previous questions which came out in examinations and to notes which the students needed to study for the examination. For example Mr. Mizzi, in whose class I

observed at Dun Karm's Boys Junior Lyceum, constantly refers to the examination:

> *...yes...but it seems as if our minds have rusted and in the holidays you were just sunbathing...but you're not studying...let's see what this Mr. Ohm discovered...we call it Ohm's Law...always open the switch...this wire always obeys Ohm's Law...look at the table what can you see...come on in the exam...London or Matsec...you will always have some table and you will have to interpret the result...*

This common thread in teaching to the examination is described by Mr. Buhagiar who teaches at the Girls' Junior Lyceum. He says, *"...we're all making a mistake because we're teaching physics for the exam..."*. While these observations provide further evidence for teaching to the test, it could also indicate that the examinations have become so predictable that students can actually be coached to answer examination questions.

Further evidence of teaching to the test comes from the students themselves. For example Janet from Santa Maria Girls' Secondary School says:

> *...he wants to finish the topics...and he rushes things...he sees what he can do to finish the syllabus...because otherwise we would do talks and things like that...he wants to hurry up...so he doesn't stop to see if we're understanding...he goes on...even when we told him to do some examples...he said that we would fall behind a whole week...*

Paul from St. Peter's College describes a similar situation:

> *...because she's all the time saying...we're fighting against the syllabus...we're not going to cover everything in time...because if I ask her to explain something again she tells me no because we have a battle with the syllabus...because the syllabus is vast...this...this...and that...and you understand nothing...*

This is very similar to what in the literature is described by Madaus (1988) as the impact of high stakes testing which results in teaching to the test, the use of past examinations to define curriculum and the adjustment of teaching to the kinds of questions asked on the examinations.

11.2.2 Note-Taking

Further evidence of teaching to the test is seen in the large amount of note taking which again took place in all the physics classrooms observed without any exception. This note-taking ranged from actual dictation of experimental procedures, to a summary of what had been said during the lessons, to the dictation of definitions and answers to questions asked during the lesson. This is again related to the emphasis on the examination. As Mr. Mizzi points out, *"...you're going to have this in the exam for sure...take out your notes and write it down...divide the page into three and draw the graphs which I have drawn..."*.

The students themselves are very dependent on these notes even if they have not understood the lesson. They feel safe that they have something written down which they can refer back to when they need to study for the examination. At Sant' Anna Girls Secondary School the girls constantly ask *"...to write down something..."*. This is important explains Paul from St. Peter's College because:

> *...in this way we have more guidance about where we are going...because otherwise when you get to the exam you don't know what to study...it's important that she tells us what is important...*

This raises the issue of how much the learning taking place in the classroom observed was geared to understanding and how much of it was geared to simply reproducing material for the examination.

What was interesting to me at this point was that there seemed to be in the observations and responses by teachers and students a notion that the examination was the driving force behind the curriculum. This relates very closely to the arguments made in the literature that in high stakes testing the curriculum becomes defined by the examination and the major goal of schooling becomes success in the examination.

11.2.3 Making physics interesting and relevant

While the main emphasis is on the examination another theme which emerged out of the data was the importance of using applications from every day life in the teaching of physics. Out of the nine teachers interviewed two made direct comments about making physics relevant and I actually observed them trying to use applications from everyday life in their lessons and another three did not make direct reference to relevance when interviewed but they were observed using applications from life during their lessons. These attempts at making physics interesting was minimal compared to the emphasis placed on the examination. However since relevance was another theme which recurred across schools and across teachers, I was interested in exploring how the applications to every day life were being used in the physics classroom.

The following conversations with Mrs. Borg from St. Peter's College and Mr. Bezzina from Sant' Anna Girls' Secondary School point to the importance given by teachers to making physics interesting and relevant. Mrs. Borg says:

> *...well...I try to bring out the relevance in every lesson...like... I always try...you know to bring out applications from everyday life in every situation...I think it is to a certain extent...it is important...if not for anything...even the way we prove things...we arrive at conclusions...in an indirect way it is relevant...if not in a direct one for those who want to continue studying...*

Similarly Mr. Bezzina argues that physics should be related to something actual and related to everyday life. His argument is based on his perception that girls find physics difficult and therefore it needs to be made more applicable to real life situations:

> *...I find that the girls find a lot of problems...but if it was amalgamated with...for example...some other subjects...or geared towards other subjects...for example...you tell them that in cooking they use the kenwood...and you ask them what they think that a kenwood has inside...and they open the kenwood and they see the motor turning and*

that it has magnets...you understand...and then you try to build a similar motor...you have to gear it with something actual which the children know how to use...so if it gets damaged...they will have some ideas of what is happening...

The difference between Mrs. Borg and Mr. Bezzina is that Mrs. Borg sees the application of physics as an analytic process which helps the boys she teaches arrive at conclusions in a faster way. For Mr. Bezzina the application of physics is important to enhance the actual understanding of the girls whom he thinks find physics difficult.

One school where I did not observe any physics being related to everyday life and relevance was not mentioned by the teachers teaching in this school was the Girls' Private School. At St. Cecilia's in fact the emphasis is much more on teaching physics for the examination and I did not observe any application of physics. This could be due to the emphasis on the examination, to the fact that they were taught by female teachers or to the fact that most of the girls aspire towards professional careers or simply because the topic taught was not conducive to the inclusion of applications. While all these factors need to be acknowledged, the strong emphasis made by the teachers both during the observations as well as in the interviews on the examination and the need for certification point strongly to the view that applications from everyday life are not included so much in this school as the teachers are rushed to finish the syllabus.

The use of applications in physics in the lessons observed point to a number of gender stereotypes. In fact in the lessons observed the teachers make use of examples from everyday life depending on whether they are teaching boys or girls. With boys the examples are taken more from applications having to do with cars, bridges and soldiers. For example in a lesson at St. Peter's College the teacher talks about resonance in terms of soldiers walking over bridges:

...this can also happen on bridges...you know if you'll continue like this, I'll keep on going in the break...so if we have soldiers marching on a bridge...the bridge starts vibrating ...it starts to move up and down...

At San Mikiel Boys' Junior Lyceum the female teacher talks about car batteries:

> *...we talked about cells and electrical energy...we talked about the car battery and why we have to add distilled water...it creates a potential difference...to be able to create a current...what does it mean when we say 1 volt...*

In the Girls' Junior Lyceum and Area Secondary School, I observed the male teachers trying to make the physics very relevant because as pointed out by Mr. Buhagiar, *"...physics is important even for a simple housewife..."*. This idea raises the issue of the importance of physics for all students, even for those who do not intend to continue studying physics. The application of physics to everyday situations in the home was observed in Mr. Buhagiar's lessons:

> *Teacher: ...what if you're a housewife...and the sales person tells you that your kitchen sink is guaranteed stainless steel...how could you check if what he said is true...?*
>
> *Pupil: ...you stick a magnet to it...and it doesn't stick...*

Mr. Bezzina at Sant' Anna Girls' Secondary School also makes use of examples related to the home:

> *...you start in a different way and tell them how to use the kenwood...how to use for example the pressure cooker so that they will know when they use these things...I tell them...don't you have a geyser at home...yes there is something before the water goes in...*

This can be seen from two different perspectives. Either that the teachers are doing their best to make physics interesting for their students in whatever way they can and this can be looked at in a positive manner. The evidence however also points to the influence of gender stereotypes and the underlying implication that the girls will not continue to study physics but will only need it in their daily life which may be very true in the light of the evidence shown in Table 2 of the previous chapter where it was seen that most of the mothers do in fact stay at home after their marriage.

In the literature review I argued (in Section 4.3.2) for a new model of educational assessment which encourages the assessment of learning within a context which is relevant to the lives of students. The inclusion of everyday life situations was apparent in the classrooms in which I observed, however the examples seem to point strongly to the use of this context in a gendered manner. The examples encourage the stereotype that physics is more for boys and that physics is only good for girls if it is watered down and turned into what Kelly (1985) calls "girl-friendly science".

11.2.4 Practical Work

As shown previously in physics practical work is carried out in schools and assessed by the teachers themselves. As already shown the teachers in fact express a number of concerns about the way in which practical work is actually being carried out. In the schools practical work is carried out in a different manner which justifies the concerns of the teachers interviewed regarding comparability.

In the Private Schools observed the students are left very much to work on their own. As described in my field notes these schools make use of circuit experiments which allow the students to work on their own:

> *Practical session at St. Peter's College*
>
> *In the laboratory there are experiments set up in different stations and groups of two or three boys work at each station. They enjoy the practical work and are absorbed in what they are doing. The teacher went round the groups and answered any questions which the students had, helping them out with any difficulties.*

> *Practical session at St. Cecilia's Girls' School*
>
> *The girls worked in pairs on different experiments. The pairs all worked on different experiments which they had negotiated with their teachers. They looked up the apparatus and set up the experiments themselves following an instruction sheet which had been prepared for them. The teacher went round the students helping them with any*

difficulties. She also questioned them about what they were doing, leading them up to the solution of the problem.

The students themselves confirm that in fact they carry out the practical sessions themselves. Nadia from St. Cecilia says:

...we do the practical on our own or sometimes we do them in twos...they help us to understand better and it's more fun to be in the lab experiencing things ourselves...

At St. Peter's the boys observed also work on their own and they enjoy themselves during the practical sessions because as Paul points out, *"...you're putting things into action...".*

I also observed practical sessions at Dun Karm's Boys Junior Lyceum, San Mikiel Boys' Secondary School and Sant' Anna Girls Secondary School.

Practical session at Dun Karm's Boys' Junior Lyceum

The experiments were set out on the laboratory benches. The students worked in groups and had to do a set of three experiments on electricity. The write up for two of the experiments had been done previously. In fact the students told me that it had been done more than three weeks ago during a theory lesson. All the students had to do was collect the results and fit them in the table which they had already copied out.

Practical session at San Mikiel Boys' Area Secondary School

The teacher started to take out the trolleys and prepare the experiment for the students. He asked the students to copy the write up of the experiment from the blackboard. The students were noisy and not interested in what was going on. The trolleys do not work. The teacher gives up and tells them that they would not do the experiment after all.

Practical Session at Sant' Anna Girls' Secondary School

The teacher started by demonstrating the experiment and explaining to the students what they had to do. She had previously given them a handout and later asked them to read the handout and develop their write up from the handout. The lesson was about magnetic field maps and all the students had to do was use two magnets and iron filings to look at the magnetic field patterns formed.

In all of these schools the practical sessions which I observed were very much tailor made for the students and the students had practically everything prepared for them. At all of these schools the students did the experiments but they followed closely a handout given by the teacher and at times the write up was dictated prior to the practical session by the teacher. This is pointed out by Frank from Dun Karm's Boys' Junior Lyceum who says, "*...we do it with the teacher...we just put it in the passive voice...*".

This was mainly influenced by the views of the teachers in these schools that the students were not capable of working on their own during a practical session. Mr. Micallef and Mrs. Zammit both state that the students have to be helped constantly and Mr. Galea at Dun Karm's Boys Junior Lyceum continually repeated that the boys could not work on their own. He says:

...yes...we manage the practicals...although...it's a joke...in what sense...because these kids are not coached enough...it's not our fault...but they are not capable of being left on their own...to write down the method...aim...mostly...you end up writing it on the blackboard...and they just try out the experiment...and they write down the results...you can't leave the children on their own...in the practical...because they won't get there...it's almost spoon feeding...almost...in a group they do it themselves...but you have to explain...they do them...but certain things...like the conclusions...they don't get there...because in the practical...the boys find everything ready...he follows the instructions that you have given him...

This results in a different attitude among the students and whereas Nadia and Paul from the Private Schools, talk about the enjoyment of practical sessions.

Maria at Sant' Anna's, Carl at Dun Karm's and Mark at San Mikiel's do not show that much enthusiasm about the practical sessions. As they say when asked whether they enjoyed the practicals:

Maria: ...so...so...I'm not capable of explaining it...it's okay if I do it but I'm not capable of explaining it...

Mark: ...we rarely do experiments ourselves because we do not have any apparatus...

Carl: ...nothing special...

These examples point to the question of student ownership in the different schools. In the Private Schools observed the students are allowed to work much more on their own and this makes the practical sessions enjoyable. This does not mean that all the students enjoyed the practical work, or that they produced better work than the students in State Schools, but that they were more confident in the work because it was their own work. Both boys and girls are given leeway to carry out the practical work and there is no evidence for gender differences.

In the State schools observed there seems to be less faith in the capacity of the students to work on their own and this leads to practical sessions which end up being very similar to theory lessons. In the previous section (Section 11.1.2.1), the distribution of resources pointed to a gender difference in the allocation of resources to the State Schools observed with boys appearing to be privileged over girls in the amount of resources available. However, when it came to the actual implementation of these resources the evidence seems to suggest that while the boys at Dun Karm are more privileged in terms of resources both in terms of gender and type of school, they are not privileged when it comes to the way in which they are actually allowed to work in the practical sessions. Even though resources are available the boys interviewed are not given the opportunity to show their full potential. In this case the distinction between the Private Schools observed and the State Schools observed seems to be the most predominant factor above any gender or class differences.

11.3 Teacher involvement in Assessment

What seems to be emerging from the data is the great influence of the examination on the teachers interviewed and on the teaching of physics. While there is no attempt to make this a general statement applicable to all teachers and all schools and all students, it raises a number of questions about the excessive importance being given to the examination and since the examinations play such an important role to the relationship between the teachers and the Examination Board.

In the literature Gipps (1994) see Chapter Four, Section 4.3.2.1 argues that any assessment process is only as good as the teachers who implement it make it to be and therefore she continues to argue that the involvement of teachers in the assessment process is essential. The teachers interviewed however, felt that in fact there was no relationship whatsoever between them and the Examination Board. Mr. Buhagiar expresses the concerns of the teachers:

> *...my fear is that with the Board there is no relationship whatsoever...I don't think that it ever considers what we say...decisions are presented to us...and they tell you...we've decided we're going to do this...we're telling you...full stop...they're ordering it...it's like the bogey man...it's impositional...*

This attitude of the Examination Board was patronising and the teachers interviewed were concerned about their lack of involvement since as Mrs. Borg points out, *"...we're treated you know like young children...and we're not trusted..."*. This makes them very wary of teacher assessment such as the practical work as they think that the lack of discussion creates lack of uniformity and disadvantages some students over others. Thus they become more dependent on the written examination which they view as being above the internal and external politics of the Examination Board.

The teachers who were interviewed recognise the need for their involvement and all the teachers interviewed agreed that their involvement would improve the way in which assessment practices are carried out in Maltese schools.

While all the teachers expressed this view, it is described most eloquently by Mrs. Borg from St. Peter's College:

> *...I would like to see more co-operation...let's meet and discuss things together...all the teachers let's voice our impressions...that there should be feedback between the Board and the teachers...we can all learn from each other's mistakes...I can learn from other teachers...I can learn from the Board...but the Board can also learn a few things from us teachers...because we are the ones who face the students in class...*

This call for more teacher involvement by the teachers themselves is a move in the right direction towards the formation of a new assessment culture. But in the words of the teachers interviewed themselves until they take an active role in the decision making they prefer to rely on the psychometric tradition of testing.

CHAPTER TWELVE

Assessment and Learning Physics

12.0 Introduction

The emphasis on the written examination and the type of teaching taking place in the physics classrooms observed also influenced the way in which the students interviewed were learning and understanding physics. This in turn influenced the way in which the students interviewed looked at assessment.

12.1 Physics as Difficult and Masculine

At one point or another during the group interviews, the students in all the schools mentioned that they found physics difficult. The students in all of the schools observed in fact comment that *"...physics is difficult...we don't understand much and it has a lot to study...it has a lot of formulae and the like...a lot of work..."*. Both the boys and the girls interviewed perceived physics as being difficult. Further evidence for this mentality is given by the teachers interviewed. Mr. Galea from the Boys' Junior Lyceum describes it in the following manner:

> *...because there is a certain mentality among the students that physics is difficult...beyond them...abstract concepts which they don't understand...they come prepared from the beginning...physics is difficult for me and I am not capable enough...*

This mentality is also described by Mrs. Sant from the Girls' Private School who calls it a stumbling block and says that they get the attitude from *"...their friends...their sisters and even their parents..."*.

The teachers interviewed related this difficulty with physics to a gender difference and thought that physics was even more difficult for the girls. Again these are only the views of the teachers interviewed and it does not mean that all teachers perceive physics to be more difficult for girls. However, it was interesting to see that the teachers interviewed regardless of

whether they were male or female themselves and regardless of the school in which they were teaching looked at physics as being more difficult for girls. Mr. Buhagiar from the Girls Junior Lyceum echoes the views of the other teachers and says:

> *...they still grumble about physics...they have the mentality that it's a boys' subject...*

Mrs. Zammit from the Boys' Junior Lyceum relates this to the boys' out of school experience and adds that:

> *...I think that when you come to certain practicalities...since boys have more time to be with their fathers and they talk about these things...I think that they have more practice...they are always handling something, playing and arranging things and they are more practical...*

This is described in the literature by Johnson and Murphy (1986) and Murphy (1997) who state that the play activities of individuals influence their interest and performance in science (see Chapter Six, Section 6.2.2). What is interesting is that even the female teachers who themselves successfully completed a course of study in physics thought that their students looked at physics more as a boys' subject.

These perceptions of the teachers are however, not reflected in the views of the majority of students interviewed themselves. The majority of the boys and the girls interviewed in all the schools thought that physics was a subject for both boys and girls. Their views are summed up in the comment made by Diane from the Girls' Private school:

> *...girls can do just as well in physics as boys...or better...we do the same work as the boys and we're able to do the same work that they do...*

A differing point of view was expressed by a number of girls in the Girls' Junior Lyceum and the Girls' Area Secondary School. These girls thought that physics was much more of a boys' subject because the boys would need it much more for their future work. Janet one of the girls at the Girls' Area Secondary School explained this:

...I think boys are more interested in it and they need it more because they need it to become electricians and I think that an electrician is more suitable for boys...

These girls relate the learning of physics to finding a job and since they are of the view that they will stay at home once they get married they do not see the use of learning physics. Janet from the Girls' Area Secondary School argues:

...why do you have to study if you want to get married...you will have to stop because if you have children you have to stop...you're not going to continue...it's not worth spending five years at University studying and then you have to stop...because the children need to spend time with you...

While this idea is expressed only by a few of the girls, it raises a number of questions about the relation of learning and examinations with the identity of the students. A number of girls and boys interviewed in the Area Secondary Schools question the reason behind all the learning and studying for examinations. This is related to the role which they will play later on in life and strongly related to the occupations chosen by the parents which were described in Chapter Ten, Section 10.3.1. There seems to be within the responses of a few of the girls and boys in the Area Secondary School a gender and class based notion of how labour is divided in society, and, embedded within that views about the function and importance of learning and assessment.

12.2 Why learn physics ?

12.2.1 Selection

At the time of the study, physics was compulsory for all students in Maltese schools and for entry into further education. In all the group interviews carried out in the different schools the students mentioned the fact that they studied physics because they had to and because it was necessary for entry into future work and further studies. *"We need it for Sixth Form...for the Junior College ..."* explained Chris from St. Peter's College and according to Sarah

from the Girls' Area Secondary School, *"...because to find a good job you need to have physics and maths..."*.

This is closely related to the function of examinations previously described by the teachers, that of motivation. The students interviewed are in fact motivated to study for the examination in order to obtain certification. Certification is viewed to be important by the students, because *"...the mentality in Malta is like that...the more certificates you have the better..."* explains Maria from the Girls Junior Lyceum. Similar observations are made by other students in the different schools. For example, Natasha from the Girls' Private School continues to relate certification to the world of work, *"...without studying you won't have a degree and you can't work..."*. The fact that among the students interviewed there was a consistency in their responses about why it was important to learn physics, led me to the view that among the students interviewed the main function of the examination was that of selection and certification. Nuttall (1975) (in Chapter Three, Section 3.2.2) also describes selection as being the main function of examinations. Nuttall in fact argues that this function is important to certify individuals at the end of a course of study so that these results can be used by employers and other individuals to select students for the limited places in the different jobs and professions.

12.2.2 Discipline

While the students interviewed all acknowledged the importance of obtaining certification, they did not all agree that physics should be the subject which determined their future lives. The students interviewed who had out of their own free will chosen to study the science subjects thought that there was an intrinsic value in studying physics which went beyond that of certification. Kenneth from St. Peter's College argued in favour of studying physics. He says:

> *...it's needed nearly in everything...it's good that it's compulsory...it's interesting and it's an advantage having it even if not for a job...*

Similar statements were made by other science students and the distinction between the science and non-science students was also made by the teachers in Chapter Ten, Section 10.3.2.

The non-science students interviewed on the other hand were very much against the use of physics as a selective mechanism. They argued like Natasha from the Girls' Private School that, *"...it's quite unfair because if you're good at other things and you don't have physics...you know...it spoils your chances..."*. The non-science students interviewed in fact all agreed that you needed physics depending on the type of work which you wanted to do and they could not understand why you needed a pass in the physics examination even if you wanted to do something completely different in life. Sarah from the Girls' Area Secondary School says, *"...we can't understand why in every work physics is needed...even for hairdressing you need to have maths or physics..."*, and Paul from the Boys' Private School says, *"...I want to become a lawyer so why should I have to learn physics..."*. While the views relate only to the individual students, and it is not suggested that they have wider validity the fact that similar statements were made by students in different schools, from different backgrounds and of different gender points to the importance of the selective function of the examination. All of the students interviewed seemed to agree on this point and there was no evidence to point to a gender or school difference.

The common theme which seems to be emerging from the statements made by the students interviewed is that the way in which physics is being taught for the examination is having a negative influence on the students, making them dislike physics. The fact that physics is tied to a reward is also having a negative influence. In this manner physics is being used as a means of disciplinary power (see Chapter Three, Section 3.2.3) in order to measure the differences among students by means of an examination. This results in a norm or standard against which all individuals can be judged and creates what Foucault (1977) describes as "a normalising gaze...that makes it possible to qualify, to classify and to punish," (p. 175). The classification of individuals on the basis of whether they pass the physics examination or not is used as a means of control in order to classify the students and place them into categories from which employers and other individuals can then select individuals. In the literature (Chapter Three, Section 3.2.3) this is also described by Broadfoot (1990) who describes the use of examinations in such a manner as a means of social control. In the statements made by the

students interviewed one factor which comes out clearly is that the students do not appreciate the use of physics as a means of disciplinary power and they would rather learn physics for their own personal knowledge.

12.2.3 Relevance to Life

The students argue that it is not the physics that they do not like but the fact that it acts as a selective barrier preventing them from access into further education or the careers of their choice. The fact that learning physics was linked to a high stakes examination made it difficult and abstract but this did not mean that the subject in itself needed to be so. The students were divided in their views about why it was important to learn physics. One clear division was between the science and the non-science students.

12.2.3.1 The Science Students.

For all the science students interviewed it was important to learn physics because it helped you to understand what was happening in the world around you. Paul from the Boys' Private School explains this:

> *...I like physics...it's nice to know because you know why it happens...because for example things fall on the floor and if no one had asked why we wouldn't know that there is gravity...*

Similar observations were made by other students in other schools. For example Sarah one of the science girls at the Girls' Private School says:

> *...it makes you think about life...like some day you go next to the sea and you see the waves and you say I know why...and about the sun and how we get light and you start reasoning things out...*

From the responses of the students interviewed it is clear that the science students enjoy learning physics for the simple joy of understanding the physical phenomena taking place in the world around us. The students who had chosen to study science did it out of their own choice and this was also remarked on previously by the teachers. This made them more motivated to learn physics and much more interested in the subject. From the data this seemed to occur across all the different schools and for both girls as well as boys.

12.2.3.2 The Non-Science Students.

For the non-science students interviewed the situation is a bit more complex. All the non-science students agreed that they were studying physics because they had to. They also agreed that the way in which physics was being taught for the examination was too difficult and did not interest them. This is where two different ideas then emerged. One group of students was adamant that physics was not relevant or useful for them in any way and that they did not want to learn physics in any form whatsoever. This view was expressed mainly by a number of boys in all the Boys' Schools. Ian from the Boys' Private School says:

> *...because what's the use of knowing the gravity of the earth and the gravity of the moon...we're not going to live on the moon...because if you're playing a game of football and you get a ball at your feet and you kick it...now to kick it and score you're not going to stay saying...sine...cosine...avoiding friction and air resistance...*

Frank from the Boys' Junior Lyceum was of the same opinion:

> *...they shouldn't give so much importance to physics...there may be things related to life...like if you know about electricity you can prevent things but then if you're going to jump from high you know that you're going to get crushed and you don't need to know how long it's going to take to get down...*

Tony from the Boys' Area Secondary School goes a step further and relates the uselessness of learning physics to his own life. He says:

> *...if you're at a disco and you find a girl...you're not going to stay talking to her about physics...it's better to learn about life...then you can talk to her about your body...*

It must be remembered that these comments are made by individual students and do not have any wider applicability but they raise the issue of the individuality of students and whether a single science subject can cater to the needs of all students. Although in a minority the students who feel that it is completely useless to learn physics exist. What needs to be probed further is why they feel in this way. The statement made by Tony can also be related to the identity of the student and what each and every individual student considers to be important for his or her personal life. These differing views

seem to suggest that the reasons for learning physics are strongly related to the individual identity of each student and to the value which each student placed on obtaining certification or being educated for life. This idea was also previously expressed by the Girls in the Area Secondary School.

What was interesting in the data was that only a few of the girls considered physics to be completely useless. For example, Erica from the Girls' Junior Lyceum was very much against learning physics because:

> *...you can do without it because the things which you need to learn you learn them anyway...you learn through experience and trying things out...*

This could be related to the way in which the physics was being taught for the examination or simply once more to the identity of the student being interviewed and the individual preferences of students. This point of view was not the common viewpoint. While they thought it unfair to have to learn physics for the examination most of the girls interviewed could see the relevance of learning physics for life.

This idea of learning physics for life rather than for the examination was in fact evident in the responses of a number of students in the different schools and of different sex. Simon a non-science student at St. Peter's College explains that:

> *...they should balance things because you learn much more from life...I think that you should learn physics not for the O'Level but just for your general knowledge...*

Similar statements were made by other students. Mark from the Boys' Area Secondary school stresses the importance of learning physics for life:

> *...because physics is in the common life...it's common sense because if you see something and you apply it...it helps you a lot...but not in the lessons and for the exam...for example I have a group and when we did about waves it helped me a lot to do the soundproofing...*

A number of girls interviewed also talked about the importance of physics for life. Whereas the boys talk about physics relevant to their hobbies, the girls interviewed talked mainly about examples from the home. Janet from the Girls' Area Secondary School says:

...you know how things like electricity work...for example the kettle...the electric one...you know how to use it...

Similarly Carol from the Girls' Private School says, *"...and if you're at home and something happens you can do something...like fix a plug..."*. Rose from the Girls' Junior Lyceum expressed it in this way, *"...you know for example why the mirror reflects and you see all those things and you say...I learnt that from physics..."*. A number of girls responded in a similar manner and the fact that the girls in different schools pointed to the application of physics in the home points to a gender difference in relating physics to everyday life. Connecting this to the previous examples given by the teachers interviewed in making the physics relevant (Chapter Eleven, Section 11.2.3), it would seem that the messages given by the teachers in their use of examples from the home are coming through to their students, who in turn view physics in light of its applicability to the home.

Looking back on the responses of the students I observed that there were a number of gender and school differences among the students. Surprisingly enough more girls than boys could see the relevance of learning physics for its applications to everyday life. This could be related to the way in which the teachers were teaching physics to the girls. While in all of the schools there were students who were both interested in and against learning physics, the students in the Area Secondary School were the ones who questioned the use of learning physics. This could be related to the class identity of these students who related physics to work and while these statements do not have any wider applicability they raise the issue of stereotyping and the way in which students are educated to take their positions in life. The main stumbling block which seemed to be creating a negative attitude against physics was that it was such a high stakes examination exerting a normalising judgement and categorising the students. The physics examination also seems to be limiting the opportunities of students. This will be explored further on in relation to the actual performance of the students in the examination. While my own previous idea had been that the students disliked physics per se, the responses of the students showed that while this was the case for some of the students interviewed, for the majority of students it was the high stakes associated with the physics that was the problem. Lily from

the Girls' Junior Lyceum sums up the views of a number of the students interviewed:

> *...that it's not important to get in somewhere...it should be a subject like art or music which are important but you enjoy them...and you don't have to hurry...I think that if it were taught in this way...*

12.3 Understanding Physics Concepts

In Chapter Eleven, the observations and interviews with the teachers showed a consistent emphasis on teaching to the examination. Further evidence for the importance given to the examination not only by the teachers but also by the students interviewed is also visible in the responses of the students in the previous section. The teaching of physics for a high stakes examination is reflected in the type of learning taking place in the physics classrooms observed and in the responses of the students.

12.3.1 Shallow Learning

In the previous section, Section 12.1, the responses made by the students interviewed showed that when physics was taught in a theoretical and abstract manner the students interviewed found it difficult to understand. In the group interviews with the students in all the schools, one theme which cropped up consistently was the fact that the students interviewed thought that they understood things well when they were in the classroom but found it extremely difficult when it came to working things out on their own. Karen from the Girls' Junior Lyceum says:

> *...at the time I understand but then I won't be able to do anything when I come to working by myself...you know the questions but you can't apply them...*

Similar statements were made by a number of students in all of the schools observed, regardless of whether they were boys or girls. This lack of understanding was also observed by the teachers themselves, who comment on the fact that sometimes they think that the students would have understood and then they realise that the students would in fact have understood nothing. Mrs. Sant from the Girls' Private Schools expressed it like this:

...the girls point this out and the parents told me...that she has understood during the lesson but they find themselves at a loss when they're alone...because in fact that's it...in class they understand because even from their faces you can see it and then you give them the homework and you collect it and you realise that they haven't understood...

The students interviewed could not explain why they didn't understand. Reasons for lack of understanding ranged from finding it difficult to understand the question, to the formula and to the teacher. One factor which emerges strongly from the data is that the boys who were interviewed in the study in all of the Boys' schools observed consistently laid the blame of their lack of understanding on the teacher. Ray from the Boys' Junior Lyceum explains it in this way:

...because it depends on the teacher you have...if we had a good teacher then we would understand him...

Mark from the Boys' Private School continues:

...because we don't understand anything because she doesn't know how to explain things...

The girls interviewed on the other hand, never mention the teacher as the reason for their lack of understanding. Rather they attribute the lack of understanding to their own inability. This points to a gender difference in the amount of confidence which the students have in themselves. The boys are confident that they are capable but they do not understand because the teacher does not know how to teach while the girls are less confident in their own capacities. There is in fact an amount of research evidence (see Chapter Six, Section 6.2.2) which points to this idea that girls are less confident about their success and capacities than the males.

Another reason given by the students interviewed for their lack of understanding of physics is that they have to learn everything for the examination. This leads to what Gipps (1994) (see Chapter Three, Section 3.3.2) as shallow learning. This would account for the apparent understanding in class and the problems encountered when it comes to working on one's own and when the students have to synthesise what they have learnt. The fact that they studied only for the examination was stated by

a number of students again regardless of the school they attended or their sex. The idea was elaborated by David from the Boys' Private School:

> *...you study for the exam and then you forget everything...because no one remembers...like last year's we forgot everything...a lot of subjects you study for the exam for example my brother when I go and ask him something about physics...he tells me I've forgotten...everyone forgets everything...*

This provides further evidence for the measurement-driven instruction which was described in Chapter Eleven. The strong emphasis on the examination made by the teachers and the teaching to the test, results in the shallow learning described by the students interviewed and results in a number of students leaving school without having grasped a certain number of basic principles.

This does not mean that all the students in all the schools do not understand physics. A number of students pass their examination successfully and leave school having grasped a certain number of physics concepts. However, the fact that the lack of understanding was mentioned in all of the groups of students interviewed indicates that there are a number of students who are in fact studying simply for the examination and that the kind of teaching to the test is doing nothing to help the understanding of these students. This becomes worrying because these students who expressed their views in the interviews are leaving school without achieving in their view anything worthwhile. In view of the previous responses made by the students regarding the importance of making physics relevant, it would seem that it is again the influence of the examination which is having such a negative influence on the learning of the students.

12.3.2 The language of instruction

Another problem which causes lack of understanding is the way in which the teachers and students interviewed communicate and make use of language. All the teachers interviewed stated that their students had a problem with the language. Mr. Micallef from the Girls' Area Secondary School echoes the views of other teachers:

...it's a problem with communicating and not whether they know the subject or not...they understand but when they come to answer the question they are lost...they do not know how to express themselves...especially in English...

There is no official language policy in Maltese schools but since the text books and the examinations are in English most teachers do try to make use of English. However, English on its own is not enough because as stated by all of the teachers the students seem to have difficulty with understanding in English. Even the teachers in the Private Schools whom I observed using English in their lessons state that they make use of Maltese, as explained by Mrs. Zammit from St. Peter's College *"...to make the point clear..."*. Mr. Galea from Dun Karm's Boys' Junior Lyceum explains this difficulty of the teachers with the use of language:

...for example I try to start the lesson in English but then they tell me to switch to Maltese because they wouldn't be understanding...you explain in English but then you switch to Maltese...my lessons I do them half in English and half in Maltese...

The problem seems to be more pronounced in the Area Secondary Schools observed. Mrs. Zammit who teaches in San Mikiel Boys' Secondary School also finds language a great difficulty. She says:

...English is a problem for sure... I try to prepare them in English it's not the first time that they tell me... miss you're going to talk to us in English...why don't we do physics in Maltese...how can you get someone who doesn't know how to spell in English to write a definition in English...the boys I find have a big problem with English...

Further evidence of the use of both English and Maltese comes from the students themselves. Most of the students interviewed say that they prefer to have the lesson in Maltese because as explained by their teachers this helps them to understand much better. For example the girls in the Area Secondary School say:

...it's difficult if he speaks in English and you're not understanding...at least if he speaks in Maltese you understand what he's saying...

The students, however also relate the use of language to the examination. While most of the students prefer to have the lessons in Maltese so that they can understand, some of the other students interviewed were concerned that the use of Maltese would hamper their performance in the examination which is given in English. These students therefore think that it is better to use English. The students in the Boys' Junior Lyceum for example say, "*...you still need to know English because the formulae are in English and the exam is in English...*". And the girls in the Junior Lyceum suggest that the examination paper should be "*...on one side in English and on one side in Maltese...and who wants does it in English and who wants does it in Maltese...*".

From the responses of the teachers and students it is clear that language also acts as a barrier in the understanding of physics and more so in the performance on the examination. Research evidence is presented by Ventura (1991a) (see Chapter Six, Section 6.3.5) that this problem is more pronounced in the Area Secondary Schools. This was evident in the observations which I carried out in the schools with the use of English being more predominant in the Private Schools. However, the responses of the teachers and students, indicated that the problem is widespread and occurs across all the schools. Of course it must be remembered that the perceptions of the teachers are always relative and what is perceived to be a large problem by the teachers in the Private Schools might in fact appear negligible compared to the great difficulty with language in the Area Secondary Schools. The only factor which can be established is that language seems to be an important factor in both the teaching and learning of physics as well as in its assessment. The extent of this problem in relation to class, gender and school type would need to be backed up by much further evidence and further work would be needed.

12.4 The Students' Views of Assessment

For the teachers, their views about the importance of the examinations led them to teach in a certain way. For the students the way in which they were being taught and the way in which they were learning physics influenced the way in which they thought about examinations and assessment.

12.4.1 The written examination.

As shown in Section 12.2.1, the students interviewed thought that examinations were important because of their selective function. The students interviewed also stated that examinations were important because *"...they show you where you stand..."*. The students interviewed felt however, that the examinations on their own were not very fair on them since too much depended on them and they created too much pressure. This pressure was very evident in the Private Schools and State Junior Lyceums which are more academically oriented. Lily from the Girls' Junior Lyceum describes the stress caused by examinations:

> *...they give us a lot of pressure...because the O' levels they are very important for us because it's from them that you decide what to do...it's too much and you have to go to private lessons...*

The private lessons are very predominant among the students interviewed who used private lessons as a last resort in order to help them to understand better. This left the students with no time whatsoever for any leisure activities. Paul from the Boys' Private School adds:

> *...there's too much pressure on the students in Malta...sometimes you go to Private lessons because at school you don't learn enough...then you have to do your homework...I don't have time for myself...I even had to stop football because with all the studying I don't have time...*

The high stakes involved in passing the physics SEC examination creates a great deal of pressure on the students, who study for the examination because they have to, in order to become someone and to get in somewhere, but this did not really mean that they knew what they had studied. This is very eloquently described by Tony from the Area Secondary School where the pressure on the examination is not so great since most of the students do not sit for the examinations in the first place. Tony says:

> *...because you find some people they have a lot of A' levels and O' levels and they do not know how to use them because I say that to work it's not intelligence that counts but wisdom and wisdom comes from your own experience...*

While this is the view of only one student, it raises the issue of what examinations really count for and how much they are related to success in future life. Nuttall (1975) (see Chapter Three, Section 3.4) provides research evidence which shows that in fact there is a very poor correlation between success in examinations and success in future work. This evidence related to the evidence presented previously about the lack of understanding of a number of students who participated in the study and to the importance of the selective function of the examination and in the light of the evidence provided by the students of the extreme pressure caused by the examination points to the view that the examinations have a negative rather than positive effect on the students. The majority of the students who participated in the group interviews in fact state that they would prefer to have a continuous form of assessment rather than a single examination.

12.4.2 Continuous Assessment

The majority of the students interviewed in the different schools thought that a system of continuous assessment based on a variety of methods such as tests and project work would be preferable to having a single examination at the end. While the majority of the students were of this opinion, Maria from the Girls Area Secondary School explains the reason for this:

> *...if they give us a test after each topic it would be better because then you can put all the tests together and it would be easier to study and you remember much more...*

Such a system would be even more fair for the students and Lily from the Girls' Junior Lyceum explains another advantage of continuous assessment:

> *...so that it doesn't all depend on the exam because maybe on that day something happens to you...you can get excited and you spoil the work of a whole year...if you have a test every term then you can take the average...*

Paul from the Boys' Private School talks of assessment in terms of project work which would make learning physics more interesting:

> *...it would be better if we did a project and we explain why...because you learn much more and you would have done something yourself...*

This is echoed by Carol from the Girls' Private School who says:

...when you do something and you enjoy it you learn it much more than when you are studying it for the exam...

The students interviewed unlike the teachers interviewed are more inclined to prefer a system of continuous assessment rather than a single examination. While they do not dismiss the idea of examinations and in fact talk about tests rather than home work or course work, they would prefer if the assessment is carried out over the whole year. The teachers were distrustful of continuous assessment because of issues of reliability. These issues were touched upon by two of the boys in the Junior Lyceum and one boy (Mark) in the Area Secondary School and one girl (Margaret) in the Girls' Private School. The boys in the Junior Lyceum were concerned not directly with issues of reliability but rather the way in which introducing an assessment system would affect them. They say:

...but then the year will become more difficult because they'll expect much more out of you...so you'll have to work much harder...also in assessment the work can be copied...

The idea of authenticity of student's work was also a concern which was expressed by the teachers interviewed. Mark and Margaret are also concerned about the authenticity of the work and about how much help the students can get for their work. Mark says:

...if your mother helps you...then he is better than someone else...for example he has an advantage because his sister is at University and the other one is a lawyer...and his father was a teacher...

However the majority of the students interviewed prefer a system of assessment which is continuous and based on their own work. They feel that this form of assessment would be more help to them and they would prefer to have an assessment which is formative rather than judgmental in nature. This was elaborated in the discussion held with the students in the Girls' Private School. Natasha expresses the desire for assessment of a more formative nature in this way:

...I think that something which is really stupid is that in Form IV they give you the exam and then they just tell you your mark...they don't tell you your mistakes...I think that it's very stupid...they should tell you

why you went wrong and where you can arrange...otherwise it is useless...you don't learn anything...

The continued emphasis on learning by students in different schools and of different gender points to the importance which the students give to actual learning. Embedded within these responses is the view that studying for the examination is not very conducive to actual learning and that you can learn much more from your own experience and from doing things yourself. This quest for ownership is consistent in the responses of a number of students interviewed.

While the emphasis of the teachers interviewed is on teaching to the examination and where possible relating the physics to the life of the students, the emphasis of the students interviewed is on being allowed to learn on their own and to reach their own conclusions. While examinations are important to show the students interviewed where they stood, and to allow them access in the world of work or further studies, they created too much stress and pressure. For the students interviewed therefore a formative, continuous assessment which encouraged learning would be preferable. This is similar to what in the literature is described in Chapter Four, Section 4.3 as a new model of educational assessment.

In the interviews with the teachers and in the observations of the type of teaching taking place in the school a number of school, gender and class differences were observed with the differences between the types of school being predominant. In the interviews with the students the difference between the schools was not so predominant and in fact students interviewed from the different schools state similar reasons for their lack of understanding of physics and for the difficulties they find with learning physics. The data however points to a number of gender differences in the way in which the students interviewed learn physics with a number of boys attributing their lack of understanding to the teacher and a number of girls to themselves. A majority of the girls interviewed also preferred to learn physics which is more applicable to their daily lives. The importance of class was also visible in the responses made by a number of students in the Area Secondary Schools. While the majority of students interviewed in all of the schools related physics

to its selective and disciplinary function, the students in the Area Secondary Schools were very strong in their idea that physics had no use in their future lives of work.

The observations and interviews with the teachers and students point to the need to examine the influence of the examination-driven curriculum and the type of learning taking place in the physics classrooms observed to the actual achievement of the students in the examination and the impact of the new SEC system.

CHAPTER THIRTEEN

The Examination

13.0 Introduction

The third research question focused on how examinations impacted the lives of students and whether there were any gender and class differences which limited the opportunities of the students. In the previous chapters it was seen how the examination influenced the type of teaching and learning taking place in the classroom. The examination also influenced the achievement and opportunities of the students. Two important themes which emerged out of the data when I tried to explore these issues were the issue of the differentiated papers and the effect of gender and school type on student achievement.

13.1 Defining Differentiation

One of the innovations of the physics SEC examination introduced in 1994 was the introduction of differentiated papers. The model chosen by the MATSEC Board (as described in greater detail in Chapter Five, Section 5.1.2) consists of a common core paper and a choice of a more difficult Paper A or an easier Paper B. Students sitting for Paper A could obtain grades 1 to 4 or else remain Unclassified and students sitting for Paper B could obtain grades 4 to 7 or else remain Unclassified. One of the main reasons for introducing such a differentiated system was to emphasise positive achievement rather than failure and allow students to show what "they know, understand and can do," (Gipps and Stobart, 1993).

Despite the fact that the main reason for introducing the differentiated papers was to cater for more students, as shown in Chapter Five (Section 5.4), the idea of differentiation was not very well received by teachers and parents. Only the teachers interviewed in the Area Secondary Schools looked at the differentiated papers in a positive light. The main reason for this being that the students in the Area Secondary Schools as shown in Chapter Ten (Section 10.3.2) are considered to be of low ability and the Paper 2B was

thought to give them a bit of a chance. Mrs. Zammit who taught in the Boys' Area Secondary School explains:

> *...personally I like it because you have a student in front of you and you know that however much you explain he is never going to grasp certain concepts...he becomes demoralised...he tries one exam because before there was only one examination...and he doesn't pass...now at least he can get a 5 or a 6...I think that's very fair...*

Mr. Micallef from the Girls' Area Secondary School was also in favour of the differentiated papers. What Mr. Micallef did not agree with was:

> *...the marks because they are very discriminatory...those who do Paper A can only get 1 to 4...and those who do Paper B...only from 4 to 7...it should be from 1 to 7 right through...*

Although these views are relative to only two of the teachers interviewed the fact that both these teachers teach in an Area Secondary School raises a number of questions about the ability of the students in the Area Secondary Schools and the way in which these students are being influenced by a Maltese society where credentials are based on examinations.

The other seven out of nine teachers interviewed were very much concerned with the introduction of the differentiated papers. In the literature Stobart (1987) (see Chapter Four, Section 4.3.2.2) describes two main technical problems with this model, the first is the increment of difficulty from the easier paper to the more difficult paper and the second is the issue of the equivalence of grades. Another problem according to Good and Cresswell (1988) is that the choice of paper has to be made prior to the examination. While in the literature, three main difficulties are described with the differentiated model, the teachers interviewed did not mention the difficulty of the papers as being a concern. Their major concern was the overlapping of grades and the way in which the choice of paper was limiting the opportunities of the students and labelling them. A number of students interviewed were also concerned that the choice of paper was labelling them and placing them into categories.

13.2 Student Choice of Paper

As described in Chapter Five (Section 5.3) students have to make a choice between a more difficult Paper A and an easier Paper B when registering to sit for the Physics SEC examination. This choice has to be made on registration which usually takes place about four months prior to the actual examination. This choice in paper cannot be changed after registration. The teachers interviewed all state that the choice is left completely up to the students, they offer guidance and advice but in the end the choice is completely in the hands of the students. *"...They have to choose for themselves...I try to advise them but then in the end it's their choice..."* says Mrs. Zammit from St. Peter's College.

If one looks at the choice of paper which has been made from 1994 to 1996 (**Figure 1**) it can be seen that more students are opting to sit for Paper B than for Paper A. (Statistical significance is measured using chi square analysis. The chi square test was chosen because it compares frequencies of unrelated data). Using chi square analysis ($\chi^2 = 22$; df = 2; $p < 0{\cdot}001$) this difference is statistically significant at the 0.001 level. This is to be expected since the Paper A was intended to cater for the top students while the easier Paper B was meant to cater for the average student to be able to show what they knew and could do.

The question which needed to be asked was whether the students were making the right choice of paper and whether this choice was influenced by external factors such as gender and type of school which one attended. The choice of Paper was considered important because of the grades associated with each Paper. Students opting for Paper A could in fact obtain only grades 1 to 4 or else fail the examination while students sitting for Paper B could obtain grades 4 to 7 or else fail the examination. Only students obtaining grades 1 to 5 were considered to be eligible for entry into post-secondary education.

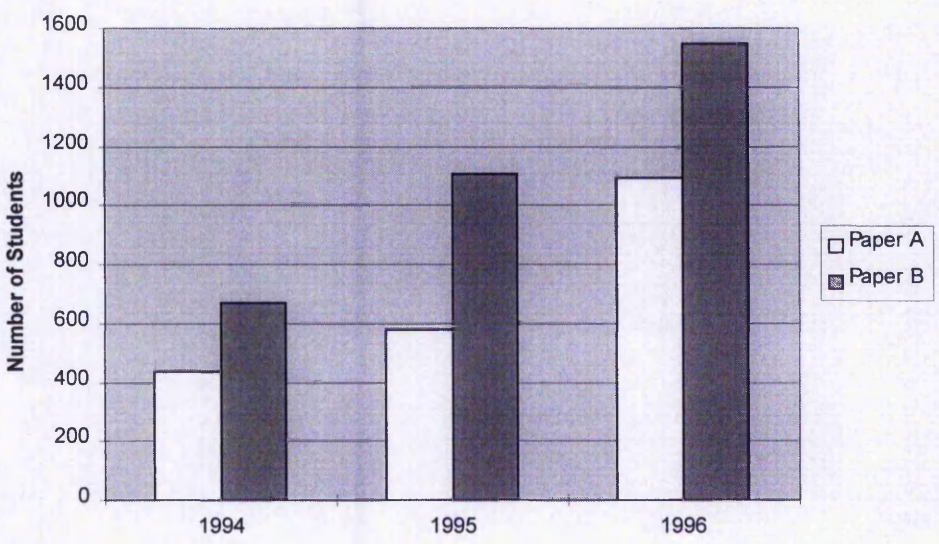

Figure 1

13.2.1 The choice of paper made by girls and boys

The question which I wanted to explore was whether girls as much as boys were opting for the difficult paper A and the easier Paper B in order to explore whether girls were opting out of the difficult paper and playing it safe with an easier paper due to lack of confidence in themselves. In the U.K. for example Elwood (1998) (see Chapter Six, Section 6.2.2) suggests that in mathematics girls opt for the middle tier of the examination much more than the boys.

In Malta, however the data shows that similar numbers of girls and boys are opting both for the more difficult Paper A as well as the easier Paper B. This is shown in **Table 3** where it can be seen that almost as many girls as boys are opting for the difficult Paper A from 1994 to 1996 with a very slight increase in the number of boys opting for Paper A in 1996. Using chi square analysis ($\chi^2 = 1{\cdot}644$; df = 2; $p < 0{\cdot}5$) this difference is not statistically significant.

Choice of Paper	Paper A	
	Number of Girls	Number of Boys
1994	217	217
1995	304	275
1996	536	559

Table 3: Girls and boys opting for Paper A in Physics SEC from 1994 to 1996.

In the case of Paper B (**Table 4**) the difference between boys and girls is even less with girls only very slightly opting for the easier Paper B more than boys. This difference appears to be minimal and chi square analysis (χ^2 = 0·422; df = 2; p < 0·9) indicates that again this difference is not statistically significant.

Choice of Paper	Paper B	
	Number of Girls	Number of Boys
1994	331	340
1995	564	543
1996	780	767

Table 4: Girls and boys opting for Paper B in Physics SEC for 1994 to 1996.

This data indicates that there seems to be no gender difference in the choice of Paper A and Paper B. Therefore it would not seem that girls are opting for

the safer choice more than boys. They seem to think that they can manage just as well as boys in the difficult Paper A.

This corresponds to the views stated by the students interviewed in Chapter Twelve (Section 12.1), the opinion of the majority of the girls being that they thought that they were just as capable of learning physics as much as the boys. It could also be related to the literature where Darmanin (1996) (see Chapter Two, Section 2.4) argues that the fact that physics is compulsory for all students has encouraged the girls to realise that they are just as good as boys when it comes to learning physics. It does not correspond however, to what is described in the British literature and discussed in Chapter Six (Section 6.2.2). Research carried out in the UK by Murphy (1997) and Elwood (1996) suggests that girls and their teachers have a much lower confidence in their success. However the context of this international literature is different to the context in which the present research was carried out and this could perhaps influence the different results obtained.

13.2.2 Student choice of paper according to school

In Chapter Six (Section 6.3.4) I argue that the type of school one attends interacts with a number of factors such as gender and class and influences the achievement of students. The school also seems to influence the choice of Paper made by students. As seen in the previous section students in general opt to sit for Paper B more than Paper A and that there does not seem to be a gender difference in this choice. If one looks at the choice of paper according to the type of school a number of differences start to emerge. **Figure 2** represents the whole population of students who sat for the Physics SEC examination in May 1996 and it shows the number of students from each type of school who are sitting for the different papers. The results shown in this figure indicate that in the Private Schools (GPS and BPS) students are opting to sit mainly for Paper A while in the State Schools both in the Junior Lyceums (GJL and BJL) as well as in the Area Secondary Schools (GAS and BAS) students are opting to sit mainly for Paper B.

Students' choice of Paper A and Paper B according to school for Physics SEC - May 1996

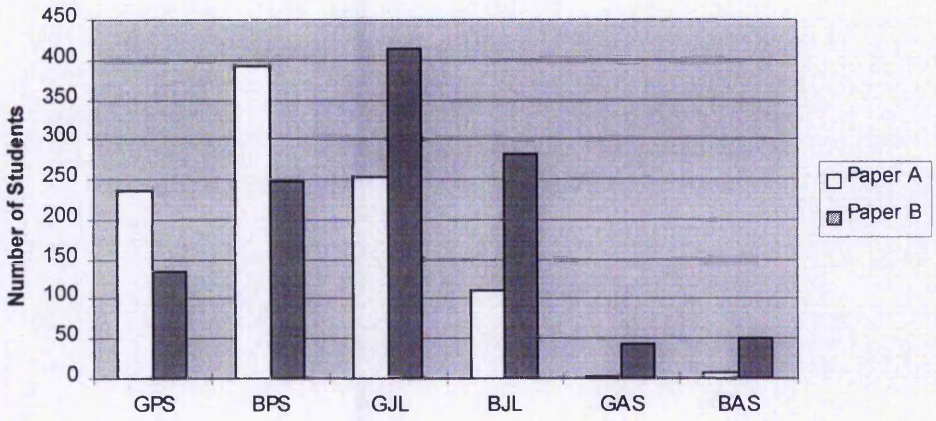

Figure 2

- GPS = Girls' Private School
- BPS = Boys' Private School
- GJL = Girls' Junior Lyceum
- BJL = Boys' Junior Lyceum
- GAS = Girls' Area Secondary School
- BAS = Boys' Area Secondary School

In order to provide further evidence for this difference in choice of paper according to the type of school one attended, I also analysed the choice of Paper A and Paper B for the individual schools in which I carried out the observations and interviews. The results obtained (**Figure 3**) for these specific schools are comparable to the results obtained in Figure 2 for the whole population of students. Again it can be seen in Figure 3 that the choice of Paper A is predominant among Private school students and the choice of Paper B is predominant among State school students.

This statistical data since it involves all the students who sat for the Physics SEC examination in 1996 and is comparable for both the schools of the study as well as the whole population of students, establishes a common trend in the choice of paper according to school. It can be seen that in the Private Schools students are opting to sit mainly for Paper A while in the State

Schools both in the Junior Lyceums as well as in the Area Secondary Schools students are opting to sit for Paper B.

Choice of Paper A and Paper B for the schools of the study (Physics SEC - May 1996)

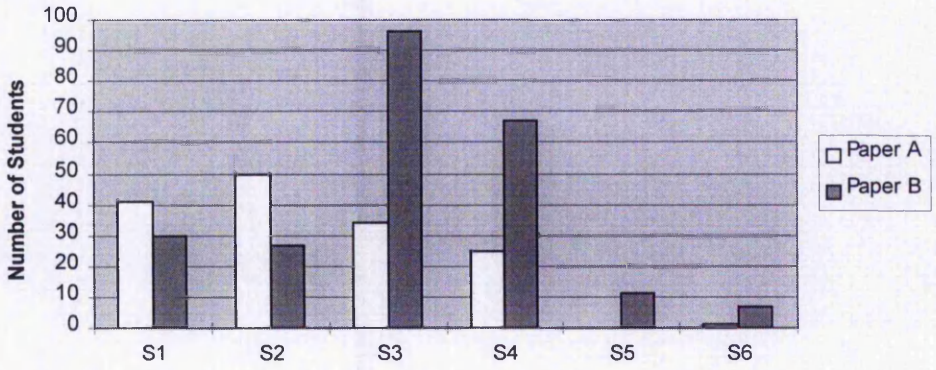

Figure 3

- S1 = St. Peter's College
- S2 = St. Cecilia's School
- S3 = Dun Karm Boys' Junior Lyceum
- S4 = Santa Maria Girls' Junior Lyceum
- S5 = San Mikiel Boys' Secondary School
- S6 = Sant' Anna Girls' Secondary School

What is surprising is that the students in the Junior Lyceums even though they are considered to be more able and prepared for Paper A are still opting in the majority to sit for Paper B. A number of explanations can be suggested for this difference in choice of paper. One reason could be that students in the Junior Lyceums have a lower ability than students in Private Schools and therefore they opt for the easier Paper B. This explanation can be justified if the percentage number of students who remain Unclassified in Paper A from is compared for the different schools. In fact it can be seen that 27% of the students from Private Schools remain Unclassified in Paper A while 37% remain Unclassified from the Junior Lyceums and 40% from the Area Secondary Schools. The higher failure rate of students in the Junior Lyceums could therefore account for their opting to choose the easier Paper B. An

alternative explanation could be that students within both Private Schools and the Junior Lyceums are of the same ability, however some factor within the Private School system enables students to achieve better than those who attend the Junior Lyceums.

Whatever the reason, the fact remains that students in Private Schools are opting to choose the difficult Paper A and have a higher pass rate in this Paper than students in the State Schools. This continues to reinforce the arguments made previously in Chapter Six (Section 6.3.4) that school type can also influence the achievement of students. Comments made by the teachers and students interviewed suggest that there seem to be two other main reasons why the above choices are occurring, (1) the prestige associated with sitting for Paper A and (2) playing it safe in order to ensure success with Paper B.

13.2.2.1 The prestige of Paper A.

The statistical analysis indicates that the majority of students from Private Schools are choosing to sit for Paper A regardless of their ability to do well in the physics examination. This does not mean that students from Private Schools do not sit for Paper B or that students from the State Schools do not sit for Paper A, but only that the predominance of choice in Paper A seems to be the students from the Private Schools.

When the students in the Private Schools were interviewed they state that they prefer to do Paper A as it is more prestigious and you can get a better mark by sitting for the Paper A. Although these views relate only to the students interviewed, they correspond closely with the number data. Chris from St. Peter's College echoes the views of his peers when he explains why they prefer to choose the Paper A:

> *...those who sit for Paper A will be given preference when it comes to choosing a school...and you can't get a good mark if you do the easy paper...for some people a 4 is good...but if you want to continue...it's better if you get a 1,2,3 or 4...*

The girls at St. Cecilia's Girls' School expressed similar views and Nadia adds:

...because after studying all those years...you study a bit longer and you go for the A...I want to take it at Sixth Form so I might as well study now...you can get better marks in the A...

The students in the Private Schools whether they are girls or boys have ambitions and they feel that they should aim for the highest grade possible. The question which needs to be asked is whether they are actually capable of getting such high grades. If this is related to the number of failures obtained in Paper A discussed in the previous section and the over-estimation of grades by the students, it can be seen that perhaps the students are being over ambitious and aiming for much more than they can handle. Although the numbers indicate that students from the Private Schools are actually sitting for the Paper B, when questioned in the group interviews none of the students present, admitted that they would be sitting for the Paper B.

Only a few of the students interviewed in the Boys' and Girls Junior Lyceum said that they would be sitting for the Paper A. The reason given for this choice is that they believed that they were capable of sitting for the difficult Paper.

13.2.2.2 Playing it Safe with Paper B.

As shown by the statistical data the majority of students in the State Schools both the Junior Lyceums and the Area Secondary Schools are opting for the Paper B. With the Area Secondary Schools this is not surprising since the Paper B was meant to cater for these students. As stated by Mrs. Zammit who teaches in the Boys' Area Secondary School, *"...I don't even think about it...only one or two students will sit for the examination and then they will all take the B paper..."*. Sitting for the easier paper will give you as explained by Sarah from the Girls' Area Secondary School, *"...a bit of a chance..."*.

In the Junior Lyceums both girls and boys, the majority of students seem to be opting for the Paper B. This is surprising in that in the Junior Lyceums the students are prepared for Paper A. However the students in the Junior Lyceum seem to be playing it safe. This is explained by Mr. Galea who teaches in the Boys' Junior Lyceum:

...if a student is wise and he doesn't want to suffer...and knows that he's intelligent and he doesn't want to suffer...he doesn't study and he

goes for the exam and he passes...he reasons that all that he needs to get is a 4...

The students who were interviewed in the Boys' Junior Lyceum, themselves confirm this perception of their teacher. Mark explains it in this way:

...it's better to do the B paper because it's easier...and you'll have more of a chance...if you get a 4 or a 5 it's still accepted...because they'll say as long as he's got it...

Therefore the students interviewed in the Junior Lyceums prefer to play it safe and obtain a pass rather than remaining without a grade. There can be several reasons for this "playing it safe". In the competitive nature of examinations which was described in Chapter Two (Section 2.1), certification guarantees a place in post-secondary education or the work place. Students therefore prefer to have some form of certification independent of the grade obtained in order to ensure for themselves a place of entry. Another reason could also be that the students in the Junior Lyceums actually have a lower ability and therefore they opt for the easier paper which they feel capable of doing. The teachers (as seen in Chapters Ten and Eleven) in fact describe the students as not having a high ability. Whatever the reason playing it safe limits the opportunities of students and does not allow them to show what they really know, understand and can do.

13.3 The Grading of the Examination

One of the major criticisms against the introduction of a differentiated model of examining was about the overlapping of the single grade four between the difficult and the easier paper. This has been discussed in Chapter Four (Section 4.3.2.2) of the literature review. Similar criticisms were made by the teachers who were interviewed. All of the teachers interviewed disagreed with having a single overlapping grade. Mr. Mizzi from the Boys' Junior Lyceum, echoes the views of the other teachers interviewed and says:

...for me there is still one thing which remains an enigma...the fact that there is one grade for two papers...the MATSEC people have said that this is possible but no one has ever explained how...

Another concern described by all of the teachers interviewed was the fact that the students who sat for Paper A and did not obtain a grade 4 would remain Unclassified (that is fail the examination). While all the teachers interviewed expressed this concern, Mr. Buhagiar from the Girls' Junior Lyceum describes it in the following manner:

> *...I think that the idea of Paper A and Paper B is ridiculous...there is a lot of inconsistencies...for example someone who does Paper A and doesn't get a grade 4...they're all lumped into a fail and then someone who got a grade 5 in Paper B is better than them...*

Because so much depended on the outcome of the examination, the teachers had a great deal of difficulty with advising students on what paper to choose. Mrs. Sant from the Girls' Private School describes this difficulty:

> *...I find it really difficult to tell a girl...the weak ones and the clever ones are obvious but the ones in the middle...I can't bring myself to tell them to do the A or the B...*

Mr. Micallef from the Girls' Area Secondary School adds:

> *...I still feel guilty about it...in a sense I'm condemning them to do the B and then they fail and they tell you...didn't you tell me...*

The problem is that having only a certain number of grades for the different papers (grades 1 to 4 for Paper A and grades 4 to 7 for Paper B) limits the students to only those grades and if students are advised to do Paper B then they miss out on the chance of getting the higher grades. While it must be remembered that these are the views of the teachers interviewed and it does not mean that all the teachers think in this way, the teachers interviewed showed consistency in their concerns about the differentiated papers.

13.3.1 Grading of Students sitting for Paper A/B

Further evidence which justifies the concerns of the teachers can be seen if one looks at the grades obtained by the students according to the choice of paper being made by the students who sat for the Physics SEC examination. **Figure 4** shows the number of students remaining Unclassified (failing the examination) in Paper A and Paper B. It is clear that more students are

remaining Unclassified in Paper A than they are in Paper B for all the three years, and using chi square analysis this difference is significant at the 0.001 level ($\chi^2 = 38{\cdot}35$; df = 2). This corresponds to the choice of paper which is being made and which was shown in Figure 1 with the higher failure rate in Paper A leading to a greater choice of Paper B. However as described previously other factors such as prestige and playing it safe also play an important role in the choice of paper.

Students remaining Unclassified for Physics SEC (1994 to 1996) in Paper A and Paper B

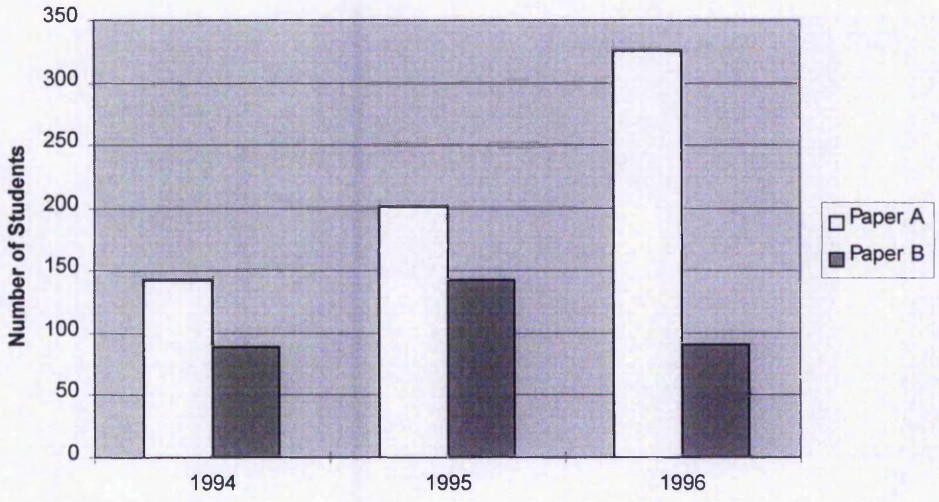

Figure 4

The question which needs to be asked is why students remain Unclassified in Paper A. Is it because they have not reached the required standard or would they have managed to obtain a Grade 4 or Grade 5 had they opted to sit for the easier Paper B, which was the major concern of the teachers interviewed (remembering that in Paper A students can only obtain grades 1 to 4 while in Paper B which is an easier Paper students can obtain grades 4 to 7 with grades 4 and 5 being considered as a pass mark for entry into University). The implication of this is that students can pass the examination first time round if they sit for the Paper B and obtain a grade 5 whereas students who might be more capable than the students who obtain a grade 5 in Paper B actually fail the examination because they had opted for the more difficult Paper A where it is not possible to obtain a grade 5.

This issue could be explored by looking at the grades which students obtained in the September session of the examination where students were given a chance to change their choice of Paper. Here we are talking about trends, because the numbers include the whole population of students who sat for the Physics SEC examination. This does not mean that all the students follow these trends but the numbers give an indication of what might be happening.

I therefore looked at the students who remained Unclassified in May and compared this grade to the grades which they obtained in September. I assigned a numerical value to indicate the improvement or regression made by students. The grades which could be obtained by students were 1 to 4 in Paper A or an Unclassified and 4 to 7 in Paper B or an Unclassified. I therefore used a single scale of 1 to 8 in order to compare the grades obtained (with an Unclassified being equivalent to an arbitrary value of 8 for both Paper A as well as Paper B). If one considers the actual marks obtained by the students then it could be possible that the marks for an Unclassified in Paper A would be very different from the marks allocated to an Unclassified in Paper B. For example an Unclassified in Paper A could be equivalent in terms of marks to a grade 5 obtained in Paper B. This would indicate a smaller shift in grades. However, the actual marks of the students were not available and for the purpose of this study I chose to work with the grades obtained. I chose to assign an equivalent arbitrary value because in terms of certification an Unclassified in Paper A was equivalent to an Unclassified in Paper B, that is the students had failed the examination.

When it came to assigning changes in grade, this meant that for example, a student who sat for Paper A in May and Paper A in September remaining Unclassified in May and obtaining a Grade 4 in September was assigned a value of 4 which indicates improvement four grades. The actual shift in marks could have been much smaller but in terms of certification and obtaining a grade which could be used for post secondary education and employment the change meant much more. In fact it made a difference to the students between a pass and a fail. Similarly, a student who sat for Paper A in May and Paper B in September remaining Unclassified in May but obtaining a Grade 4 in September was assigned a value of 4 indicating an improvement

of four grades. A frequency count of this mobility in grade was then carried out.

The results shown in **Table 5** show that with students who re-sit Paper B, there is no great shift in the grades obtained. As seen in **Table 5** most of the students retain the same grade or change grade by only one or two grades. Out of the total of 443 students who re-sit Paper B, 263 manage to raise their grade to a pass (grade 4 or 5). This means that 59% of the students who re-sit Paper B pass Physics SEC at the second attempt.

% Frequency of students changing their grade from May to September	Change in Grade									
	-2	-1	0	1	2	3	4	5	6	7
Paper A /Paper A			29				55	8	4	4
Paper A/ Paper B			1	4	5	29	61			
Paper B/ Paper B		2	25	48	22	3				
Paper B/ Paper A	60	10	0	0	30					

Table 5: Arbitrary change in grade by students sitting for the May and September sessions of the Physics SEC examination 1996 (shaded boxes indicate the maximum shift in grade).

For some reason a total of 11 students sat for Paper B in May and then opted for the difficult Paper A in September even though they did not manage to make the grade in the easier paper. As seen in **Table 5,** 10% of these students managed to improve their grade to a 4, however the other 60% of these students remained Unclassified.

The greater changes are seen for those students who chose to sit for Paper A. The results (**Table 5**) show that for students sitting for Paper A in May and

Paper A in September, the majority improved their grade by four, that is from an Unclassified to a 4. This is to be expected as some extra studying during the summer months could result in a change of grade. Some students (4%) also managed to increase their grade from an Unclassified in May to a 1 in September which is a much larger difference. What is of interest is that only 49 students (26%) who sat for Paper A in May decided to retake Paper A in September. The other one hundred and forty students (74%) who sat for Paper A in May decided to play it safe and sit for the easier Paper B in September.

For students who sat for Paper A in May and then opted for the easier Paper B in September (**Table 5**) a number of changes can also be seen. These students improve their grades by an equivalent of three or four grades, for example from being Unclassified to a Grade 4. In fact 29% of the students who sit for Paper B in September obtain a grade 5 while 61% improve their grade from being Unclassified to a grade 4. This means that 90% of the students could possibly have obtained a pass in May if they had opted to sit for Paper B in the first place. This could have been due either to the change in choice of Paper with students finding Paper B easier to handle, the actual marking of Paper B or the strong motivation of students who had failed their examination to do well the second time round. One could also argue that a large percentage (55%) of students who re-sat paper A also managed to increase their grade by an equivalence of four grades in September and that perhaps it was not the choice of paper but an easier examination in September which enabled students to score higher grades in the re-sit of the examination.

Whatever the reason, this data provides further evidence to back up the concerns of the teachers interviewed about the single overlapping grade which as shown in the statistical analysis results in the incorrect choice of paper. The 1 to 4 grades only in Paper A limit the opportunities of students and decrease their chances of applying for further education. One could argue that the students do make it through the second time around, however this does not take into consideration the trauma of failing an examination or the discouragement faced by the students. The problem becomes even more worrisome when one considers that out of the 325 students who fail paper A

in May only 214 (66%) re take the examination in September. This leaves 111 (34%) of the students unaccounted for.

13.3.2 Teachers' Prediction of Grades

The data indicates that a number of students are not making the right choice of Paper. Further evidence for the inaccuracy in the prediction of grades could be seen when the teachers and students who participated in the study were asked to predict the grades they thought they would obtain in the SEC physics examination and then their predictions compared to the actual grades obtained. This was carried out only for the teachers and students who participated in the study and is not meant to have any wider applicability. The results can simply be used to indicate whether there is a problem or not with the prediction of grades.

The teachers and students who participated in the study were asked in December when I was carrying out my observations and interviews in the schools what grade they thought that the students would obtain in the Physics SEC examination which would take place the following May. These predicted grades were then compared with the actual grades which the students obtained in the May session of the Physics SEC examination. In the literature (see Chapter Four, Section 4.3.2.2) research by Murphy (1979) suggests that there is a reasonably high level of agreement between the teachers predictions and the actual grades obtained by their students. This was not evident in the responses made by the teachers and students in the study.

I compared the predicted grades with the actual grades and assigned each difference in value an arbitrary number. For example if the student obtained a grade 4 and the teacher had predicted that he or she would obtain a grade 3, I assigned a negative value of -1. If the predicted grade was the same as the actual grade a 0 was assigned. If the teacher or student predicted that they would obtain a grade 6 and they in fact obtained a grade 4, a positive value of 2 was assigned. These predicted grades were developed purely on an arbitrary basis in order to look at how accurately the teachers and students were predicting the grades which were obtained by the students in the physics SEC examination. I used responses from teachers and students in

the Private Schools and the Junior Lyceums of the study since the numbers in the Area Secondary Schools were too small.

In the responses of the teachers and students interviewed it can be seen (**Table 6**) that only 19% of the teachers predict the grade accurately while 45% of the teachers interviewed over-estimate the grades the students will obtain by one grade and 25% of the teachers overestimate the grades of the students by two grades. In the case of the students who participated in the study, again there is an over-estimation of grades with 21% of the students predicting their grade accurately, 35% over-estimating their grade by one and 25% of the students over-estimating their grade by two grades (see **Table 6**).

Arbitrary Value	-5	-4	-3	-2	-1	0	1	2	3	4
Teachers' Predictions (%) N=102		3	6	25	45	19	1	1		
Students' Predictions (%) N=102	2	1	4	25	35	21	9	1	1	1

Table 6: Teachers' and Students' Predictions of Grades (shaded area shows region were the maximum error is taking place).

Thus it would seem that although these results only apply to the teachers and students interviewed and no claim is being made for a wide applicability, there is an indication that even among such a small group, 25% of the teachers interviewed and 25% of the students interviewed are over-estimating their grades by two grades. The present system of a single overlapping grade does not cater for these teachers and students. This provides further evidence for the arguments made by the teachers interviewed that the grading system is being unfair to students. This evidence is also similar to evidence reported by Good and Cresswell (1988) who recommend a safety margin of two overlapping grades when using differentiated papers. There does not seem to be much evidence for underestimating the students,

however, the data indicates that the students underestimate themselves much more than the teachers do.

If the predicted grades are separated out according to schools (**Table 7**), it can be seen that the spread of arbitrary values is greater for the students in the Private Schools mainly the boys in the Private School, who seem to be over estimating themselves much more than other students when it comes to predicting their grades. The boys in the Private School seem to be more over confident about their ability than both the girls in the Private schools as well as both boys and girls in the State Schools. This overconfidence can be influenced by what is described by Murphy (1990) in Chapter Six (Section 6.2.2) as the higher expectations which teachers have for male students.

	Assigned value for change in grade	-6	-5	-4	-3	-2	-1	0	1	2	3	4
% number of students and the difference in the grade which they predict they will obtain and the actual grade obtained	Girls' Private School		3	0	3	20	53	9	6	0	3	3
	Boys' Private School	5	5	5	5	35	30	15				
	Boys' Junior Lyceum				10	10	38	24	14	4		
	Girls' Junior Lyceum					33	15	37	15			

Table 7: Grades predicted by students in the different schools (shaded area indicates the accurate prediction of grades).

13.4 Teachers' Recommendations

The majority of teachers interviewed believed that there were a number of problems with having differentiated papers and this is reflected in the data which provides evidence that the differentiated system is not working as it should but rather that it is acting as a form of disciplinary power further categorising students and labelling them according to the school which they attend.

All of the teachers interviewed expressed their concern about this and they offered two main solutions to the problem. Some of the teachers thought that it would be better to assess students by means of one graded paper. Mrs. Sant from the Girls Private School argues that:

> *...personally I think that there should be one graded paper with easy questions which everyone can tackle and the others a bit more difficult ...I think that would solve a lot of problems and more energy could be concentrated on doing a better paper and like that you're not labelling the children...you're good for an A...and you're good for a B...*

Similar observations were made by other teachers interviewed.

A second line of thought included teachers who were mainly preoccupied with the level of the students learning physics. They were mainly the teachers in the State Schools who had to teach physics to unmotivated students. The philosophy of these teachers interviewed was that it would be much better to have a split syllabus, with the theoretical and abstract syllabus being for those students who wanted to continue to learn science, and a less difficult applications based syllabus for those students who were not so motivated to learn physics. Mrs. Zammit from the Boys' Area Secondary School describes it in this way:

> *...you need to have two syllabuses...for those who are interested and for those who aren't interested...in that way you can work much better with those who aren't interested in learning physics...*

What all the teachers interviewed agreed upon was that something needed to be done about the Paper A and Paper B system in order to avoid the labelling of students and to be able to interest and motivate the students into learning physics.

13.5 Student achievement in physics SEC

If one compares the grade distribution for Physics SEC for the years 1994 to 1996 (**Figure 5**) it can be seen that the number of candidates increases steadily from 1994 to 1996 with 1105 students sitting for the examination in

1994 and 2645 students sitting for the examination in 1996. The graph shows that the grade distribution of the students has remained very similar from 1994 to 1996 however chi square analysis ($\chi^2 = 38{\cdot}78$; df = 14; $p < 0.001$) indicates that there is a difference in the distribution of grades which is statistically significant at the 0.001 level.

The graph shows that the very few students obtain the higher grades 1 to 3, the majority of students obtain grade 4; and a substantial number of students obtain grades 5 to 7. This can be related to **Figure 1** which shows that the greater number of students opt for Paper B and therefore eligible only for grades 4 to 7 rather than Paper A from which students can obtain the higher grades.

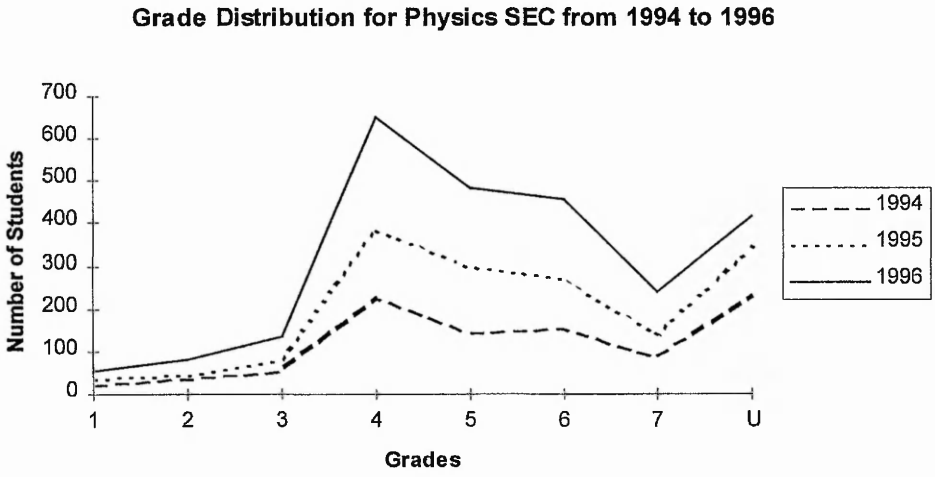

Figure 5

13.5.1 By Gender

When interviewed as described in Chapter Eleven, the teachers perceived physics to be more of a subject for boys than for girls. The students themselves when interviewed (as shown previously) thought that physics was as much for girls as for boys with the exception of a number of girls in the Girls' Junior Lyceum and the Girls Area Secondary School. The views of the majority of the students interviewed who thought that girls were as able of performing well in physics as boys are reflected in the statistical analysis of

the grades obtained by the whole population of students who sat for the physics SEC examination. Because these results include all the population of students who sat for the Physics SEC examination it is possible to talk about trends and while trends do not encompass all of the students, they point to the commonalities and differences in the results. The analysis in fact indicates that there is no gender difference between the achievement of the girls and the boys who sat for the Physics SEC examination between 1994 and 1996.

Ventura (1991) (see Chapter Six, Section 6.2.1) shows that prior to the introduction of the SEC examination boys performed better than girls in physics. Later studies (Borg, 1996; Ventura, 1997 and Ventura and Murphy, 1998) however show that since the introduction of the new SEC examinations in 1994 there have been no significant gender differences in performance in Physics SEC. The results are similar to the results obtained in this study. If one looks at the grades obtained by boys and girls for the years since the introduction of the new SEC examinations that is, 1994 to 1996 it can be seen (**Table 8**) that there is no statistically significant difference in the grades obtained by boys and girls.

I also wanted to explore whether there were any specific gender differences at the different achievement bands, that is whether there were differences between girls and boys who were achieving the higher and the lowest grades. I therefore grouped the students together according to whether they were achieving the top grades which I took to be grades 1, 2, and 3 which can be obtained from Paper A; whether they were average students and obtaining a grade 4 which is the only overlapping grade between Paper A and Paper B; whether they were at the lower end of the spectrum and obtaining the lower grades which can be obtained in Paper B, that is, grades 5, 6, and 7 and finally those students who were remaining Unclassified and therefore failing the examination.

	1994		1995		1996	
Grade	No. of Girls	No. of Boys	No. of Girls	No. of Boys	No. of Girls	No. of Boys
1	10	13	15	21	19	36
2	19	16	23	22	44	37
3	29	23	49	32	67	69
4	123	105	200	186	325	327
5	73	70	155	141	230	251
6	80	73	138	132	241	213
7	37	47	64	70	119	120
U	85	146	184	159	203	212
	χ^2 = 18.6 df = 7 p < 0.01		χ^2 = 5.3 df = 7 p < 0.7		χ^2 = 8.5 df = 7 p < 0.3	

Table 8: Grade distribution for girls and boys sitting for Physics SEC for the years 1994 to 1996.

Looking at the actual number of students who obtained grades 1, 2, and 3 together as the top grades which can be obtained from Paper A, it can be seen in **Figure 6** that in 1994 and 1995 more girls are obtaining high grades, however in 1996 it is the boys who are again obtaining the higher grades. This difference is however not statistically significant (χ^2 = 1·69; df = 2; p < 0·5). One explanation could be that since this was a new examination the best boys did not sit for the Maltese exam but preferred to be tested by a foreign board. Another explanation could be that the format of the new examination did not include multiple choice questions and the girls could perform at their best with the new examination format. However, it is difficult to pin-point the exact reason for this increase in performance by girls.

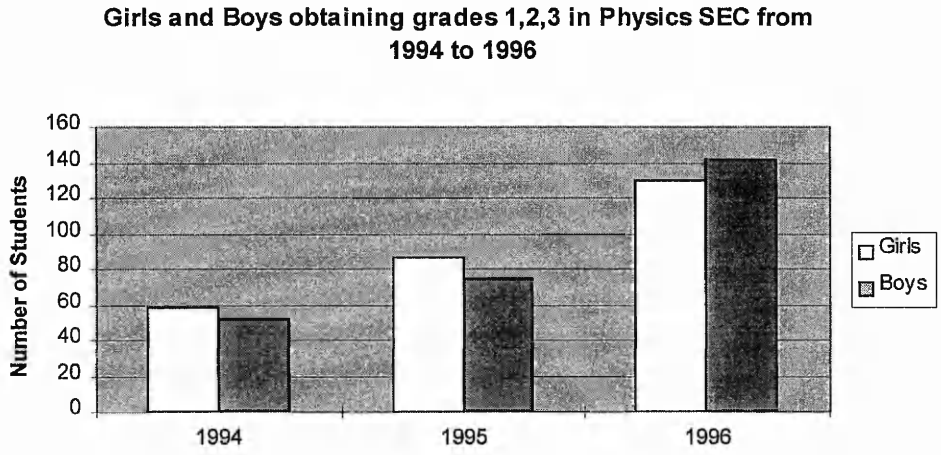

Figure 6

When it comes to the overlapping Grade 4 which can be obtained from both Paper A as well as from Paper B, it can be seen in **Figure 7** that the difference between the actual number of girls and boys who obtain a grade 4 is again minimal and not statistically significant ($\chi^2 = 1{\cdot}23$; df = 2; $p < 0{\cdot}7$). Again in 1994 and 1995 more girls than boys obtain a grade 4, however in 1996 as many boys as girls are obtaining a grade 4.

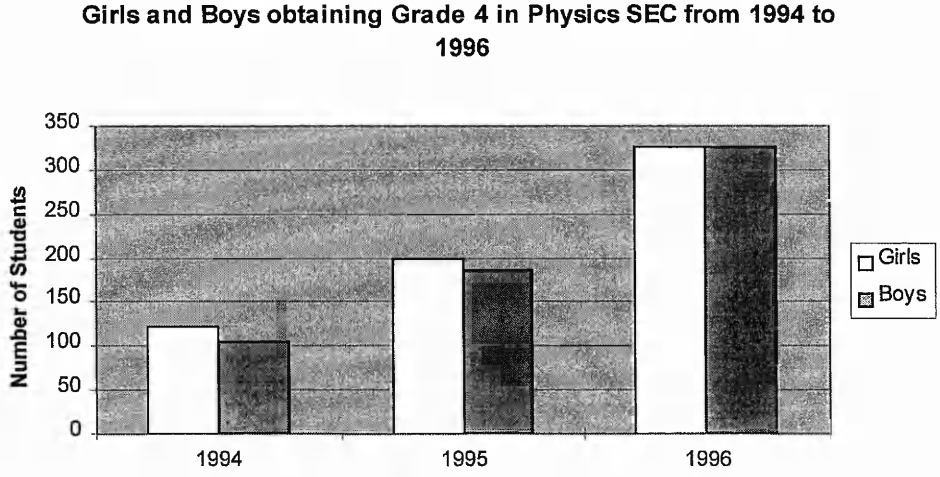

Figure 7

When it comes to the lower end of the spectrum with Grades 5, 6 and 7 which can only be obtained from Paper B, (**Figure 8**), again it seems that the same number of girls as boys are achieving the lower grades. Chi square

analysis shows that this difference is not statistically significant ($\chi^2 = 0{\cdot}82$; df = 2; $p < 0.7$).

Girls and Boys obtaining grades 5,6,7 in Physics SEC from 1994 to 1996

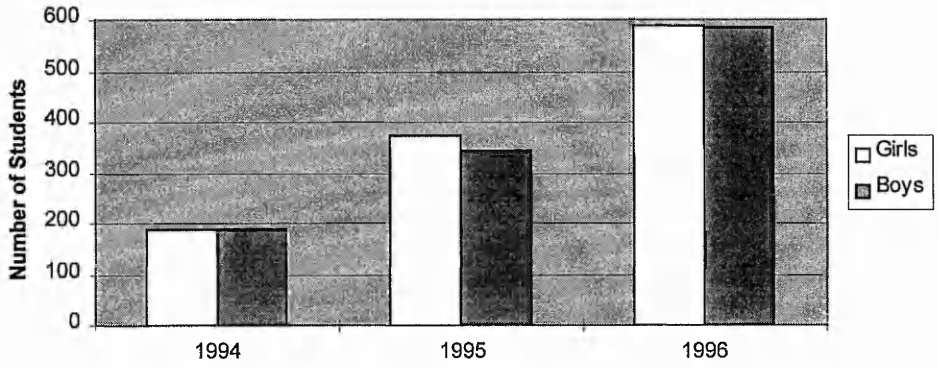

Figure 8

The only significant gender difference ($\chi^2 = 15{\cdot}96$; df = 2; $p < 0{\cdot}001$) which can be seen from 1994 to 1996 is in the number of girls and boys remaining Unclassified. **Figure 9** shows that in 1994 more boys than girls remain Unclassified, this is reversed in 1995 while in 1996 the situation seems to be more stabilised with approximately the same number of boys as girls remaining Unclassified. This seems to tie in with the previous conjecture that initially the best boys were not sitting for the local exam, but gradually as the exam became more established more of the best boys started to sit for the examination thus resulting in the decrease in the percentage rate of failure.

Girls and Boys remaining Unclassified in Physics SEC - 1994 to 1996

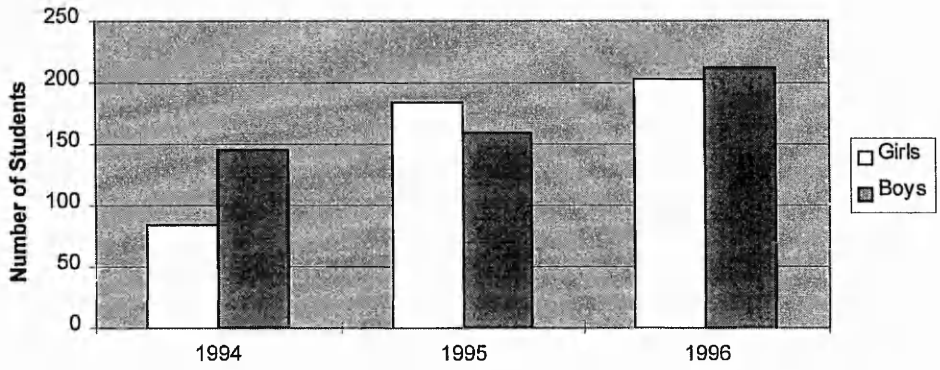

Figure 9

These results suggest that in fact in the case of Maltese students the gender difference is not significant at all levels of ability with as many girls as boys achieving the higher grades and as many girls as boys achieving at the lower end of the spectrum. These results are different from the research carried out in other countries and which is discussed in Chapter Six (Section 6.2.1). Elwood (1996) indicates that in physics boys used to outperform girls and that in some countries this trend is being reversed with the girls performing slightly better than the boys. In Malta the numerical data indicates that girls are achieving at par with the boys and while this is different from the international literature it is consistent with what both teachers and students were saying (see Chapter 11 and Chapter 12). One of the reasons for this could be the fact that in Malta schools are single sex and the girls do not have to compete with the boys. This makes them confident of achieving just as well as the boys. This was also reflected in the interviews with the girl students. Another reason could be that as argued by Darmanin (1996) the fact that physics is compulsory for all students, allows the girls to realise that they are capable of doing well in physics and this makes them achieve just as well as the boys. Whatever the reason, the statement made by Natasha from the Girls' Private school that *"...girls can do just as well as the boys in physics..."* appears to be reflected in the numerical data.

13.5.2 By school

One of the main themes which emerged out of the data and which was discussed in Chapter Ten, was the fact that there appeared to be a number of differences in the way physics was being taught in the different schools and in the views of the teachers interviewed regarding the students in the different schools. In the literature Chapter Six, Section 6.3.4) it was also argued that the type of school influences the performance of students. This is reflected in the data where a school difference also emerges very strongly in the numerical analysis of the achievement of the students attending the different schools. Since the numerical data includes all the population of students sitting for physics SEC, this establishes a pattern or trend which raises a number of questions about whether the physics SEC examination is allowing all students to show their best potential regardless of the type of school which they attend.

If one looks at the differences in the achievement of students who attend Private and State Schools, it can be seen that the grades obtained by students who attend the different schools are very different. **Figure 10** shows that the majority of students who attend Private schools obtain a Grade 4; for students who attend Junior Lyceums there is less of a sharp peak with students obtaining mainly grades 4, 5 and 6. Students in the Area Secondary School are very few in number, and the majority of grades obtained are in the range of 6 and 7. This can be related to the choice of paper being made by the students shown in Figure 4 which indicates that the majority of students in the Junior Lyceums choose Paper B making them eligible for grades 4 to 7 while students in the Private Schools choose mainly Paper A making them eligible for grades 1 to 4. This is reflected in Figure 10 which shows students in Private Schools obtaining more grades 1 to 4 and students in State Schools obtaining more grades in the region of 4 to 7.

Grade Distribution for Physics SEC for the different schools - May 1996

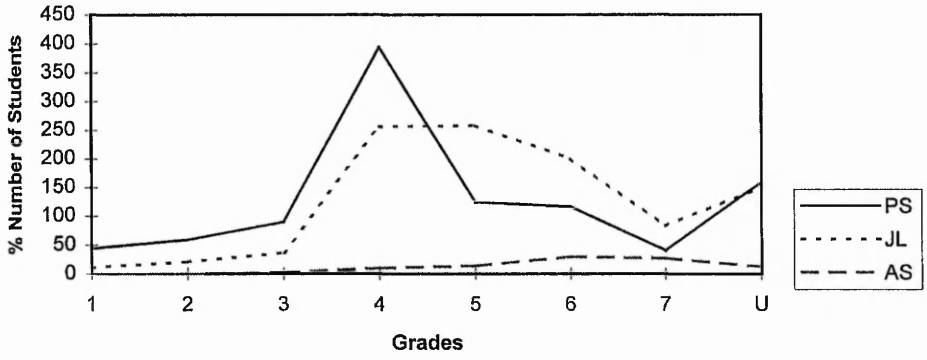

Figure 10

If one looks at these differences in achievement in terms of gender it can be seen that this trend is followed in both the girls' and boys' schools. In the girls' schools (**Figure 11**) there is a difference between the grades obtained by girls in the different schools. The majority of girls in Private Schools and Junior Lyceums obtain a grade 4 which overlaps between Paper A and Paper B. However, the girls in the Junior Lyceums obtain more grades 5 and 6 which again corresponds to the choice of paper. The girls in the Area

Secondary Schools mainly obtain grades 6 and 7. In fact the largest difference in grade distribution is seen in the grades obtained by the girls who attend Area Secondary Schools.

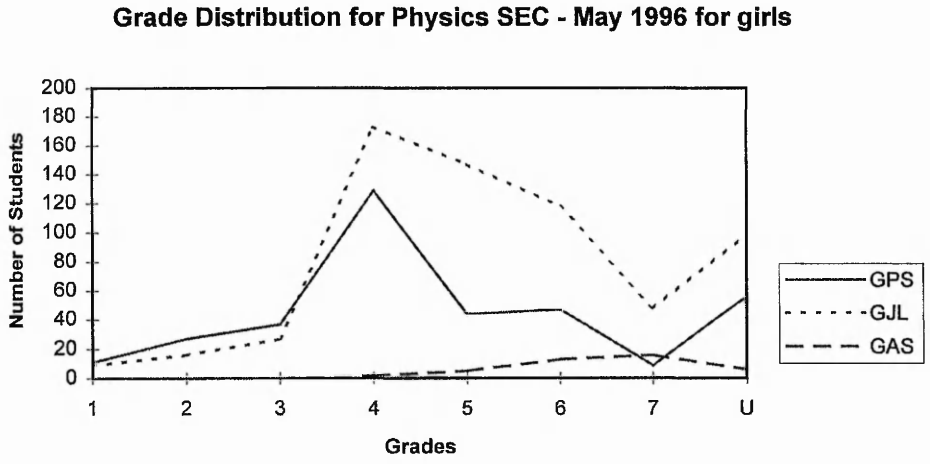

Figure 11

If the boys' schools are compared (**Figure 12**) it can be seen that again there is a difference in the grade distribution among the different schools. Again it is the boys in the Area Secondary School who are performing at the lower end of the spectrum. The boys in the Junior Lyceum obtain more Grades 5 and 6 because more boys from these schools opt to sit for the easier Paper B. In the Private schools the boys obtain high grades with most of them obtaining a Grade 4.

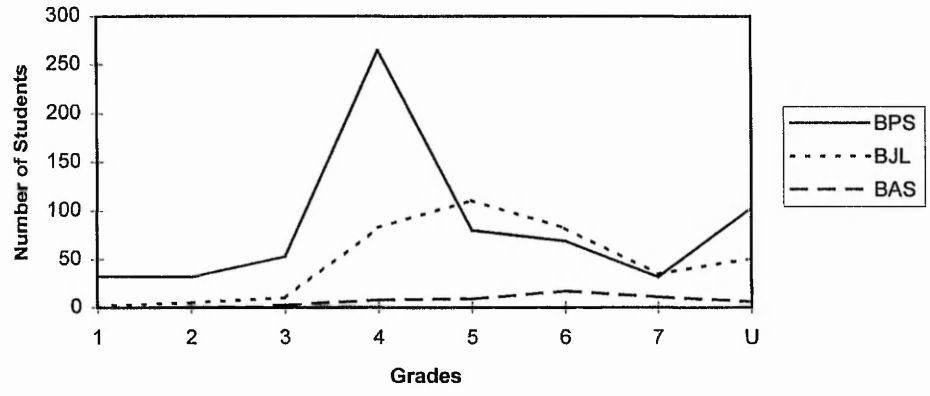

Figure 12

Therefore the major difference which can be seen in the achievement of students occurs when it comes to the different schools with students in Private Schools achieving in a different manner from those in State Schools. Students in Private Schools in fact achieve slightly better grades. This could be due not only to the ability of students but to the choice of Paper being made. Since students in Junior Lyceums opt mainly for Paper B this completely eliminates their chances of getting higher grades. The low grades obtained by the students in the Area Secondary Schools is also consistent with the views of the teachers' about the ability of the students which is described in Chapter Ten, Section 10.3.2. This raises a number of issues about the relationship between the type of school and achievement. The data seems to indicate that school type does influence achievement and continues to accentuate the gender and class inequalities of a Maltese society and which have been described in Chapter Six, Section 6.3.

13.6 Student aspirations for the future

The analysis of the grades obtained by the students in physics SEC show that while there appears to be no gender difference in achievement, there is a large difference in achievement by students who attend the different schools. In a previous section, the analysis showed that the examination results were important for students as they acted as a selective device allowing students to enter further studies or pursue the careers of their choice. In light of the differences which emerged in the statistical analysis I was interested in exploring how the examination, gender, and school type influenced the future aspirations of the students.

13.6.1 The effect of the examination on career choice

The examination is a very important factor determining the future of students and their aspirations for a future career. Students are very concerned with the function of examinations as a means of selection and they very often believe that examinations are the sole true indicator of their ability and their success, "*...but do you find students who do not go to the Junior Lyceum, who go to University...do you find students like us ?...we don't have a chance because we're not clever...at least I'm not clever...the exam tells me from the*

results which I get... 12... 7... ". This student is already associating her ability with examination results, these results which she knows have taken away the opportunity of her ever being able to go to University.

The students feel that the examination results *"...will influence my whole future..."* or that *"...good marks mean that my ambition to become a teacher can be fulfilled..."* while failure means that *"...I can't continue with my studies..."* leading to a sense of despair *"...what am I going to do?..."*. As one girl so aptly puts it:

> *...From these results my whole life and career depended. Is it right to give all this importance to a few questions gathered together to form an exam !! I don't think so...I got a good grade and was really satisfied. But what if this wasn't so ? What if I had not passed ? Would I have remained the same person ?*

Examinations make or break an individual who might have so many hopes for the future. Griffiths (1993) describes the relationship between the identity of students and achievement. In my own autobiography, I describe how the examination had a strong disciplinary influence on determining who I was as an individual. As Griffiths argues, ideally individuals should be loved and appreciated for who they are and not for what they can achieve. In Malta where the examination exerts such a strong influence, it would appear that the examination has a strong hold and plays an important role in determining the identity of individuals.

13.6.2 Gender and occupational choice

The statistical analysis of the grades obtained by the students indicate that girls can achieve just as well as boys in physics SEC. Darmanin (1996) argues that this however is not reflected in the careers chosen by girls at University. In the study when I asked the girls what they would like to become, although the results indicate that they can do well in physics they opted for typical feminine occupations. The results of the small survey which I carried out involved only the students who were interviewed and they cannot be taken to have a wider applicability. However, they point to the gender stereotyping which can be found among the girls of the study.

When I asked participants in the study what they thought that they would be doing in five years time, students listed a variety of careers. Choices made by girls ranged from teacher and kindergarten assistant to accountant and soldier. **Table 9** and **Table 10** show the most popular career choices made by girls and boys. These tables in fact only show the most popular careers chosen by the students (other choices made are not shown in these tables since they were options chosen by individual students).

Career Choice	% No. of Girls
Teacher	16
Accountant	10
University	8
Kindergarten Assistant	5
Medicine/Doctor	5
Lawyer	5
Secretary	5
Manager	2
Computers	2
Lab Technician	1
Engineer	1
Other Choices	40

Table 9: Girls' Career Choices

N = 116

Career Choice	% No. of Boys
Teacher	5
Accountant	5
University	19
Lawyer	1
Manager	9
Computers	5
Technician	7
Engineer	11
Other Choices	38

Table 10: Boys' career choices

N = 57

If these most popular careers chosen by girls and boys are compared, it can be seen that while both girls and boys mentioned an extensive range of careers and taking into account the limited number of students involved, a number of gender differences emerge. The majority of the girls interviewed opt for jobs in the caring professions like teaching (16%); medicine (5%); accountancy (10%) and the law (5%). These careers are not very popular with the boys interviewed and in fact only 5% would like to become teachers and accountants and none of the boys interviewed would like to become doctors, secretaries or kindergarten assistants, jobs traditionally associated with females. Also more boys (19%) than girls (8%) aspire to go to University.

Another large difference is in the area of engineering and technicians where 11% of the boys would like to become engineers compared to only 1% of the girls and 7% of the boys want to become technicians compared to only 1% of the girls. This would seem to suggest that when it comes to career choice a number of gender stereotypes still exist, with engineering and technical jobs considered to be more suitable for boys than for girls and science especially physical science still viewed as "masculine". This is similar to the masculine image of science described in Chapter Six (Section 6.2.2). The jobs chosen by the girls are traditionally considered to be female occupations because of their caring nature and because they are more flexible when it comes to combining a career and family life.

13.6.3 Class and Occupational Choice

Occupational choice is also very strongly influenced by the type of school which the students attend. If type of school is taken as a very rough indicator of social class then it can be seen as has been argued in Chapter Six, Section 6.3, that schools are used to reproduce privilege from one generation to the next. Differences in the career aspirations of students emerged in the group interviews. Boys and girls in the Private schools aspired for professional careers and encouraged by their parents, the boys wanted to become *"...a pilot...computer consultant...veterinary surgeon...biological researcher...lawyer...or accountant..."*, the girls even though their mothers were mostly housewives still wanted a professional career for themselves and they say that they want to become *"...a lawyer...banker...teacher... designer...doctor..."*.

In the Junior Lyceums the boys and girls are a bit more uncertain about what they would like to become. As one girl at Zejtun Girls' Junior Lyceum says, *"...it depends on the grades which you will get in your O' Levels...then you can decide...for now it is useless because you do not know if you are going to pass..."*. Thus while the students in the Private schools aspire to particular careers and then try their utmost to get the grades which will permit them entry into those professions, the students in the Junior Lyceums go about it the other way around. First they see how they will be classified by society according to an examination and then they will pursue a career accordingly.

The boys have a vague idea that they would like to do something in the tourist industry and *"...go to ITS (Institute of Tourism Studies)..."* while the girls would like to do *"...something with languages or something in a hospital...or a teacher..."*.

In the Area Secondary Schools the students have no illusions about their position in life. Most of the students in fact do not even sit for the SEC examination. If one looks at the cohort of students who attend Form V in Private Schools and State Schools it can be seen that in 1996 out of a total of 3979 students 2645 (that is, 66%) sit for the physics SEC examination. This means that 34% of all the students who are in the last year of their secondary schooling do not take the examination. If one looks at the students actually sitting for the examination in 1996 it can be seen that 39% of the students come from the Private Schools, 40% from the Junior Lyceums and only 4% of the students come from the Area Secondary Schools. (The other 17% of the students come from post-secondary schools, independent schools and private candidates which have not been included in this study). In the Area Secondary Schools this indicates that the students are not interested in further studies or the more professional careers to which examinations open up the doors. They are simply interested in finding a job, the boys as *"...a cook...sprayer or panel beater..."* and the girls as *"an air hostess...nurse or police woman..."*. However they are not very sure that they will even manage this because you still need exams for these careers, so even if they do not manage to make the grade they are content to *"work in a factory until I get married"*. For these girls especially those in the Area Secondary Schools work is associated with earning money rather than with a profession or a career.

This difference in career aspirations was also seen in the responses made by students when I asked them what they would like to do in the future. I categorised these careers according to the class structure described in Chapter Six (Section 6.3) and it could be seen (**Table 11**) that the students in Private Schools and Junior Lyceums aspired mainly for professional careers while students in the Area Secondary Schools opted mainly for non-manual or manual work. The major problem therefore seems to lie with the students in

the Area Secondary School for whom examinations appear to be creating a barrier to access into the world of professional careers.

School	Class I & II (%)	Class III, IV, V (%)	Class VI, VII (%)
Girls' Private School	77	23	0
Girls' Junior Lyceum	86	14	0
Girls' Area Secondary School	7	73	20
Boys' Private School	91	9	0
Boys' Junior Lyceum	68	28	4
Boys' Area Secondary School	0	64	36

Table 11: Students' choice of career according to class.

- ◊ Class I, II (professionals, administrators, managers and proprietors)
- ◊ Class III, IV, V (non-manual workers, artisans, technicians foremen)
- ◊ Class VI, VII (manual workers)

In Chapter Six (Section 6.3) I argue that in Malta individuals tend to place themselves within specific classes and identify themselves as upper, middle or working class to create the class structure described by Darmanin (1991). This structure being closely related not only to education and educational achievement but also to the web of social interconnections described by Baldacchino (1993). The data shows that these factors together with the type of school encourage the distribution of work and power among Maltese society and accentuates inequalities.

While as described by Bradley (1996) (see Chapter Six, Section 6.3) class can no longer be defined on education and occupation alone but is determined by a number of lived relationships and state of living, it would seem that success in the examinations and hence aspirations for a future life style play an important role in determining social status. As Bradley points out (Chapter Six, Section 6.3) members of the privileged classes are able to pass on to their children both material advantages and cultural advantages which give them a headstart in life. This seems to be the case with the students in the Area Secondary Schools.

The students in Area Secondary Schools seem to be selecting themselves out of further opportunity because they do not believe that they can obtain the required certification to enter further education or to find a good job. As one student says, *"...I don't manage to pass the school exam...let alone the O' Level..."*. Therefore examinations seem to be selecting for and against students and used to reproduce class and gender differences. The challenge would be to provide these students who have been let down by traditional education with the required training and support so that they can regain their self-confidence and move ahead in life.

13.7 Reflections

As I looked back over the data I tried to observe how the views of the teachers and the students interviewed were related to the kind of teaching and learning taking place in the physics classrooms and how all of this influenced the achievement of students and hence their opportunities for the future. While I was constantly aware that the evidence related only to the teachers and students involved and nothing definite could be said about all the students and teachers or even about the students and teachers in the schools observed, the evidence raised a number of questions about the importance of assessment practices and the relationship between gender, class and type of school in determining student achievement.

From the data it could be seen that a number of issues were raised:

(1) The importance of the examinations as a selective and motivating mechanism used by teachers and society to classify and categorise individuals according to their ability and achievement. Because of the high stakes associated with the examination, the teachers' views of the examination are embedded within the psychometric tradition with teachers preferring a selective mechanism which in their view was reliable and objective and not based on their own subjective judgement. This power of the examination was visible in the examination driven curriculum and the teaching to the test which was observed in a number of physics classrooms. At the same time the teachers while being dominated by the examination rebelled against the authority of the Examination Board and

wanted to have a greater say and hence more power in the setting up of examinations.

(2) This selective mechanism was further enhanced by constant teaching to the test which resulted in shallow learning and lack of understanding of the physics concepts. The students learnt physics because they had to, because it was needed to get into further studies and a professional career. This meant that their achievement was related more to success in the examination rather than to any intrinsic understanding of the subject. The students were building up an identity of self depending on the success which they obtained in the examination and this was being influenced mainly by the type of school which they attended.

(3) The selective mechanism was further enhanced by the differentiated model of the examination which was selecting for students attending Private Schools and against students attending State Schools who were opting for an easier Paper B and hence removing any chance of obtaining the higher grades. Students at Private schools were also being placed at a disadvantage since they were being encouraged to sit for the difficult Paper A but being overly ambitious in doing so.

(4) In some cases an attempt was being made to make the physics more interesting and relevant. This was positive in that it motivated the students to learn physics and find it interesting. However, the examples used by the teachers helped to perpetrate the idea that physics was more for boys and that girls could use physics only in the home and not in their future work. This was also reflected in the fact that while the girls achieved as well as the boys in physics SEC they were not opting for careers in science.

What seemed to be emerging out of all of this was that the physics being taught in the schools observed was abstract and theoretical and the high stakes associated with the physics examination were doing nothing to enhance the understanding of the physics. The type of school which one attended and hence the class of the students seemed to be selecting individuals in order to maintain the status quo and ensuring that the children

of those who set the examinations and attended certain types of schools were the most successful in the examinations.

PART FIVE

TOWARDS A FAIRER ASSESSMENT

DISCUSSION AND CONCLUSIONS

CHAPTER FOURTEEN

Reflections and Implications

14.0 Introduction

I started out the research with a main question in mind, "Are examinations fair and just for all students in Maltese schools ?" In order to try and explore this question I situated the research within the context of the Physics SEC examination since as described in Chapter One (Section 1.3) physics was the only science subject which was required for entry into post-secondary education and a compulsory subject in all State Secondary Schools and most Private Church Schools. The data presented is therefore specific only to the Physics SEC examination, however the questions raised in the study regarding the Physics SEC examination can also be raised for examinations in general.

The MATSEC Board in fact offers twenty two examinations at Secondary level. Out of these only four are compulsory for entry into post-secondary education. These include Maltese, English, Mathematics and Physics. While there are of course differences between these subjects with regards to registration, format and achievement, the Secondary Education Certificate is organised in such a way that most of the characteristics of the examination are common to all the examinations. For example, the number of papers, the structure of the examination paper, the differentiated papers, the way in which examinations are marked all follow a rigid centralised structure. Therefore while the data is specific to the learning and assessment of physics, the questions raised for physics can be raised for the structure of the examination in general.

Further evidence to back up this argument is provided in a study by Ventura and Murphy (1998) which shows that there are a number of similarities and consistencies which run through the examinations in a number of subjects. For example, Ventura and Murphy looked at registration and choice of paper. When looking at registration they concluded that there has been an increase

in the number of students sitting for the SEC examinations across all subjects. When it came to choice of paper, namely between the difficult Paper 2A and the easier Paper 2B, it was seen that the majority of students opted to sit for the easier Paper 2B with the exception of Maltese where students preferred to choose the difficult Paper 2A. Ventura and Murphy argue that this choice could be due to a number of reasons, namely that students, teachers and parents have realised that the Paper 2A is only meant for the high achievers, and that a number of students opt to play it safe with the easier paper. In Maltese students perceive themselves to be more capable or they perceive the paper to be less difficult and opt for the Paper 2A. This ties in with the evidence presented in this study which has shown in Chapter 13 (Section 13.2) that more students are opting to sit for the easier Paper 2B. It also implies that the issues raised about differentiation are structural in nature rather than subject specific.

Other aspects which were looked at in terms of physics were the effects of gender and school type on the achievement of students. Again while the results discussed only pertain to the physics examinations and are in no way indicative of all examinations, I hope that some implications drawn from the physics examination will be relevant to examinations in general. The consistency across examinations in different subjects can be backed up by the research carried out by Ventura and Murphy (1998) who show similar results to the current study and who also show a number of trends running through different subjects examined at SEC.

When they examined gender differences Ventura and Murphy state that significant gender differences were found in Maltese and English in favour of girls and in Mathematics in favour of boys. They did not find any significant differences in Physics, Italian and Religious Knowledge. This runs counter to general international trends but is in agreement with the results of this study and with other local results (Borg, 1996 and Ventura, 1992). When considering the differences by school sector Ventura and Murphy (1998) state that the results are consistent and decidedly in favour of candidates from Private Schools in all subjects. This corresponds to the evidence put forward in this study and suggests that school difference runs across gender,

subject and methods of teaching. This again indicates that the data from the physics examination can be used to raise some questions about examinations in general.

14.1 The research questions

As I have argued in the previous section, while the data presented in this study is specific only to the Physics SEC examination, it helped to raise a number of questions about assessment practices and examinations in general. My initial concern was that a number of factors such as gender and class were influencing the performance of students in examinations. I was concerned that in a post-modern era of multiplicity the success or failure of students in Maltese schools was being determined by a single score which was perceived to be a "true" representation of the students' potential. The initial focus of the research was therefore on the way in which examinations were impacting the lives of students through the kind of teaching and learning taking place in the classroom and through the actual form of the examination itself. From my own initial perceptions and experiences I moved into the research area, first immersing myself in the literature and then in the actual dialogue with the teachers and students to listen to their views on the subject.

As I read the literature I came to the view that internationally ideas about assessment were in a continual state of change and flux and that there was what Gipps (1994) describes as "a paradigm shift" from a testing and examinations culture to an assessment culture. As I talked to the teachers and students in Maltese schools it was clear that this paradigm shift had not yet taken place. The literature pointed to an assessment culture based on formative assessment which encouraged positive achievement and bringing out the best potential of students. In my observations in the classrooms I observed an emphasis on selection and the rewarding of success in examinations creating what Foucault (1977) calls "a normalising gaze" on students placing them into categories. This is in fact one of my main initial questions and in Chapter One (Section 1.1) I question this selective form of assessment. Drawing on the work of Berstein (1971) and Eggleston (1984) I question the distribution of power and the handing down of the values of what

Gipps (1994) describes as powerful groups in society. Like Gipps my main concern was that people outside those groups who had different values and experiences would be affected in a negative manner.

These views led me to look at the data through the lenses of gender and class (since as explained in Chapter One race is a negligible factor in Maltese schools). What emerged out of the data was that gender and class could not be looked upon in isolation but that they continually interacted with each other to form what Griffiths (1995a) describes as a web of identities and an identity of self which as described by Griffiths (1993) is highly individualistic but also highly communalistic. Within this post-structural framework as I have argued in Chapter Six (Section 6.2) it is no longer appropriate to explore equity issues solely in terms of gender but together with other issues such as class.

In fact the data led me into another area which I had not set out to explore initially. All throughout the research both in the quantitative analysis of the data as well as in the qualitative analysis of teachers' and students' views it was very clear that an important factor influencing achievement and the development of a sense of identity was the type of school, that is whether the school was a Private School, or a State Junior Lyceum or Area Secondary School. As has been argued in the school effectiveness research (Hopkins, Ainscow & West, 1994) there is a vast amount of evidence to show that the internal features of individual schools can make a difference to pupil progress. What seems to be lacking in the school effectiveness research however is the effect of different types of school. Most of the research is also of a quantitative rather than a qualitative type. Because the situation in Malta is not so complex and schools are clearly divided on a tripartite level, the research fills in a gap which is not predominantly explored in the international literature. The evidence put forward in this study in fact shows clearly and repeatedly the effect of the type of school on student views about assessment, on their achievement and on their aspirations and expectations for their future lives. This important aspect of the school effect emerges out of the data and needs to be explored in further depth.

The initial questions therefore served to lead me into the field, into the research area. They focused on the views of teachers and students about *the examination*; the way in which these were influencing teaching and learning in *the schools*; and the impact which the examinations were having on the lives of *students*. The exploration of these initial questions led me to even more questions and through a continual reflective and reflexive process I started to formulate some ideas about what I thought was happening and guided by the theory and practical suggestions of teachers and students how I thought that the assessment practices in Maltese schools could be improved. These ideas were grounded in the data and helped me develop a theoretical perspective which was influenced not only by my academic and professional views but also by my own personal views and experiences.

Therefore in this final part of this thesis I try to reflect upon the evidence presented throughout the thesis and try to answer the initial questions which I had set out to answer, perhaps not by finding solutions but at least by identifying the issues and implications. In response to the initial questions, I try to:

(1) establish the predominant view of teachers and students regarding assessment;
(2) explore how these views affect the teaching and learning;
(3) discuss the influence of gender, class and school type;
(4) relate the impact of all of this to the development of individual student identity;
(5) critique the selective function of examinations and try to answer the main question of whether examinations are fair and just for all students in Maltese schools; and
(6) propose an alternative model of educational assessment.

The main argument which I shall make is that assessment practices in Maltese schools are still very much grounded within an examination tradition based on the psychometric paradigm and that the paradigm shift described by Gipps (1994) has not yet taken place in Maltese schools. The data points to an examination oriented curriculum based on the belief that examinations can provide an objective picture of the potential of the individual and the use

of education as a positional good in society. In the classroom this emphasis on the examination is visible in the amount of coaching and teaching to the test which takes place resulting in what Gipps (1994) describes as shallow learning. The "high stakes" examinations lead to the development of student identity and success in future life being highly dependent on success in examinations, establish categories and what Foucault (1977) describes as a disciplinary power. As a consequence the values of those who are in power are transmitted through the examination while students who have a different class background or attend for example State Area Secondary Schools are placed at a disadvantage. All the evidence points to the idea that in fact examinations are not fair and just for all students in Maltese schools and that the type of school which one attends interacts with class and gender to give some students an advantage over others. Therefore I will argue that this evidence points to the need for a change in the assessment practices being used in Maltese schools, the need for a paradigm shift from an examinations culture to an assessment culture.

14.2 The research process: A reflexive autobiography

One of the main aspects of this thesis has been its reflective and reflexive nature and the interweaving of my own personal autobiography with the text. The research process has been an ongoing journey, a learning and exploratory journey not only about the initial questions which I started out with but also about the research process itself. As I read the literature and worked with the teachers and students I began to see new things about assessment. I started out with a concern that examinations were not allowing students to bring out their best potential. This concern was reflected in what I was observing and it raised a number of other questions. The questions did not lead to solutions but to even more questions, from questions which were being raised by the data to questions about the research process itself. My ideas continued to change and evolve and the data as described by Fine (1994) seemed to crystallise and grow haphazardly in all sorts of directions. The main challenge which I will try to address in this final section is to make sense out of all that was happening and develop the research evidence into theory. The research became a journey where as described by Casteneda

(1990) I travelled looking, looking breathlessly. And as I looked I tried to be continually reflective and reflexive and to describe what I was seeing. The descriptions and interpretations are mine as the author, and the reader can give his or her own interpretation. I have tried to be critical and reflexive as possible and what I have left unsaid is just as important as what I have said. Like Griffiths (1998) my descriptions are personal but not confessional. In my view, the value of being reflexive is that it gives the reader a sense of where I was coming from, the difficulties I encountered and an insight into why and how certain choices were made. It also creates an honest authentic relationship of trust between myself as the author and the reader leading to respect for the reader in the same way as respect for participants was established. The importance of this reflexivity is discussed in Chapter Seven (Section 7.1.2) where like Griffiths (1998) and Opie (1992) I argue that it is not sufficient to posit one's ideological position but that it is necessary to continually re-examine the extent to which one is bound by the stereotypes.

I hope to continue to do this to the end of this research. In fact in Chapter Eight (Section 8.0) I try to give a biographical journey to position myself as the researcher within the research context. I try to describe and reflect upon the influence which assessment practices have had on my own personal life and how my own experiences have shaped my views on assessment and in particular my views on examinations. These were the views with which I started out the research but the journey did not stop there, it continues to evolve and change even as I am writing out this final chapter. Because as I have argued in Chapter Seven (Section 7.1.2) I believe that subjectivity is temporally, socially and culturally located, I felt the need to take the biographical journey one step further. Like Flax (1992), Davies and Banks (1992) and Stanley and Wise (1990) I argued that the social self and I would add the intellectual and professional self are developed through powerful, affective relationships with other persons and are contextually specific. This research is therefore also contextually specific. My views continued to change and develop as I continued to interact with teachers, students, colleagues, family and friends. Also, because the research did not take place in a vacuum it was influenced by the changes which took place in my personal life as well as in my professional life.

As I continue to struggle with the writing up of this research two major changes have taken place from where I left off the biographical journey (Section 8.0). The first change affected my professional career as I left my post as Principal Subject Area Officer (Science) at the MATSEC Support Unit and took up the post of assistant lecturer in science methodology with the Faculty of Education. Therefore I was no longer in contact with the day to day running of the examinations. However, in the Faculty of Education I participated in the development of an Assessment policy for student teachers and in the introduction of student-teacher portfolios. This has helped me to put some of the abstract theory into practice and to contextualise some of the readings which I had been doing for this research.

The second major change was the birth of my son. While my son's entry into the world changed my working habits and practices it also made me think more precisely about what it was that I was doing. The data and the research were telling me one thing and the realities of the kind of education I wanted for my son were telling me another thing. While philosophically I was arguing against the elitism of private schooling and the unfairness created by having a tripartite system, the actual state of secondary schooling made me desire a private school education for my son. When the time comes for Luke to start going to school, I would rather not have to choose between Private and State schooling. If State schooling is improved so that it offers students the same opportunities and education offered to students in Private schools, then the choice would not have to be made. At the end of this thesis I attempt to visualise an ideal model of educational assessment. Some of these views are also reflected in the new draft of the National Curriculum Review (1998) which also places emphasis on formative continuous assessment rather than summative assessment. The constraints faced by the teachers in schools in the implementation of such a model of assessment are enormous, however the vision which can drive the implementation is already unfolding.

All this made me think a bit more about the insider-outsider dilemma which I discussed more fully in Chapter Seven (Section 7.1.3). My theoretical

framework drew on the ideas of participatory research and an "intersubjective world shared with others" (Berger & Luckmann, 1977) and yet here I was making myself part of the "powerful elite" whom I theorise so strongly against in the literature. It made me realise that my position in life did in fact make me part of this powerful elite. The question which needs to be raised is how I make use of this power. The dilemma created by the research process was how I could as described by Griffiths (1995a) weave a web through all these multiple selves and create an authentic self who really practised what she preached as a mother, as a researcher and as a teacher. As part of the powerful elite, the only part I can play is to work with others to try and develop an assessment model which is fair for all students and which I could authentically feel comfortable entrusting my son to.

14.3 Other implications for the research

The research also raised a number of other issues and concerns and has a number of limitations. What I have struggled very hard with are the idea of collaboration and my role as a researcher.

14.3.1 Collaboration

I tried very hard to involve the participants in the research process. I started off with the ideal that "educational research is research that improves the education of children and students...is a personal and political improvement and there must be a strong ethical underpinning" (Griffiths, 1997, p.192). Like Griffiths (1998a) I believed that collaboration would help to give the teachers and students voice, get empowerment, develop new knowledge and improve the education of students. However, my initial ideas about collaboration seem to be pretty naïve and I thought that my own desire for collaboration would make it happen. In fact it did not. As stated by Griffiths (1998a) collaboration is a chancy business and there is very little evidence to tell us how it can be accomplished successfully. In the present research I believed in collaboration because I wanted the teachers and students to become part of the research, to own the research and to critically inform the research process so that the theory would emerge out of their practice.

However, the teachers and students had other views. They were used to what I have described in Chapter Seven (Section 7.1.3) as a quantitative methodology which did not involve the researcher as a participant or as a subjective self. They were also used to researchers going into the schools, collecting the data and going out again without ever sharing their findings or acknowledging the input of the teachers and students. This left some of the teachers as I described in Chapter Eight (Section 8.2) with a negative feeling about research.

The teachers did not believe that research could empower them or change their situation. Therefore while they agreed to participate in the research they remained distant and detached. Even though I tried my best to be flexible and amenable (Ely, 1991) they still saw the research as my research and not their research. Even when as I describe in Chapter Eight (Section 8.4.2.3) I tried to share the transcripts of the observations and interviews with them, it still did not actively involve them in the research. Another problem was my role as a MATSEC official. I wanted to be as honest as possible and did not hide my role from the teachers and students. However, to some extent this honesty created even more of a barrier between the teachers and myself.

Therefore, while I established a positive relationship of trust (Measor, 1985) with the teachers and students and while they shared with me their thoughts and their views. While I tried to respect them and avoid harm (Fontana and Frey, 1994) and I allowed them to view following Opie (1992) my interpretations of their views, the teachers and students still remained on the other side of the fence. This has led me to the view that while collaboration should be an essential part of educational research it cannot take place unless collaboration is placed on the overt research agenda. All individuals involved in the research should understand what collaboration is all about, why it is important to collaborate and the conditions in which collaboration can take place.

14.3.2 Observations and Interviews

The research process itself helped me to redefine some of my ideas about doing research. As I have argued in the previous section reading and abstract theorising about research is one thing. Actually carrying out the research is a different story. Another dilemma which was raised by the research was the actual authenticity of what I was observing and what the teachers and students were telling me. While I felt comfortable with the interviews since I believed that the relationship of trust made the teachers and students comfortable telling me what they thought, though of course they only allowed me to see what they wanted me to see, I was not convinced that the observations were not being coloured by my presence. As described in Chapter Eight (Section 8.4.1) one of the main difficulties was trying to deal with the multiple perspectives in the research.

This has led me to the view that educational research since it is about individuals should be carried out in an actual classroom, over a long period of time, with teachers and students fully collaborating in the research. This leads to what Griffiths and Davies (1995) describe as "less distortion of what is actually normal teaching and learning" (p. 197).

14.3.3 My role as a researcher

The difficulties of doing qualitative research arise out of the multiple roles and multiple perspectives involved. This results in what in Chapter Eight (Section 8.5) I describe drawing from Denzin (1994) as a "multivoiced, reflexive, open-ended and emotionally based text" (p. 510). I had different roles to play, that of MATSEC Official, researcher, student, and teacher and I could not simply shed off all these roles and just become a researcher. My other selves became part and parcel of the research so that as stated by Griffiths (1998) I was neither a complete insider nor a complete outsider. The difficulty was in maintaining an equilibrium between the multiple perspectives and basing decisions on sound ethical principles which I describe in more detail in Chapter Nine (Section 9.1). Thus I have come to the view that the starting point of any successful research is honesty and respect for all the

participants making the research as trustworthy and authentic as possible and empowering all the individuals involved.

CHAPTER FIFTEEN

An Examination Oriented Culture

15.0 Introduction

The main research questions which I outline in Chapter One were:

1. What did teachers and students think of the physics examination ?
2. How were teachers' and students' views reflected in the kind of teaching and learning taking place in schools ?
3. How did examinations impact the lives of students and were there any differences in gender and class which limited the opportunities of students ?

These questions stemmed out of the main research question "Are examinations fair and just for all students in Maltese schools ?" In order to try and answer these initial questions, the data was divided into three main parts, the teaching and assessment of physics; learning and assessment of physics and the examination. In order to try and organise the evidence presented in answer to the initial questions this chapter will be divided into three main parts. The first part will deal with the present views of teachers and students regarding assessment and the predominance of an examination oriented culture. The second part will deal with the second question and concentrate on the result of this examination oriented culture in the classroom, that is the teaching to the test and shallow learning. The third part will deal with the third question and look at the way in which gender, class and type of school influence student achievement. This will lead to an answer as to whether the examinations are fair and just to all students in Maltese schools.

15.1 The Importance of Examinations

In the introduction to Part Two of this thesis I distinguish between examinations and assessment. Following Linn and Gronlund (1995) I define examinations as only one method of obtaining information about a student's achievement while assessment involves multiple ways of collecting

information. I argue that assessment is an essential aspect of the curriculum because it provides information about students' perceptions, knowledge, understanding and feelings and following Gipps (1994) that assessment does not stand outside the teaching and learning process but rather stands in dynamic interaction with it. I also argue that within a new philosophy of educational assessment examinations on their own no longer satisfy these characteristics.

As I started to interact with the teachers in schools and with their views about assessment I realised that as described in Chapter Eleven (Section 11.1) the teachers whom I interviewed did not have a clear definition of assessment. They used the word assessment interchangeably with the word examinations and they did not appear to distinguish between the two. As I continued to probe further I realised that the views of these teachers were very much embedded within a psychometric tradition which gave a great deal of importance to accurate measurement of ability. The teachers interviewed as shown in greater detail in Chapter Eleven (Section 11.1.1) in fact could not perceive of a curriculum without a system of examining because they felt that students were only motivated to learn for the examination and without examinations the level and standard of education would fall. Historically this fear of what would happen without examinations can be related to the failure of the comprehensive system of education which was introduced in Malta in the early seventies and which I describe in more detail in Chapter Two (Section 2.2). In this chapter it is seen that several authors suggest that one of the reasons for the failure of the comprehensive system was in fact the removal of the highly selective examination system.

15.1.1 The role of quantitative measurement

The development of examinations within a psychometric tradition is also discussed in the literature in Chapter Three (Section 3.1). Gipps (1994) and Gipps and Stobart (1993) describe how the emphasis on examinations was an offshoot of intelligence testing. This was based on the comparison of individuals and obtaining scores which were meaningful, reliable and accurate. In Section 3.1 I argue that this belief in the fairness, reliability and

objectivity of examinations give examinations a high status and labelling potential with teachers, parents, students and prospective employers placing all of their trust in a single score obtained on a one off basis. This view is reflected in the ideas of the teachers interviewed who clearly state that while assessment in the form of teacher assessment or course work are good ideas in principle, they are very difficult to put into practice, first of all because of a lack of resources and secondly because this form of assessment is not reliable, is highly subjective and does not ensure comparable standards. Thus while in the literature I was arguing against the strong influence of the examinations and critiquing examinations on the very basis that standardisation and reliability were being considered at the expense of validity and usefulness to the teachers, the teachers themselves were telling me that they wanted this reliability and uniformity, that all that was important was the ability to measure and place students in categories which would then enable selection to take place.

Another argument in favour of the quantitative measurement of students was the idea that quantitative tests could provide equality of opportunity in that groups such as girls or working class students could show what they were capable of doing in the same way as students from more advantageous backgrounds. This belief has been strongly criticised in the literature by Nuttall (1987), Gipps and Murphy (1994) and Broadfoot (1986) (see Chapter Three, Section 3.4.2) who all argue that examinations are culturally and context bound and in the types of questions they ask and in their format and context may actually disadvantage the groups they were meant to create an opportunity for. Therefore, in my view while a grade on an examination can give some indication of the potential of students, it leaves a great deal unsaid and does not offer a complete picture of what a student is capable of. As stated in the Ministry of Education Report (1963), students cannot all be assessed solely on the outcome of a single examination. For many students "other pieces of evidence" are also important.

The importance of quantitative measurement is related to the major function of examinations, the selective function. This selective function of the examination comes out very strongly both in the views of the teachers in

Chapter Eleven (Section 11.1) as well as in the views of the students in Chapter Twelve (Section 12.2). Both teachers and students argue that without examinations you cannot get anywhere, you cannot know where you stand and you cannot find a job or continue your studies. The end result of examinations that is certification becomes the be all and end all of the teaching and learning taking place in the school and the main goal of education.

This is also reflected in the literature where in Chapter Three (Section 3.2.2) I discuss the work of Nuttall (1975) who argues that selection is the main function of examinations. Nuttall argues that if examinations were to be abolished it would be very difficult for employers to select individuals and that students would have to go through a battery of selective tests for every job they applied for. At a later date Nuttall admits that tests and examinations do not provide all the answers and that a middle course needs to be found. In Chapter Three (Section 3.4) I critique the selective function of the examination. I will continue to critique this function of the examination throughout this chapter, however at this point I simply wanted to establish the high stakes associated with the examination.

15.1.2 Moving from examinations to assessment

While as I have argued in the literature in my view, there is still a place for examinations within an assessment culture, however in conjunction with other methods of assessment, the teachers interviewed were telling another story. I would argue that this stems out of a traditional background of teacher education which is grounded very much within psychology and psychometrics. As I have argued previously in Chapter Five (Section 5.1.1), influential individuals in education have traditionally come into education from different fields, predominantly the area of psychology and they have trained teachers within this paradigm. Therefore in my view it is very difficult for the teachers to let go of all they have been brought up to value. As some teachers would argue, it is better the devil you know than the devil who you don't know.

The dilemma in the research was how to take these views of the teachers into consideration and at the same time move forward to a new vision of educational assessment. What the teachers seem to be saying is that they prefer to stick to examinations which they feel confident with, which they feel can give an objective viewpoint, and which are relatively easy to mark and grade. For the teachers, teacher assessment, course-work and other forms of assessment opened up a whole number of issues, such as how subjective does the marking become, how can one ensure comparability between schools, how can one ensure that the students actually did the work themselves. While I respect the views of these teachers and while I agree with them that some form of external examination is necessary to ensure standards, what I would disagree with them would be the complete and utter faith in the one off examination. In my view, yes examinations which the teachers are familiar with are important, but they should not be the only source of information about students' progress. Like Boaler (1997) I would argue that the demands upon teachers to prepare students for an examination diminishes the potential for teachers to move away from a narrow and closed teaching model and reduces the likelihood of their spending time letting students explore and use in Boaler's case mathematics in open or authentic situations.

For the teachers to move from a narrow view of examining to a more open view of assessment they need to be involved in the development of new assessment and educational policies. Torrance (1995) argues that the role of the teacher is vital for any change in assessment and educational practices to be brought about (Chapter Four, Section 4.4). The teachers themselves have said this repeatedly. Like Torrance they argue that for any paradigm shift to take place this has to be accompanied by staff development, by input from teachers being acknowledged and by allowing teachers to get together to discuss their assessment practices. I would agree with the teachers and argue that once the involvement of teachers is encouraged and used in a positive manner, then the teachers themselves can start to realise the advantages of a new assessment culture. Within the constraints with which the teachers work, they are justified in wanting to stick to the familiar as they believe that that is more fair to the students, however perhaps if they are

exposed to alternative modes of assessment, are involved in the policy and decision making stages and are trained in implementing these policies, then their views about assessment can be changed radically. As Ball (1981) argues "in analysing educational innovations there is a tendency to overlook the fact that the reform of the educational system also involves the reform of the educators" (p. 288).

This reform of the educators has to be brought about in conjunction with a whole reform of the educational system. As stated by one of the teachers interviewed, before this paradigm shift and this great leap can take place, *"...the whole educational system will have to change..."*. This is also the argument made by Torrance (1995) (Chapter Four, Section 4.4) who argues that the traditional modes of examination are still very significant and that while governments may aspire to use assessment to reform the curriculum, and while educators may try to use such policy opportunities to develop new and more valid or "authentic" approaches to assessment, such aspirations are difficult to accomplish and moreover the traditional role and purposes of examinations in facilitating selection and in particular in controlling entry into higher education remains very significant indeed. Therefore any changes in assessment have to be accompanied by changes in educational ideology.

This idea is debatable and while some authors such as Hildebrand and Allard (1993) argue that changes in assessment practices can change what is taught and how it is taught others like Torrance (1995) and Broadfoot (1986a) argue simply changing assessment practices is not enough. Based on the evidence presented in this study like Torrance and Broadfoot I would argue that changes in assessment practices have to be accompanied by changes in curriculum if they are to be successful. This study in fact shows that while the new Secondary Education Certificate attempted to change the philosophy of examinations (see Chapter Five, Section 5.1.2) this was not followed by a change in the philosophy of the teachers who continued to teach and assess students in very much the same way they had always done, that is for the examination. A change in this teacher philosophy can only be brought about as has been stated repeatedly by the actual involvement of the teachers themselves. As argued very eloquently by Hargreaves (1967):

> ...Ultimately the possibility of some reform lies in the hands of the teachers themselves. The status quo based on an elitist view of education, whereby children are educated and socialised to fit into certain preconceived social strata of life in the modern world. If we are to educate all these children to develop and maintain co-operative and satisfying human relationships, to lead useful and constructive adult roles in society, to attain a degree of personal integrity and self-realisation, many of the assumptions about education we make as parents, teachers, administrators and legislators must urgently be challenged and reformulated (p. 192).

15.2 Teaching to the test and shallow learning

Since the views of the teachers who I interviewed were very much embedded within a psychometric tradition and oriented towards testing and examinations, this philosophy is very much reflected in the kind of teaching and learning taking place in Maltese classrooms. While no generalisations can be made about the teaching and learning in all Maltese classrooms, the fact that the patterns of teaching to the test and shallow learning appeared in all the schools where I carried out my interviews and observations, indicates that they are both issues which need to be taken into consideration and analysed in greater depth.

In the literature in Chapter Three (Section 3.3.2) I argue that examinations play an important role in the day to day decisions taken by teachers about what to teach and how to teach it. This argument is borne out by the data where it is seen in Chapter Eleven (Section 11.2.1) that the strong emphasis on the examination plays an important role in the kind of teaching taking place. In fact the "high stakes" (Madaus, 1988) associated with examinations, namely that of selection and maintaining standards cause teachers to teach to the test and coach their students to prepare them for the examination. In the literature, drawing on Madaus I argue that the measurement-driven instruction and high stakes testing results in the curriculum being defined by the examination and the major goal of schooling

becomes success in the examination. This was very evident as shown in Chapter Eleven (Section 11.2) in the strong emphasis placed by the teachers on the examination, the continual referral to past examinations, the use of past examinations to define the curriculum, the adjustment of teaching to the kind of questions which emerge in the examination and the copious note-taking which took place in all of the classrooms in which I observed.
This strong emphasis on the examination also leads to what Gipps (1994) describes as shallow learning. This is discussed in greater detail in Chapter Three (Section 3.3.2) where shallow learning is defined as taking place when there is an acquisition of principles without deep commitment or considerations and the principles are therefore often discarded as soon as they are no longer needed. This kind of shallow learning was also something which I myself had gone through as a student and which I describe in Chapter Eight (Section 8.0) and it was something which the students whom I interviewed repeated over and over again. As seen in Chapter Twelve (Section 12.3.1), the students interviewed constantly referred to the difficulty which they found with understanding physics concepts, stating that they understood when they were in class but seemed to forget everything when it came to working things out on their own. This seems to be an effect of teaching to the test and rushing through the curriculum without considering whether actual understanding of concepts has taken place.

Based on this evidence I would argue that the high stakes and measurement driven instruction are having a negative effect on the learning of students and that a large number of students are leaving school without having learnt anything worthwhile. This does not mean that any form of testing necessarily results in shallow learning. In my view there are forms of assessment which can be used to encourage deep learning, for example assessment through project work or role play can actually indicate whether any deep learning has taken place. What I would argue however is that in the Maltese context the ultimate goal is success in the examination and not learning. Therefore in order to do well in the examination the teaching and learning is carried out at a superficial level and geared for the examination which does result in shallow learning.

I would continue to argue that if the focus is removed from the examination and placed on learning then the students could be assessed on any deep learning. In this case the emphasis would be on the learning taking place and not on the assessment. Like Drummond (1997) I would argue that each child:

> ...has a right to an education in which his learning is seen as of paramount importance - not his difficulties, or his limitations, or his disadvantages, not his successes or failures - but his learning...(p. 10).

In a situation where it is evident that this learning is being inhibited by the kind of examinations which students are having to take, a review of the current assessment practices is necessary. Like Drummond I would continue to argue that "assessment is a process that must enrich their lives, their learning, and development. Assessment must work for children" (p. 13). In such a situation the assessment could become a natural and integral part of the teaching and learning process rather than a one-off evaluation at the end of the course.

Further evidence for the importance of focusing on learning rather than on assessment can be seen in a study carried out by Boaler (1997). Boaler compares the achievement of students who attend two different types of school. In one school the emphasis is on the traditional learning for the examination which is similar to the situation described in the Maltese context. In the other school learning and assessment is much more progressive and the examination was only a secondary aspect. The teaching and learning in this case was more active and exploratory. The surprising results of Boaler's study was that when students from both schools sat for the traditional GCSE examination the students who attended the progressive school performed as well or better than the students who had been prepared for the examination. Perhaps some lessons can be learnt from the results of this study and the argument which I have made throughout this thesis that the traditional teaching to the examination does nothing for the development of students' learning is strengthened by the evidence put forward by Boaler. It provides an optimistic agenda and shows that students can learn when they are confident in themselves and when they are made aware that learning will lead

to something other than success in the examination. As Boaler argues the only learning that seemed to be moderately successful in the long term was when it occurred within an applied activity.

15.3 The impact of the examination on the student

The third question which I ask initially relates to how examinations impact on the lives of students and whether any differences in gender and class limited the opportunities of students. My initial focus was therefore on gender and class, yet two other important factors emerged out of the data as being influential in determining the opportunities of students. These are the nature of the differentiated examination system and the type of school which one attends. Therefore I would argue that there are three main factors which impact on the lives of student and limit student opportunity. In practice these factors are all inter-related and intertwined and one cannot discuss one factor without taking into consideration the other factors. However, for the purpose of clarity and organisation, I have divided them into three main areas:

1. the differentiated examination papers;
2. gender and class; and
3. the type of school.

15.3.1 The differentiated examination papers

One of the main innovations of the new SEC examinations was as I have described in Chapter Five (Section 5.1.2) the introduction of a differentiated examination system. The aim of differentiation according to Sultana (1996) and Ventura (1997) was to privilege achievement rather than selection and to cater for a wider ability range of students. This is in line with the main ideas behind differentiation outlined by Broadfoot (1986) and Gipps and Stobart (1993) and which are discussed in more detail in Chapter Four (Section 4.3.2.2). The introduction of the differentiated papers was not well received by the public as shown in Chapter Five (Section 5.4) where I argue that the differentiated system traps students into making choices and this is very much reflected in the data. The teachers interviewed were also concerned

with the choice of paper and the overlapping grades between papers (Chapter Thirteen, Section 13.1).

Based on the evidence presented in Chapter Thirteen (Section 13.1) I would argue that differentiation is not allowing the positive achievement of students because of three main factors. Firstly, students who do not obtain a Grade 4 in the difficult Paper A are left Unclassified. The data shows that when these students re-sit the examination in September and opt for the easier Paper B, 90% of the students manage to obtain a grade 4 or a grade 5. The implications of this result is that perhaps the students could have made it through the first time around, with a grade 5. It could also imply that the difficulty levels of the examination papers are very different and that while Paper A is very difficult, Paper B is very easy and hence students are able to perform better in the easier Paper B. This gives an advantage to students sitting for Paper B.

Secondly, the data also suggests that a single overlapping grade does not take into account error in the estimation of grades. Good and Cresswell (1988) suggest that a safety margin of two overlapping grades should be used when using differentiated papers. This is borne out by the data presented in Chapter Thirteen (Section 13.3.2) where it is seen that both teachers and students interviewed tended to overestimate the grades by two grades. In the literature Murphy (1979) suggests there is a high level of agreement between the teachers' prediction of grades and the actual grades. However, this was not observed in the present research. This discrepancy in the prediction of grades suggests that it is very difficult for students to make a choice of paper and that an incorrect choice could lead to a restriction in the opportunities given to students.

Thirdly, the choice of paper emerged out of the data as having a number of serious implications. It can be seen in Chapter Thirteen (Section 13.2) that the choice of paper being made by the students is dependent on factors other than actual ability of the students in the subject. Most of the students were in fact opting for Paper B which is to be expected since the difficult paper was intended to cater for the top 20% of the students. What is worrying however,

is the way in which this choice is being carried out. While there appeared to be no gender differences in the choice of paper, a large school difference emerged in the way in which the choice of paper is being carried out. This was also observed by Ventura (1997) who carried out a statistical analysis of the choice of paper in a number of subjects. In fact in physics it is seen that students in Private schools are opting to sit mainly for the difficult paper A. This is associated as is described in greater detail in Chapter Thirteen (Section 13.2.2.1) with the prestige associated with sitting for a more difficult paper. The majority of students in State schools on the other hand were opting to sit for the easier Paper B. This is to be expected in the case of students in the Area Secondary Schools, since these students are considered to be of lower ability but it was a surprising factor as described in Section 13.2.2.2, in the case of the students in the Junior Lyceums, who are actually prepared for the more difficult paper A. The students interviewed however suggested that they preferred to pass the examination with a lower grade than not pass the examination at all. This can also be related to the self-esteem and identity of the students in the different schools which will be discussed in more depth in a later section.

Thus I would argue that the introduction of a differentiated examination system in Maltese schools is not functioning as it should. The evidence suggests that rather than encourage positive achievement and bringing out the best potential in students, the differentiated papers are limiting the opportunities of students. Students appear to be channelled into choosing the difficult or easier paper depending on the type of school which they attend. Students with low potential who attend Private Schools are in some cases encouraged to choose the difficult paper even though they are not of the required standard for the sake of prestige. They then fail the examination and miss out on future opportunities. At the same time, students with high potential again strongly influenced by the school opt to choose the easier paper. While these students are successful in the examination, they miss out on the opportunity of obtaining a higher grade. In Chapter Five (Section 5.4) I argue like Darmanin (1996) that the differentiated examination system leads to a closing of options rather than to the intended opening of opportunities. Based on the evidence I would add that the situation is even more serious

when one considers that the closing of opportunities depends on the type of school which one attends. Again the evidence points to the need for a serious rethinking of the differentiated examination system.

15.3.2 Gender and Class

I have opted to discuss gender and class in conjunction because as I argue in Chapter Six (Section 6.2 & 6.3), definitions of gender are very strongly intertwined with definitions of class and change over time both on an individualistic and collective basis. Throughout the whole research one of the main issues which emerged was that there seemed to be no one single factor which determined student achievement in examinations or one single factor which impacted on the lives of the students. Rather a number of factors ranging from gender and class to type of school interacted together to influence teacher and student views and performance.

Another difficulty arises when trying to consider class on its own. In the literature in Chapter Six (Section 6.3.2) there are differing views of social class in Malta. Darmanin (1991) argues that there are clear limits which define class which is closely related to attendance in private schools. On the other hand Baldacchino (1993) argues that class cannot be clearly defined since in Malta it is not what you do (that is, occupation) or what you know (that is, formal qualification) which matters, but more importantly, who you know and who you are which matters. This creates a class structure which is based more on connections than qualifications and which is very difficult to define either quantitatively or qualitatively. In the small survey which I carried out in the schools of the research (Chapter Ten, Section 10.3.1) there is some indication that class is related to attendance in private schools. However, this survey was based solely on father's occupation, the numbers were very limited and therefore no conclusions can be drawn. In my view, all the different schools have students from different class backgrounds because at this day and age being able to pay for a private school education does not mean that one has a high status occupation. Therefore while it is not possible to identify a clear link between class and student achievement, or the impact on the lives of students, the idea of class remains underlying all

throughout the data sometimes emerging as evident data and sometimes remaining buried beneath a number of other factors. Therefore, in this research while class is considered to be an important influential factor, not enough information was available to establish clear links between class, achievement, and student aspirations.

When considering gender (bearing in mind that gender is also strongly related to class) a number of interesting factors emerge out of the data. In Chapter Six (Section 6.2.1) I review the international literature regarding gender difference in achievement in science. The international literature in fact points to a gender difference in achievement in physics, which first started out in favour of boys, but which is now apparently shifting in favour of girls although Elwood (1994) cautions that this might not necessarily imply that girls are being given better opportunities in science.

In the case of Maltese students the data presented in Chapter Thirteen (Section 13.5.1) indicates that in fact there is no gender difference in performance in physics SEC. The fact that there is no gender difference is surprising in a culture which looks at physics as predominantly masculine and difficult and which as described in Chapter Twelve (Section 12.1) is considered to be even more difficult for girls. The teachers interviewed in fact thought that boys were much better in physics than the girls because of the practical out of school experiences which boys encountered (which is similar to what is described in the literature by Murphy, 1997). The teachers as shown in Chapter Eleven (Section 11.2.1) also used different examples with boys and girls and tended to use examples associated with hobbies for boys and examples associated with the kitchen for girls. This tended to perpetuate the stereotype that girls would not continue to study physics but rather that they would need physics only in their daily lives as wives and mothers. These views of the teachers were not however reflected in the views of most of the female students themselves who thought that they could do just as well in physics as the boys. An exception was a number of girls in the Area Secondary School who thought that physics was more of a subject for boys than for girls. This is a typical instance where gender and class are inextricably linked. The girls in the Area Secondary relate the learning of

physics with finding a job. There seems to be in this case a gender and class based notion of how labour is divided within a society and one cannot really tell whether it is gender or class which is the predominant influential factor here. However, it fits in with the post-structural framework of multiple meanings and perspectives.

This continues to show that while girls continue to perform well in Physics SEC, their attitudes to physics has not changed much and as argued by Darmanin (see Section 6.2.1) this has not increased the number of girls subscribing to engineering courses at the University. This is similar to the argument presented by Elwood (1996) who suggests that while girls are apparently out-performing boys, more boys have the opportunity to take up physics at Advanced level.

Despite these difficulties, taboos and stereotypes, girls still continue to do well in physics SEC. I would argue that there are a number of reasons why this could be taking place. First of all, the fact that physics is compulsory has according to Darmanin (1991) and discussed in more detail in Chapter Two (Section 2.4), encouraged girls since they have had no choice but to study physics and it has made them realise that they can do well in the subject. Secondly, as described in Chapter Six (Section 6.2.2.6) schools in Malta are still single-sex and as shown in the literature girls benefit when they are in a single sex setting. Thirdly, it could be that the girls sitting for the SEC physics examination are the high achievers who come from a particular type of background, therefore the girls who need to be most encouraged to take up physics, for example the girls in the Area Secondary Schools are not taking up physics and therefore a whole section of the population is omitted when it comes to analysing the statistical data. I would therefore argue that while it is all well and good that girls are performing just as well as the boys, this should not encourage us to be happy with this. A closer look at the type of students sitting for the physics SEC needs to be taken, and an alternative found for those girls who are not actually sitting for the physics examination but would still like to learn something about physics.

15.3.3 The type of School

One of the major findings of this research and which emerged out of the data was the importance of the type of school which one attended in determining achievement and student aspirations for the future. Equity issues in assessment are described as providing assessment practices which are fair and just for all groups. The evidence seems to suggest that the type of school which one attends influences achievement and hence gives students who attend a particular type of school an advantage over others.

In the literature Wilson and Wyn (1993) suggest that:

> Schools are intimately involved in the processes of cultural formation, and as such, become arenas in which the tensions and conflicts of the cultural dimension of social division are of central importance. The kinds of knowledges, classroom language, teaching styles and assessment strategies which are given priority reflect values, assumptions and practices which operate in the interests of students from one type of background or another (p. 6)

This was very evident in the data and as seen in Chapter Thirteen (Section 13.5.2), the achievement of students was very closely related to the type of school they attended and to the kinds of knowledges, language and teaching practices which were associated with the different kinds of school. In fact it can be seen (Section 13.5.2) that students in Private schools perform better than students in State schools and that students in Junior Lyceums perform better than students in Area Secondary Schools.

This was also seen previously in Chapter Thirteen (Section 13.1) where it was seen that the choice of examination paper was also determined by the type of school which one attended. The perpetration of the school's values in determining choice of paper and achievement rewards individuals who belong to a particular type of school, for example a Private School and punish those who do not have the same values and attend a different school, such as an Area Secondary School.

The data also shows that the type of school is also related to the type of career expectations which students might have for their future. Because of the selective nature of the examination students in Area Secondary Schools who are not very successful in the SEC examinations have limited career opportunities. On the other hand the students who attend Private Schools and Junior Lyceums aspire for more professional careers to which they are given access by their success in the examination. What is worrying in light of the importance of the type of school which has been shown by the data is that the type of school which one attends could perhaps influence one's life chances with school type perpetrating the social division of labour in society and preparing individuals for the roles they will take on as citizens. Who attends which type of school is determined by the examination which in turn is determined by the values of those who hold the reins of power in society.

The evidence presented in this study is very similar to research carried out on the tripartite system in the U.K. and which was discontinued with the introduction of the comprehensive system. Studies by Halsey, Heath and Ridge (1980) show the effect of the type of school on achievement. The study shows that once pupils are entered into a relatively inflexible structure and allocated to a grammar or secondary modern school, intelligence has little effect on one's future career. Able working class boys selected for the grammar schools had a good chance of doing well, but equally able boys from whatever social class selected for the secondary modern schools had very little chance. This can be compared to the situation of the present study which has shown that students from Area Secondary Schools appear to be at a disadvantage compared to students who attend other schools both in terms of achievement as well as in their aspirations for the future. Like Hargreaves (1967) I would argue that this process of categorisation of students into different schools can have effects which are deleterious on the self-concept and development of students. As argued by Hargreaves if achievement is one of the key values of our society then the school becomes a central focus and means by which individuals can achieve and hence the school becomes an important factor in determining the development of the personal and social identity of the individual.

Despite the evidence presented in a number of studies, the effect of the school was not always considered to be important. Hopkins, Ainscow and West (1994) describe how until recently the ability of schools to make a difference on student learning was widely debated. They suggest however, that the research on effective schools consistently demonstrates correlations between student achievement on tests of basic skills and a stable set of school organisation and process characteristics. The authors conclude that "schools can also contribute differentially to pupil achievement and that the school a child goes to does matter" (p. 44).

The present research in fact shows a clear relationship between school type and student achievement and their aspirations for the future. While the international research on school effectiveness focuses on individual schools and the characteristics of individual schools, this research has shown that the type of school, whether Private or State and within the state whether Junior Lyceum or Area Secondary is also a determinant factor. While most of the school effectiveness research is based on multilevel statistical correlations which give conflicting results this study gives quantitative and qualitative evidence which suggest that the type of school really does matter.

There are a number of factors which lead to this difference in student achievement according to type of school. These are:

1. The general school environment: all throughout the general picture of the school which emerges based on my impressions, the observations and interviews carried out with teachers and students is that differences do exist between the schools in which the study was carried out. As I describe in Chapter Ten these differences range from the actual school building to the embellishment of the school environment, to the amount of resources allocated to the schools and to the perceptions of the teachers regarding their students.

2. The involvement of the students: the participation and ownership which students are given in the different schools also contributes to their positive achievement. As I describe in Chapter Eleven (Section 11.2.4) in

Private Schools students are allowed more ownership over their work. They are actually involved in the practical work and are allowed to do the work themselves. In the State schools the learning is much more teacher directed, practical write ups are dictated and there is very little involvement. Therefore in Private Schools the involvement of the students is more conducive to a positive learning environment.

3. The behaviour of the teachers: All throughout the research the teachers are seen to classify and label their students on the basis of subject choice and on the basis of ability. The teachers interviewed tended to distinguish between science and non-science students, bright and weak students. The teachers interviewed in the State schools also had a poor perception of their students ability as seen in Chapters Ten and Twelve. This poor perception in the students' ability could also lead to a poor performance by the students.

4. The language of instruction: In Chapter Twelve (Section 12.3.2) the teachers and students interviewed comment that the language of instruction, that is English acts as a barrier to the understanding of physics and to performance in the examination. All the teachers interviewed state that they have a problem with language, however it could be seen that the problem was more predominant in the Area Secondary Schools and this could be another factor influencing the poor achievement of students in Area Secondary Schools.

These and other factors are described by Rutter, Meighan, Mortimer & Ouston (1979) as being some of the characteristics of effective schools. While I am in no way trying to describe Private Schools as effective schools and State Schools as ineffective schools, the fact remains that students in Private schools perform better in examinations. The question which needs to be asked is therefore, whether the students perform better because they are really more able, because they attend a particular type of school or is it because the present examination system rewards the kinds of values which are predominant in the Private School Sector ? While I am not hoping to solve this major educational dilemma in the next few pages, I hope to show in

the light of the evidence presented, the implications of having an examination system which rewards students on the basis of a number of factors one of which being the type of school one attends.

Chapter Sixteen:

Towards A Fairer Assessment

16.0 Are examinations fair and just for all students in Maltese schools ?

This was the main question with which I started out the research and what I tried to explore through an analysis of the data. Looking back on the evidence if one tries to give a simple "yes" or "no" answer to the question then it would seem that examinations are not fair and just for all students in Maltese schools. However, in educational research the answer is never so simple and one has to delve in much deeper and question what is fair and just and if examinations are not fair and just then whether they can be replaced by a fairer form of assessment ?

My initial definition of fairness in Chapter One and Chapter Six is the "righting of structural injustice due to race, class, gender and special needs" (Griffiths and Davies, 1995, p.193). Based on the evidence presented in Part Four of this research it can be seen that the factors which contribute to injustice in the Maltese SEC examination go beyond class and gender (which were the two factors which I focused on initially). In my view based on the evidence the factors which contribute to the unfairness of the examinations are:

1. the strong high stakes associated with the examination which leads to a selective mechanism which categorises and labels students;
2. the teaching to the test and coaching which results in only the knowledges which prevail in the examination as being valued;
3. the differentiated examination system which creates labels among students;
4. gender and class stereotypes; and
5. the type of school.

I would argue that because of these factors, examinations create bias or unfairness in favour of certain groups and result in inequity. As I have argued in Chapter Six (Section 6.0) it is not possible to create a situation where there is equality of opportunity or equality of outcomes, since students come from different backgrounds, have different abilities and different individual needs. These differences necessarily place some students at an advantage over others. Within this framework of multiple experiences and the social construction of meanings trying to create equal opportunities or a fair examination is no longer valid. As I have argued previously what needs to be done is to work towards an assessment culture which is fair to all groups. This leads to what Griffiths and Davies (1995) (see Chapter Six, Section 6.0) describe as the empowerment of the individual.

16.1 The selective function of the examination

One of the most important themes which runs across both the literature review as well as the analysis of the data is the emphasis on the selective purposes of the examinations. The students interviewed are very emphatic in Chapter Twelve (Section 12.2.1) about the importance of having certification in examinations in order to be able to find a job or continue their studies. This is also related to a system of reward and punishment which Foucault (1977) describes as "a normalising gaze that makes it possible to qualify, to classify and to punish" (p. 175). The examinations are in fact rewarding those students who through the coaching which is so prevalently described in Chapter Eleven (Section 11.2), learn to respond well. Those students who fail to read the signals are punished for not being able to respond in the manner that was required of them.

This places some students, for example as is evident in the data, students from Private Schools at an advantage over the students in the State Schools, not because they are more able or more capable but rather because the values encouraged by the schools are similar to the values of the examinations. Like Wilson and Wyn (1993) I would argue that "through the perpetuation of a particular set of values the school rewards those who conform and penalises those who do not" (p. 15). The students who do not

conform are left in a marginal position because their values and practices are not rewarded on the terms of the school and of those who set the examinations. According to the authors, this "matter of who shall or who shall not be selected for greater things can be construed as an act of power" (p. 15). Nuttall (1987) argues in fact that the context in which examinations are presented greatly influence performance (Chapter Three, Section 3.4). This can create bias in favour of one social group or another.

This act of power is also viewed by Foucault (1977) (see Chapter Three, Section 3.2.3) as one of the main functions of the examination. Examinations judge and differentiate between individuals creating documentary evidence which is used to pin down each individual into a particular category. This results according to Broadfoot (1990) in a form of social control. In Chapter Three I argue that Foucault presents a very dismal picture of the function of examinations and that examinations can be used to bring out the best potential in students rather than to compare and judge them. Based on the evidence however, I would tend to agree with Foucault that the main function of examinations is as a means of social control and that the examination on its own cannot bring out the best potential in students.

The teachers interviewed argue in favour of examinations because of their neutrality, because of their objectivity, because of their reliability but like Foucault I would argue that these characteristics are simply a mask, hiding the underlying political agendas and the maintaining of the status quo. Like Hargreaves (1994) I would argue that "schools and teachers are being affected more and more by the demands and contingencies of an increasingly complex and fast-paced, post-modern world" (p. 23). Yet their response as is described by Hargreaves and seen clearly in the views of the teachers interviewed is often inappropriate or ineffective – "leaving intact the systems and structures of the present, or retreating to comforting myths of the past" (p. 23). In the case of the teachers interviewed, the myth of the past is the ability of the examination to give a true picture of each individual student's ability. This is in fact one of the major criticisms of examinations described by Torrance (1995) and which is discussed in detail in Chapter Three (Section 3.4).

The effect of selection also has a negative labelling effect on the students which as described in Chapter Three (Section 3.3.1) may have according to the BERA Assessment Policy Task Group (1992) a harmful effect on student learning. This harmful effect is very evident in the shallow learning which was observed in the classrooms (Chapter Twelve, Section 12.3.1) and in the development in students of an inauthentic sense of self. The development of student identity is in fact strongly influenced by examinations and their selective function.

16.1.1 Examinations and the development of Student Identity

As shown by the data the examination plays an important role for students in Maltese schools. It has a great labelling effect on students and all throughout the data teachers were seen to distinguish between bright and weak students, able and less able students on the basis of results which they had obtained in tests or examinations. The examination, I would argue also leads to the development of a sense of self and the role which one should take in society. I was very struck by a comment made by one student (Chapter Thirteen, Section 13.6.1) who said:

> *...From these results my whole life and career depended...What if I had not passed ? Would I have remained the same person ?*

For me this comment sums up the whole argument about the relationship between the examinations and the development of student identity. In my own experiences with examinations which I describe in Chapter Eight (Section 8.0), I had already realised that examinations had been very influential in my own life and now I was observing it and listening to students who were saying the same thing.

The importance given to learning physics and examinations by students is also related to what they perceive will be their future role in life. Students who viewed themselves as incapable of passing their physics examinations (Chapter Thirteen, Section 13.6.1) did not have high aspirations for their future careers. This is also related to class and type of school attended.

Therefore it would seem that the examination is limiting the opportunities of students and telling them that only those students who are successful in examinations are worthy of taking up a professional career.

In Chapter Six (Section 6.1) I argue that there is no direct relationship between achievement and self-esteem and that a number of factors such as gender and class play an important role in the development of an individual's sense of identity. Based on my own experiences and following Griffiths (1993) I argue that self-esteem is not caused by or causes achievement but rather that self-identity and esteem is created as a result of a process of constructing narratives of ourselves, of developing a sense of belonging and acceptance in relation to others or a sense of resistance and rejection. Based on the evidence I would argue however that in a context which is highly selective and highly examination oriented as is the Maltese context, this sense of acceptance or rejection is not only based on individuals being valued for who they are but that success in the examination also determines this acceptance or rejection and hence the development of an identity of self.

Repeatedly in the data (Chapter Twelve and Chapter Thirteen), it is seen that the students interviewed judge themselves on the basis of success in examinations, the teachers judge the students on the basis of success in the examination and career choices and opportunities are determined by success in examinations. This places students in what Griffiths (1993) describes as a double bind situation in which no achievement can be good enough. Like Griffiths (1993) I think that the ideal situation would be a situation where individuals are valued and loved for themselves rather than for what they can do, but in the highly selective context of Maltese examinations value is placed on the examination rather than on any intrinsic value.

This suggests that the identity formation of students and the writing of their narrative is strongly influenced by success or failure in examinations. This results in individuals who value themselves on the basis of what they can do. Related to the difference in achievement obtained by students in the different schools this is rather worrying as it would seem to imply that students in Private Schools have a better chance than those in State Schools of

developing an identity which might be inauthentic but which is that which is valued by society. This leads to an unfair situation where students in State Schools are placed in a marginal position where their culture is not valued and leads to a sense of self-derogation and powerlessness which is viewed in Chapter Thirteen (Section 13.6) in the students' description of their low abilities and their low expectations.

As argued by Griffiths the narrative of the self is developed both on an individual level as well as within a community. Within a community which values success in examinations above everything else and which measures success in life as being equivalent to success in examinations, the development of a sense of self and identity is very closely linked to success in the examination. Within such a context the examination becomes a powerful tool empowering individuals and determining their sense of worth. Once the mask of the examination is removed the individual is left bare and vulnerable and incapable of developing a sense of self-worth based on intrinsic rather than extrinsic values.

Sultana (1991) argues (see Chapter Six, Section 6.3) that the promise which education holds out for many parents is that through a sustained effort and investment in school work on the part of their future, these can hope for a better quality of life than they themselves had. He adds however, that one of the predominant concerns of educational theory and research has been that schooling, rather than bringing about social equality and equity, serves to reproduce privilege from one generation to the next. Examinations as described in Chapter Three (Section 3.0), were introduced precisely to avoid this reproduction of privilege and encourage advancement on the basis of merit. The evidence presented in this study suggests however, that rather than encourage equity, the physics SEC examination is in fact through its very nature, through differentiation, through its selective function and through the kind of teaching and learning it encourages in fact creates an unfair situation. This situation advantages students on the basis of their background, but more importantly on the basis of the type of school which they attend. In this case the school rather than bringing about equity helps to maintain the status quo and through rewarding success in examinations

based on particular values encourages the reproduction of the values of those who hold the reins of power in the society.

In Chapter One I question this selective function of the examinations and use Bernstein (1971) and Eggleston (1984) to suggest that those who hold major power positions in society are those who determine what counts as knowledge in the examination and therefore who makes it through the system. The evidence presented in this study indicates that this distribution of power and limitation of student opportunity is in fact taking place. As I have argued previously nothing can be done to change the differences in individuals and in a post modern age these differences should be celebrated rather than changed. What can be changed are the assessment practices which are creating such a selective mechanism. I am not suggesting that selection can ever be eliminated because society has different needs and different levels of job opportunities. What can be done however, is to ensure that the assessment practices encourage rather than limit opportunities and that all students regardless of their gender, class or type of school they attend, can leave school having learnt something which is useful for their lives as future citizens. This will encourage students to develop their full potential.

What is required therefore is a shift from the testing and examination culture based on selection which is so predominant in the schools of the study to a new assessment culture based on the formative development of students. While there will always be someone in a more powerful position than others, while I myself have acknowledged at the start of this final part of the thesis, that I myself might form part of this powerful elite, the idea is not to make everyone equal but to ensure that the power is used in a way that is of benefit to the students. This calls for a new philosophy of assessment which is described very well by Drummond (1997) who says:

> The practice of effective assessment requires a thorough understanding and acceptance of the concepts of rights, responsibility and power, lying at the heart of our work as teachers. In searching for ways to make our assessment practices more effective, we are committing ourselves to recognising children's rights, shouldering our

responsibilities towards them, and striving to use our power wisely and well (p. 11).

16.2 A new model of educational assessment

At present the situation in the schools in which I observed and the views of the teachers and students interviewed indicate that examinations dominate assessment practices in Maltese classrooms and the main function of assessment is that of selection and social control. In this section as I have argued in Chapter Four (Section 4.3) and based on the data I will argue that a new model of educational assessment based on formative, diagnostic assessment is needed to encourage learning and positive achievement among Maltese students. This new model of educational assessment will hopefully contribute to the righting of structural injustice created by the unfairness of examinations.

While as shown in Chapter Eleven, the teachers interviewed were not very positive about alternative forms of assessment other than the examination, the students as shown in Chapter Twelve were much more in favour of having multiple forms of assessment and reducing the influence of the examination. The majority of the students interviewed as described in Section 12.4 argue in favour of having multiple forms of assessment such as tests and project work throughout the whole year. The students interviewed thought that in this way if the pressure of having to study for a final examination were removed then they would learn much better. Although concerns similar to the concerns expressed by the teachers regarding issues of objectivity and reliability were expressed by some students, most were in favour of multiple forms of assessment.

What the students interviewed felt very strongly about and which I would agree with was the fact that any form of assessment practice should be used in a formative manner in order to help the students understand and improve their learning. One student captures the very essence of formative assessment (see Chapter Twelve, Section 12.4) and states, "*...otherwise it is useless...you don't learn anything...*". Like Drummond (1997) the emphasis of

the students is on learning and like Drummond I would argue that in effective assessment teachers use their assessment to enhance the learning of all children, individually and collectively.

The students also argue (see Section 12.4) that if the emphasis on the examination is removed and replaced by a low stakes form of assessment, then learning for life rather than for the examination can take place. They argue that it is important to learn physics which is relevant and useful for them in their daily lives as future citizens. This would make learning enjoyable and fun and you would end up with something you could use in your life rather than with a certificate which you could as described by one boy hang on the wall or put in a drawer, but did not really mean anything at all.

The teachers in the study did to some extent as described in Chapter Eleven (Section 11.2.3) try to relate the learning of physics to every day life situations. However, this was still associated with a high stakes examination and therefore while it did much to increase student interest in physics it did not enhance their performance or understanding. What the students interviewed were saying was that physics should be learnt and appreciated and assessed in a formative positive manner leaving them with something relevant to their lives rather than a certificate.

The characteristics described by the students interviewed are very similar to the characteristics of a new model of educational assessment proposed in the literature by various authors and which is described in detail in Chapter Four (Section 4.3.1). This model of educational assessment is based on the basic post-modern stance that there is no thing as a true score and that student performance needs to be represented by multiple methods of assessment, on a continuous basis throughout the year and carried out by different assessors. Based on these views as described by Gipps (1994), "assessment does not stand outside teaching and learning but stands in dynamic interaction with it" (p. 15).

Within this new model of educational assessment the emphasis is on multiple methods of assessment, formative assessment and more teacher involvement in the assessment process. Gipps (1994) argues that "to embrace educational assessment, with the professional involvement of well trained teachers, will be to harness a powerful tool for learning" (p. 176). In the study it is seen that this powerful tool is not in fact being harnessed. However, as I have argued in Chapter Fifteen (Section 15.1.2), if the teachers are more actively involved in both assessment and educational change then the vision for a new model of assessment can be implemented and actualised even within the constraints of the present situation in Maltese classrooms.

16.3 Characteristics of a New Model of Educational Assessment

The evidence shown in this study indicates that the assessment practices being carried out in Maltese schools are not fair for all students. Above all the study shows that students who attend Private Schools seem to be at an advantage over students who attend State Schools. Therefore, from the evidence shown in this research I would argue that there is a need for the creation of an official assessment policy for Maltese schools which goes hand in hand with the National Curriculum.

There are many constraints in the creation of an assessment policy within the current educational system and a complete rethinking of the aims of education needs to be carried out. In Malta the main aim of education as has been argued previously in Chapters Two and Three is the selection and classification of individuals so that they can find their role in society and their role in the labour market. This emphasis on selection brings with it a strong emphasis on the examination as the only reliable form of selecting. Selection cannot be removed as a function of education however its importance can be minimised and assume a secondary purpose rather than a primary one. Once the emphasis is shifted from selection to learning and achieving one's best then one of the major barriers to authentic assessment is removed.

Other constraints which have been described by the teachers in Chapter Eleven include the increase in their work load, the need for more resources, the subjectivity of teacher assessment and the maintaining of standards across schools. All these constraints can be eliminated if a new assessment policy is formulated in conjunction with curriculum review and innovation, a change in educational aims, and a change in pedagogy.

A new model of educational assessment can be created within the present constraints even if the selective eleven plus examination is not removed for the time being. Each school however whether it is a Private or State School can develop its own Assessment Policy. This policy would be based on a number of principles and ensure that each individual leaves school with a profile of achievement which includes information from multiple sources, multiple assessors and in a number of different contexts.

I have argued throughout this study for the need for a new model of educational assessment. However, I have come to the view that the development of a new model of assessment cannot take place on its own in a vacuum. It has to be brought about together with a redefinition of the physics curriculum and a redefinition of what fairer assessment really means. The focus as I have argued drawing on Hildebrand (1996) in Chapter Six (Section 6.4) should be on an effective pedagogy for all students which deconstructs and redefines the implicit dualisms which act as stabilisers of current paradigms.

Drawing on the work of Gipps (1994), Gipps and Murphy (1994) and Hildebrand (1996) I would argue that the characteristics of an effective pedagogy leading to fairer assessment of students should be based on the following principles:

1. A pedagogy which rewards holistic learning set in a context with assessment tasks set within similar contexts related to real life situations. This allows students to see the relevance of what they are doing and to use the assessment tasks in a positive manner to enhance their own personal learning.

An example:

For example in Chapter Eleven teachers are described as teaching magnetism in a context which is relevant to the lives of the students, the example being given of the use of magnetism in the kitchen. This is an example of holistic learning set in a context and an assessment task such as a research project describing the uses of magnetism in the kitchen, in industry etc. could easily accompany such learning.

2. Encouraging qualitative learning with constant qualitative feedback being given to students. This allows them to understand their strengths and weaknesses and helps them to improve their learning much more than a single grade in an examination would ever be able to.

An example:

This is an important aspect of a new assessment system. Comments given to students regarding their work encourage and motivate students to learn about their strengths and weaknesses and ways in which they can improve. This involves more work for the teacher however the kind of relationships which can be built with students through such qualitative feedback is extremely satisfying and professionally rewarding. Also if the change in assessment is accompanied by a change in curriculum, the curriculum could be reduced to give the teachers more time to carry out meaningful assessment.

3. Making use of multiple forms of assessment. The different forms of assessment can be used to assess different ways in which students learn, it encourages learning in different situations and by different methods and does not value one form of learning over the other. All students will be able to show and perform well in areas in which they are better in.

An example:

Again there are a variety of ways in which students can be assessed. The examination at the end of the year can remain one of the modes of assessment, however not the only mode. It can be accompanied by tests, project work, research work, work done in school, work done at home, community involvement, role play and any other way in which the teachers feel it is best to assess the learning of their students.

4. Clear guidelines and criteria should be provided to students. This encourages intrinsic motivation and allows the student to know what is expected out of them. This again encourages success rather than failure.

Comment:

Once the students know what is expected of them it is very easy for them to work towards a specific goal. The students will also know what to expect out of the assessment and this is a much fairer method of assigning a grade or a mark to students.

5. An active involvement of both teachers and students in the assessment process. Different work can be assessed by different individuals, teachers, parents, colleagues and the students themselves can be involved in the assessment practices. This will give a multiple perspective of the students' learning and allow students to build up an assessment profile based on the views of different individuals.

Comment:

Traditionally it is the teacher who assigns the work and the grade to the students. This makes it a one way process with the power being completely in the hands of the teacher with the students having no say whatsoever. An assessment system which allows teachers and students to work collaboratively can make use of modes of assessment where students can decide with their teachers in what way they want to be assessed and also they can negotiate grades and marks given to particular pieces of

work. Some teachers are a bit wary of this as they feel that this is giving the students a great deal of power and that they will take advantage of this. However, in my view the very fact of giving some ownership to the students encourages them to work in a better and more satisfying manner.

6. A greater sense of student ownership. This establishes assessment as a collaborative venture between teacher and student. It is based on positive achievement and allows students to negotiate starting points for learning, negotiate assessment modes and even the possibility of upgrading their work.

An example:

It was seen it Chapter Twelve that when students were allowed a greater sense of ownership in carrying out their practical work they enjoyed the learning much more and saw it as more useful. If students are allowed to collaborate with teachers on the choice of work and allowed to feel that they are capable of doing the work they assume a greater sense of responsibility and learning and assessment becomes a natural way of doing things.

7. Valuing values and differences among individuals. This encourages difference rather than labelling. It again emphasises the positive characteristics of each individual and that values of individuals may be different but not necessarily better.

Comment:

In this way the differences among students are valued. Students can be allowed to work on different assignments, different tasks according to ability and interest and be given credit for anything positive which they can do.

8. Acknowledging and giving credit for what pupils have achieved rather than for what they have not achieved in order to enhance the personal and social development of individuals.

An example:

This goes hand in hand with the formative feedback which can be given to students. If students are told what they have done right and not only what they have done wrong, they will be better able to develop an identity based on their successes rather than their failures.

9. Assessment practices which provide teachers and schools with feedback regarding the development of pupils' skills and talents with a view to revise and improve curricula and teaching pedagogy.

Comment:

Besides the examination other forms of assessment can be used to give the teacher feedback about the kind of teaching and learning taking place in the classroom. These assessment practices can also be used to provide feedback to parents and other interested individuals about what is being done in the school. For example, exhibitions of project work, the organisation of open school days to show what has been done by the students can give a great deal of feedback and involve the students directly.

10. Actively involving the teachers in any policy making regarding pedagogy and assessment so that they will feel involved and use assessment effectively.

Comment:

The point which has been stressed all throughout this final part of the thesis is that no change in assessment practices can be brought about unless there is direct involvement of the teachers. This is a powerful tool which needs to be developed much more if assessment is really

to become an integral part of the teaching and learning process.

Based on these principles students leaving secondary school can leave school with a positive profile of what they have achieved, their successes rather than their failures. This profile can be developed by teachers and students within the current constraints of the system. Even if the selective system is not removed, each school whether Private, Junior Lyceum or Area Secondary can create their own profiles of achievement with which their students can leave schools. Such a profile could include:

- the results from external examinations;
- the teacher assessment for specific subjects whether they have been taken for the examination or not;
- evaluations of project work, written work, creative work, drama, role play, etc.;
- a practical or oral assessment;
- evidence of work done in the community, peer assessment, etc.

This profile therefore includes information from multiple modes of assessment, is given by different assessors over different time frames and in different contexts. It can be formative and give qualitative information to students and parents about the progress of student work and it is based on a mutual collaboration and learning experience between teachers and students. It is carried out in authentic setting and promotes learning in a relevant context. It also provides prospective employers with more information about the individual student than a simple mark or grade in an examination.

The major constraints to the development of this kind of profile are again time, teacher work load and resources and the maintaining of standards among the different schools. Time and resources can only be increased if the curriculum is reduced to make assessment practices manageable. However the professional satisfaction and reward gained through the motivation of the students to learn is beyond any limits. This has to take place hand in hand with the professional development of teachers and their greater involvement in the policy making decisions regarding assessment.

Standards across schools can still be maintained because of the external examinations which will still take place but will no longer have that much importance as well as through the auditing of other work carried out by students. This can be carried out by constant interaction and meetings among teachers to discuss the work of students and establish codes of practice, ethics and standards.

16.4 Conclusions

The benefits of such an assessment policy are boundless and not impossible to achieve. In fact in Australia the introduction of the Victoria Certificate of Education for physics (Hildebrand, 1996) has introduced a syllabus which is based on formative assessment with tasks based in real world contexts, accompanied by explicit guidelines and assessed by different assessors. This has been very successful and changed the way in which physics is taught and assessed.

With such an assessment model, the students leave school with something which is worthwhile, which has led to a deeper understanding of knowledge which is relevant and meaningful to their daily lives. The teaching and learning becomes more interesting and motivating and the teachers have more satisfaction in seeing their students becoming more involved in the learning process. There is also more information for teachers, students and parents regarding the progress of the individual students and this progress is continuous from one year to another and from one teacher to the next. As already pointed out there is also more information for prospective employers who can look at different aspects of student achievement rather than solely academic achievement.

The change in assessment policy has to take place hand in hand with a rethinking of the main aims of secondary education, a rethinking of what we want sixteen year old students to know and have achieved by the time they leave school, and a rethinking of the type of curriculum we want secondary students to have followed. Once this challenge is taken up, then assessment can become an integral part of the teaching and learning process, an

essential giver of feedback and positive criticism without the stress and tension created by a single one-off examination. This can result in assessment practices which "are fair and just for all groups" (Gipps and Murphy, 1994, p.18) combined with an effective pedagogy which as described by Gipps (1996) requires "reflective practice on the part of the teacher and a focus on the pupil as learner" (p. 270).

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Appendix I

Details of how the Interviews were conducted

- **Choice of Schools**

The interviews were carried out in six Maltese schools. The schools were chosen to represent both girls' and boys' schools and the different types of schools which can be found in the Maltese Islands, that is, Private Church schools, Junior Lyceums and Area Secondary Schools. The particular schools were chosen to cover a wide geographical area to ensure that schools from different areas in Malta were covered. Within the particular areas schools with the largest number of students sitting for the SEC examinations were chosen.

- **Choice of Informants**

Once the schools were chosen and permission for access into the schools obtained, I visited the schools and made contact with the Head of School. The Head of school then indicated the teachers who taught physics in the particular school. I was introduced to the teachers who accepted to participate in the study. The individual teachers then introduced me to their students. I chose to carry out observations in two different classes in each school. The students in each class were divided into groups of five to six students and I then met these students during their break or during a "free" lesson. "Free" in the sense that their teacher was either absent or involved in some other duties.

- **The time-frame**

The observations and interviews were carried out between the 4th October 1995 and the 11th December 1995. Visits to the schools were carried out on a weekly basis throughout that period and I would visit the schools two or three times a week depending on the lessons available for me to observe or the time set aside for interviews with the teachers and students.

- **Conducting the Interviews**

The interviews were conducted in an informal manner and were guided by a number of themes and questions I wanted to explore. However, within these themes I allowed the participants to talk about anything which they wanted to as long as it was related to the general theme of assessment and physics. The interviews were conducted in the schools themselves. With the teachers the interviews were generally conducted in the laboratory or in a classroom which was not being used. When only one teacher taught physics in the school an individual interview was carried out. When more than one teacher was available, a group interview was carried out. With the students in all cases group interviews were carried out.

The interviews were conducted in English and Maltese. Where individuals were comfortable enough to engage in a conversation in English, I responded in English. When the participants used Maltese, I responded in Maltese. The interviews were tape recorded and transcribed soon after. When conversations were carried out in Maltese, I simultaneously transcribed into English.

- **Key questions asked**

I went into the interviews with a set of tentative questions but allowed the participants to guide me into the areas which they wished to discuss. The initial set of questions which I wanted to explore were:

The students:

1. What do you think of physics ?
2. Why do you like/dislike physics ?
3. Do you think that physics should be compulsory ?
4. What do you find most difficult in physics ?
5. Do you enjoy practical work ? Why ?
6. Are you going to sit for your physics SEC examination ?
7. Which paper are you going to sit for ? Why ? Did anyone help you to make the choice ?
8. What do you think of examinations in general ? Do you think that examinations are important ? Why ?

9. Do you think that exams are important for your future ?
10. What would you change about examinations if you were the Head of School or the Minister of Education ?

The teachers:

1. What do you think of the Physics SEC syllabus ?
2. What would you like to change in the syllabus ?
3. What do you think of the physics examination ?
4. What do you think about Paper A and Paper B ?
5. How do you think that student achievement can best be assessed?
6. What would you change if you could ?

- **Confidentiality**

In order to ensure confidentiality all the names of schools, teachers and students were changed in the text. The pseudonyms of the schools were chosen in order to try and capture the same kind of atmosphere imparted by the actual name of the school without it being too close for identification. For example if the actual name of the school was in English then the pseudonym was also given in English. Where names of saints were used other names of saints were chosen. The names chosen are names very common in Malta and care was taken to ensure that none of schools in Malta carried an identical name.

In the case of teachers and students, I tried to use a surname or name with an identical initial letter so as to make the transcriptions easier. I then chose names which are very common in Malta.

Appendix II

Categories used in the analysis of the data

The categories and sub-categories used in the initial analysis of the data include:

1. Teaching and Learning Physics:
   - Teaching physics.
   - Practical work.
   - Language used in teaching and learning physics.
   - Learning concepts.
   - Relevance of content.
   - Spoon-feeding.
   - Student ownership of learning.
   - Private lessons.
   - Difficulties encountered by teachers when teaching physics.
   - Physics versus Integrated Science.

2. The Examination and Assessment:
   - Function of examinations and assessment.
   - Selection.
   - Differentiation.
   - Teacher involvement in assessment.
   - Students' views of assessment.
   - Teachers' views of assessment.
   - Examinations versus continuous assessment.
   - Students' and teachers' perception of ability.
   - Moderation.
   - Parental influence.

3. Gender and Class:
   - Gender sterotypes.
   - Differences between boys and girls.

- School differences.
- Class differences and aspirations for the future.

4. The Student:
   - Family background.
   - Students' attitudes to physics.
   - Differences between students in different schools.
   - Relationship between students and teachers.
   - Labelling of students.
   - Career and future aspirations of students.

5. Power Relations:
   - The power of the examination.
   - The involvement of teachers in policy making.
   - The school, social class and success in examinations.
   - The influence of examinations on future student aspirations.