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THE UNIVERSITY OF ALBERTA

TEACHERS IN THE COMMONWEALTH OF THE BAHAMAS

A TEN YEAR PROJECTION

1979-1990

by



VERDIE M. FARQUHARSON

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH
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ABSTRACT

This research was aimed at projecting future demand for teachers of primary, junior high and senior high levels of the educational system of The Bahamas for the years 1979-1990. The study began by presenting brief discussions of related research on educational planning and enrolment projections. The first topic focused on different strategies employed in meeting demand for and supply of education while the second provided various techniques used in making enrolment projections. A general geographical and historical background of The Bahamas' educational system followed. An examination of past and current data on pupil enrolments and the teaching force was made as a prerequisite for projecting future pupil enrolment and future demand for teachers of the school system.

The main thrust of the investigation was the projection of school enrolment and hence, future teacher requirements for the period mentioned above. Results concerning future enrolments show that primary level enrolment will continue to increase until 1980 and then experience a decline to 1990. With regards to secondary levels, both junior high and senior high enrolments may be expected to increase throughout the forecast years 1979-1990. Consequently, similar trends may be expected for future teacher demand since the size of the teaching force is directly related to school enrolment.

It was projected that the demand for teachers at primary level will increase to its peak in 1990 and decrease thereafter to 1990 and that junior and senior high levels will experience increasing demands for teachers in the years 1979-1990 inclusive.

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TABLE OF CONTENTS

CHAPTER		PAGE
I	INTRODUCTION	1
	THE PROBLEM AND ITS SETTING	4
	STATEMENT OF THE PROBLEM	4
	SUBPROBLEMS	4
	SIGNIFICANCE OF THE STUDY	5
	DEFINITIONS	5
	LEVEL	5
	TYPES OF QUALIFICATION	5
	LIMITATIONS AND DELIMITATIONS	6
	LIMITATIONS	6
	DELIMITATIONS	7
	ASSUMPTIONS	7
	ESTIMATING FUTURE REQUIREMENTS AND SUPPLY OF TEACHERS	9
	DATA AND METHODOLOGY	11
	OVERVIEW OF THE STUDY	13
II	A REVIEW OF THE LITERATURE	14
	EDUCATIONAL PLANNING	14
	WHY PLAN EDUCATION?	15
	DIFFERENT APPROACHES TO EDUCATIONAL PLANNING	16
	SOCIAL DEMAND PROJECTION	16
	MANPOWER FORECASTING	18

CHAPTER		PAGE
	RATE-OF-RETURN ANALYSIS	19
	ENROLMENT PROJECTIONS	21
	FLOW STRUCTURES	21
	TREND EXTRAPOLATION	23
	Time Series	24
	Ratio Analysis	25
	SUMMARY OF CHAPTER II	26
III	THE SYSTEM COMPOSITION	28
	THE GEOGRAPHY OF THE BAHAMAS	28
	THE EDUCATIONAL SYSTEM	31
	THE HISTORY OF THE EDUCATIONAL SYSTEM	31
	PRESENT STRUCTURE OF SCHOOLS	33
	SCHOOLS	34
	PUPILS	35
	TEACHERS	35
	SUMMARY OF CHAPTER III	42
IV	ANALYSIS OF BASIC DATA	44
	ENROLMENT	44
	TEACHERS	55
	SUMMARY OF CHAPTER IV	64
V	PROJECTION OF SCHOOL ENROLMENT	66
	The Enrolment Ratio Model	66
	Assumptions	67

CHAPTER	PAGE
Projections - School-Age Population	67
Enrolment Projections - All Schools	69
Enrolment Projections - Ministry of Education Schools	76
Enrolment Projections - Independent Schools . . .	81
SUMMARY OF CHAPTER V	84
VI PROJECTION OF TEACHER DEMAND	85
The Pupil/Teacher Ratio Method	85
PROJECTION OF TEACHERS	85
Ministry of Education Schools - New Providence. .	86
Ministry of Education Schools - Family Islands. .	86
Independent Schools	97
All Schools	101
SUMMARY OF CHAPTER VI	101
VII SUMMARY, CONCLUSIONS AND IMPLICATIONS	105
CONCLUSIONS	106
IMPLICATIONS	106
SUGGESTED RESEARCH	
BIBLIOGRAPHY	

LIST OF TABLES

Table	Description	Page
I	Ministry of Education and Culture Schools - 1976/77	36
II	Independent Schools - 1976/77	37
III	Total School Enrolment in the Commonwealth of The Bahamas - Ministry of Education and Independent Schools - 1975/76 and 1976/77.	38
IV	Involvement Ratio of Pupils by Age: 1970/71 - The Commonwealth of The Bahamas	39
V	Involvement Ratio of Pupils by Age - 1975/76 - The Commonwealth of The Bahamas	40
VI	Involvement Ratio of Pupils by Age - 1976/77	41
VII	Total Enrolment in Ministry of Education and Culture and Independent Primary schools - 1970/71 - 1976/77	45
VIII	Total Enrolment in Ministry of Education and Culture and Independent Junior High Schools - 1970/71 - 1976/77	46
IX	Total Enrolment in Ministry of Education and Culture and Independent Senior High Schools - 1970/71 - 1976/77	47
X	Enrolment Trends in Ministry of Education and Culture Schools - 1946, 1950, 1955, 1960, 1965/66 - 1976/77	49
XI	Total Enrolment in Ministry of Education and Culture Primary Schools - New Providence and Family Islands - 1970/71 - 1976/77	51
XII	Total Enrolment in Ministry of Education and Culture Junior High Schools - New Providence and Family Islands - 1970/71 - 1976/77	52
XIII	Total Enrolment in Ministry of Education and Culture Senior High Schools - New Providence - 1970/71 - 1976/77	53

Table	Description	Page
XIV	Total School Enrolment by Level of Education in The Bahamas - 1970/71 - 1976/77	54
XV	Number of Pupils and Teachers by Level in Ministry of Education and Independent Schools, and Average Pupil/Teacher Ratio - 1976/77	56
XVI	Teachers in Ministry of Education and Culture Schools by Level and Qualification - 1976/77	58
XVII	Teachers in Ministry of Education and Culture Schools by Level and Citizenship - 1976/77	59
XVIII	Teachers in Ministry of Education and Culture Schools by Level and Qualification - New Providence - 1976/77	60
XIX	Teachers in Ministry of Education and Culture Schools by Level and Citizenship - New Providence - 1976/77	61
XX	Teachers in Ministry of Education and Culture Schools by Level and Qualification - Family Islands - 1976/77	62
XXI	Teachers in Ministry of Education and Culture Schools by Level and Citizenship - Family Islands - 1976/77	63
XXII	Teachers in Independent Schools by Level and Qualification - 1976/77	65
XXIII	Projected Population 0-29 years of age by Five-year Age-group - The Commonwealth of The Bahamas - 1975-1990	68
XXIV	Projected Population 5-19 years of age in single years 1975-1990, based on projections originally given in five-year Age-groups	70
XXV	Projected School-Age population by Level - 1975, 1980, 1990	71
XXVI	Enrolment Ratio of Pupils by Level - The Commonwealth of The Bahamas - 1975/76 and 1976/77	72
XXVII	Actual and Projected Enrolment in Primary Schools-1975-1990	74

Table	Description	Page
XXVIII	Actual and Projected Enrolment in Junior High Schools - 1975-1990	75
XXIX	Actual and Projected Enrolment in Senior High Schools - 1975-1990	77
XXX	Projected School Enrolment by Age-group and Level - 1975, 1980, 1985, 1990	78
XXXI	Actual and Projected Enrolment in Ministry of Education and Culture and Independent Schools by Level - 1975, 1980, 1985, 1990	80
XXXII	Actual and Projected Enrolment in Ministry of Education and Culture Schools - New Providence and Family Islands - 1975, 1980, 1985, 1990	82
XXXIII	Actual and Projected School Enrolment by Level - The Commonwealth of The Bahamas - 1975-1990	83
XXXIV	Actual and Projected Number of Teachers at the Primary Level - Ministry of Education and Culture Schools - New Providence - 1976, 1980, 1985, 1990	87
XXXV	Actual and Projected Number of Teachers at the Junior High Level - Ministry of Education and Culture Schools - New Providence - 1976, 1980, 1985, 1990	88
XXXVI	Actual and Projected Number of Teachers at the Senior High Level - Ministry of Education and Culture Schools - New Providence - 1976, 1980, 1985, 1990	89
XXXVII	Actual and Projected Number of Teachers at the Primary Level - Ministry of Education and Culture Schools - Family Islands - 1976, 1980, 1985, 1990	92
XXXVIII	Actual and Projected Number of Teachers at the Junior High Level - Ministry of Education and Culture Schools - Family Islands - 1976, 1980, 1985, 1990	93

Table	Description	Page
XXXIX	Actual and Projected Number of Teachers at the Senior High Level - Ministry of Education and Culture - Family Islands - 1976, 1980, 1985, 1990	94
XI	Actual and Projected Number of Teachers by Level - Ministry of Education and Culture Schools - 1976, 1980, 1985, 1990	95
XLI	Actual and Projected Number of Teachers by Level - Ministry of Education and Culture Schools - 1976, 1979, to 1990	96
XLII	Actual and Projected Number of Teachers at the Primary Level - Independent Schools - 1976, 1980, 1985, 1990	98
XLIII	Actual and Projected Number of Teachers at the Junior High Level - Independent Schools - 1976, 1980, 1985, 1990	99
XLIV	Actual and Projected Number of Teachers at the Senior High Level - Independent Schools - 1976, 1980, 1985, 1990	100
XLV	Actual and Projected Number of Teachers by Level. The Commonwealth of The Bahamas - 1976, 1980, 1985, 1990	103

LIST OF FIGURES

Figure	Page
1. Map of The Commonwealth of The Bahamas	29
2. Map of the Caribbean	30
3. Actual and Projected Number of Teachers - The Bahamas Ministry of Education and Culture Schools	91
4. Actual and Projected Number of Teachers - The Commonwealth of The Bahamas	102

CHAPTER I

INTRODUCTION

Education is considered, in developed as well as in developing countries, as a pivotal force in development. Both educators and economists believe that education is a good investment which provides the qualified human resources needed for national development. Hence, some developing countries are spending a large part of their resources educating their citizens in the hope that the returns that will accrue from such an investment will enhance their efforts at national development. The decision to divert scarce resources, from other sectors of the society, to education is always an important one to make but, it is considered even more crucial in developing countries where the need to generate educated and trained persons is rather pressing and resources very scarce.

It is generally assumed that the educational system will produce the quantity and quality of skills and knowledge required by its citizens to perform the work needed for national production and economic growth. But, in order for this to become a reality, there must be "sufficient" qualified administrators and teaching personnel at all levels of the educational system. Policy-makers are resorting to the use of educational planning techniques to help in guiding decision-making and actions so that enough personnel will be available to maintain the educational system.

The Bahamas, discovered in 1492 by Christopher Columbus, was

a British Colony which depended upon help and ideas from without. Because of its geographical and historical background The Bahamas' economy enjoyed periods of immense prosperity. This economy, based on maritime activities was supported by occupations which did not require schooling, therefore training and education contributed little to it. Further the Bahamian population consisted of expatriate masters and slaves (after the extinction of the Arawaks who were the aboriginal Bahamians -- Bain, 1959) who saw no need for educational institutions or to encourage the development of education. Consequently, the demand for education was almost non-existent in the islands.

The post-war years brought on an awareness to Bahamians that an efficient and adequate educational system was imperative for national development; an awareness which has perpetuated through to pre-independence and post-independence years. Both policy-makers and the lay-men have come to recognize the importance of a national system of education to the Bahamian society. Pindling (1975) describes this system of education as one that would seek to

Create in The Bahamas a society which is forward-looking and dynamic, utilizing efficiently all available resources -- human and material -- to produce an authentic quality of life based on social justice and economic progress.

The Government of the Commonwealth of The Bahamas, following independence 1973, initiated a campaign to diversify its economy -- which is based at present mainly on the tourist industry -- to include agriculture, fisheries and petrochemicals so as to increase its gross national product. Incidentally, the per capita G.N.P. of The Bahamas, which is at present one of the highest among third world

countries, is the highest in the Caribbean. For example the per capita G.N.P. in the Caribbean countries are: The Bahamas \$2,320, Jamaica \$1,060 and Haiti \$115 (Canadian International Development Agency 1977). This diversification of the economy will necessitate also the diversification of school programmes. These programmes will, in turn, equip the future labour force with training requirements and "tools" necessary for the "new world of work." Bahamians, like nationals of other developing countries, believe that the educational system is the most effective instrument for orderly social and economic change as well as for shaping new ideas and attitudes. Hence, the country is depending on the educational system to produce well qualified people who will enhance economic as well as social growth.

A most serious obstacle to the development and expansion of The Bahamas' educational system is the shortage of adequately trained teachers. Great strides have been made toward the training of teachers at home and abroad and the recruitment of specialists for the secondary levels, nevertheless the increased number of teachers, especially at the junior and senior levels is not yet in proportion to the increased number of pupils. It was, therefore, the purpose of this study to examine current enrolment, future enrolment and current quantitative and qualitative aspects of the teaching force of the Commonwealth of The Bahamas' educational system and in the light of the evidence, forecast the number of teachers required for the years 1979 to 1990.

THE PROBLEM AND ITS SETTING

STATEMENT OF THE PROBLEM

This study was designed to forecast the number of teachers required by The Bahamas' educational system for the years 1979 to 1990.

In order to accomplish this the following tasks were performed:

- (i) forecast the enrolment in primary, junior and senior high schools;
- (ii) draw up an operational plan consisting of forecasts of teacher requirements for The Bahamas by level.

SUBPROBLEMS

The major problems were divided into a number of subproblems.

These subproblems were:

- (i) To determine past and current enrolment in primary, junior and senior high schools in The Bahamas;
- (ii) To determine the current number of teachers in the educational system by level and qualification;
- (iii) To project the additional number of teachers required to meet the staffing needs for schools over the forecast years.

SIGNIFICANCE OF THE STUDY

The significance of this study is threefold:

- (i) The 1974 "Report of a Review Team - Educational Development in an Archipelagic Nation" emphasized the need for accurate predictions of staffing requirements in order to shape the school system. This study is a first attempt at a long-range projection of teachers needed in The Bahamas and it is hoped that information acquired will help to eliminate the problem of teacher shortages experienced in former years;
- (ii) The study will contribute to the knowledge in the areas of educational planning and projection techniques;
- (iii) It will demonstrate the use of techniques that might help in eliminating surpluses and shortages which have been perpetual problems in all levels of the educational system.

DEFINITIONS

Two of the terms which will recur throughout this study are as follows:

LEVEL: The educational system will be considered at three levels. The term level refers to the primary, junior and senior high levels in the system.

TYPES OF QUALIFICATION. This term refers to the following:

- (i) Graduate/Trained Teacher - a teacher who possesses either a Bachelor's degree in a teaching area along with a Teacher's

Diploma or a Bachelor of Education degree.

- (ii) Graduate/Untrained Teacher - a teacher who possesses a Bachelor's degree in an area other than education and who does not possess professional training.

The above qualifications are required of teachers who teach in senior high schools and upper forms of junior high schools.

- (iii) Trained Teacher - a non-graduate teacher possessing basic professional teacher training and who teaches in primary schools and lower grades in junior high schools.
- (iv) Untrained Teachers - Teachers possessing neither a degree nor a Teachers' Diploma.

Throughout this study the terms high schools and secondary school will be used interchangeably.

LIMITATIONS AND DELIMITATIONS

LIMITATIONS

In this study the following limitations were envisaged:

- (i) The population projections of The Bahamas have been made up to 1980 by the Department of Statistics. It was necessary to make projections to 1990 on the basis of assumption 'B' used by the Department of Statistics 1970 (last census date). Consequently slight variations in figures might be observed.
- (ii) The information concerning (a) past school enrolment and (b) the teaching force was necessarily limited. Pupil enrolment by age and level was the only complete information available on past enrolment for both Government and Independent schools. This

information dated back to 1970. Also, information on teachers included qualifications and citizenship by level only covering the same period as mentioned above.

Since the educational data available were inadequate and not as detailed as those kept in developed countries this placed a limit on the application of certain projection techniques and the kind of results obtained in this research.

DELIMITATIONS

The aim of this study was to estimate the number of students by levels in The Bahamas and hence to forecast the teacher requirements by level for the years 1979 to 1990. Estimates were made for the primary, junior high and senior high schools - both Government and Independent.

ASSUMPTIONS

In "Focus on the Future - White Paper on Education" (1972), the Ministry of Education and Culture offered brief statements of the Government's basic policies for the development of education in the Commonwealth of The Bahamas. The assumptions used in this study are based on and influenced by these policies. The assumptions are:

1. (a) By 1990 all students of primary age, i.e. 5 years to 11 years, whether they be on the more densely populated islands of New Providence and Grand Bahama or on the less densely populated Family Islands will be attending school;

- (b) On completion of six years of primary education, all students will be automatically transferred to a secondary school to undertake a three year course of secondary education. It must be noted at this point that education is compulsory between the ages of 5 and 14 years in The Bahamas;
- (c) Between the ages of 11 and 14, all students will be undertaking a junior secondary course either in a separate junior secondary school or in a junior secondary division of a secondary school;
- (d) All students on completion of junior secondary schools will proceed to a senior secondary school or to a senior secondary division in a secondary school and will complete another three years of education until grade 12;
- (e) All new primary school teachers entering the profession will have received a full primary and secondary school education (Grades 1 to 12) and would complete the normal requirements for Teacher Certification in The Bahamas - a three year pre-service teacher's course conducted at the College of The Bahamas;
- (f) All junior secondary teachers will have done the course designated for junior secondary teachers now being conducted at the College of The Bahamas. This consists of three years of training following the completion of a full secondary school course;

- (g) All senior high teachers entering the profession will have completed a four year pre-service teacher's course leading to a Bachelor of Education degree at the College of The Bahamas or from other degree granting institutions abroad plus one year professional training in education;
 - (h) All untrained teachers will be trained or phased out by 1990;
 - (i) The teaching staff will be fully Bahamianized at the end of the forecast years.
- ii. The rate of population increase will continue the trend as seen in assumption 'B' of the 1970 census report.

ESTIMATING FUTURE REQUIREMENTS

AND SUPPLY OF TEACHERS

The following are the basic steps for forecasting teacher requirements and supplies as a basis for ascertaining the required expansion in the various levels of the educational system. (Parnes, 1962)

- (i) Prepare an inventory of teachers for the base year by level;
- (ii) Forecast the total number of teachers for the target year;

- (iii) Estimate the total number of teachers per level and specialist area for the forecast years;
- (iv) Within each level, allocate the total number of teachers per specialist department for the forecast years;
- (v) Convert the data on requirements by level and specialist area into data on requirements by educational qualification;
- (vi) Estimate the anticipated supply of teachers by type of educational qualification for the forecast years on the basis of:
 - (i) present stock,
 - (ii) anticipated outflows from existing teacher training institutions, and
 - (iii) losses due to death, retirement and withdrawals from the teaching force;
- (vii) Compute the change in annual outflow from the various teacher training institutions necessary to create balance in the forecast years between (v) and (vi);
- (viii) Calculate the number of teachers, by level in Teacher training institutions, necessary to achieve the required annual outflows.

Estimation of the above requirements and supplies of teachers written as equations are:

- (i) $\text{Teacher Demand} = f(\text{school age population, pupil/teacher ratio, flow of students, students' choice})$

of subject area, number of periods per subject area offered).

(ii) Teacher Supply = f (teacher stock, recruitment, retention, policies, qualification, remuneration).

(iii) Teacher Shortage = f (Demand for teachers - Supply of teachers)

In obtaining an estimate of teachers for The Bahamas, the social demand approach to educational planning was utilized. The social demand approach was applied to the primary and junior high school levels where education is compulsory. This seemed appropriate because the demand for education at these levels depends only upon the number of students in the education system. Consequently, the required number of teachers for both of these levels is dictated by the compulsory school age population - hence enrolment. The expected demand for education above the junior secondary stage was used as a basis for calculating teacher requirements for the senior high level.

DATA AND METHODOLOGY

The major sources of data for this research were the figures prepared by the Planning Division, Bahamas Ministry of Education and Culture and the Department of Statistics.

Information gathered from the Ministry of Education and Culture was obtained from various Annual Reports, files and publications. Data provided by the Department of Statistics came from The Bahamas Report of the 1970 Census of Population as well as from other

statistical reports. Information was also gleaned through interviews with officers of the Ministry of Education as well as others from relevant government offices.

The method by which data were collected and compiled so as to prepare a manpower survey of teachers in the educational system of The Bahamas and hence to forecast the required number of teachers for the years 1979 to 1990 is outlined below.

SECTION I: INVENTORY OF CURRENT TEACHING FORCE

An inventory of the current teaching force was made by obtaining the following data:

- (i) distribution of teachers by level;
- (ii) educational qualification of the teaching force by level and citizenship.

SECTION II: INVENTORY OF CURRENT STUDENT ENROLMENT

This inventory was made by obtaining:

- (i) the distribution of students by level;
- (ii) enrolment ratio of students by level.

SECTION III: ESTIMATE OF STUDENTS IN THE FORECAST YEAR

- (i) an estimate of student enrolment based on school age population was made;
- (ii) estimate of students enrolment based on past trends by level.

SECTION IV: ESTIMATE OF TEACHERS IN THE FORECAST YEAR

An estimate of the total number of teachers by level was obtained by applying the pupil/teacher ratios for

each level of the system as observed in 1976/77 to the school enrolment estimates for primary, junior and senior high levels.

OVERVIEW OF THE STUDY

This study comprises seven chapters. The first chapter gives a description of the study and its problem. Chapter two presents a brief review of literature related to the study -- Educational planning and Enrolment projections. In chapter three The Bahamas' educational system, its structure and composition of pupils and teachers are outlined.

Chapter four provides an analysis of the system in relation to the problem of the study, while chapters five and six present estimates of the system's school enrolment and teacher requirements over the forecast period respectively. The final chapter includes the summary, conclusions and implications of the study.

CHAPTER II

A REVIEW OF THE LITERATURE

EDUCATIONAL PLANNING

Countries, throughout the world today, are increasingly practising educational planning. The volume of research material on this topic is also increasing rapidly. But, despite these facts, a standard definition of educational planning still does not exist. Education systems are dynamic, diverse and complex structures, each one having problems unique to its own particular situation or environment. Consequently, educational planning has a different meaning in different countries and this in turn dictates the kind of approach or combination of approaches used when striving toward solutions. Coombs (1970:12) aptly expresses the complexity of educational planning and the problems of defining it in the following statement:

Educational planning as we know it today is still too young and growing too rapidly, and is far too complex and diversified a subject, to be encased in any hard and fast definition, good for all times. This is why no generally accepted definition of educational planning yet exists much less an acceptable general theory.

Miklos (1972:6) proposes the following composite definition as a guide to those who are responsible for improving and implementing planning:

- (i) the identification and refinement of alternative goals;
- (ii) the development of alternative means of achieving selected goals;

- (iii) the identification of the most efficient and effective means;
- (iv) monitoring the extent to which goals have been achieved; and
- (v) on the basis of information gained, revising means and possible goals or targets.

WHY PLAN EDUCATION?

Benveniste (1972) states that planning in education results from the fact that organizations and entire governments are unable to function in an environment that has become too uncertain. Education systems, the world over, are subject to many changes while pressures and problems of these systems have skyrocketed in size and complexity. This is especially true of developing countries where educational needs are greater and more urgent and resources more scarce than in the case in developed countries. Traditional tools of planning and management have become inadequate to these new situations, hence the resorting to new strategies and techniques [Coombs (1970)].

Five chief characteristics which appear to have influenced educational policies of different countries since the end of the second world war have been identified by Miklos (1972:12). They are:

- (i) A policy which supports the general expansion and extension of formal schooling;
- (ii) A policy which views education chiefly as an instrument of economic development;
- (iii) A policy which views education as an instrument of social change;

- (iv) A policy which emphasizes increased efficiency in the operation of all levels of an educational system; and
- (v) A policy directed toward qualitative improvement of education.

The preceding education policies form the environment for planning and reflect economic, political and social conditions as well as cultural values.

DIFFERENT APPROACHES TO EDUCATIONAL PLANNING

There are three main approaches to educational planning but, because of the complex and dynamic situation of educational systems, no one approach can be depended upon to serve the many purposes of meeting economic, social and cultural needs. These approaches complement each other rather than compete with each other in that the limitations of one approach are usually the strengths of the other. The additive results of these methods will, therefore, come nearer to producing the kind of answers anticipated by planners.

The three approaches are social demand projection, manpower forecasting and the rate-of-return analysis.

SOCIAL DEMAND PROJECTION

This approach, used in the past by the majority of countries, has little to do with economic targets. It consists of projecting the demand for education in the light of demographic data, long term national goals and consumer preferences. For the level of compulsory education the approach involves demographic projections. For those levels beyond compulsory education, the projections of enrolment take

into account past trends as well as expected economic, social and cultural changes.

Despite its many drawbacks the social demand approach does have some usefulness in educational planning. First, this approach is most often satisfactory to politicians since it allows for policies which are first determined before any projections are made. Second, it assumes that education needs will be met as popular demand increases, hence it satisfied the demand of the population at large. The major focus of the educational planner using this approach is toward finding means by which to correct deficiencies between the supply and demand of education. (Coombs, 1970)

Parnes (1964), Simpson (1966) and Coombs (1970) have suggested shortcomings which exist in this approach. One of the problems is that the social demand approach ignores the broader problem of resource allocation at the national level and assumes that education is always the best investment. It also ignores the pattern of manpower needs of the country and this can easily result in producing too many of some types and too little of others. Another criticism is that social demand projection does not attempt to find a balance between demand, cost and resource allocation hence reducing the quality and effectiveness of educational investments. Further, the social demand equates the sum total of the individual needs with social requirements and does not provide for the fact that the demand for education is dependent on government's overall policies.

MANPOWER FORECASTING

The manpower forecasting approach to educational planning views education chiefly as an instrument of economic development. Economic growth, however, requires not only physical resources and facilities but also human resources to organize and use them. The aim of this approach, therefore, is to make available to the economy "sufficient" amount and quality of human resources for economic development (Harbison and Myers 1964).

The process of the above involves estimating the required number of personnel with various occupational qualifications for each occupational category. Generally these estimates are based on statements of economic goals, the analysis of resources necessary for these achievements and also the awareness of the implications of the analysis of resources for manpower needs (Richards 1971).

Many worthwhile results can be achieved through the process of manpower planning. Parnes (1964:59-61) states that in order for this approach to be useful, educational planners would have to be cognizant of and attempt to remedy extreme gaps and imbalances with which they are faced. He also continues that manpower forecasts are both necessary and possible for sound educational planning and for the proper structuring and allocation of expenditure. These forecasts should be conditional and relate to the functional composition of employment.

The manpower approach to educational planning, if adhered to strictly, could lead to the educating of persons who show ability in certain skills. It follows that the probability of neglecting the

larger majority of people who do not show the potential is heightened.

The process of the manpower approach in developing countries has often been hindered. One of the main problems arises from the fact that occupational classifications and manpower ratios as well as the corresponding educational qualifications are usually borrowed from developed economies and do not fit the realities of less developed countries. Such faulty assumptions may result in mis-preparation and over-preparation of the labour force.

RATE-OF-RETURN ANALYSIS

The rate-of-return approach to educational planning is defined in terms of the cost of education versus the benefits of education. In essence this method involves calculating the individual or social cost of providing a certain amount of education to an individual and comparing these costs with the total returns or benefits that will accrue from this education. Benefits are measured by finding the difference between lifetime earnings of persons with differing educational attainments and expressing this difference as an annual percentage return on the cost involved in obtaining the additional education. Calculations can be made for individuals or society as a whole. Both Blaug (1967:262-287) and Coombs (1970) explain the method for measuring benefits and returns.

The rate-of-return approach to educational planning is most useful in that it constantly emphasizes the need to examine alternatives

and to ascertain their costs and benefits before making decisions (Coombs 1970). Quantitative evaluation of benefits, no matter how rough, provides clues to the charges which customers are willing to pay for certain services.

In reviewing the literature on the rate-of-return analysis Blaug (1965:215-260) outlines the various objections against this process as follows:

- (i) Education, earnings, ability, motivations and social class are all intercorrelated and one has yet to succeed in isolating the pure effects of education on earnings.
- (ii) People, it is assumed, are motivated solely by consideration of additional school attendance thus, ignoring both the non-pecuniary attractions of certain occupations and the consumption benefits of education.
- (iii) The calculation depends on the production of future trends thus, neglecting historical improvements in the quality of education as well as the effects of secular growth of education on perspective earnings differentials.
- (iv) Existing earnings differentials in favour of educated people reflect long established social conventions inherent in an imperfect labour market, rather than the difference in the contribution to productive capacity; therefore the rate-of-return studies do not tell us anything about the role of education in economic growth.

ENROLMENT PROJECTIONS

Educational planners are often called upon to answer questions such as recruitment efforts and future enrolment pertaining to the educational system. These answers which are estimates depend on systematic and frequent analysis of the system. In the past, more often than not, estimates made were inaccurate and unreliable. As early as 1960 researchers have worked at alleviating these problems and have identified several analytical techniques to enrolment forecasting.

In reviewing the literature, two major groups of techniques have been revealed. Richards (1971) classified these groups as flow structures and trend extrapolation. Flow structures express future enrolment in terms of past enrolment in the same system. These models provide a powerful means of analysing enrolment change, and estimates are made directly from the counts of the number of students which make each possible transition between the various levels of grades of the educational system. Separate accounting of flows from outside the system into each level or grade is also possible. Trend extrapolation involves the analysis of an historical trend or the combination of trends and the application of statistical techniques to determine the outcome of such trends.

FLOW STRUCTURES

The flow model technique could be sub-divided into the following: grade - age cohort survival ratio, empirical flow matrix and Markov chain. One of the most widely used of the above methods is the

cohort survival technique. It consists of following a "class" or cohort of pupils through grades of schools to calculate how many survive to various points after a given number of years. Davis (1966) describes cohort analysis as the only certain way to determine flow output and efficiency in the educational system. Armitage and Smith (1967:159-205) utilized the flow model technique in developing a computable model of the British Educational System which accounts for demand of educational places and teacher requirements. However, they concluded that it is extremely difficult to include demand factor variables so as to produce other than crude results. Both the grade-by-grade and aggregate cohort survival methods were utilized by the Illinois Public School System (1974) for projecting fall enrolments between the years 1974 and 1985. It was found that in order to enhance accuracy and reliability, aspects such as socio-economic, demographic conditions, values and attitudes should be applied.

Correa (1975:45-82) describes an integrated flow/demographic model for forecasting school population by age and sex and teacher requirements for schools with or without technologically assisted instruction. This method was applied to Puerto Rican Schools. A flow model based on the analysis of student enrolment and movements within the Alberta Educational system under various changes in the parameters of the system was utilized by Grace and Bay (1975:10-42).

An early application of Markov chain theory to the flow of students in an educational system is reported by Brown and Savage (1960) where transition matrices were empirically calculated and used to describe flows between faculties and majors in universities. In the Markov process, subjects within a population are stratified

into a set of mutually exclusive categories. These categories may include various levels and grades of studies at an institution.

Transition probabilities or proportions are calculated per subject who has been in a particular category at one time or in the same or a different category in the next period. Thornstad (1967:125-158) utilized a special type of Markov chain - an absorbing chain - to forecast enrolment requirements in the Norwegian Educational System. The basic assumptions of the Markov chain model are fairly rigid and at best a crude approximation of the educational pattern.

Koenig et al. (1970) developed a student flow model as a sub-component of a larger resource allocation/costing model and extended their formulation conceptually to the larger economic situation.

The transition coefficient approach to a simulation flow model is evaluated by Baisuck and Wallace (1970:365-381) who observe that many models described by their builders as Markov models resemble Markov's chain hence the use of the term. They concluded that the computer model permits the planner and decision maker to synthesize and evaluate alternative sets of assumptions. Zimmer (1970) in his evaluation of Markov chain models confirms that this method, among the many other unsophisticated techniques, is most suitable for enrolment analysis.

TREND EXTRAPOLATION

The methods used for extrapolating trends may be placed into two categories: (i) time series and (ii) ratios. Watson (1975:36-56) describes time series methods as those which estimate the future values of enrolment variables entirely on the pattern of the past

value of the same variables. McLean (1970) indicates that assumptions underlying these methods are very restrictive, that is, that past trends will continue and that new factors will not be introduced. Ratio analysis express future enrolment in terms of its parallel relationship with some other variable exogenous to the system. This method, referred to as demographic ratio analysis or the participation rate method, allows the planner to have independent control of two factors underlying enrolment: (i) the size of the potential pool of students and (ii) the readiness of members of this pool to enrol in an institution (Alworth and Freed, 1976:60-63).

Time Series

Time series methods include trend curve fitting, regression and correlation analysis. In evaluating the polynomial curve fitting model Zimmer (1970) concludes that except for short-range projections, this method is least recommended. However, a considerable strength of this method is its modest data requirement. Brown refers to this approach as trend line method and suggests that its procedure is appropriate when enrolment of previous years are the only data at hand.

Savage and Brown (1975:171-198) utilized a model consisting of a combination of linear regression on time to study high school graduates in Minnesota. Hummel et al. (1977) made use of the multiple regression technique to predict enrolment and to examine overall enrolment trends in Pennsylvania Higher Education. This technique permits the simultaneous analysis of many variables, some of which may be intuitively related. Only through an integrative analysis of variables is it possible to establish significant interrelationship.

Correlation analysis involves the application of classical statistical techniques to the objectives of determining the association between enrolment as a dependent variable and one or more independent variables. These variables may be endogenous or exogenous to the educational system. Brown and Savage (1975:171-198) developed various models to determine the number of students in attendance at high school graduates' functions as well as net changes in armed forces personnel. Sawiris (1970:83-150) suggests methods utilizing a linear multiple regression technique including deterministic models, stochastic models and models of components and concludes that the usefulness of any particular model is a function of the number of observations available. Wasik (1971) recommends the development of regression equations which include high school graduates, economic activity indicators and population as independent variables.

Ratio Analysis

In the survey of education participation and projection of enrolment at the national level, ratio analyses are widely used. The technique supports rather sophisticated studies which are based on components of population change such as fertility, mortality, immigration and emigration. In their study of Education and Manpower in The Bahama Islands, Clapp and Mayne (1968) utilized the enrolment ratio technique to forecast first grade primary rolls annually for the years 1969-1978. Davis (1966) gives a description of this method whereas detailed procedures for its application are provided by Liu (1966).

Thornstad (1967:125-158) in developing a mathematical model

of the Norwegian Educational System applied several ratios in determining forecasts of school attendance and graduation. Alworth and Freed (1976:60-63) in their discussion of participation rates disclose that these rates can be used to calculate projections at both local and national levels. Further, the rates predict the structure of future enrolment which is limited only by the number of variables used in the study.

In the process of forecasting enrolment as a basis for making a projection of teacher requirements in this research, the enrolment ratio technique was utilized. Information on total enrolment for Ministry Schools for the years 1946 to 1976/77 was available. Also available was information on enrolment by level and age for the years 1970/71, 1975/76 and 1976/77 for all schools. Hence, the method of estimating future school enrolment by the use of enrolment ratios seemed particularly suitable in this case.

SUMMARY OF CHAPTER II

Educational systems, more now than ever, are relying on the expertise of educational planners to help in reducing uncertainties in decision-making so as to enhance the achievement of national goals.

Three main approaches to educational planning have been identified - social demand projection, manpower forecasting and rate-of-return analysis. The social demand approach is based upon the size of a set of school-age population drawn from the entire population. Manpower forecasting views educational planning chiefly as an instrument for economic development. The rate-of-return analysis is an examination of the cost of education versus the benefits of education.

Each approach has its strengths and weaknesses. Individually they do not provide an adequate approach to educational planning. The choice of any or a combination of these depends on the situation and the type of decisions to be made.

Many techniques are used for making demand forecasts. These techniques may be put into two general categories -- flow structures and trend extrapolation. Flow structures express future enrolment in terms of past enrolment in the same system. Trend extrapolation analyses historical trend or a combination of these trends to determine the outcome of such trends.

Mere possession of these tools does not necessarily ensure accurate or reliable estimates. Choosing a suitable technique depends, to a large extent, on the nature of the data available, hence the forecaster should be capable of selecting the most appropriate tool for the job in question.

CHAPTER III

THE SYSTEM COMPOSITION

This chapter describes the structure and composition of The Bahamas' educational system. But, before doing this, it is necessary to present a brief description of the geography of The Bahamas so as to give a clearer understanding of this chapter as well as the remaining ones in this study.

THE GEOGRAPHY OF THE BAHAMAS

The Bahamas is an archipelagic nation comprising more than 700 islands. The islands, spreading over an expanse of sea which is about 100,000 square miles in area, extend in a southeasterly direction from the coast of Florida to a position off the coast of Haiti. Covering a distance of 760 miles with a total land area of 5,353 square miles, these islands range in size from 2,300 square miles (Andros) to the smallest inhabited island -- $\frac{1}{2}$ square mile (Spanish Wells).

Twenty-two of the islands are inhabited -- the total population being approximately 225,000. There exist among the islands great contrasts in population. Some of these islands have a population of several thousand while others have only a few people. New Providence, on which Nassau, the capital is situated, with an area of 80 square miles accounts for more than 60 percent of The Bahamas' population. Figure 1 is a map of The Bahamas. Figure 2 illustrates the islands in relationship to other Caribbean islands.

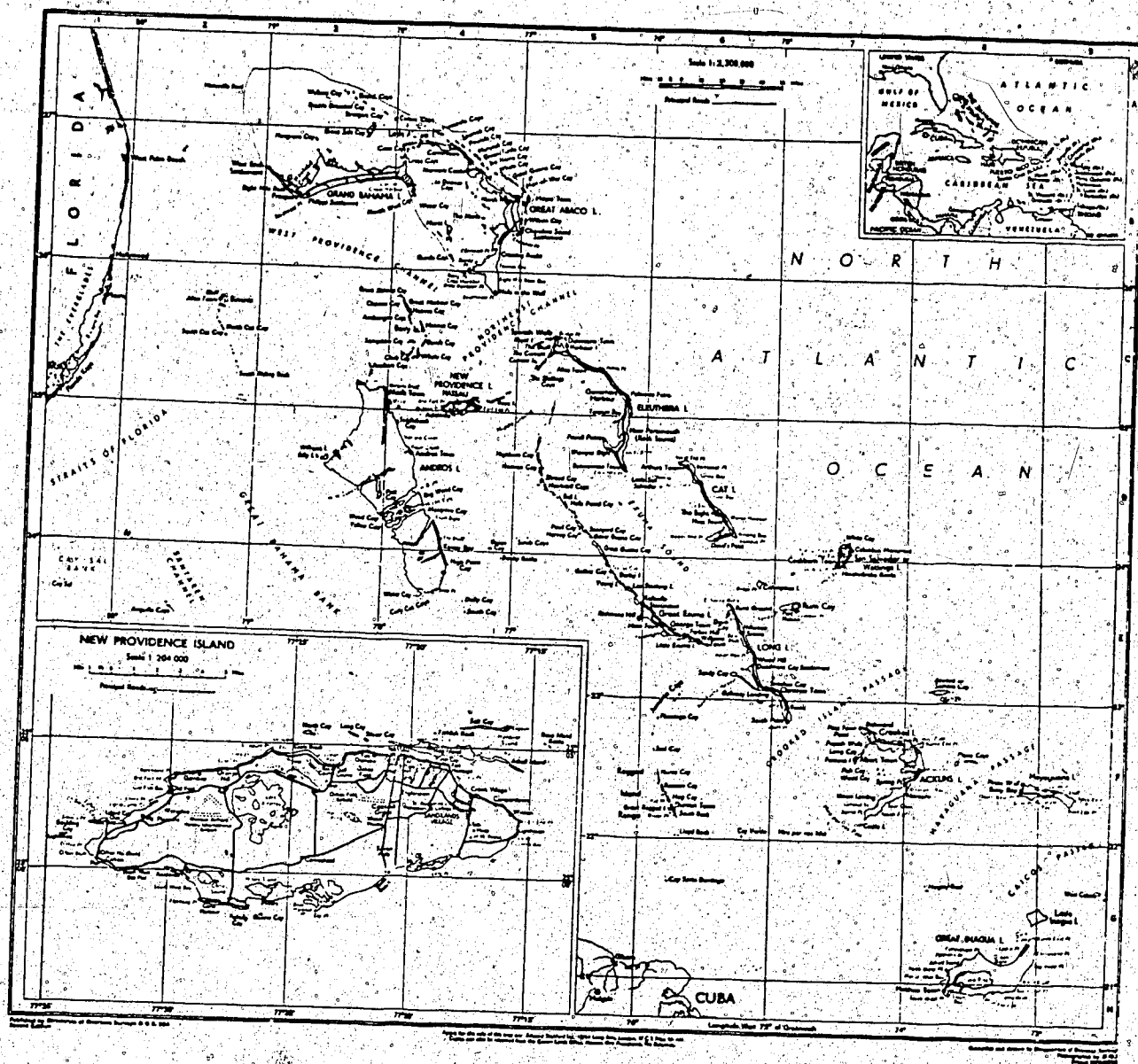


Figure 1
Map of The Commonwealth of The Bahamas

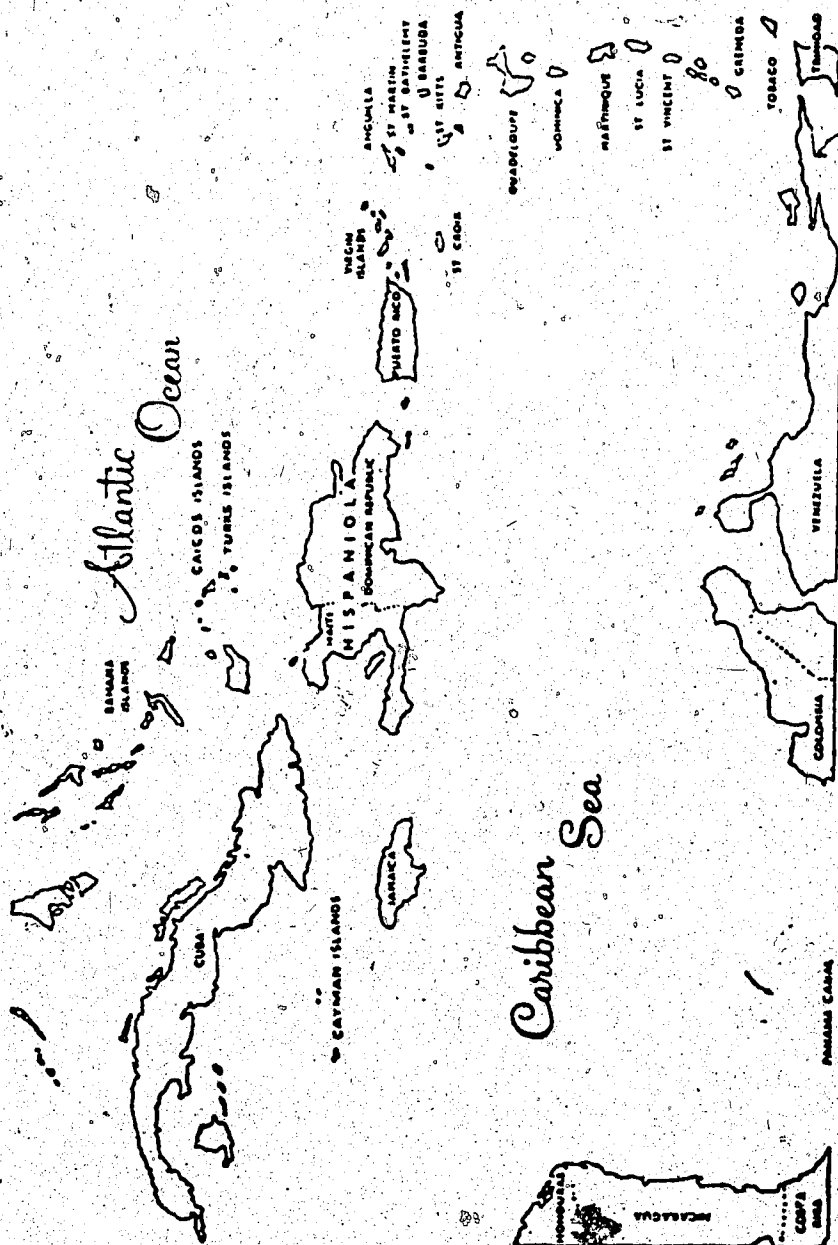


Figure 2

Map of the Caribbean Area

THE EDUCATIONAL SYSTEM

THE HISTORY OF THE EDUCATIONAL SYSTEM

Education, introduced to The Bahamas in 1718, remained mainly the responsibility of private and religious authorities until the end of the 19th century when a series of Acts granted government more authority over it. The compulsory school attendance for children between the ages of six and twelve was also introduced. In 1908 the school leaving age was raised to fourteen. (Ministry of Education - Annual Report 1970/71)

The system of education prior to 1962 was not fully integrated. There existed a basic literacy programme at the primary level and for those who could pay for it, a British "grammar school" type of secondary course.

Public education was confined to the elementary level in infant, junior and senior schools on New Providence and in All-Age schools on the Family Islands (formerly known as Out Islands). Other types of schools that co-existed were a Government owned "grammar school", Private or Independent schools not receiving public assistance and several church controlled schools which received government grants. The responsibility of the Board of Education (now Ministry of Education and Culture) was broadened to include vocational education in 1951. (Clapp and Mayne, 1968)

In 1962 "Secondary Modern" or non-selective schools were established so as to integrate the system of education. The school entrance age was lowered to five years.

The system was structured into two segregated streams: the non-selective to which the large majority of students went from

primary levels to pursue mainly an academic course directed toward the Bahamas Junior Certificate examination and the selective stream which catered to a small number of pupils who were selected by special examination (Common Entrance Examination) to enter at the age of eleven. These students followed a grammar school course either at the Government owned grammar school or at Private secondary schools in preparation for writing the British General Certificate of Education. A few non-selected pupils after obtaining the Bahamas Junior Certificate were allowed to transfer to study for General Certificate examinations. A number of other Independent secondary schools existed which had their own standards and entry requirements.

The first step toward the expansion of secondary education in The Bahamas was made in 1965. In the island of New Providence several new schools were commissioned. Three years later three of these schools were designated "High Schools" and were staffed and equipped so that their academically-able students would have an opportunity to follow General Certificate of Education "Ordinary Level" courses following success in The Bahamas Junior Certificate Examination. (Ministry of Education Annual Report 1970/71).

Secondary education expanded to The Family Islands in the form of "Central Secondary Schools" to which students from primary and all-age schools came. These central schools catered to children ages 11 to 17 or 14 to 17 and provide secondary education facilities for children from settlements on the particular island. The concept of centralization is recognized as a feasible alternative in an attempt to meet the need as well as growing demand for a better type of education than was being provided in the scattered, physically inadequate, ill-equipped

all-age schools in the islands. (Ministry of Education Annual Report, 1971/75)

The year 1970/71 saw the reorganization of secondary schools into junior high schools and senior high schools. The former being grades 7 to 9 and the latter grades 10 to 12. Pupils on completion of the junior high programme, write the Bahamas Junior Certificate examination. Those students who are academically inclined are prepared for the General Certificate of Education examination whereas others follow a basic vocational programme.

In 1974, in keeping with the Government's policy that there be no selection for entry to junior secondary schools, the Common Entrance Scholarship examination was discontinued and the Government High School, the Government's only "grammar school" was phased out to become a senior high school.

The Government's White Paper "Focus on the Future" (1972) outlined plans for the development of further education in The Bahamas. These plans became a reality in 1974 when the College of The Bahamas, a community college came into being. This college is the country's only institute of higher learning and it has designed a program to cover a wide spectrum from trade courses to Associate Degrees with some emphasis on Bachelor Degrees.

PRESENT STRUCTURE OF SCHOOLS

Schools are structured into three levels: primary, junior and senior high schools. The primary level covers grades 1 to 6 after which pupils transfer to the junior level for three years (grades 7 to 9) to be followed by three years at the senior high

level (grades 10 to 12). (In Independent schools the senior high programme is usually a two-year programme - grades 10 and 11). These levels are fairly distinct in New Providence with slight variations seen in the Independent schools.

Schools are therefore categorised as follows:

Primary	Ages 5 to 11+
Junior High	Ages 11 to 14+
Senior High	Ages 14 to 16+
All-Age	Primary and Junior High groups or Primary, Junior and Senior High Groups
Special Schools	All-Age schools catering to students having severe learning disabilities

It was observed that for the years 1975/76 - 1976/77 the proportion of 11 and 14 year olds was very small in primary and junior levels respectively, hence for calculation purposes the age groups per level are: primary 5 - 10, junior high 11 - 13 and senior high 14 to 19 years.

SCHOOLS

In 1976/77 the system included 226 schools - 184 or 81.4 per cent fully maintained by Government and 42 or 18.6 percent separate or Independent schools. Of the 184 government owned schools 38 are situated in New Providence and 146 in the Family Islands. Twenty-eight Independent schools are situated in New Providence whereas 14 are found in the Family Islands.

Overall there existed 78 primary schools, 109 all-age schools,

7 junior high schools, 18 junior/senior high schools and 4 special schools in The Bahamas. Tables I and II present the distribution of Government and Independent schools.

PUPILS

The total school enrolment in the islands for the year 1976/77 was 61,760. This showed an increase of 3 percent over the previous year's total of 60,010. In Ministry of Education and Culture schools the student population rose from 47,004 to 48,834. A drop in the number of students from 12,966 to 12,926 was seen in Independent schools. See Table III.

Enrolment in primary, junior and senior high levels were 32,197, 15,817 and 13,746 respectively.

Tables IV, V and VI show the school involvement ratio for the academic years 1970/71, 1975/76 and 1976/77 by five-year age-groups as follows: 5 to 9 year-olds 98.4 percent, 10 to 14 year-olds 92.7 percent and 15 to 19 year-olds 42.5 percent. It must be mentioned here that the reported involvement ratio for the age-group 15 to 19 is lower than it is in reality because many students in this group are enrolled at the College of The Bahamas where the admittance age is seventeen years.

TEACHERS

Records for the academic year 1976/77 reveal that there were 2,632 teachers in the system, 1,932 of whom were in the Ministry of Education and Culture schools, 666 in Independent schools and 34 in Special schools.

MINISTRY OF EDUCATION AND CULTURE SCHOOLS

1976/77

TABLE I

ISLAND	SCHOOL					Total
	Primary	All-Age	Jr High	Jr/Sr High	Sr High	
Abaco & Cays	2	14		1		17
Acklins		9				9
Andros	5	16		1	1	23
Berry Island		1				1
Bimini		1				1
Cat Island	4	6		2		12
Crooked Island	6			1		7
Eleuthera	2	16			2	20
Exuma		14			1	15
Grand Bahama	5	7		2		14
Harbour Island		1				1
Inagua		1				1
Long Cay		1				1
Long Island	8	6		1		15
Mayaguana		3				3
New Providence	26	1	6	1	4	38
Ragged Island		1				1
Rum Cay		1				1
San Salvador	3			1		4
Total	61	99	6	10	8	184

Source: The Bahamas Ministry of Education and Culture.

INDEPENDENT SCHOOLS

1976/77

TABLE II

ISLAND	SCHOOL						
	Primary	All-Age	Jr High	Jr/Sr High	Sr High	Special	Total
Abaco & Cays	1	1					2
Acklins							
Andros							
Berry Island							
Bimini	1						1
Cat Island							
Crooked Island							
Eleuthera	1	1		1			3
Exuma							
Grand Bahama		4		1	1	1	7
Harbour Island		1					
Inagus							
Long Cay							
Long Island							
Mayaguana							
New Providence	14	3	1	6	1	3	28
Ragged Island							
Rum Cay							
San Salvador							
Total	17	10	1	8	2	4	42

Source: The Bahamas Ministry of Education.

TOTAL SCHOOL ENROLMENT IN THE
COMMONWEALTH OF THE BAHAMAS

1975/76 - 1976/77

TABLE III

YEAR	ENROLMENT		
	Ministry	Independent	Total
1975/76	47,044	12,966	60,010
1976/77	48,834	12,926	61,760

Source: The Bahamas Ministry of Education and Culture.

INVOLVEMENT RATIO OF PUPILS BY AGE - THE
COMMONWEALTH OF THE BAHAMAS 1970/71

TABLE IV

AGE-GROUP (Years)	SCHOOL POPULATION			Country's School-age Population (1970 Census) ¹	Total Enrolment As a Ratio of School-age Population
	Ministry	Independent	Total		
5-9	5	3,787	1,253	5,040	26,372 103.1
	6	4,379	1,319	5,698	
	7	4,406	1,226	5,632	
	8	4,425	1,130	5,555	
	9	4,196	1,074	5,270	
10-14	10	3,970	977	4,947	20,578 101.9
	11	3,596	1,133	4,701	
	12	3,155	1,098	4,253	
	13	2,744	969	3,713	
	14	2,427	937	3,364	
15-19	15	1,656	810	2,466	14,616 31.3
	16	597	598	1,195	
	17				
	18	320	583	903	
	19				
Total	39,630	13,107	52,737	61,566	85.7

Source: The Bahamas Ministry of Education and Culture.

¹ 1970 Census Report, Department of Statistics, 1970.

INVOLVEMENT RATIO OF PUPILS BY AGE 1975/76

THE COMMONWEALTH OF THE BAHAMAS

TABLE V

AGE-GROUP	SCHOOL POPULATION			Country's Estimated School-Age Population (Assumption 'B') 1	Percentage		
	Ministry of Education and Culture	Independent	Total				
5-9	5	3,835	1,139	4,974	26,340	28,522	92.3
	6	4,205	1,073	5,278			
	7	4,153	1,039	4,192			
	8	4,324	1,024	5,348			
	9	4,548	1,000	5,548			
10-14	10	4,437	1,016	5,453	25,836	27,337	94.5
	11	4,221	1,118	5,339			
	12	4,045	1,066	5,111			
	13	4,048	1,148	5,196			
	14	3,602	1,135	4,737			
15-19	15	2,845	949	3,794	7,834	21,657	36.2
	16	1,801	668	2,469			
	17	761	424	1,185			
	18	178	145	323			
	19	41	22	63			
Total	47,044	12,966	60,010		77,516	77.4	

Source: The Bahamas Ministry of Education and Culture.

¹Population Projections for the Bahamas until 1980, Department of Statistics 1974.

INVOLVEMENT RATIO OF PUPILS BY AGE 1976/77

THE COMMONWEALTH OF THE BAHAMAS

TABLE VI

SCHOOL POPULATION					Country's Estimated School-Age Population (Assumption 'B') 1	Percentage	
AGE-GROUP	Ministry of Education and Culture	Independent	Total				
5-9	5	4,470	1,302	5,772	26,817	28,485	94.1
	6	4,099	1,119	5,218			
	7	4,152	980	5,132			
	8	4,332	1,020	5,352			
	9	4,382	961	5,343			
10-14	10	4,448	932	5,380	25,337	27,503	92.1
	11	4,172	1,067	5,239			
	12	4,352	1,104	5,456			
	13	4,071	1,051	5,122			
	14	3,112	1,028	4,140			
	15	3,026	1,025	4,051			
	16	2,499	806	3,305			
15-19	17	1,233	399	1,632	9,606	22,900	41.9
	18	404	115	519			
	19	82	17	99			
Total	48,834	12,926	61,760		78,888	78.3	

Source: The Bahamas Ministry of Education and Culture.

¹Population Projections for the Bahamas until 1980, Department of Statistics 1974.

The number of trained teachers in the Ministry's schools was 1,397 or 72.3 percent while 535 or 27.7 percent were untrained. 1,477 or 76.4 percent were Bahamians and 455 or 23.6 percent were non-Bahamians.

Teachers in the Ministry of Education and Culture schools were allocated to the various levels as follows:

<u>LEVEL</u>	<u>NEW PROVIDENCE</u>	<u>FAMILY ISLANDS</u>
Primary	493	427
Junior High	322	205
Senior High	327	158

In New Providence 446 or 95.1 percent of the teachers in Independent schools were trained with 24 or 4.9 being untrained. In the Family Islands 152 or 85.8 percent were trained while 25 or 14.2 percent were untrained. Exact figures on the number of non-Bahamian teachers in these schools were not available, hence the conservative approximation of 90 percent is used.

In the four Special schools, 23 or 67.6 percent of its teaching staff were specialists and 11 or 32.4 percent non-specialists.

SUMMARY OF CHAPTER III

The Bahamas is an archipelagic nation comprising more than 700 islands. It has a total land area of 5,353 square miles and a population of about 225,000.

Education was brought to The Bahamas by missionaries in 1718 and remained practically under their jurisdiction until the end of the 19th century when the government was given more authority over it. Compulsory school attendance for children was introduced.

Before 1962 the system of education consisted of a basic literacy programme at the primary level and a British "grammar school" type of secondary course for those who were able to pay for it. In 1962, secondary modern or non-selective schools were introduced.

The year 1965 saw the beginning of an expansion of secondary education in The Bahamas. Several new secondary schools were commenced in New Providence. Centralized secondary schools were established in the Family Islands. This was followed by the reorganization, in 1970/71 of secondary schools into junior secondary and senior secondary schools.

In 1974, the writing of the Common Entrance Scholarship examination for admission to junior secondary schools was discontinued. This year was also significant in that higher education was introduced to the country with the commissioning of the College of The Bahamas.

In 1976/77 there was a total number of 226 schools in the Commonwealth of the Bahamas. School enrolment totalled 61,760. The number of teachers in the system was 2,632.

CHAPTER IV

ANALYSIS OF BASIC DATA

The study and analysis of data concerning the educational system is necessary before attempting to formulate future educational plans. In this chapter an attempt has been made to analyse available data on enrolment and teachers in The Bahamas' educational system as a pre-requisite for forecasting teacher requirements. Data utilized were compiled by The Ministry of Education and Culture - Planning Division and published in the Annual Education Statistics Reports. Information included enrolments for all schools in the country for the years 1970/71 to 1976/77; enrolments for Ministry Schools, New Providence and Family Islands, 1946 to 1976/77, and data on teachers for the year 1976/77.

ENROLMENT

Total enrolments in Bahamian primary, junior high and senior high schools for the years 1970/71 to 1976/77 are illustrated in Tables VII, VIII and IX. Enrolment in primary schools had reached a high level in 1970/71 after which there was an apparent decrease until 1972/73. This was followed by a yearly increase until the previous high level was surpassed in 1976/77.

In junior high schools the enrolment trend was an upward one except for the year 1974/75 when a slight decrease was experienced. The net increase in the population of junior high pupils for the period in question was 24.9 percent.

TOTAL ENROLMENT IN MINISTRY OF EDUCATION AND CULTURE
AND INDEPENDENT PRIMARY SCHOOLS 1970/71 - 1976/77

TABLE VII

Year	ENROLMENT			Percent Ministry	Percent Independent
	Ministry	Independent	Total		
1970/71	25,163	6,979	32,142	78.3	21.7
1971/72	25,832	6,287	32,119	80.4	19.6
1972/73	25,749	5,249	30,998	83.1	16.9
1973/74	25,449	5,992	31,441	80.9	19.1
1974/75	25,518	6,209	31,727	80.4	19.6
1975/76	25,502	6,291	31,793	80.2	19.8
1976/77	25,883	6,314	32,197	80.4	19.6

Source: The Bahamas Ministry of Education and Culture.

TOTAL ENROLMENT IN MINISTRY OF EDUCATION AND CULTURE
AND INDEPENDENT JUNIOR HIGH SCHOOLS 1970/71 - 1976-77

TABLE VIII

Year	ENROLMENT			Percent Ministry	Percent Independent
	Ministry	Independent	Total		
1970/71	9,467	3,200	12,667	74.7	25.3
1971/72	9,750	3,118	12,868	75.8	24.2
1972/73	10,835	2,768	13,603	79.7	20.3
1973/74	11,747	3,514	15,261	77	23.0
1974/75	11,354	3,734	15,088	75.3	24.7
1975/76	12,314	3,332	15,646	78.7	21.3
1976/77	12,595	3,222	15,817	79.6	20.4

Source: The Bahamas Ministry of Education and Culture.

TOTAL ENROLMENT IN MINISTRY OF EDUCATION AND CULTURE
AND INDEPENDENT SENIOR HIGH SCHOOLS 1970/71 - 1976/77

TABLE IX

Year	ENROLMENT			Percent Ministry	Percent Independent
	Ministry	Independent	Total		
1970/71	5,000	2,928	7,928	63.1	36.9
1971/72	6,087	2,678	8,765	69.4	30.6
1972/73	6,172	2,323	8,495	72.7	27.3
1973/74	6,912	3,134	10,046	68.8	31.2
1974/75	8,135	3,289	11,424	71.2	28.8
1975/76	9,228	3,343	12,571	73.4	26.6
1976/77	10,356	3,390	13,746	75.3	24.7

Source: The Bahamas Ministry of Education and Culture.

As regards senior high enrolment, an upward trend was also seen except for the year 1972/73 when there was a small drop in enrolment. The net rise at this level was 73.4 percent.

At the primary level Independent schools accounted for approximately, each year, 20 percent of the total primary enrolment. The junior high level accounted for more than 20 percent while the senior level catered to more than 25 percent of the senior high school population over the period 1970/71 to 1976/77.

Information on enrolments in Ministry of Education and Culture New Providence and Family Islands schools going back to 1946 was available. Data for the years 1946 to 1976/77 are presented in Table X. Between the years 1946 and 1965 information is given at five year intervals and thereafter on a yearly basis. Over the 30 year period, Ministry schools increased their enrolment from 12,276 to 48,834 at an average rate of 5.2 percent per annum. A marked increase in enrolment of 61.3 percent was experienced between 1960 and 1965. The large enrolment growth over this period was derived basically from expansion of the school age population from age 6 to 16 to age 5 to 17 in 1962.

Although both New Providence and Family Islands Ministry schools have shown increases in actual enrolments, the proportion of Family Islands' enrolment to that of total enrolment in these schools has shown a steady downward trend since 1946 to 1967/68, and thereafter the general trend has been observed to fluctuate. The decline in proportion of Family Islands' enrolment was due mainly to the migration of families to the urban area of New Providence. The development of Freeport (the nation's second city) on the island of

ENROLMENT TRENDS IN MINISTRY OF EDUCATION AND CULTURE

SCHOOLS 1946, 1950, 1960, 1965/66 - 1976/77

TABLE X

Year	ENROLMENT			Percent New Providence	Percent Family Islands
	New Providence	Family Islands	Total		
1946	3,299	8,977	12,276	26.9	73.1
1940	4,026	9,514	13,540	29.7	70.3
1955	6,074	9,959	16,033	37.9	62.1
1960	7,854	10,437	18,291	42.9	57.1
1965/66	15,347	14,162	29,509	52.0	48.0
1966/67	17,301	15,276	32,577	53.1	46.9
1967/68	17,794	15,235	33,029	53.9	46.1
1968/69	18,379	16,083	34,362	53.5	46.5
1969/70	20,139	16,723	36,862	54.6	45.4
1970/71	22,313	17,317	39,630	56.3	43.7
1971/72	23,762	17,907	41,669	57.0	43.0
1972/73	24,288	18,468	42,756	56.8	43.2
1973/74	24,741	19,367	44,108	56.1	43.9
1974/75	25,602	19,405	45,007	56.9	43.1
1975/76	26,218	20,826	47,044	55.7	44.3
1976/77	27,498	21,336	48,834	56.3	43.7

Source: The Bahamas Ministry of Education and Culture.

Grand Bahama plus increasing development of several other islands might be a plausible explanation for the upward enrolment trends in the Family Islands.

Tables XI, XII and XIII show the total enrolments in Ministry of Education schools by level between 1970/71 - 1976/77. Family Islands' primary school enrolment has shown a steady rise over the period. New Providence enrolment showed an increase in 1971/72, followed by a decline until 1975/76 after which 1976/77 enrolment approximated that of 1970/71. The net increase in Family Islands' enrolment was 6.7 percent with an annual average growth of 1.1 percent. Enrolment in New Providence primary schools declined by an average of about 0.2 percent yearly.

At the junior high level, both New Providence and Family Islands' enrolment experienced increases except for the drop in 1974/75 in Family Islands' total.

A steady increase in both New Providence and Family Islands' enrolments were seen at the senior high level. The increment being an average rate of 14.8 and 11.2 percent per annum respectively.

Table XIV gives the total school enrolments with respective enrolment ratios for the years 1970/71 - 1976/77 for primary, junior and senior levels of the system. Primary enrolment as a ratio of total school enrolment showed a steady decline at an average annual rate of about 1.5 percent. In 1970/71, 61 percent of all pupils enrolled in the school system were found in primary schools. By 1975/76 it had declined to 53 percent and by 1976/77 to 52.1 percent. As total enrolment increases further it is expected that the primary proportion

TOTAL ENROLMENT IN MINISTRY OF EDUCATION AND CULTURE

PRIMARY SCHOOLS 1970/71 - 1976/77

TABLE XI

Year	ENROLMENT			Percent New Providence	Percent Family Islands
	New Providence	Family Islands	Total		
1970/71	14,352	10,811	25,163	57.0	43.0
1971/72	14,869	10,963	25,832	57.6	42.4
1972/73	14,663	11,086	25,749	56.9	43.1
1973/74	14,350	11,099	25,449	56.4	43.6
1974/75	14,309	11,209	25,518	56.1	43.9
1975/76	14,110	11,392	25,502	55.3	44.7
1976/77	14,349	11,534	25,883	55.4	44.6

Source: The Bahamas Ministry of Education and Culture.

TOTAL ENROLMENT IN MINISTRY OF EDUCATION AND CULTURE

JUNIOR HIGH SCHOOLS 1970/71 - 1976/77

TABLE XII

Year	ENROLMENT			Percent New Providence	Percent Family Islands
	New Providence	Family Islands	Total		
1970/71	5,192	4,275	9,467	54.8	45.2
1971/72	5,334	4,416	9,750	54.7	45.3
1972/73	6,176	4,659	10,835	57.0	43.0
1973/74	6,609	5,138	11,747	56.3	43.7
1974/75	6,494	4,860	11,354	57.2	42.8
1975/76	6,893	5,421	12,314	56.0	44.0
1976/77	6,978	5,617	12,595	55.4	44.6

Source: The Bahamas Ministry of Education and Culture.

TOTAL ENROLMENT IN MINISTRY OF EDUCATION AND CULTURE

SENIOR HIGH SCHOOLS 1970/71 - 1976/77

TABLE XIII

Year	ENROLMENT			Percent New Providence	Percent Family Islands
	New Providence	Family Islands	Total		
1970/71	2,769	2,231	5,000	53.4	46.6
1971/72	3,559	2,528	6,087	58.5	41.5
1972/73	3,449	2,723	6,172	55.9	44.1
1973/74	3,782	3,130	6,912	54.7	45.3
1974/75	4,799	3,336	8,135	59.0	41.0
1975/76	5,215	4,013	9,228	56.5	43.5
1976/77	6,171	4,185	10,356	59.6	40.4

Source: The Bahamas Ministry of Education and Culture.

TOTAL ENROLMENT BY LEVEL OF EDUCATION IN
THE BAHAMAS 1970/71 - 1971/72

TABLE XIV

Year	ENROLMENT						
	Primary		Junior High		Senior High		Total
	Number	Percent	Number	Percent	Number	Percent	
1970/71	32,142	61.0	12,667	24.0	7,928	15.0	52,737
1971/72	32,119	59.8	12,868	23.9	8,765	16.3	53,752
1972/73	30,998	58.4	13,603	25.6	8,495	16.0	53,096
1973/74	31,441	55.4	15,261	26.9	10,046	17.7	56,748
1974/75	31,727	54.5	15,088	25.9	11,424	19.6	58,239
1975/76	31,793	53.0	15,646	26.1	12,571	20.9	60,010
1976/77	32,197	52.1	15,817	25.6	13,746	22.3	61,760

Source: The Bahamas Ministry of Education and Culture.

of school enrolment will continue to decrease. The general trend of junior high enrolment proportions has been more often upward than downward during the period in question. Enrolment proportions at the senior level have shown a steady increase from 15 percent in 1970/71 to a high of over 22 percent in 1976/77. A minimal decline was seen in 1972/73. It is expected that as total enrolment increases, enrolment at the secondary level will increase because of the demand for education at this level plus the tendency for more primary students to go on to senior courses and continue on at a later age. The average increase per annum at the senior high level was at a rate of 1.2 percent.

TEACHERS

The numbers of teachers by level along with their respective pupil/teacher ratios for both Ministry and Independent schools are presented in Table XV. The year 1976/77 saw Ministry primary schools with an average pupil/teacher ratio of 28.1. At the junior level the average pupil/teacher ratio was 23.9 and at the senior level 24.4.

Overall the pupil/teacher ratio was 26.3. These ratios are far below the desired ratios of: primary level - 35, junior high level - 30 and senior level - 25. In fact the desired ratios are unrealistic in that they are calculated on the presupposition that the school population is evenly distributed among teachers at the different levels throughout the country, hence all classes per level are of the same size. The distortion of these ratios arises from the facts that (i) 84 ministry schools each have a school population of less than 100 and (ii) the ratios are based on

NUMBER OF PUPILS AND TEACHERS BY LEVEL AND AVERAGE
PUPIL/TEACHER RATIOS IN MINISTRY OF EDUCATION AND
CULTURE AND INDEPENDENT SCHOOLS 1976/77

TABLE XV

Level	Pupils	Teachers	Pupil/Teacher Ratio (All Teachers)	Average Pupil/Teacher Ratio (Trained Teachers)
<u>MINISTRY SCHOOLS</u>				
Primary	25,883	920	28.1	35.4
Junior High	12,595	527	23.9	32.5
Senior High	10,356	485	21.4	37.3
Total	48,834	1,932	26.3	35.0
<u>INDEPENDENT SCHOOLS</u>				
Primary	6,314	344	18.4	20.1
Junior High	3,222	172	18.7	20.4
Senior High	3,390	184	18.4	20.2
Total	12,926	700	18.5	20.2
Grand Total	61,760	2,632	23.5	30.4

Source: The Bahamas Ministry of Education and Culture.

trained and untrained teachers. This information is of significance when estimating teacher requirements for Ministry of Education schools. Pupil/trained teacher ratios in Ministry primary, junior high and senior high levels were 35.5, 32.5 and 37.3 respectively.

The ratios in Independent primary, junior and senior levels were 18.4, 18.7 and 18.4 respectively for all teachers and 20.1, 20.4 and 20.2 per level for trained teachers.

As indicated in Table XVI, untrained teachers in Ministry schools, in 1976/77, represented 28 percent of the total with 20 percent of them being in primary schools, 27 percent in junior highs and 43 percent at the senior high level.

Table XVII shows the number of expatriate teachers in Ministry schools. The percentage of both untrained and expatriate teachers were observed to be lowest in primary schools and highest in senior high schools.

When analysing teachers in Ministry schools in New Providence it was observed that the percentage of untrained teachers as well as expatriate teachers increased from primary level to senior high level. Tables XVIII and XIX identify these facts. Data on teachers in the Family Islands show that the percentage of untrained teachers was approximately the same at each level. This was also true of the percentage of expatriate teachers at primary, junior and senior high levels. See Tables XX and XXI.

In New Providence primary schools more than 85 percent of the teachers were trained. In the junior high schools 75 percent were trained whereas in the senior schools approximately 50 percent of the teachers were trained. The majority of teachers in the untrained

TEACHERS IN MINISTRY OF EDUCATION AND CULTURE
SCHOOLS BY LEVEL AND QUALIFICATION 1976/77

TABLE XVI

Level	Trained	Untrained	Total	Percent Untrained
Primary	732	188	920	20.4
Junior High	387	140	527	26.6
Senior High	278	207	485	42.7
Total	1,397	535	1,932	27.7

Source: The Bahamas Ministry of Education and Culture.

TEACHERS IN MINISTRY OF EDUCATION AND CULTURE

SCHOOLS BY LEVEL AND CITIZENSHIP 1976/77

TABLE XVII

Level	Bahamian	Non-Bahamian	Total	Percent Non-Bahamian
Primary	791	129	920	14.0
Junior High	395	132	527	25.0
Senior High	291	194	485	40.2
Total	1,497	455	1,932	23.5

Source: The Bahamas Ministry of Education and Culture.

TEACHERS IN MINISTRY OF EDUCATION AND CULTURE SCHOOLS
BY LEVEL AND QUALIFICATION - NEW PROVIDENCE 1976/77

TABLE XVIII

Level	Trained	Untrained	Total	Percent Untrained
Primary	427	66	493	13.4
Junior High	241	81	322	25.2
Senior High	165	162	327	49.5
Total	833	309	1,142	27.1

Source: The Bahamas Ministry of Education and Culture.

TEACHERS IN MINISTRY OF EDUCATION AND CULTURE SCHOOLS
BY LEVEL AND CITIZENSHIP - NEW PROVIDENCE 1976/77

TABLE XIX

Level	Bahamian	Non-Bahamian	Total	Percent Non-Bahamian
Primary	469	24	493	4.9
Junior High	240	82	322	25.5
Senior High	173	154	327	47.1
Total	882	260	1,142	27.8

Source: The Bahamas Ministry of Education and Culture.

TEACHERS IN MINISTRY OF EDUCATION AND CULTURE SCHOOLS
BY LEVEL AND QUALIFICATION - FAMILY ISLANDS 1976/77

TABLE XX

Level	Trained	Untrained	Total	Percent Untrained
Primary	305	122	427	28.6
Junior High	146	59	205	28.8
Senior High	113	45	158	28.5
Total	564	226	790	28.6

Source: The Bahamas Ministry of Education and Culture.

TEACHERS IN MINISTRY OF EDUCATION AND CULTURE SCHOOLS

BY LEVEL AND CITIZENSHIP - FAMILY ISLANDS 1976/77

TABLE XXI

Level	Bahamian	Non-Bahamian	Total	Percent Non-Bahamian
Primary	322	105	427	24.6
Junior High	155	50	205	24.4
Senior High	118	40	158	25.3
Total	595	195	790	24.7

Source: The Bahamas Ministry of Education and Culture.

category of senior high schools, although not professionally trained, possessed Bachelor degrees.

Table XXII presents limited information on teachers in Independent schools. It was observed that at all levels, less than 10 percent of the teachers were untrained.

SUMMARY OF CHAPTER IV

Total school enrolment in The Bahamas has increased steadily between the years 1970/71 and 1976/77. While Ministry of Education schools showed yearly increases, some fluctuations were experienced in Independent schools.

1976/77 staff data indicate that the number of trained teachers as well as the number of non-Bahamian teachers in Ministry schools increased from primary to senior high schools. As has been the case for many years, trained teachers and non-Bahamian teachers in Independent schools represented more than 90 percent of the teaching staff.

TEACHERS IN INDEPENDENT SCHOOLS BY LEVEL

AND QUALIFICATION - 1976/77

TABLE XXII

Level	Trained	Untrained	Total	Percent Untrained
Primary	314	30	344	8.7
Junior High	158	14	172	8.1
Senior High	168	16	184	8.7
Total	640	60	700	8.6

Source: The Bahamas Ministry of Education and Culture.

CHAPTER V

PROJECTION OF SCHOOL ENROLMENT

The task of projecting pupil enrolment for many years into the future, while difficult and perhaps never completely accurate, may be approached from several points of view. However, the method used depends on the nature and availability of relevant data. In this study the enrolment ratio method was utilized to estimate future school enrolments for The Bahamas 1979-1990. This method, based essentially on the projection into the future of past and current ratios of school enrolments, requires estimates of population by age and sex and either school attendance data or school enrolment by age and sex. Data, although not in great detail, existed for past school enrolment - 1946 to 1976/77 for Ministry of Education schools, and from 1970/71 to 1976/77 for all schools. Future school-age population has been projected to 1990. Consequently, the choice of the enrolment ratio technique seemed suitable in this situation.

The Enrolment Ratio Model

The enrolment ratio was defined as the relationship between school enrolment and school-age population for a specified time period. For the purpose of this research, the levels of the Bahamian school system have been categorized by the following age groups: primary (5 to 10 years), junior high (11 to 13 years) and senior high (14 to 17 years). Included in this latter level are several 18 and 19 year old pupils. Primary, junior high and senior high level ratios for

Ministry and Independent schools as well as those for New Providence, and Family Islands schools were applied to the respective groups of school-age population so as to obtain school enrolments for the years 1979 to 1990.

Assumptions

The enrolment ratios for 1976/77 have shown increases over those of 1975/76, at all levels of the system, with a very slight increase at the junior high level. Assuming that the increasing enrolment trends will continue and that Government's increased efforts to provide facilities for every young Bahamian as well as to expand and diversify secondary programmes to accommodate all students to the age of 17+ will continue ("Focus on the Future" 1972), the following assumptions have been arrived at: (i) enrolment ratios will continue to increase over the forecast years (1979-1990); (ii) optimum school population (99 percent) of compulsory age pupils will be obtained; (iii) the optimum school ratio will be obtained at the senior level of the system because of the demand for "further" education created by economic and social pressures, and (iv) the optimum school enrolment ratios will be obtained by 1990.

Projections - School-Age Population

Table XXIII gives projected population 0-29 years in five-year age-groups for the years 1975, 1980, 1985 and 1990. These were used to calculate the projected school-age population 5 to 19 years inclusive for the above mentioned years. By means of interpolation, the five-year age-groups were disaggregated into single years as shown

PROJECTED POPULATION 0-29 YEARS OF AGE BY FIVE-YEAR
AGE GROUPS - THE COMMONWEALTH OF THE BAHAMAS 1975/1990

TABLE XXIII

AGE-GROUP (Years)	PROJECTED POPULATION AT MID-YEAR (ASSUMPTION "B")			
	1975	1980	1985	1990
0-4	28,721	33,568	30,289	27,010
5-9	28,522	28,317	27,588	26,858
10-14	27,337	28,847	30,925	33,011
15-19	21,657	27,211	27,663	28,114
20-24	17,466	21,489	24,791	28,092
25-29	15,512	17,299	22,018	26,736

Source: The Bahamas Department of Statistics.

in Table XXIV. The single year projections were then aggregated into levels - primary, junior high and senior high (see Table XXV).

By 1990, the projected primary school-age population is expected to decrease by 1,068 or 3.1 percent to 33,125 from 34,193 in 1975. In contrast, both junior and senior high school-age populations show considerable increases. Junior high school-age population is expected to increase from 16,580 in 1975 to 20,356 in 1990. School-age population at the senior level is expected to grow as follows: from 18,725 in 1975 to 23,569 in 1990 for the 14 to 17 year age-group and from 8,018 to 10,932 for the 18 to 19 year age-group. Overall the school-age population at this level is expected to increase from 26,743 in 1975 to 34,501 in 1990.

Enrolment Projections - All Schools

Enrolment ratios for the years 1975/76 and 1976/77, are illustrated in Table XXVI for primary, junior high and senior high levels of the school system. The primary enrolment ratio increased from 93.0 percent in 1975/76 to 94.3 percent in 1976/77. Enrolment ratios at the junior high level were 94.4 percent and 94.5 percent for the respective years 1975/76 and 1976/77. At the senior high level the enrolment ratio rose from 47 percent to 49.1 percent. (As mentioned earlier in this study, the percentage of pupils enrolled at the senior level seem lower than in reality because many pupils in this age group are enrolled at the College of The Bahamas where the admittance age is seventeen years.)

The proportion of the future school enrolments that may be expected to be attending the primary level over the forecast years are

PROJECTED POPULATION 5-19 YEARS OF AGE IN SINGLE YEARS
OF AGE 1975-1990, BASED ON PROJECTIONS ORIGINALLY GIVEN
IN FIVE-YEAR AGE GROUPS

TABLE XXIV

AGE	PROJECTED POPULATION			
	1975	1980	1985	1990
5	5,698	5,780	5,355	4,929
6	5,705	5,667	5,375	5,084
7	5,709	5,613	5,466	5,318
8	5,704	5,605	5,604	5,602
9	5,706	5,652	5,788	5,925
10	5,671	5,692	5,979	6,267
11	5,655	5,775	6,235	6,695
12	5,564	5,825	6,364	6,904
13	5,361	5,810	6,283	6,757
14	5,086	5,745	6,066	6,388
15	4,816	5,688	5,870	6,052
16	4,537	5,639	5,663	5,687
17	4,286	5,523	5,483	5,442
18	4,089	5,315	5,364	5,413
19	3,929	5,046	5,283	5,519

Source: Compiled from Table XXIII.

PROJECTED SCHOOL-AGE POPULATION BY LEVEL

1975, 1980, 1985, 1990

TABLE XXV

LEVEL	PROJECTED POPULATION			
	1975	1980	1985	1990
PRIMARY				
(5 to 10 years)	34,193	34,009	33,567	33,125
JUNIOR HIGH				
(11 to 13 years)	16,580	17,410	18,882	20,356
SENIOR HIGH				
(14 to 17 years)	18,725	22,595	23,082	23,569
(18 to 19 years)	8,018	10,361	10,647	10,932
TOTAL	26,743	32,956	33,729	34,501
GRAND TOTAL	77,516	81,375	86,178	87,982

Source: Compiled from Table XXIV.

ENROLMENT RATIO OF PUPILS BY LEVEL & THE COMMONWEALTH

THE BAHAMAS - 1975/76 and 1976/77

TABLE XXVI

YEAR	LEVEL	SCHOOL POPULATION		Country's Estimated School-Age Population (Assumption 'B') ¹	School Population as a Percent of Estimated School-Age Population
		Ministry	Independent	Total	
1975/76	PRIMARY	25,502	6,291	31,793	93.0
	JUNIOR HIGH	12,314	3,332	15,646	94.4
	SENIOR HIGH	9,228	3,343	12,571	47.0
	TOTAL	47,044	12,966	60,010	77.4
1976/77	PRIMARY	25,883	6,314	32,197	94.3
	JUNIOR HIGH	12,595	3,222	15,817	94.5
	SENIOR HIGH	10,356	3,390	13,746	49.1
	TOTAL	48,834	12,926	61,760	78.3

Source: The Bahamas Ministry of Education and Culture

¹Population projections for The Bahamas until 1980, Department of Statistics.

summarized in Table XXVII. Assuming that the enrolment ratio of 93.0 percent, at this level, will continue to increase steadily by 1 percent each year to 1980, a ratio of 98 percent will be reached. If this ratio increases at 0.2 percent yearly to 1990 an enrolment ratio of 99 percent will be reached. Applying the assumed ratios as stated previously to the projected school-age population at the primary level, the expected enrolments for the years 1980, 1985 and 1990 were produced. The projections indicate that primary enrolment will attain a high of 33,329 in 1980 and then experience a period of decline to 32,794 in 1990. This decrease represents 535 or 1.6 percent.

The estimated enrolment ratio at the junior high level was assumed to increase by 0.8 percent per year until 1980, by a yearly 0.2 percent to 99 percent in 1985 and remain thereafter. These ratios were applied to the projected school-age population at this level. The expected number of junior high pupils is expected to increase to 17,062 in 1980 and to 20,152 in 1990. Enrolment in 1990 will represent an increase of 3,090 or 18.1 percent over 1980's. Table XXVIII shows these results.

As regards the senior level, although attendance is not compulsory, there is an increasing demand for education at this level, so much so that it would be fairly safe to assume that by 1990, 99 percent of the pupils in this age-group will be enrolled in school. This assumption is supported by the Minister of Education, Mr. Livingstone N. Coakley's "Communication to Parliament, June, 1975 which states that senior high education will be expanded (with special emphasis on technical and vocational education) so as to provide

ACTUAL AND PROJECTED ENROLMENT
IN PRIMARY SCHOOLS 1975-1990

TABLE XXVII

YEAR	Number of Children (5 to 10 Years)	Assumed Enrolment Ratio (%)	Expected School Enrolment
<u>ACTUAL</u>			
1975	34,193	93	31,793
<u>PROJECTED</u>			
1980	34,009	98	33,329
1985	33,567	99	33,231
1990	33,125	99	32,794

ACTUAL AND PROJECTED ENROLMENT
IN JUNIOR HIGH SCHOOLS 1975-1990

TABLE XXVIII

YEAR	Number of Children (11 to 13 Years)	Assumed Enrolment Ratio (%)	Expected School Enrolment
<u>ACTUAL</u>			
1975	16,580	94.4	15,646
<u>PROJECTED</u>			
1980	17,410	98.0	17,062
1985	18,882	99.0	18,693
1990	20,356	99.0	20,152

specific preparation for employment as well as preparation for further study and higher education.

Records of enrolment for 1975 show that 65.1 percent of the pupils enrolled at the senior level were ages 14 to 17 years while 4.3 percent were ages 18 to 19 years. Assuming that enrolment ratios for pupils ages 14 to 17 years will be 75 percent, 85 percent and 95 percent for the year 1980, 1985 and 1990 respectively and that enrolment ratios for pupil ages 18 to 19 will decrease to 3 percent in 1980, 2 percent in 1985 and 1 percent in 1990, the expected senior level enrolments will be as calculated in Table XXIX. The number of pupils, ages 14 to 17 years, enrolled at the senior high level may be expected to increase from 12,185 in 1975 to 16,946 in 1980 and to 23,333 in 1990. Between 1980 and 1990 the net increase is expected to be 6,387 or 37.7 percent.

In the 18 to 19 year age-group, the number of pupils that may be expected to enrol here may be expected to decrease steadily until 1990. Fewer people in this age-group will be attending senior high schools as they will have completed high school and might be attending post-secondary institutions.

A summary of projected enrolment by level in the Bahamian school system for the years 1980, 1985, 1990 is presented in Table XXX.

Enrolment Projections - Ministry of Education Schools

In 1975, enrolments in Ministry of Education and Culture schools accounted for 80.2 percent, 78.7 percent and 78.4 percent of the total school enrolments at primary, junior high and senior high levels respectively. Considering that these ratios will remain

ACTUAL AND PROJECTED ENROLMENT
IN SENIOR HIGH SCHOOLS 1975-1990

TABLE XXIX

YEAR	NUMBER OF CHILDREN		ASSUMED ENROLMENT RATIO %		EXPECTED SCHOOL ENROLMENT	
	(14 to 17 Years)	(18 to 19 Years)	(14 to 17 Years)	(18 to 19 Years)	(14 to 17 Years)	(18 to 19 Years)
<u>ACTUAL</u>						
1975	18,725	8,018	65.1	4.8	12,185	386
<u>PROJECTED</u>						
1980	22,595	10,361	75	3	16,946	311
1985	23,082	10,647	85	2	19,620	213
1990	23,569	10,932	99	1	23,333	109

PROJECTED SCHOOL ENROLMENT BY AGE GROUPS AND LEVEL

1975*, 1980, 1985, 1990

TABLE XXX

LEVEL	PROJECTED SCHOOL ENROLMENT			
	1975*	1980	1985	1990
PRIMARY				
(5 to 10 Years)	31,793	33,329	33,231	32,794
JUNIOR HIGH				
(11 to 13 years)	15,646	17,062	18,693	20,152
SENIOR HIGH				
(14 to 17 Years)	12,185	16,946	19,620	23,333
(18 to 19 Years)	386	311	213	109
TOTAL	12,571	17,257	19,833	23,442
GRAND TOTAL	60,010	67,648	71,757	76,388

*Actual enrolment

fairly constant over the forecast period, the proportion of pupils at the primary, junior high and senior high levels will be respectively 80 percent, 80 percent and 75 percent. Table XXXI shows the expected enrolments for these schools for the years 1980, 1985 and 1990.

Primary level enrolment in Ministry of Education schools is expected to reach a peak of 26,663 in 1980 and then experience a decline to 26,235 in 1990.

Enrolments at both junior and senior levels are expected to increase considerably over the forecast years. Junior level enrolment will increase from 13,650 in 1980 to 16,122 in 1990 while senior level enrolment will increase from 12,943 in 1980 to 17,582 in 1990.

The proportion of students in Ministry of Education Schools on the island of New Providence has increased yearly over the past 30 years. This proportion, since 1965, represented more than 50 percent of the Ministry's total school population. With further development and urbanization of the Family Islands, it is expected that the proportion of population living in these islands will stabilize over the next ten years, hence, the school-age population in New Providence as well as the Family Islands will stabilize also. Under these circumstances and on the basis of enrolment proportions reports - 1975/76 and 1976/77, the following ratios for 1980, 1985 and 1990 may be expected to be 55 percent (primary level), 56 percent (junior high level) and 57 percent (senior high level) in New Providence schools and 45 percent, 44 percent and 43 percent for the respective levels in Family Islands schools. The projected enrolments for New Providence and Family Islands may be

ACTUAL AND PROJECTED ENROLMENT IN MINISTRY OF EDUCATION AND CULTURE
AND INDEPENDENT SCHOOLS BY LEVEL - 1975, 1980, 1985, 1990

TABLE XXXI

YEAR	LEVEL	Total School Enrolment	MINISTRY SCHOOLS		INDEPENDENT SCHOOLS		
			Ratio %	Number of Pupils	Ratio %	Number of Pupils	
<u>ACTUAL</u>							
1975	PRIMARY	31,793	80.2	25,502	19.8	6,291	
	JUNIOR HIGH	15,646	78.7	12,314	21.3	3,332	
	SENIOR HIGH	12,571	73.4	9,228	26.6	3,343	
<u>PROJECTED</u>							
1980	PRIMARY	33,329	80	26,663	20	6,666	
	JUNIOR HIGH	17,062	80	13,650	20	3,412	
	SENIOR HIGH	17,257	75	12,943	25	4,314	
1985	PRIMARY	33,231	80	26,585	20	6,646	
	JUNIOR HIGH	18,693	80	14,954	20	3,739	
	SENIOR HIGH	19,833	75	14,875	25	4,958	
1990	PRIMARY	32,794	80	26,235	20	6,559	
	JUNIOR HIGH	20,152	80	16,122	20	4,030	
	SENIOR HIGH	23,442	75	17,582	25	5,860	

expected as is indicated in Table XXXII.

Primary level enrolment in New Providence is expected to rise to 14,665 in 1980 and to decrease to 14,429 in 1990. Enrolment at the junior high level will increase from 7,644 in 1980 to 9,028 in 1990 while that at the senior high level will increase from 7,378 to 10,022 for the same period.

Family Islands enrolment figures at the primary level show an increase to 11,998 in 1980 and a decrease to 11,806 in 1990. Both junior and senior high levels indicate respective increases to 6,006 and 5,565 in 1980 followed by further increases to 7,094 and 7,560 respectively in 1990.

Enrolment Projections - Independent Schools

Independent schools have played an important role in the development of education in The Bahamas. Over the past years these schools have accounted for an appreciable amount of the school population at each level of the educational system. The proportions of enrolment at primary, junior high and senior high levels were approximately 20 percent, 20 percent and 25 percent respectively in 1975/76. Assuming that the percentage of enrolment in these schools will remain constant at approximately the present levels, enrolment projections to 1990 may be expected as seen in Table XXXI.

Table XXXIII presents a summary of projected school enrolment by level for the Commonwealth of The Bahamas for each year 1979 to 1990.

ACTUAL AND PROJECTED ENROLMENT IN MINISTRY OF EDUCATION AND CULTURE
SCHOOLS - NEW PROVIDENCE AND FAMILY ISLANDS - 1975, 1980, 1985, 1990

TABLE XXXII

YEAR	LEVEL	Total School Enrolment	NEW PROVIDENCE SCHOOLS		FAMILY ISLAND SCHOOLS	
			Ratio %	Number of Pupils	Ratio %	Number of Pupils
ACTUAL						
1975	PRIMARY	25,502	55.3	14,110	44.7	11,393
	JUNIOR HIGH	12,314	56	6,893	44	5,421
	SENIOR HIGH	9,228	56.5	5,215	43.5	4,013
PROJECTED						
1980	PRIMARY	26,663	55	14,665	45	11,998
	JUNIOR HIGH	13,650	56	7,644	44	6,006
	SENIOR HIGH	12,943	57	7,378	43	5,565
1985	PRIMARY	26,585	55	14,622	45	11,963
	JUNIOR HIGH	14,954	56	8,374	44	6,580
	SENIOR HIGH	14,875	57	8,479	43	6,396
1990	PRIMARY	26,235	55	14,429	45	11,806
	JUNIOR HIGH	16,122	56	9,028	44	7,094
	SENIOR HIGH	17,582	57	10,022	43	7,560

ACTUAL AND PROJECTED SCHOOL ENROLMENT BY LEVEL - THE
COMMONWEALTH OF THE BAHAMAS 1975-1990

TABLE XXXIII

YEAR	LEVEL			
	Primary	Junior High	Senior High	Total
<u>ACTUAL</u>				
1975	31,793	15,646	12,571	60,010
1976	32,197	15,817	13,746	61,760
<u>PROJECTED</u>				
1979	33,046	16,751	16,380	66,177
1980	33,329	17,062	17,257	67,648
1981	33,309	17,389	17,773	68,471
1982	33,289	17,715	18,288	69,292
1983	33,269	18,041	18,803	70,113
1984	33,240	18,367	19,318	70,926
1985	33,231	18,693	19,833	71,757
1986	33,143	18,985	20,555	72,683
1987	33,055	19,277	21,277	73,609
1988	32,969	19,569	21,999	74,536
1989	32,881	19,861	22,721	75,463
1990	32,794	20,152	23,442	76,389

SUMMARY OF CHAPTER V

This chapter presented future school enrolments for The Bahamas - 1979 to 1990. Projected enrolments were calculated for each level of Ministry of Education - New Providence and Family Islands' - schools as well as for Independent schools. By applying assumed enrolment ratios, based on observed trends of the years 1975/76 and 1976/77, to primary, junior high and senior high groups of the school aged population, expected enrolments for the forecast years were obtained. Primary level enrolment is expected to continue its increasing trend until 1980 and then experience a decline in growth to 1990. In contrast, enrolment at both junior and senior high levels are expected to increase considerably over the period in question.

Projected enrolment in Ministry of Education schools will account for approximately 80 percent of the total enrolment whereas independent schools may be expected to account for approximately 20 percent between 1979 and 1990. The proportion of projected school enrolment that may be expected in Ministry of Education Schools in The Family Islands will be approximately 45 percent.

CHAPTER VI

PROJECTION OF TEACHER DEMAND

Because the "process" of education in The Bahamas has been changing for many years, it has been extremely difficult to make predictions about the development of the school system and hence difficult to estimate the future demand for teachers - especially at the senior high level. This chapter is an attempt at projecting teacher demand for Bahamian schools and is concerned with estimating the general demand for teachers and not for any particular type of teacher. The pupil/teacher ratio method was used to obtain results.

The Pupil/Teacher Ratio Model

The model utilized several pupil/teacher ratios. This was necessary because of the difference in ratios per level between Ministry of Education schools and Independent schools as well as between Ministry of Education - New Providence and Family Islands schools. The ratios per level were applied to the respective estimated school enrolments derived in Chapter V so as to obtain separate estimates of teacher demand. These results were then aggregated to produce the total demand for teachers in the school system.

PROJECTION OF TEACHERS

In order to estimate the demand for teachers it was assumed that as school enrolment increases, the number of teachers will increase proportionally and that pupil/teacher ratios will remain constant at the

1976/77 level over the forecast years.

Ministry of Education Schools - New Providence

In 1976/77, pupil/teacher ratios for primary, junior high and senior high levels in New Providence schools were 29.1, 21.7 and 18.9 respectively. Applying these ratios to the estimated school enrolment for each level found previously, produced the projected demand for teachers in this island.

Table XXXIV shows that the projected demand for teachers at the primary level will reach its peak in 1980, remain at this level until 1985 and then decline thereafter to 1990. The projected demand for teachers at this level is expected to rise to 504 in 1980 from 493 in 1976/77 and then to decline to 496 by 1990.

The projected demand for teachers at the junior high level is illustrated in Table XXXV. Projections here show an increase in demand over the forecast years. A steady increase is expected from 322 in 1976/77 to 352 in 1980 and to 416 in 1990.

A more rapid increase in projected demand for senior high teachers may be expected over the forecast period as is indicated by Table XXXVI. The projections show an increase to 390 in 1980 from 327 in 1976/77. By 1990, the projected demand for teachers at this level will be 530.

Ministry of Education Schools - Family Islands

The projected demand for teachers in Family Islands schools were derived by applying pupil/teacher ratios: 27 (primary level), 27.4 (junior high level) and 25.5 (senior high level) to the estimated

ACTUAL AND PROJECTED NUMBER OF TEACHERS AT THE PRIMARY
LEVEL - MINISTRY OF EDUCATION AND CULTURE SCHOOLS - NEW PROVIDENCE
1976, 1980, 1985, 1990

TABLE XXXIV

YEAR	Enrolment	Teachers	Pupil/Teacher Ratio
<u>ACTUAL</u>			
1976/77	14,349	493	29.1
<u>PROJECTED</u>			
1980	14,665	504	↓
1985	14,662	504	
1990	14,429	496	

ACTUAL AND PROJECTED NUMBER OF TEACHERS AT THE JUNIOR HIGH
LEVEL - MINISTRY OF EDUCATION AND CULTURE SCHOOLS - NEW PROVIDENCE
1976, 1980, 1985, 1990

TABLE XXXV

YEAR	Enrolment	Teachers	Pupil/Teacher Ratio
<u>ACTUAL</u>			
1976/77	6,978	322	21.7
<u>PROJECTED</u>			
1980	7,644	352	↓
1985	8,374	386	
1990	9,028	416	

ACTUAL AND PROJECTED NUMBER OF TEACHERS AT THE SENIOR HIGH
LEVEL - MINISTRY OF EDUCATION AND CULTURE SCHOOLS - NEW PROVIDENCE

1976, 1980, 1985, 1990

TABLE XXXVI

YEAR	Enrolment	Teachers	Pupil/Teacher Ratio
<u>ACTUAL</u>			
1976/77	6,171	327	18.9
<u>PROJECTED</u>			
1980	7,378	390	↓
1985	8,479	449	
1990	10,022	530	

school enrolments for the respective levels calculated previously in Chapter V.

It is expected that the demand for teachers at the primary level will increase to 444 in 1980 from 327 in 1976/77 and decline to 437 in 1990. Table XXXVII illustrates this.

As shown in Table XXXVIII, the projected demand for teachers at the junior high level will increase gradually to 219 in 1980 and then to 259 in 1990.

Like the projected demand at the junior high level, the demand for teachers at the senior high level is expected to increase continually over the forecast period. Table XXXIX illustrates that this demand is expected to increase steadily to 210 in 1980 and then to 285 in 1990.

Between 1980 and 1990, the expected increase in demand for teachers at the junior high and senior high will be 40 and 75 respectively.

Table XL summarizes the total projected demand for teachers per level in Ministry of Education and Culture Schools. As illustrated in Figure 3, a more gradual increase in demand is expected at the junior high level than at the senior high level. At the junior high level, the demand is expected to increase gradually to 674 in 1990. A more rapid increase is expected at the senior high level - from 600 in 1980 to 815 in 1990.

The demand for primary level teachers is expected to reach its peak of 948 in 1980 and decline thereafter to 933 in 1990.

As seen in Table XLI, projected demands at the various levels of Ministry of Education schools suggest a slightly increasing demand for

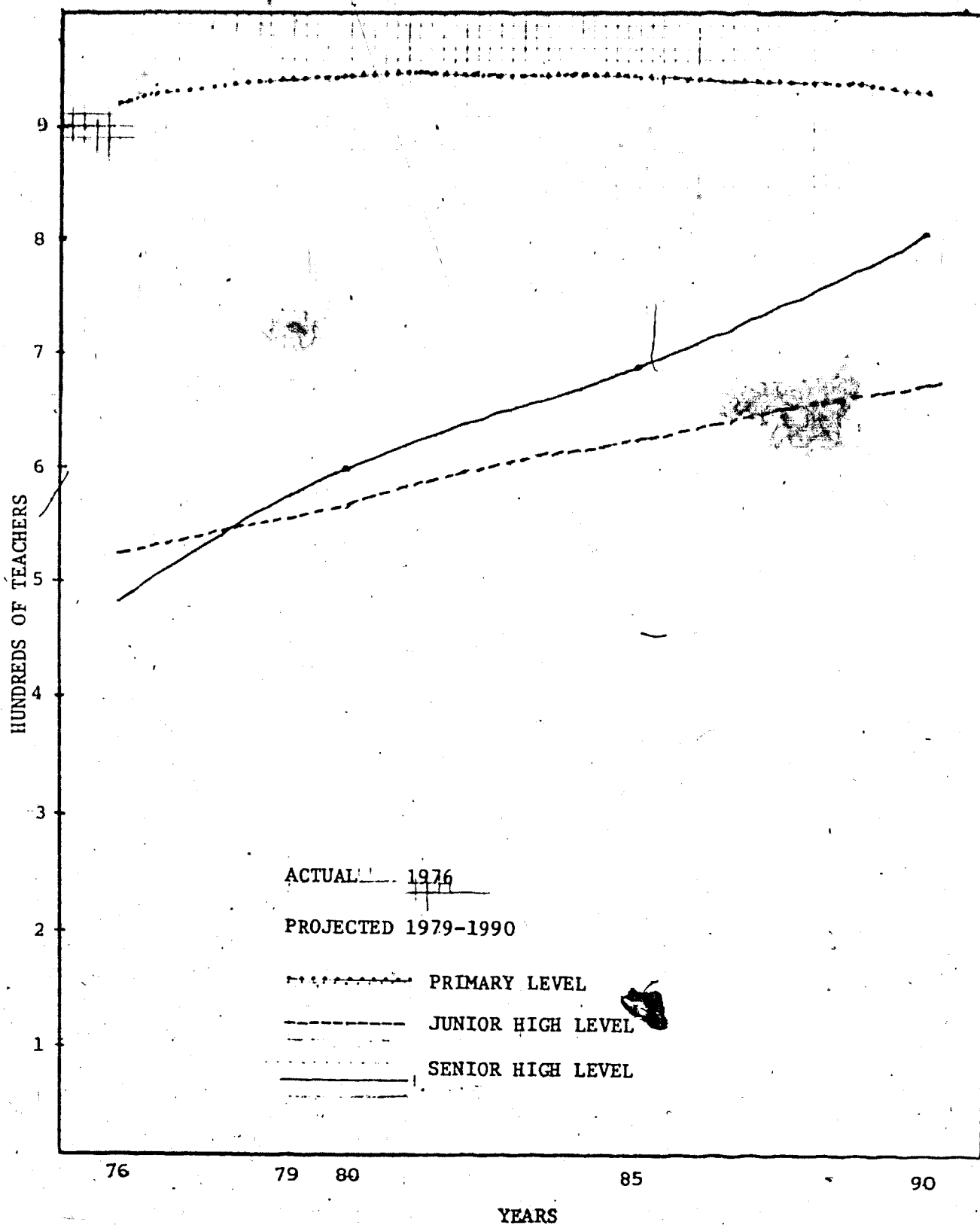


FIGURE -3

ACTUAL AND PROJECTED NUMBER OF TEACHERS - THE
BAHAMAS MINISTRY OF EDUCATION AND CULTURE

ACTUAL AND PROJECTED NUMBER OF TEACHERS AT THE PRIMARY
LEVEL - MINISTRY OF EDUCATION AND CULTURE SCHOOLS - FAMILY ISLANDS

1976, 1980, 1985, 1990

TABLE XXXVII

YEAR	Enrolment	Teachers	Pupil/Teacher Ratio
<u>ACTUAL</u>			
1976/77	11,534	427	27
<u>PROJECTED</u>			
1980	11,998	444	↓
1985	11,963	443	
1990	11,806	437	

ACTUAL AND PROJECTED NUMBER OF TEACHERS AT THE JUNIOR HIGH
LEVEL - MINISTRY OF EDUCATION AND CULTURE SCHOOLS - FAMILY ISLANDS

1976, 1980, 1985, 1990

TABLE XXXVIII

YEAR	Enrolment	Teachers	Pupil/Teacher Ratio
<u>ACTUAL</u>			
1976/77	5, 517	205	27.4
<u>PROJECTED</u>			
1980	6,006	219	↓
1985	6,580	240	
1990	7,094	259	

ACTUAL AND PROJECTED NUMBER OF TEACHERS AT THE SENIOR HIGH
LEVEL - MINISTRY OF EDUCATION AND CULTURE SCHOOLS - FAMILY ISLANDS
1976, 1980, 1985, 1990

TABLE XXXIX

YEAR	Enrolment	Teachers	Pupil/Teacher Ratio
<u>ACTUAL</u>			
1976/77	4,185	158	26.5
<u>PROJECTED</u>			
1980	5,565	210	↓
1985	6,396	241	
1990	7,560	285	

ACTUAL AND PROJECTED NUMBER OF TEACHERS BY LEVEL - MINISTRY
OF EDUCATION AND CULTURE SCHOOLS - 1976, 1980, 1985, 1990

TABLE XI.

YEAR	TEACHERS			
	Primary Level	Junior High Level	Senior High Level	Total
<u>ACTUAL</u>				
1976/77	920	527	485	1,932
<u>PROJECTED</u>				
1979	941	560	571	2,072
1980	948	571	600	2,119
1985	947	626	690	2,263
1990	933	675	815	2,423

ACTUAL AND PROJECTED NUMBER OF TEACHERS BY LEVEL - MINISTRY
OF EDUCATION AND CULTURE SCHOOLS - 1976, 1979 to 1990

TABLE XLI

YEAR	TEACHERS			
	Primary	Junior High Level	Senior High Level	Total
<u>ACTUAL</u>				
1976/77	920	527	485	1,932
<u>PROJECTED</u>				
1979	941	560	571	2,072
1980	948	571	600	2,119
1981	948	582	618	2,148
1982	948	593	636	2,177
1983	948	604	654	2,206
1984	948	615	672	2,235
1985	947	626	690	2,263
1986	944	636	715	2,295
1987	941	646	740	2,327
1988	938	656	765	2,359
1989	935	666	790	2,391
1990	933	675	815	2,423

primary level teachers to 1980 followed by a slight decrease in demand to 1990. A steady increase in demand, at both junior high and senior high levels, is expected over the forecast years.

It must be mentioned that the projections of teacher demand for the above schools were based on ratios which included untrained teachers as well as non-Bahamian teachers. If the teaching staff of the schools is to become fully trained and Bahamianized by the year 1990, the need for teachers at the various levels will be high over the forecast period.

In 1976/77, there was a total of 415 untrained Bahamian teachers in Ministry of Education schools - 164 at the primary level, 110 at junior high level and 141 at senior high level. A total number of 455 non-Bahamians were teaching in these schools - 129 at primary level, 132 at junior high level and 194 at senior high level. These numbers, if they remain fairly constant over the years, indicate the need for additional teachers - 293 primary, 242 junior high and 335 senior high teachers. Overall an extra demand of 870 teachers is expected between 1979 and 1990 or an average of 79 teachers per year.

Independent Schools

Tables XLII, XLIII and XLIV show projected demand for teachers at primary, junior high and senior high levels of Independent schools respectively. The projections show an increase in demand to 360 in 1980 from 344 in 1976/77 followed by a slight decline to 356 in 1990.

Projected demand for junior and senior high teachers is expected to increase over the forecast period. The number of junior high teachers is expected to increase from 172 in 1976/77 to 182 in 1980 and to 216

ACTUAL AND PROJECTED NUMBER OF TEACHERS AT THE PRIMARY
LEVEL - INDEPENDENT SCHOOLS - 1976, 1980, 1985, 1990

TABLE XLII

YEAR	Enrolment	Teachers	Pupil/Teacher Ratio
<u>ACTUAL</u>			
1976/77	6,314	344	18.4
<u>PROJECTED</u>			
1980	6,666	362	↓
1985	6,646	361	
1990	6,559	356	

ACTUAL AND PROJECTED NUMBER OF TEACHERS AT THE JUNIOR HIGH
LEVEL - INDEPENDENT SCHOOLS - 1976, 1980, 1985, 1990

TABLE XLIII

YEAR	Enrolment	Teachers	Pupil/Teacher Ratio
<u>ACTUAL</u>			
1976/77	3,222	172	18.7
<u>PROJECTED</u>			
1980	3,412	182	↓
1985	3,739	200	
1990	4,030	216	

ACTUAL AND PROJECTED NUMBER OF TEACHERS AT THE SENIOR HIGH
LEVEL - INDEPENDENT SCHOOLS - 1976, 1980, 1985, 1990

TABLE XLIV

YEAR	Enrolment	Teachers	Pupil/Teacher Ratio
<u>ACTUAL</u>			
1976/77	3,390	184	18.4
<u>PROJECTED</u>			
1980	4,314	234	↓
1985	4,958	269	
1990	5,860	318	

in 1990. Similarly, the demand for teachers at the senior high level is expected to increase steadily from 184 in 1976/77 to 284 in 1980 and to 318 in 1990.

All Schools

The overall projected demand for teachers at each level of the system is presented in Table XLV. The projected demand for primary level teachers will reach its peak of 1,310 in 1980 and then gradually decrease to 1,289 in 1990. The projected demand for junior high level teachers is expected to increase continually from 669 in 1976/77 to 753 in 1980 to 891 in 1990. At the senior high level, the projected demand for teachers for the year 1990 will be approximately double its 1976/77 total of 669.

Figure 4 illustrates the trends of projected demand for teachers per level of the school system of the Commonwealth of The Bahamas. These trends are consistent with those identified after estimating the school enrolments for the various levels of the school system.

SUMMARY OF CHAPTER VI

The projected demand for teachers in New Providence, the Family Islands and Independent schools by level for the years 1979 to 1990 were obtained by applying various pupil/teacher ratios to the respective projected school enrolments. Results derived were aggregated to produce the total projected teacher demand for teachers in the Commonwealth of The Bahamas. Projections indicate that the demand for teachers at the primary level will reach its peak in 1980 and then experience a period

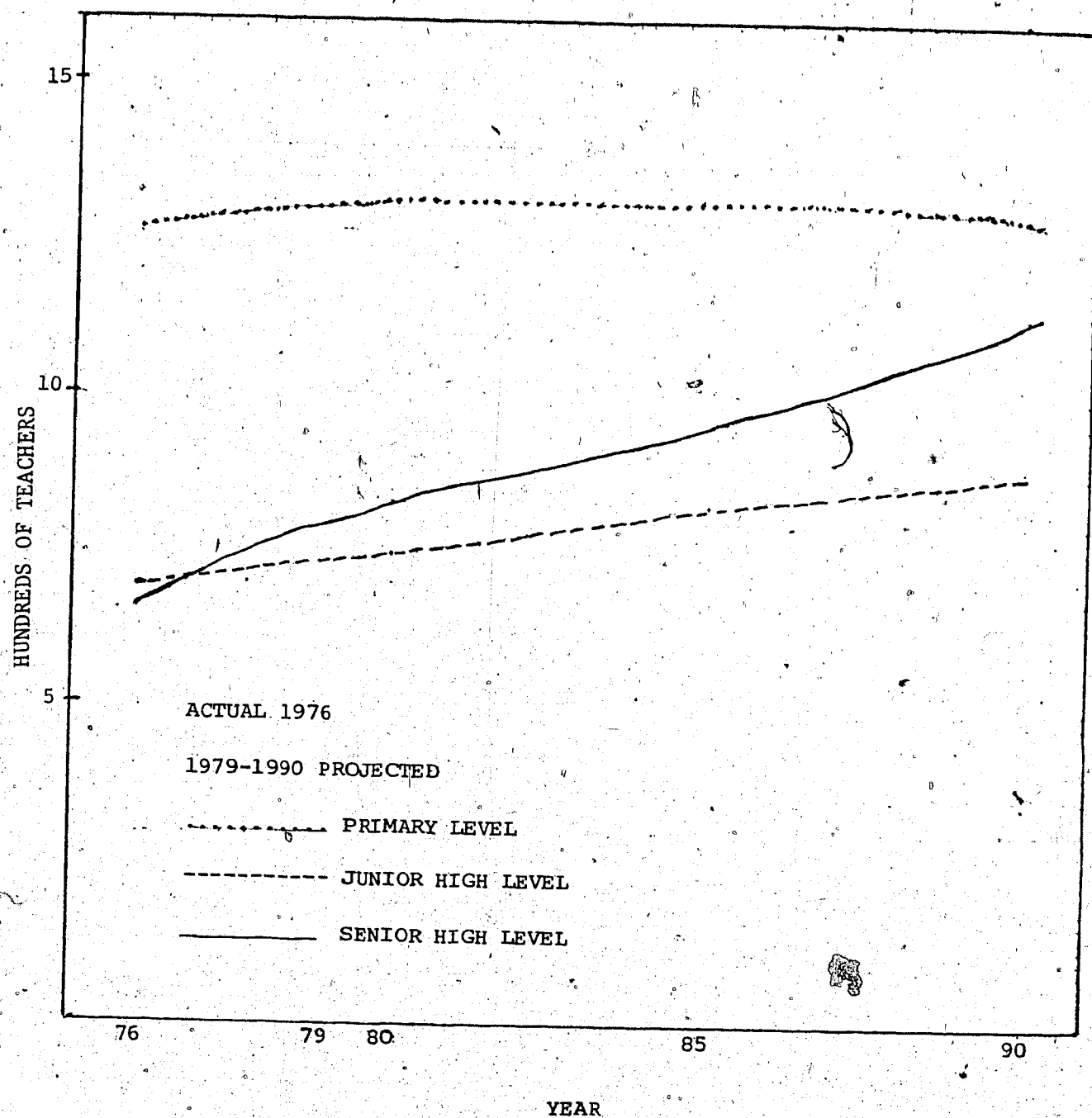


FIGURE 4

ACTUAL AND PROJECTED NUMBER OF TEACHERS - THE
COMMONWEALTH OF THE BAHAMAS

ACTUAL AND PROJECTED NUMBER OF TEACHERS BY LEVEL - THE
COMMONWEALTH OF THE BAHAMAS - 1976, 1980, 1985, 1990

TABLE XLV

YEAR	TEACHERS			Total
	Primary Level	Junior High Level	Senior High Level	
<u>ACTUAL</u>				
1976/77	1,264	699	669	2,632
<u>PROJECTED</u>				
1979	1,298	739	792	2,829
1980	1,310	753	834	2,897
1985	1,308	826	959	3,093
1990	1,289	891	1,133	3,313

of decline to 1990). Both junior high and senior high level projections suggest increases in the demand for teachers over the forecast period.

CHAPTER VII

SUMMARY, CONCLUSIONS AND IMPLICATIONS

The purpose of this research was to forecast the number of teachers required by 'The Bahamas' education system for the years 1979-1990. In obtaining the future demand for teachers, the social demand approach to educational planning was utilized. The approach was applied to primary and junior high levels of the school system where education is compulsory. The expected demand for education above the junior secondary stage was used as a basis for calculating teacher requirements for the senior high level.

The study began by outlining the statement of the problem and its setting. This was followed by a brief review of related literature on educational planning and enrolment projections in Chapter II.

So that readers might get a clearer understanding of The Bahamas and its problem of teacher shortage, a general background of the islands, the structure of the School System and its composition were presented in Chapter III.

Chapter IV gave an analysis of past and current pupil enrolments along with current quantitative and qualitative aspects of the teaching force while Chapter V presented projected school enrolments for primary, junior and senior high levels of the school system. The projected demand for teachers in Ministry of Education and Culture and Independent schools by level for the years 1979-1990 were presented in Chapter VI.

CONCLUSIONS

The projections of future school enrolments have identified several trends over the forecast period, 1979 to 1990. Primary level enrolment is expected to continue in increasing trend until 1980 and then experience a decline in growth to 1990. In contrast, enrolments at the junior high and senior high levels are expected to increase considerably over the forecast years. These trends are consistent with those of the projected school-age population, compiled from assumption "B", over the same period.

With regards to the future demand for teachers, it is expected that teacher demand will increase or decrease in proportion to school enrolments. The demand for teachers at the primary level is expected to reach its peak in 1980 and decrease thereafter to 1990. Both junior high and senior high level projections suggest increases in demand for teachers during the forecast years with increases at the senior high level being more rapid.

IMPLICATIONS

The conclusions reached by this study reveal several conditions surrounding future enrolments hence, future demand for teachers at primary and secondary levels. Several implications thus follow. These implications are important for Ministry of Education and Culture.

With the apparent decrease in primary level enrolment following 1980, The Bahamas Ministry of Education may be able to concentrate more on improving the qualification of teachers at this level. This enrolment decline may also allow a decrease in the primary level pupil/

trained teacher ratio which is at present above 35. Further, it may allow the channeling of more funds toward the training of secondary and specialist teachers.

In the case of secondary level enrolment, its increasing trend will necessitate an increase in the yearly intake and consequently the yearly output of secondary teachers at the College of The Bahamas. There will also be a continuing demand for new facilities, especially at the senior high level, over the coming decade both in New Providence and the Family Islands.

If the teaching force is to become fully trained and Bahamianized in the near future, this means that an increase in demand for teachers at all levels will be needed. An even greater increase in the output of teachers per year will be required.

The coming into effect of the above potential will depend on the Government's willingness to continue level of resources allocated to education, particularly teacher education. Realization of the overall potential requires the establishment and maintenance of an efficient as well as sufficient supply of teachers.

SUGGESTED RESEARCH

In order to increase the accuracy of predicting the teacher requirements, further research is necessary. With regards to the supply of teachers, research concentrating on factors such as (i) recruitment, (ii) retention policies, (iii) teacher qualification and standards as well as (iv) remuneration could help in the understanding of the dynamics of the apparent teacher shortages.

An investigation into enrolment trends in senior high school subject area would provide a basis for predicting enrolments in various subjects and consequently the demand for teachers of those subjects.

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