A STUDY OF FUTURE SCHOOL ENROLMENTS IN LIBYA 1969 – 1983

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1. Introduction

Educational planning is an important phase in the development planning of any country. This assumes special importance in the case of Libya. Libya has vast geographic area but only a small portion of it is inhabited. The population of the country is relatively small (about 1.8 million in 1969). The country has acquired lot of financial assets from petroleum deposits and the national wealth is likely to accelerate in the future. The government of Libya has been taking many steps to utilize its financial resources for raising the standard of living of the masses through various development projects including educational ones (Ministry of education, Document 1, 1966).

It is needless to stress the importance of the school age projections of a population in its educational planning. For proper planning of education one needs to plan for future buildings, teachers, laboratories etc, all of which depend on the future student population. In the present paper, a set of projections for Libya are worked out for primary, preparatory and secondary schools for the period 1969-83.

The work of obtaining future school age population by age or class poses a number of problems most of them originating from either lack of data or errors in the existing data. For these reasons the projections of future school age population should be interpreted with care.

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2. School Education In Libya

The preuniversity education in school is divided into three sections in Libya. The first section is the primary education. The primary school education takes six years to complete (assuming no failures). The normal age of entry into primary school is six years but in Libya a number of children of higher ages enter the primary school. This point will be taken up at a later stage. Prior to 1964-65 examinations were held at each class and those succeeding in the examinations are being promoted to the next class. Since 1964-65 the examinations in the first five classes were abolished. Students were automatically promoted from one class to the next except in the sixth class where an examination will be held. This change is assumed to have reduced the drop-outs because of social and economic reasons.

Those succeeding in the primary will be eligible to enter preparatory schools. The preparatory education consists of various branches ; academic, vocational, industrial training, and health training. This takes three years for academic courses to complete and at the final year there is an examination.

Those succeeding in preparatory school will be eligible to enter secondary school. The secondary education also consists of a number branches : academic studies, commercial, industrial ; agricultural and applied engineering ; health education ; petroleum engineering ; social service training ; telecommunication engineering and others. It requires three years for academic courses, to complete the study and at the final year an examination will be held. Those succeeding in this examination will be eligible to enter university.

In the present paper, we shall be interested in the total number of students in each class of primary, preparatory and secondary schools and not in the details of their branch of study. Also since we are confined to pre-university education we do not touch upon the university education. These aspects are deferred to a second report.

Primary education :

Growth of education : School entrolments in Libya have increased at a phenomenal rate. In the early forties, during the British and French occupation, a rough estimate of 4,900 Libyan children were attending primary schools. At that time about 50 primary schools and 150 teachers could have been involved in the primary education. In 1950-51 it is estimated that about 22,115 children were in primary schools. (Ministry of education, Document 1,1966 p. 16). In 1952-53 the school year following independence, an estimated number of 45,000 pupils were in 235 schools (International Bank for Reconstruction Development). In 1960-61 an estimated number of 123,433 children were in primary school. The number of public schools in 1960-61 were estimated to be around 681 with about 5,175 teachers. This expansion in pupils, schools and teachers during a short period of 10 years is a significant development.

Table 1 shows the reported primary enrolment of boys and girls by class and academic year. In 1960-61 25,872 and 97,561 girls were attending primary schools. By 1969-70 the enrolment of boys has increased to 203799 and that of girls has increased to 107047. The figure for boys in 1969-70 is double that of the enrolments in 1960-61. The enrolment for girls in 1969-70 is more than four times the enrolment in 1960-61. This increase over a period of ten years is commendable. In 1970-71 it is reported that about 348,708 boys and girls were in primary school. These figures clearly indicate the tremendous increase in primary school enrolment in the recent years. If this trend continues, there will be enormous growth of primary school children in future and this necessitates equally rapid growth in schools and associated facilities.

This increase in numbers in primary education is estimated to have resulted in the reduction of children not attending school. In 1965-66, 32% of boys between 6 and 12 years of age were not in school, by 1969-70 this proportion dropped to 14%. For girls this improve-

ment has been considerable. In 1965-66, 69% of girls between 6 and 12 years were not attending. By 1969-70 this proportion dropped to 50%. (Maya prasad, 1971 ; p. 4). The estimates of boys and girls not attending school in 1969-70 based on the projected population obtained by the author are 6% and 42% respectively. The estimate for boys is very much less than that of the I.L.O expert and for girls the decrease less significant. This could be due to either an overesti. mation of the population in 1969-70 by the I.L.O expert or an underes. timation of the population in 1969-70 by the author or both. Apart from the differences in magnitudes, it is clear the proportion not attending school is decreasing with time.

Sex-ratio :

From table 1 it is clear that the boys out-number girls in all classes. In 1960-61 there were 3.8 boys for each girl in the primary school. This ratio reached a peak of 5.8 in 1961-62 and then gradually decreased to 1.9 in 1969 as shown below.

Number of boys for each girl in the primary school

1960/61	3.8	1965	2.6
1961	5.8	1966	2.4
1962	4.0	1967	2.3
1963	4.4	1968	2.1
1964	4.1	1969	1.9

One interesting point emerges from these figures. The ratio of boys to girls in primary seition has dropped suddenly from 1965. A look at Table 1 shows that in 1965 the number of girls in primary classes has increased greatly. This enormous increase in girls brought down the ratio. It is to be noted the year 1965-66 is important because, the examination in the first five classes of primary school were cancelled at that time. This has stimulated girls to go to school. The effect of cancellation of examinations has a lesser effect on the boys.

Though the increase in the girls of primary level is significant there is scope for improvement. In 1969-70 an estimated number of 177 thousand boys and 166 thousand girls are present in the population of primary school age. However the ratio of boys to girls in the primary is nearly 2 to 1.

The sex-ratio in different classes of the primary varies. It is found that the ratio increases as we proceed from class 1 to class 6. The pattern of a sudden change after 1965-66 is also observed in this case as well (Table 1) .

Age distribution :

One of the striking features of the school education in Libya is overaged pupils. Table 2 presents the age distribution of boys and Table 3 that of girls in 1969-70. The boys who enter primary school range from 6 to 14 years. The major portion of the boys and girls (about 70%) are in ages 6 and 7. There are boys as old as 17 years attending primary school. The normal primary school age is 5-11 years. In 1969-70, about 26% of boys and 15% of girls of age 12 years and above were attending primary schools. This is a significant percentage in the case of boys. The main reasons responsible for this are (i) late entry into primary school, (ii) considerable amount of repitition and dropout. This is a serious draw back, and the government is understood to have been taking steps to enforce early entry into primary classes. It is expected that in future the age of entry into primary classes converge to 6 years. However, the wide spread of age distribution in primary classes will continue for some years in future.

Repetition and dropouts :

Table 4 presents the break up of freshers and repeaters of 1968-70 in each of the primary classes. In 1969-70 out of 203,799 boys in primary classes 52,905 were repeaters, forming 26%. Among girls 26,918 were repeaters out of 107,047 girls, forming 25%. This is a

significant percentage. The percentage of repeaters varies from cla to class. In the first class about 31% of boys and 29% of girls wer repeaters.

The number of pupils dropping out are also of significant propor tion in Libya. Table 5 presents dropouts for some years. There are many gaps in the table due to errors in the data. For boys in 1964-65 the dropout rates are quite significant. In the first class 22% of boys are dropouts in 1964-65 and this figure fell to 13% in 1968-69. The dropout rates for boys in classes 4 and 5 also decreased between 1964-65 and 1968-69. The dropout rate for girls in 1965-66 was 19% and it decreased to 12% in 1968-69. There is a decrease observed in classes 3 and 5. However, these inferencs are based on insufficient time series and too much meaning should not be read into them. The dropout causes a lot of wastage in education. This can be studied by making use of the data in Table 1. By following a cohort of primary pupils till they pass out of the primary school we can infer wastage in education. The following table illustrates this point.

	Class						
	1	2	3	4	5	6	%
	Years						wastage
	59-	60-	61-	62-	63-	64-	
Boys	27336	18641	17057	14981	13949	11395	58.3
Girls	9654	8136	3891	2986	2096	1415	85.3
Total	36990	26777	20948	17967	14045	12810	65.3
	60-	61-	62-	63-	64-	65-	
Boys	30510	20130	19355	16661	15558	11966	60.8
Girls	9830	5446	4293	2744	2487	2178	77.8
Total	40340	25576	23648	19405	18045	14144	64.9

	64-	65-	66-	67-	68-	69-	
Boys	40641	27513	24621	23621	22933	18603	54.2
Girls	12943	11805	9616	7741	6644	4706	63.6
Total	53584	39318	34237	31362	29577	23309	56.5

Source : Table 1.

A rough approximation of the educational wastage is obtained by expressing the decrease in the class 1 pupils as they proceed towards class 6. From the above table we note that for the cohort of boys entering primary school in 1959-60 the wastage is 58% and for girls 85%. The wastage for the 1960-61 cohort comes out to be 61% for boys and 78% for girls. For the 1964-65 cohort the wastage is 54% for boys and 64% girls. Thus we notice a steady decreasing trend. The wastage is expected to decrease further in future years.

It is to be noted that the above estimates are only rough estimates of educational wastage. Because some pupils who drop-out and leave the school might later return to school and hence the above estimates are expected to be on the high side.

Another way of looking at the wastage is to examine the out-turn of primary school graduates. The following table shows the number of pupils in primary schools and the turn-out of graduates. However this is only a rough and indirect way of showing latent wastage.

	Enrolment	Graduates
1961-	123433	6193
1962-	131098	6648
1963-	145195	6891
1964-	154672	7991
1965-	169191	9552
1966-	192293	9789
1967-	216351	10777
1968-	248731	15035
1969-	270617	14121

While the turn out of graduates up to 1964 was not satisfactory there was a considerable increase in the number of graduates after that date.

The pass percentage of primary school children is satisfactory. In 1969-70 out of 23308 pupils 14,121 pupils succeeded in the examination giving 61% pass rate. In 1970-71 the percentage is estimated to be about 70%. These percentages can be improved in future.

Students per class :

The number of students in 1969-70 in the primary school in each class is shown below.

Class	Students	No. of classes	Students/class
1	96419	2558	37.69
2	59539	1946	30.60
3	53521	1794	29.93
4	42278	1496	28.26
5	35781	1255	28.51
6	23308	927	25.14
Total	310846	9976	31.16

Source : Maya Prasad (1971)

There are about 1224 primary schools in 1969-70, with 9976 classes. The ratio of students per class turns out to be 31. This figure is quite reasonable. The density of the students varies from class to class. The highest number of students are in class 1 and density decreases gradually at higher classes.

However it appears that there is some variation in the density of students per class in towns and rural areas. " The class rooms in elementary schools in cities, for example may contain up to 60 pupils, in villages and rural areas they may not exceed 15 " (Ministry of education, 1966, Document 3, p. 21).

It is estimated that there are about 11,122 teachers out of which 2479 are female teachers in 1969-70. Therefore number of students per teacher works out to be 28. This is also quite satisfactory. As mentioned earlier this ratio is likely to vary between towns and rural areas.

Preparatory School Education :

Statistics of preparatory schools could not be obtained readily. Most of the observations made here are based on the statistics reported in I.L.O expert's report for 1969-70 (Maya prasad, 1971).

The enrolment in preparatory schools has gone up very much between 1962 and 1969. In 1962-63 an estimated number of 15,522 students were in preparatory schools and this number increased to 36,316 in 1969-79.

Sex-ratio :

The following table shows the number of boys and girls in preparatory schools in 1969-70.

Preparatory class	Boys	Girls	Total
1	14628	3190	17818
2	8558	1579	10137
3	7423	938	8361
Total	30609 (84.3%)	5707 (15.7%)	36316 (100.0)

It is clear that the number of girls in the preparatory classes is very small (about 16%) compared to boys. This percentage is poorer than in primary schools. Much of this is due to the social practiçes and overages in primary schooling. This situation is likely to change in future.

The proportion of girls in preparatory level varies from class to class. The percentage of girls in class 1 is about 18% and in class 3,11%. This is due to drop-outs in the preparatory section. It is likely that the drop-out of girls is more than that of boys.

Age distribution :

Table 6 presents the age distrubution of boys and girls in preparatory schools. Both boys and girls range from ages 11 to 21. This is quite unsatisfactory. The normal age group for preparatory education should be 12-15 years. About 9% of boys and 11% of girls enter class 1 of preparatory at ages 12 or less. That is about 90% of the pupils enter the preparatory late. This is due to their late entry and repetition in primary classes. About 60% of boys and 40% of girls of the preparatory level are 16 years or older. This clearly focuses the problem of overaged students. However unless the overage problem at primary level is corrected, the overage problem at preparatory level cannot be rectified.

Repetition and promotion :

Table 7 presents the distribution of freshers and repeaters in preparatory classes in 1969-70. Out of 10609 boys in the preparatory classes 5835 or 19% are repeaters and 81% are freshers. In the case of girls out of 1707 girls in preparatory level 13% are repeaters and 87% are fresheres. The proportion of repeater girls is less than repeater boys.

The proportion of repeaters among boys and girls varies by class. The highest repeater rate is found in class 3 for boys and girls.

The number of boys and girls appearing and passing in the preparatory classes are shown in Table 8. It is clear from this table that the pass percentage among girls is better than boys. The pass percentages of boys of 40% - 48% during 1967-1970 is low. Also there appears to be a trend of decreasing pass percentages both for boys and girls during 1967-70. In 1969-70 the pass percentage for

boys and girls are 40% and 46% which are low and have to be improved in future. The turn out of preparatory graduates has been growing at a slower rate. The preparatory graduates during 1967-70 are shown below.

	Boys	Girls	Total
1967-68	3932	451	4382
1968-69	4617	467	5084
1969-70	4586	529	5115

Students per class :

An estimated number of 151 preparatory schools for boys and 26 for girls with 1115 classes were running in 1969-70. The number of students per class works out to be 33. This is again quite satisfactory. As mentioned earlier, there can be some variation in these number from one school to another. The number of teachers in the preparatory schools in 1969-70 were 2447 giving a ratio of 15 students per teacher. This student / teacher ratio is also quite satisfactory. Also it is mentioned that the qualifications of the teachers is quite satisfactory, thereby ensuring a good quality of education. (Maya Prasad, 1971, p. 9).

Secondary School Education :

As mentioned earlier statistics for secondary school education were also not readily available. In the present paper only the statistics for 1969-70 published by I.L.O expert have been used.

The growth of secondary school education has also been significant. In 1962-63 an estimated number of 2799 students were in secondary schools. This figure grew slowly till 1964-65 and by 1969-70 it reached a value of 8304. This is a considerable progress. The growth of secondary school education takes time as it has to follow corresponding increase in primary and preparatory school enrolments.

Sex-ratio :

The number of boys and girls in 1969-70 in the various secondary classes are shown below.

Secondary classes	Boys	Girls	Total
1	3120 (86.4%)	492 (13.6%)	3612
2 (Literary)	558 (79.5%)	144 (20.5%)	701
2 (Science)	1524 (90.9%)	153 (9.1%)	1677
3 (Literary)	586 (79.2%)	154 (20.8%)	740
3 (Science)	1446 (91.9%)	128 (8.1%)	1574
Total	7234 (87.1%)	1071 (12.9%)	8304

One of the interesting point is that the proportion of girls compared to boys is small. The overall percentage of girls is about 13%. This is quite small. Much needs to be done to encourage female secondary school education.

The number of boys in science subjects is more than double that of boys in literary classes. This is an encouraging sign. However in the case of girls, the science subjects does not seem to attract many of them.

Age-Structure :

Table 6 presents the number of boys and girls by age in the various classes of the secondary school in 1969-70. The boys and girls range from age 14 to 21. The normal age for the secondary education is 16-19. About 15% of boys and 20% of girls are 16 years or less. About 34% of boys and 42% of girls are above age 19 in 1969-70. Thus we find quite a significant proportion of students are overaged in the secondary schools. This type of age structure is a result of delayed education both at primary and preparatory levels ; and also due to repetitions and failures.

Repetition and promotion :

Table 7 gives the break-up of freshers and repeaters in the secondary school in 1969-70. About 17% of boys and 8% of girls were repeaters. The proportion of repeaters varies from first year to third year. These repetition rates are lower than those in preparatory levels.

The number of students appearing and passing in 1969-70 in the secondary schools is shown in Table 8. The pass percentage in science subjects is found to be generally better than that of literary subjects both for boys and girls. Between boys and girls, girls appear to have a better pass percentage than boys. The general percentage of passes is quite low, in the neighbourhood of 50%. Enough attention should be paid to this problem so that in future percentage of passes increases.

The following table presents the number of boys and girls graduating in 1967-70 (Maya Prasad, 1971, p. 14) :

Science subject :			
Boys	601 (92%)	686 (92%)	817 (91%)
Girls	52 (8%)	61 (8%)	82 (9%)
Total	653	747	899
Literary subjects :			
Boys	279 (87%)	434 (84%)	538 (85%)
Girls	43 (13%)	84 (16%)	97 (15%)
Total	322	518	635

The increase in the number of graduates in Literary subjects has increased more rapidly than the graduates with science subject. The number of Literary graduates in 1969-70 is almost three times that of science graduates. One other point of interest is the decreasing gap

between science and Literary graduates. In 1967-68 the number of Literary graduates were nearly half of science graduates. But in 1969-70 the Literary graduates were 70% of the Science graduates.

Students per class :

In the following table the number of students per class in 1969-70 secondary schools are shown :

Secondary Class	Students	Classes	Students/Class
1	3612	111	33
2 (Literary)	701	26	27
2 (Science)	1677	62	27
3 (Literary)	740	27	27
3 (Science)	1574	55	29
Total	8303	271	30

The average number of students per class is 30. This is a satisfactory value for the density of students in secondary classes. As seen in the case of primary and preparatory sections, the density is highest in the first year, but decreases as we go down the third year.

3. Review of School Population Projections for Libya :

School population projections for Libya have been worked out by a number of authors at various times. However the present author could obtain some of them only. Projection of school population for Libya is not simple. There are two important reasons for this. One is lack of sufficiently accurate data (especially about age) over time. This of course is a common defect with most of the developing countries. The second is due to certain peculiarities of the Libyan school education with a large number of overaged children, heavy repetition and drop-out rates.

Le seelleur (1963), UNESCO expert, obtained school population projections by class in Libya for 1963-75. This is a comprehensive

attempt to project the school population and related educational inputs. Mahfud Ayad (1971) obtained future estimates of primary school teachers in Libya (1970-80) through the projected school populations. Ingvar Werdelin (1964) has worked out school enrolments for boys in Libya for the period 1963-75. Young (1969) also obtained illustrative projections of educational enrolments. Some projections are obtained by Zuied (1972) for school enrolment for Libya, making use of a computer model.

In the present section a brief review of the methodology employed in some of these works will be given. However no details will be given of the numerical results obtained.

Le seelleur first obtained the future population of Libya by sex, starting from the year 1954. Using these population figures and assumed future birth rates he obtained absolute number births by sex in each of the academic years during the period 1950-75. As he found that pupils who enter class 1 of the primary school predominantly consisted of 6, 7 and 8 years only he obtained the total number of births in the years T-6, T-7 and T-8 where T is any given year. This total is called by him as " relative births " and refer to year T. He also obtained new pupils or beginners in class 1, making use of reported enrolment and repeater rates for some years 1958-1963. He then computed the ratio between the relative births and beginners to class 1. He then assumed that development of this ratio in future will be linear. Making use of two linear trends, one for boys and one for girls, he obtained future class 1 beginners and also enrolment.

To obtain enrolment in other higher classes he obtained grade progression ratios. A grade progression ratio is the ratio of enrolment in the class in T th year to the enrolment in (i-1) th class in (T-1)th year. Making use of these ratios - assumed to remain constant in future he obtained the enrolment in class 2, 3, 4, 5 and 6 in the academic years during 1963-75.

Making use of certain student density (students/class) he worked

out projected class room requirements. Also making use of certain student / teacher ratios he obtained future teacher requirements.

The basic method used by Le seelleur is over simplified and the numerical inputs used are not sufficiently accurate. The projected enrolments obtained by Le seelleur depend predominantly on two values (i) the estimates of births and (ii) grade progression ratios.

The estimates of birth rates used by Le seelleur are almost out of range of any probable birth rate estimates for Libya. Le seelleur used a birth rate of 30 per thousand population, for Libya in 1962-63. This estimate is based on vital statistics, which are universally known to give underestimates in developing countries. The true birth rate for Libya around 1963 should be in the range of 46-49 births per thousand population. (Venkatacharya, 1972 ; Cairo Demographic center, 1970). Thus the births and relative births estimated by Le seelleur are expected to be greatly underestimated.

The second point, which is also raised by Ingar Werdelin in his paper, is the development of linear trend for the ratio of relative births and beginners to class 1. The question is not so much about the linear trend itself, but the validity of the assumptions underlying the linear trend. Two important aspects have a bearing on this point. Firstly the age distribution of class 1 beginners ranged from 5 to 17 which is quite undesirable. It is desirable and is likely that the age distribution may converge to a single year of age, say 6 years in future in a gradual manner. If such changes take place, it is not true that the linear trend can hold.

There is another important aspect in the primary school education of Libya, which has been already stressed. This is connected with the repetition and drop-out rates. Le seelleur assumed (Table 6 page 10 of his paper) all the grade progression ratios to be less than unity.

(*) Le seelleur used the word 'grade' instead of 'class,' Ingvar Werdelin also used the word 'grade' following Le seelleur. The word 'class' has been used through-out this paper.

But this need not necessarily hold in all cases. The class ratio based on published enrolment figures when happened to exceed one (Table 9), there is a tendency to conclude that reported statistics are inaccurate. However where there are high reptition and drop-out rates it is likely that the class progression ratio exceed one. This factor also tends to underestimate the predicated enrolments.

Manfud Ayad (1971) has obtained projected primary school children for the period 1970 / 71 to 1984 / 85. As class progression ratios for 1960/61 to 1969/70 based on reported enrolment statistics did not show any consistent pattern, the approach of using class progression ratios is given up. He obtained 'intake ratio' i.e. class 1 enrolment by population aged 6 to 10 years, for the period 1960/61 to 1969/70. This pattern is then projected beyond 1969/70 in a geometric progression. Later regression lines of enrolment in class 2 to 6 on class 1 enrolment are obtained for boys and girls seperately. Making use of these regression lines enrolment of boys and girls in the classes 2-6 as a whole has been obtained. To these enrolments in classes 2-6, the class 1 enrolment has been added to obtain the total enrolment in classes 1 to 6, i.e. primary school enrolment. Making use of these regression lines enrolment of boys and girls in the classes 2 to 6 as a whole has been obtained. To these enrolments in classes 2 to 6, the class 1 enrolment has been added to obtain the total enrolment in classes 1 to 6, i.e. primary school enrolment. Making use of the student / teacher ratio, the future estimates of required primary school teachers are derived. The method of using the regression lines for the ratio of enrolment of class 1 to classes 2 to 6 suffers to some extent from the criticism made earlier in connection with the linear trend for the ratio of relative births to beginners to class 1.

Ingvar Werdelin (1964) has started with a critical examination of the Le seeleur's method and illustrated an alternative method. He pointed out in his paper the limitation of using linear trend in Le seelleur's method, as discussed earlier. Werdelin has obtained projections of only boys, with a view to illustrate his method, rather than

to provide a complete set of school population projections.

Werdelin also felt that the birth rates used by Le seelieur are on the low side. He first obtained the future total population by using two equations, one a quadratic expression ($y = 1078710 + 10710x + 834x^2$) and the other a geometric progression ($y = 1088873 (1 + .03)$. The first equation provides population estimates having an annual rate of increase of 1.1% and the second one an annual rate of increase of 3.0%. After obtaining the total population, the population in the school age by assuming - under the low projections - that the population aged 6-11 is 14.6% of the total population and 17% under high projections. The populations at individual ages 5, 6, ... 15 are obtained by interpolating the population in the five year age groups. Thus the single year population under low and high projections are obtained.

From the single year population the enrolment in class 1 is obtained. For this it is assumed that after a certain year the enrolment to class 1 will consist of entirely of population aged 6 years (for low projections it happens from and after 1964 / 65 and for high projections from and after 1967/68). After obtaining class 1 enrolment the enrolment in higher classes is obtained by assuming certain class progression ratios.

4. Available Data

For the purpose of projecting the school populations. One needs two types of data. The first type is the demographic data and the second type is educational data.

The demographic data is needed to derive future populations of school ages. For this we need the initial population by age and sex and future trends of fertility and mortality rates. These can be derived from census data and some socio-economic surveys. Here no attempt is made to discuss about the demographic data. Such a discussion could be found elsewhere (Venkatacharya, 1972).

Statistics, regrading education in Libya can be found from the publications of the Ministry of Education, Government of Libya (1966). In these publications, school enrolment by age and class are provided for some years. Some data on repeaters is also available.

However there seems to be not much of utilization and evaluation of these data were made. There were some deficiencies as always to be found in the statistical system of any developing country. But a number of efforts are made to organize the statistical system and its administration. A number of U.N educational experts have cintributed towards this work. (Le seelleur, 1963 ; Young, 1969 ; Anderson, 1971). As a result of these efforts the educational statistics in recent years are believed to have improved.

Though imperfect, educational statistics are available for Libya for about ten years. However statistics for purposes of comparison are available only for the Ministry of Education day schools. As the public schools account for a majority of the total schools the problem of comparability is not great.

Distribution of primary school students by private and public schools 1963/64 - 1967/68

Year	Number of students			
	Public	Private	Total	Private Percentage
1963-64	153952	5009	158961	3.2
1964-65	170188	5403	175591	3.1
1965-66	191774	5500	197274	2.8
1966-67	215841	5442	221283	2.5
1967-68	252001	4566	256567	1.8

Source : Ministry of planning, Census and Statistics, Department Statistical Abstract, Libya 1968.

From the above table it is clear that not only the magnitude of private schools is small, but also their strength decreased between 1963-64 and 1967-68.

As it is well known, before using any data one need to evaluate it. This means identification of reporting and other errors in data. Later the data needs correction and adjustment for these errors. As the detailed (cross-classified) data of school enrolments are not available for a reasonable number of years, evaluation of data becomes difficult. In the present section only a couple of observations regarding the accuracy of the reported data will be made.

It is very well known that in devcloping countries such as Libya, age reporting errors are common. Further age plays an important role in the school population projections. In Table 10 the reported primary, preparatory and secondary school enrolment in 1969-70 is presented by age of student. In the same table the total number of students attending school by sex and population by sex in 1969-70 are also shown. As is to be expected the population attending school of a given age should be less than the total population at the specified age.

This holds true in the case of girls. This is due to the fact that the female participation rate is small. However in the case of boys this does not hold. The school enrolment for boys at age 8,9 and 10 exceed the total population reported in 1969-70. This cannot be true. There could be three possible reasons for this (i) the projected population of Libya (High level) used here could be on low side of the true population in 1969-70. (ii) There could be over statement of enrolment of boys in 1969-70 and (iii) There could be age heaping or preference for ages 8,9 and 10 in reporting the age of school children. It is also possible all three of the reasons might have operated in various degrees.

It is possible that projected population of 1969-70 to be on the low side, because the effect of migration is not considered in those projections. Still the magnitude of this is going to be small in high

projections and is not likely to affect the results to such an extent as to explain the above difference. The second reason is also not very likely. But there could be some errors at the time of compilation if at all such errors occur. The third seems to be the well known phenomenon of preference in age reporting. However the heaping in three consecutive ages of 8, 9, 10, without any significant dip in the ages 7 and 11 shows that even if age preference prevailed, it could operate at a low level. These aspects only indicate that there are some deficiencies in the reported data, though their magnitude is not known. This problem really deserves a full study.

Another point of difference is to be found in the reported enrolment of 1964-65 in the Census and reported statistics of the Ministry of Education. In 1964 Census the number attending primary school by age groups for boys and girls are given in the following table.

Age Group (1964-65)

	6-14	15-19	20-24	25-29	30-34	35-39	40-44	45+	Not Stated	Total
Boys	85297	18624	10765	8311	5151	3848	2607	3298	79	137980
Girls	34440	5458	1749	858	342	214	92	174	17	43344
Total	119737	24082	12514	9169	5493	4062	2699	3472	96	181324

Also for the period 1964-65, the Ministry of Education gives the enrolment in primary schools. From Table 1 we note that during 1964-65 the number of boys and girls enrolled in primary schools are 136,293 and 32,898 respectively. Also we know that the age distribution of boys and girls extends from age 6 to age 17+. Therefore the primary school enrolment in 1964-65 can be estimated from census data by adding the reported enrolments for age groups 6-14 and 15-19. The figures for boys and girls turn out to be 103921 (=85297+18624) and 39898 (=34440+5458). The figure for boys when compared to the figure of Ministry of Education Statistics falls on the low side. The figure for girls falls on the high side of the figure of Ministry of

Education. The discrepancy between the reported enrolment of boys is more significant.

Another point is the total primary enrolment, including adult age groups is only slightly greater than the reported figure of the Education department. The figure of the Ministry of Education is supposed to contain only children and not adults. As such there seems to be some error of reporting in one of the sources.

It is difficult to state which source is correct. The participation rate of boys and girls aged 6-14 based on citizen population, derived from 1964 census statistics yield 48% for boys and 21% for girls.

6-14	Boys in primary school	85297
	Total boys	177548
	(Citizen)	
	participation rate	48%
	Girls in primary school	34440
	Total girls	161398
	Participation rate	21%

These participation rates are low and seem to be not very much off the mark. However, if we estimate participation rates for the total population instead of citizen population the participation rates for boys and girls turn out to be 49% and 23% respectively.

If we compute using the reported figures of Ministry of Education one obtains higher participation rates. Based on total populations the participation rate of boys (aged 6-14) turns out to be 70% and the participation rate of girls (aged 6-14) turns out to be 20%. Thus while the participation rate for girls was close to that observed in census statistics, the rate for boys differs much.

The participation rate of 70% for boys, may be higher than that could be expected in a country like Libya with desert environment. However since the age distribution of the primary school children in Libya extends over many ages, the rate is expected to be higher.

5. School Age Population by Single Year Age

One of the basic data for obtaining the future school enroments is the single year population of school age children. In some of the previous models the single year population of school age children are obtained by using simple but less precise relationships. In the present paper more attention is paid to the problem of obtaining single year population figures of school age children by using population projections obtained by component method of projection

Population Projections :

Population projections for Libya for the period 1964-84 have been obtained earlier (Venkatacharya, 1972). These projections provide male and female populations by five year age groups at five year intervals.

Three sets of assumptions are made regarding future fertility and mortality patterns for Libya corresponding to low, medium and high projections. In these projections the in-migration to Libya in future has been exculded. As it is known that Libya is attracting a large amount of labour force at various levels, it is likely that the above mentioned population be on the low side. For this reason in the present work only high level of projections are used.

It is assumed-under high level projections-that the female expectation of life at birth ($^{0}e_{0}$) will increase at the rate of 2.5 years for every five years during 1964-74. From and after 1975 the female $_{0}e^{0}$ is expected to increase at the rate of 3.75 years at the end of every five years. The corresponding rise in male $_{0}e^{0}$ will be 2.26 years and 3.39 years respectively.

Regarding fertility it is assumed that the level of fertility remained

constant during the whole period. For details the reader should refer to the paper mentioned earlier.

In the following the male and female population in Libya for the school ages, under high projections are shown.

(Figures in hundreds)

Age group	SEX	1964	1969	1974	1979	1984
0- 4	M	1473	1616	1891	2268	2719
	F	1377	1580	1847	2213	2651
5- 9	M	1139	1371	1519	1792	2167
	F	1074	1283	1487	1754	2119
10-14	M	938	1119	1350	1499	1772
	F	885	1055	1264	1468	1736
15-19	M	802	924	1104	1336	1483
	F	722	871	1041	1252	1454
20-24	M	688	783	905	1087	1318
	F	632	707	855	1027	1238

Source : Venkatacharya, 1972. Table 12.

Making use of the above Table it is necessary to obtain the single year population figures corresponding to each year. The 1964 census was taken in the month of July and *hence the years we refer thoughout the paper are nearly academic years.* The academic year in Libya starts in September of each year. No correction is applied for the two month-difference.

The derivation of single year populations is done in two stages. First, the single year of age population for ages 6 to 17 are obtained for males and females by interpolating between the above mentioned five year age groups. Thus we obtain the single year population corresponding to each of the years 1964, 1969, 1974, 1979, and 1984. Later the single year school population for years between 1964 to 1969

etc. are obtained by linear interpolation of the values at five year intervals.

To obtain single year population from five year figures the Karup-king interpolation formula is used. In the following Karup-King multipliers are given.

Karup-King formula for obtaining single year values for the first group for data given in 5- year groups (Newtons formula)

	W_{5X}	W_{5X+5}	W_{5X+10}
P_{5x}	.328	—.176	.048
P_{5x+1}	.256	—.072	.016
P_{5x+2}	.192	.016	—.008
P_{5x+3}	.136	.088	—.024
P_{5x+4}	.088	.144	—.032

Karup-King formula for obtaining single year values for the second to the last but one group for data given in five year age groups.

	$W_{5X—5}$	W_{5X}	W_{5X+5}
P_{5x}	.064	.152	—.016
P_{5x+1}	.008	.224	—.032
P_{5x+2}	—.024	.248	—.024
P_{5x+3}	—.032	.224	.008
P_{5x+4}	—.016	.152	.064

Karup-King formula for obtaining single year values for the last group, for data given in five year age groups.

	W_{5X-10}	W_{5X-5}	W_{5X}
P_{5x}	—.032	.144	.088
P_{5x+1}	—.024	.088	.136
P_{5x+2}	—.008	015	.192
P_{5x+3}	.016	—.072	.256
P_{5x+4}	.048	—.176	.328

W_{5x} = Population aged 5x to 5x+4 and

P_x = Population aged x.

The above multipliers should be applied to the Population in five year age-groups given earlier. We shall obtain the single year populations in the age range 6-17. For this we need age groups 5-9 to 15-19. The age group 5-9 is called 'first group' and the age group 15-19 is called 'last group'. The rest of the age groups are called 'middle groups' To obtain single year populations we use the corresponding panel of multipliers.

For the purpose of illustration, say, we need male population in 1964 corresponding to age 6. This age falls in 5-9 age group and hence we choose to apply first panel of Karup-King multipliers. Here

W_{5x} = male population in 1964 aged 5- 9 = 1139

W_{5x+5} = » » 10-14 = 938

W_{5x+10} = » » 15-19 = 802

P_{5x+1} = male population at age 6

$= .256(W_{5x}) - .072\,(W5x+5) + .016\,(W5x+10)$

$= .256x1139 - .072x938 + .016x802$

$= 237.$

The same procedure is applied to derive the single year school populations for males and females. The results are shown in Table 11.

The values corresponding to each single year age for every academic year between 1964-84 are obtained by linear interpolation. Actually linear interpolation is not very accurate and the results themselves indicate this. However, to save heavy computation and time, the linear interpolation is used.

There is an alternative and more accurate method of interpolation available. The population aged 0 at time t will become aged 5 at time t+5 and 10 at time t+10. Thus we have three values of a function at three equal intervals of time. By making use of three point interpolation formula the population in individual age groups can be obtained. However for the present method this approach is not used.

The results of the linear interpolation are shown in Tables 12 and 13. A look at these tables indicate that linear interpolation is not satisfactory. In some cases the population aged X at time T is equal or greater than population aged X+1 at T+1. This is not correct. However, the magnitude of the error is small. No effort is made to apply any corrections because their impact on the final results are expected to be negligible.

6. Method of Projection of School Children

The projection of school enrolment is done in two stages. In the first stage we derive the enrolment to class 1 in each of the years 1969-1983 the period in which we are interested. After obtaining class 1 enrolment, making use of repetition and promotion rates, the enrolment in higher classes are obtained. Before we proceed into the details of these steps, some assumptions on which the projections are based are to be mentioned.

In the present paper only enrolment by class are obtained. These enrolments are not subdivided into ages. (The projected enrolments

both by age and class are deferred to another paper as mentioned earlier). In preparatory and secondary school education there are a number of technical and vocational courses along with the academic courses. No attempt is made to split the enrolment in preparatory and secondary education into these various branches. Such an analysis is postponed for future work as a number of relevant data are lacking.

For the purpose of projection only the government day school enrolments are used. As stated earlier the enrolment under private school is negligible.

Model :

Define (the following symbols apply both for boys and girls).

P_x^T : Population at age x in year T.

$S_{x,j}^T$: Participation rate at age x in class j of the primary section in year T. This is equal to (enrolment in j th class with age x) / (Population aged x).

S_x^T : Participation rate at age x in all classes of the primary section in year T.

Q_j^T : Enrolment in jth class in the year T.

a_x^T : Proportion of class 1 school boys or girls out of all primary school children of age x.

E_j^T : New enrolments or beginners in class j in year T.

G_P^T, G_R^T, G_S^T : Graduates of primary, preparatory and secondary sections in year T.

g_P^T, g_R^T and g_S^T are graduation rates in primary, preparatory and secondary sections. r^T d^T and p^T are repeaters dropout and promo-

tion rates in primary, preparatory and secondary sections in class j and year T.

We have

$$Q_1^{T+1} = \sum_{x=6}^{14} S_{x,1}^{T} \cdot P_x^{T} \quad \ldots\ldots (1)$$

$$= \sum_{x=6}^{14} S_x^{T} \cdot a_x^{T} \cdot P_x^{T} \quad \ldots\ldots (2)$$

also $p_j^{T} = 1 - r_j^{T} - d_j^{T}$

$$Q_j^{T+1} = Q_j^{T} \cdot r_j^{T} + Q_{j-1}^{T} \cdot p_j^{T} \quad \ldots\ldots (3)$$

$$j = 2, 4, 5, 6,$$
$$= 8, 9,$$
$$= 11, 12$$

The enrolment for classes 7 and 10 which are the first year classes of preparatory and secondary schools are obtained seperately.

$$G_p^{T+1} = Q_6^{T} \times g_p^{T}$$

$$G_r^{T+1} = Q_9^{T} \times g_r^{T} \quad \ldots\ldots (4)$$

$$G_s^{T+1} = Q_{12}^{T} \times g_s^{T}$$

$$E_7^{T+1} = G_p^{T+1} \times e_p^{T+1} \quad \ldots\ldots (5)$$

$$E_{10}^{T+1} = G_r^{T+1} \times e_r^{T+1} \quad \ldots\ldots (6)$$

Where e_p and e_r are proportion of graduates entering into preparatory and secondary schools respectively.

First the enrolments in each class of the primary, preparatory and secondary sections in Libya for the academic year 1969-70 are obtained. Thus T starts from 1969.

Using equations (1) and (2) we first obtain the enrolment in class 1 for each of the years 1969 to 1983. Then using equations (3) to (6) we can obtain the enrolment in all classes 2 and above for the year T+1=1970. By repeating the same process we can obtain the enrolment in all future years.

Now it is necessary to obtain the values of various inputs used in equations (1) to (6).

Input values :

Estimates for 1969-70 :

For the estimation of class 1 enrolment we first need the participation in primary schools by age. In Table 14 the estimated male and female population in 1969 by single year of age is shown. These are obtained from the high level population projections mentioned earlier. In the same table the reported primary enrolment in 1969 for males and females is presented. From these figures the age specific primary participation rates are obtained for males. A look at the figures show that the participation rates for ages 9 and 10 are more than 1. This could happen either due to understimation of the population or age reporting errors in school enrolments. Even if age reporting errors are there, these have to be minor because the participaation rates even for the neighbouring ages are high. It is possible both errors could have taken place. For this reason, the reported primary school enrolment for boys has been adjusted for age reporting errors in the middle ages 8 to 12. Making use of these adjusted figures ' adjusted ' age specific participation rates are obtained. These are shown in the last column.

In the case of females, the participation rates appear smooth even with reported enrolments. And hence there was no need to use

any smoothing. But this does not mean that the reporting of females is better than males. As the over all participation of girls is small the errors even if present will not show up easily.

These participation rates ($s_{x,\ j}$) shown in Table 14 for boys and girls are taken as the estimates for the year 1969-70.

The next thing needed is the estimate of the proportion of boys and girls in class 1 (a^{T}_{x}). In Table 15 the enrolment of boys and girls in class 1 and primary sections are shown by age based on the reported statistics for the year 1969. From these figures the proportion of class 1 enrolment for boys and girls can be obtained. The proportion of girls in class 1 is greater than the proportion of boys in class 1 for most of the ages. This can be due to increased enrolment of girls than boys in 1969 as compared to the past, These are taken as the estimates for the year 1969.

Future trend :

Having obtained the estimates for the year 1969-70 we now proceed to obtain such estimates of ($P^{T}_{x,\ j}$) anr (a^{T}_{x}) for all future years.

From Table 14 we notice that a large number of overaged children, especially boys attend primary school. In Table 15 we note that there are 2.3% of boys aged 14 among primary school children in class 1. The corresponding figure for girls is 1.6%. Now we have to see whether such a pattern could continue in future. It is not necessary to emphisize the disadvantages of late entry into class 1. It is also believed that Government of Libya wants that all children should enter class 1 who are aged 6 years. This can be achieved by creating a consciousness among the masses about the importance of education in general and the entry to school at the right age in particular. It is believed that the Government of Libya is already taking such steps.

It is therefore reasonable to expect that a gradual convergence of

the age pyramid in future years to the single age 6 (or to a small number of central ages such as 6 and 7) will take place. However there is no data on which we can base the rate at which such a convergence can take place. In other words we do not have a basis through which we can project the participation rates objectively.

Under these circumstances some assumptions have to be made. It is important to stress here, that these assumptions while true in their qualitative character need not be true or are unique in their value. We note first that this process of convergence of age pyramid will be more in the case of boys than in the case of girls.

Accordingly, among boys it is assumed that by 1983 there would be none in primary schools aged 13 or above. That is the primary school boys in 1983 are expected to belong to the age group 6-12. (In reality this could be achieved sooner or later or not at all). The second assumption is that the participation rates in 1983 for ages 6 to 12, will be those shown in the last column of Table 16. Thus we have two sets of rates for boys one for 1969 and another for 1983. We can interpolate these two columns to obtain the primary participation rates for intervening years. These are shown in Table 16 under boys.

In the case of girls (Table 16) it is assumed that in 1983 there will be none in the primary schools aged 15 years or more. This is done because, it is believed that among girls it may not be possible to converge to the age distribution 6-12 by 1983. This assumption is purely arbitrary. It is only made to reflect the expected difference in the speeds of convergence to the primary age group 6-12 between boys and girls. Also the number girls entering primary school in 1983 of ages 13 and 14 are assumed to be much smaller than those of 1969, though they are not zero as in the case of boys. The participation rates of girls in 1983 for ages 6-12 are those shown in Table 16 in the last column under girls. The rates are higher than those of 1969 girls but lesser than those of boys for 1983. As in the case of boys the participation rates for the intervening years are obtained by linear

interpolation of the values for 1969 and 1983 (Table 16). However a more appropriate method would be to use a geometric or logistic pattern of development of participation rates. For expediency this is not done. However the difference is not expected to be significant in the case of boys as the participation rates are quite high at crucial ages.

We now need the proportion of boys and girls in class 1 (out of all primary enrolment) in the future years. In Table 15 we have obtained one set of such estimates for 1969. We have assumed in the earlier paras that in 1983 the primary school children (especially boys) converge to the age group 6-12. When such a change takes place, it begins with class 1 enrolments first converging to the age, say 6 years. This is the goal towards which the efforts are to be directed in the future. Thus for boys in 1983, it is assumed none will be found in the ages 8 or above in class 1. It is also assumed that all primary school children aged 6 years will belong to class 1 plus 20% of those primary school boys aged 7 years. The latter figure is chosen arbitrarily. Having obtained the values of a_x^T for two years 1969, 1983 the intermediate values can be obtained by linear interpolation. These are shown in Table 17 under boys.

In the case of girls, in 1983 all the primary girls aged 6 years, 40% of those aged 7 years and 5% of those aged 8 years are assumed to belong to class 1. Thus we obtain the proportion of class 1 values for the intervening years. These are also shown in Table 17 under girls.

Class 1 enrolment :

Having obtained estimates of s_x^T and a_x^T, the next step is to apply thse rates to the corresponding population of males and females. This is done by applying the rates of Table 16 to the corresponding values of Tables 12 and 13 seperately for boys and girls. Then the rates of Table 17 are applied to the corresponding figures of boys and

girls derived above and the values are summed over all ages for each year for boys and girls seperately. The values of class 1 enrolments for boys and girls thus obtained are shown in Table 17. The estimates of future class 1 enrolments for boys and girls is termed as those derived under changing age patterns of primary enrolment.

One interesting point emerges from the projected class 1 enrolments for boys and girls. The future class 1 enrolments of boys tend to decrease continuously where as for girls it is found to continuously increase. The reason could be easily understood. In the case of boys the age specific primary participation rates for ages- 6-12 are already high in 1969 and the values increase very slowly till 1983. This tends to increase primary enrolment. However the participation rates for ages 13-17 are decreasing and this tends to lower the primary enrolment. The net result of these two is found to yield an increasing primary enrolment for boys. The application of the rates of Table(17) to the primary enrolments gave a decreasing trend to class 1 enrolments. This is because of the decreasing trend in the values of Table (17).

In the case of girls the primary participation rates are low in 1969 and they increase significantly to 1983. Thus even though the proportion of class 1 enrolments (out of all primary enrolment) a_x^T decreased as we proceed to 1983 (Table 17), this effect is more than the effect by the increasing participation rates s_x^T. Thus the net effect is an increasing class 1 enrolment for girls.

In the above derivation of class 1 enrolment, the basic assumption is that of converging age distribution for primary school children. However, we would like to know, the class 1 enrolment on the assumption that the age patterns remained constant over time, 1969 to 1983 (both for boys and girls). This is not likely to be true. But these estimates provide an alternative set of class 1 enrolment.

To obtain class 1 enrolment under constant age patterns the procedure described earlier holds good, with the only change that rates

obtained for 1969 for s_x^T and a_x^T are used through out for all years. The resulting class 1 enrolments for boys and girls under 'constant age patterns' of primary school children are shown below. One of the striking result is that the class 1 enrolments obtained under 'constant age patterns' are much higher than those obtained under ' changing age patterns '.

Class 1 enrolment under 'constant age patterns' in primary
(in hundreds)

	Boys	Girls	Years	Boys	Girls
1969	566	399			
1970	579	412	1977	697	513
1971	591	425	1978	718	529
1972	604	438	1979	741	546
1973	615	450	1980	772	569
1974	630	463	1981	803	591
1975	652	479	1982	833	613
1976	674	497	1983	864	637

The total class 1 enrolment in 1969 was nearly 96,500 and this increases to 150,100 in 1983. This is obviously an enormous growth and the strain on primary educational facilities will be great. Under the ' changing age pattern ' the class 1 enrolment is found to increase only to 99,555 in 1983. Thus the strain on primary educational facilities under this assumption are moderate.

It is necessary to emphasize here, that the constant or changing age patterns are assumed *only to derive class 1 enrolments in future.* The subsequent method of obtaining enrolment at higher classes (2 and above) does not make any such assumption and in fact the method abstracts age altogether.

Repeater and promotion rates :

After obtaining the class 1 enrolments the next step is to project the enrolment of boys and girls in higher classes of primary, preparatory and secondary schools. For this we need the repeater and promotion rates.

To obtain the proportion of repeaters and promoters in 1969-70, we need enrolment in 1968-69 and the number of repeaters and promoted pupils in 1969-70. The enrolment figures for boys and girls in 1968-69 are readily available for the primary section, but not for preparatory and secondary schools. Therefore an approximate method of constructing enrolment in 1968-69 from 1969-70 repeater and fresher pupil figures are adopted for preparatory and secondary section. But before we apply the method to these sections, we first test it for primary section to examine the amount of error that can occur beween estimated enrolment and true enrolment.

Repeater and fresher boys in primary classes (1969)

Class	Repeaters	Freshers	Estimated Enrolment 1968-69	Observed Enrolment 1968-69	Repeater Rates Estimated	Observed
			$F_i + R_{i-1}$		(2)/(4)	(2)/(5)
(1)	(2)	(3)	(4)	(5)		
1	17436	39185	46161	49280	.377	.353
2	8356	28725	34842	34359	.240	.243
3	8361	26486	31579	32201	.264	.260
4	6539	23218	25969	26119	.252	.250
5	7461	19430	21311	22933	.350	.325
			$G^{1969} + R_{i-1}$			
6	4752	13850	16099	18188	.295	.262

Enrolment in a given year consists of those that repeat the same class *next* year, those that get promoted to the *next* higher class *next* year and those that dropout during the current year. Thus assuming that the freshers in 1969-70 are nearly equal to promoters and dropouts of 1968-69 we have enrolment in the class in 1968-69 as the sum of $R_{i-1}^{1969} + F_i^{1969}$.

Some dropouts of ith class in all the years including 1968-69 and those preceding 1968-69 enter the ith class in 1969-70 as freshers. However, the magnitude of these dropouts as compared to the dropouts in 1968-69 is not possible to specify. But the two are expected to be nearly equal.

The results of repeater rates shown in the last two colums agree very well thereby showing that the approximate method is quite satisfactory. The same degree of success is obtained in the case of girls of primary section.

The above mentioned approximate method is applied to the preparatory and secondary sections. The results are shown in Table 7. The repeater rates of preparatory boys in the first three years are .274, .205 and .267 respectively. The repeater rates of boys in the secondary schools for the first three years are .213, .150 and .281 respectively. The repeater rates in the first two years of secondary are smaller than the corresponding rates for preparatory school.

For girls of the preparatory class in the first three years, the repeater rates were found to be .226, .147 and .258 respectively. These rates are lower than the corresponding rates for boys. The repeater rates for girls in the first three years of the secondary school are .111, .063 and .176 respectively. The rates are lower than the rates for girls in preparatory and also those of boys in the secondary school. However, the rate .063 for the second year secondary is lower than the rates for the first and third years. This pattern of a lower dropout in the second year for boys and girls in both preparatory and secondary sections is an interesting observation.

One of the draw-backs of the present analysis is that no time-series data could be obtained to derive a series of repeater rates over years to deduce a trend (except for primary section, Table 5).

These repeater rates of 1969-70 are likely to decrease in future years. Both economic and social factors are expected to influence this change. Though we know that the repeater rates are likely to decrease in future years, it is very difficult to predict the way the repetition rates are expected to decrease by 1983. Under one set of projections we assume that these repetition rates remain constant till 1983. Again, it is unrealistic to assume that the repetition rates remain constant over fifteen years. But this provides as a means to compare the results that are obtainable under alternative assumptions of decreasing repetition rates.

In the second set of projections we assume the repetition rates by 1983 for primary section decrease to certain arbitrarily chosen value which is much lower than the 1969 value. Having obtained the repetition rates for 1969 and 1983, the intermediate values are obtained by linear interpolation.

For primary education, the repetition rates of boys in all classes is assumed to decrease to .03. The corresponding figure for girls is chosen to be equal to .04. The interpolated repeater rates are shown in Tables 18 and 19 for boys and girls respectively. In preparatory level, the repetition rates for boys and girls are assumed to be .10 and .07 in all three years by 1983. The intermediate values are obtained by linear interpolation and are shown in Table 20 and 21. In the secondary level, the repetition rates are assumed to decrease to .07 and .05 for boys and girls by 1983. The interpolated values are shown in Tables 20 and 21. The values of repetition rates for boys or girls in preparatory or secondary are assumed to be the same in all three years in 1983. In fact this is an arbitrary assumption. Even if there are some small differences they are not worth the trouble of taking care of because the assumed values of repetition rates are them-

selves small. The values assumed for the various repetition rates are also arbitrary.

The complement of repetition rates will consist of promotion rates and dropout rates. The dropout rates of primary section are shown in Table 5, There are a number of gaps in the Table and we can only say that the rates of dropouts are likely to be smaller than .01 or about this value. Actually dropouts are expected to be mostly occuring due to deaths or due to migration. One can obtain the incidence of dropout due to death by looking at the Life Table death rates (q_x) in the school ages. Some of these rates are shown below for some expectations of life at birth :

Values of q_x from South Model life tables (United Nations, 1967)

Exact age (years)	MALES e_o^o (years)			FEMALES e_o^o (years)		
	47.4	51.9	56.3	50.0	55.0	60.0
5	.022	.016	.011	.022	.016	.010
10	.012	.010	.007	.013	.010	.007
15	.019	.014	.011	.019	.014	.010

From the above Table it is clear that a 1% dropout rate due to deaths for boys and girls at all ages is a sufficiently good approximation. We use this dropout rate for all classes and future years.

Now that we know the repeater rate (r) and dropout rate (d) for each class and for each year we can obtain promotion rate (p) as :

$$p_j = 1 - d_j - r_j.$$

The values of promoter rates are shown in Tables 18 to 21.

Graduation rates : We now proceed to the estimates of graduation rates for primary, preparatory and secondary levels. In Table 8 the rate of passes of boys and girls are shown for some years. The gra-

duation rates for boys and girls in 1969-70 in primary section are found to be nearly equal to 61%. This appeared to be on the low side. In 1970-71 the graduation rates of boys and girls of primary section are observed to be around 70%. For our purpose we choose a rate of 70% for the year 1970-71 for boys in primary section. For girls also the same rate is used.

As to the future trend in these graduation rates two assumptions are made. In one set the rates are assumed to remain constant at the level of 70%. In the second set of assumptions, the graduation rates are assumed to gradually increase to 84% in a linear fashion. These assumptions are the same for boys and girls of the primary section. The rates are summarized in Table 22.

In the preparatory level, the pass rate for boys and girls in 1969-70 turn out to be 40% and 46% respectively (Table 8). The passes for years 1967-68 and 1968-69 are higher than these values. The dip in the pass rates of 1969-70 is taken as an exception and not to indicate a decreasing trend. For this reason the graduation rate in 1969-70 is taken as 48% for boys and for girls 53% for the year 1969-70.

As to future trend again two alternative sets of assumptions are made. In the first set the graduation rates of 1969-70 are assumed to remain constant for the future years. In the second set of assumptions the rates are assumed to increase to 62% for boys and to 67% for girls by 1983. It is not clear whether the better graduation rates observed for girls in the three academic years (Table 8) between 1967-70 than for boys is likely to continue into future. In the present study we retain the same trend in future years. These trends are also shown in Table 22.

Rate of Entrants or beginners :

A certain proportion of graduates of every year from the primary section enter preparatory section. Similarly a certain number of

graduates from preparatory section enter secondary. In the following table the graduates in 1968-69 and the beginners or entrants in preparatory and secondary in 1969-70 are shown :

Section	Graduates		Boys		Girls		Rate of	
	Boys	Girls	Freshers	Repeaters	Fresh-ers.	Repeat-ers.	Boys	Girls
Primary	12028	3007*	—	—	—	—	—	—
Preparatory	4617	467	11953	2675	2768	422	99.4%	92.7%
Secondary	1120	145	2633	487	457	35	57.0%	97.8%

Source : Maya Prasad (1971).

(*) The figures for boys and girls are estimated from a total of 15035.

The rates of entrants of the primary graduates into preparatory school are almost 100% both for boys and girls. This does not mean that nearly all those who graduated from primary in 1968-69 entered preparatory schools in 1969-70. In the past (before 1968-69) many primary graduates who have not entered preparatory school have started joining the preparatory school by about 1969-70. In fact this trend might not continue after certain time.

The sudden increase in the entrants to the preparatory school is more an occasional phenomenon than a trend. For this reason the observation in 1969-70 is only taken to indicate the level and not the exact estimate of the percentage of primary graduates into preparatory schools. For the present calculations, in 1969-70, 85% of boys and 82% of girls graduating from primary schools are assumed to enter the preparatory schools.

As to the future trend, again two sets of assumptions are made. In one we assume that the rate of entrants in future years will remain constant at the level of 1969-70 both for boys and girls. In the second set of assumptions the percentage of entrants into preparatory

assumptions (Tables 26, 27 and 28) and low assumptions (Tables 29, 30 and 31). First overall school enrolment is studied and later the enrolment in primary, preparatory and secondary schools is examined.

The total enrolment in primary, preparatory and secondary together are shown below :

	1969	1983		
		HIGH	MEDIUM	LOW
	(figures in hundreds)			
BOYS :				
Primary	2048	4500	2939	2702
Preparatory	306	1461	1185	1032
Secondary	72	649	599	424
Total	2426	6660	4723	4158
GIRLS :				
Primary	1070	3317	2753	2505
Preparatory	57	994	920	722
Secondary	11	537	523	380
Total	1138	4848	4196	3607
School age (5-19) Population in 1983		Boys : 5164		Girls : 5142

In the above table the enrolments for boys and girls are taken from tables 23 to 31. The school age population is estimated from the projected figures given by five year age groups (Section 5 first table).

From the above table we notice that the projected over all school enrolment of boys under high assumptions exceeds the population of boys in 1983. The other two levels have the enrolment of boys less than the population aged 5-19. Here it is necessary to stress the point that in the methodology adopted here, there was no constraint on the projected enrolments above class 2, such as the total

enrolment is less than or equal to total school age population. Except in the derivation of future class 1 enrolments, no use of projected male and female populations have been used. Thus it is not possible with the present method of projection to identify the exact age group to which school children are supposed to belong. In fact for such a projection, a different method using age-class specific enrolments and rates should be used.

In 1969 academic year for instance it is reported that there are 204 boys in class 1 aged 14 years (Table 2). Assuming that these boys do not dropout or repeat, they will reach 6th class in 1974 at the age of 19. Similarly the 75 boys who are in class 2 in 1969 (Table 2) will reach class 6 in 1973 at the age of 20 assuming that they do not fail or repeat. Thus whatever be the subsequent age patterns after 1969 there is every chance that the well spread primary age distribution to continue in future for some years. This is mentioned here to point out the fact that the present paper does not take care of the process of aging from class to class projection.

From the above table it appears that the projected enrolments under high assumptions seem to be too much on the high side. For this reason the following discussion is based only on the medium and low assumptions.

Primary enrolments :

Under the medium and low assumptions it is assumed that the age patterns of class 1 primary students converges slowly to a narrow range by 1983. The only difference in the medium and low projections is that in the medium projections the various promotion, repeater, graduation and entrant rates are assumed to change over time whereas in low assumptions these rates are assumed to remain constant over time.

From the above mentioned table we note that the enrolment of boys has increased from 204800 to 293900 between 1969 and 1983, under medium assumptions. For low assumption the enrolment in

1983 turns out to be 270200. This amounts to 44% and 32% increase over 1969 enrolment under medium and low projections. However, in the case of girls the improvement in the enrolment by 1983 is more significant. Under the medium projections, the enrolment of girls by 1983 is assumed to increase to 275300 from 107000 in 1969, a 157% increase. Under low projections the primary girls-enrolment is expected to increase to 250500 in 1983 which amounts to 134% increase. The total primary enrolment is expected to increase by 95% and 71% under medium and low assumptions respectively. The reason for smaller enrolment for boys as compared to girls is due to the fact that for boys in 1969 itself the overall participation rate was high. The more probable figures are expected to be those of medium projections.

The output of primary schools is also expected to increase by 1983. The increase in the number of graduates during 1969 and 1983 is shown below :

	Primary School Graduates 1983 (in hundreds)		
	1969	MEDIUM	LOW
Boys	113	406	302
Girls	29	359	245
Total	141	765	547

The most significant observation in the above table is the enormous increase in the number of girl graduates. This increase is brought about by large scale increases in the 6th class enrolment (Tables 27 and 30). For instance under medium assumptions the enrolment of girls in the 6th class in 1983 has increased to more than 9 times the value in 1969. Even under the low assumptions the 6th class enrolment in 1983 increased to more than 8 times the value of 1969.

Preparatory enrolment :

The increase in the enrolment of boys, girls and total in the preparatory section is illustrated in the following table.

Preparatory enrolment in 1983 (in hundreds)

	1969	MEDIUM	LOW
Boys	306	1185	1031
Girls	57	920	722
Total	363	2105	1754

From the above table it is clear that the enrolment of boys in 1983 increases by 286% and 237% under medium and low assumptions respectively. This is certainly a great improvement. For girls the increases under medium and low assumptions are very great. Under medium and low assumptions the enrolment in 1983 becomes 16 and 13 times the 1969 value. This enormous increase in the girls enrolment is due to increasing participation rates. The total enrolment in preparatory schools is expected to increase seven times and six times between 1969 and 1983 under medium and low assumptions respectively.

In the following table the preparatory graduates that are expected to turn out by 1983 are shown below.

Preparatory graduates in 1983 (in hundreds)

	1969	MEDIUM	LOW
Boys	40	239	168
Girls	5	195	130
Total	45	433	297

Just as the preparatory enrolment has been enormous, the increase in the preparatory graduates by 1983 is also considerable. Among boys the preparatory graduates by 1983 are expected to increase by more than 5 times the 1969 value for medium assumptions and more than 4 times under low assumptions. The increase in the preparatory graduates among girls has been phenomenal. The total preparatory graduates by 1983 are expected to be about 10 times the figure of 1969 under medium assumptions.

Secondary enrolment :

The enrolment of boys and girls in secondary education in 1983 is summarized below.

Secondary school enrolment in 1983 (in hundreds)

	1969	MEDIUM	LOW
Boys	72	599	424
Girls	11	523	380
Total	83	1122	804

From the table it is evident that the enrolment of boys in the secondary section has increased more than 8 times under medium assumptions. The increase for girls has been great as in the earlier cases. The enrolment of the secondary section is assumed to increase 13 times under medium assumptions and by 9 times under low assumptions.

In 1969 the number of boys and girls graduating from secondary schools were 1355 and 179 but by 1983 this number has grown very much.

Secondary school graduates in 1983 (in hundreds)

	1969	MEDIUM	LOW
Boys	14	141	97
Girls	2	122	78
Total	15	263	175

The graduates among boys have increased 10 times by 1983 under medium assumptions and 7 times under low assumptions. Again the increase among girl graduates is very great.

Teacher and class room requirements :

It has been mentioned earlier that in the primary schools on the average there are about 32 students per class and about 28 students per teacher. In the preparatory schools there are about 33 students

per class on the average and about 15 students per teacher. In the secondary schools there are about 30 students per class and 10 students per teacher. The student teacher ratio is quite low in the preparatory and secondary schools. It is possible to estimate from projected enrolment of school children, the required class rooms and teachers in future. For this we need to assume certain students per class and students per teacher, in future years. For primary section we assume student/class and student/teacher ratios as 32 and 30. In the preparatory section we use 32 and 25 as the student/class and student/teacher ratios respectively. In the secondary the ratios assumed are 30 and 20. Using these ratios, which are assumed to remain constant over time, future class room and teacher requirements are worked out. These are shown in Tables 32 and 33. The findings in this regard are in line with those made with regard to enrolments etc. The following table illustrates the growth of class room requirements.

	1969		MEDIUM 1983		LOW	
	Class rooms	Teachers	Class rooms	Teachers	Class rooms	Teachers
	(in hundreds)					
Primary	100	111	178	190	163	173
Preparatory	11	24	66	76	55	70
Secondary	3	8	37	56	27	40

In the primary section the number of class rooms in 1983 are nearly 1.8 times the 1969 level under medium assumptions and 1.6 times the 1969 level under low assumptions. The increase in the number of teachers by 1983 under medium and low assumptions are 1.7 and 1.6 times the 1969 level. This increase is moderate. The reason for this is the assumption of converging age patterns for class 1 pupils.

In the preparatory section the number of class rooms by 1983 are found to be 6 times and 5 times the 1969 value under the medium

and low assumptions. The number of teachers in 1983 are found to be 7 times the 1969 value both under medium and low assumptions. It is clear from this that the expansion of preparatory classrooms and teachers will have to be great by 1983.

In the secondary section the increase is even greater. In the 1983 the number of classrooms are likely to be 12 and 9 times the 1969 level under the medium and low assumptions.

Thus we notice the future requirements of preparatory and secondary school facilities in future will increase greatly.

As mentioned earlier the model has its own limitations, especially those connected with inputs. The inputs are more or less based on the data available by 1969-70. As such, assumptions regarding future repeater, promotion, entrant and graduation rates may not represent the true rates.

The other limitation and probably a more serious one is the assumption that the academic courses and various technical courses are alike. Most technical courses at preparatory and secondary levels are expected to take 4 years each (due to shortage of personnel sometimes vocational graduates are turned out after 3 years). The educational system in Libya is undergoing changes and is likely to undergo further changes (teacher training is changed from 4 years to two types of 5 years and 2 years etc.). The present set of projections are based on the assumption that all courses including vocational and teacher training require 3 years of schooling each at preparatory and secondary levels. Hence the results are expected to be rough estimates and may deviate from true future enrolments. The preparatory enrolment is lilely to be understated and graduates overstated. The projected enrolment figures for secondary section are likely to be affected more than the preparatory level. The secondary graduates are also expected to be overstated. A more detailed model is underway which takes care of most of these limitations.

However, the present model did succeed in showing the importance of taking steps to see that children go to school at reasonable ages. Even if age distribution of entrants to class 1 gradually converges to age 6, for some years in the future the problem of overaged students persists. Based on the reported statistics of 1969 it is likely that the age distribution of primary school children which ranged from 5 to 17 may further diverge initially. Thus overage school children is number one problem in Libyan education.

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REFERENCES

Anderson, K. (1971) : Libyan Arab Republic - Education Statistics, UNESCO Expert's report.

Cairo Demographic Centre (1970) : The demographic measures and population growth in Arab Countries, Cairo.

Ingvar Werdelin (1964) : On forecast of school enrolment, Studies and Lectures No. 1, Regional Center for advanced training of educational personnel in Arab countries, Beirut.

International Bank for reconstruction development,. The economic development of Libya, Chapter 13, education, p. 252.

Le Seelleur, T. N. (1963) : Libya - Educational Statistics, UNESCO expert's report (mimeographed).

Mahfud Ayad (1971) : Future estimates of primary school teachers in Libya, 1970/71 - 1979/80. Student Dissertation, Cairo Demographic Centre, Cairo (Mimeographed).

Maya Prasad (1971) : The primary, preparatory and secondary school graduates in Libya, I.L.O. expert's report (Mimeographed).

Ministry of Education, Kingdom of Libya, (1966) : Development of education in Libya, Document 1, Tripoli, Libya.

Ministry of Education, Kingdom of Libya (1966) : Development of educational planning and its machinery in Libya, Document 2, Tripoli, Libya.

Ministry of Education, Kingdom of Libya (1966) : Education and the first economic and social development plan, Document 3, Tripoli, Libya.

Ministry of Economy and Trade, Census and Statistical Department, General Population Census, 1964, Tripoli, Libya.

United Nations (1967) : Manual IV. Methods of estimating basic demographic measures from incomplete data. Population Studies No. 42.

Venkatacharya, K. (1972) : Population Projections of Libya, 1964-84. DIRASSAT, vol. 8 No. 2, pp. 1-42.

Zaied, Khalied, A., (1972) : Simulation models for population projection and educational planning in Libyan Arab Republic, (Unpublished M.S. dissertation, School of Public and International Affairs, University of Pittsburg).

TABLE 1

Primary School enrolment of males and females by year and class

Year	CLASS I	II	III	IV	V	VI	Total
				MALES			
1960-	30510	18641	15355	12671	11701	8703	97561
1961-	33717	20130	17057	13649	12099	9819	105771
1962-	38235	20988	19355	14981	12818	9739	116116
1963-	40833	23715	20289	16661	13949	10407	125854
1964-	40641	26885	22979	18835	15558	11395	136293
1965-	41933	27513	22250	18789	16653	11966	139104
1966-	47508	28783	24621	20799	18608	13181	153500
1967-	50268	34020	28413	23621	21102	16226	173650
1968-	49280	34359	32201	26119	22933	18188	183080
1969-	56621	37081	34847	29757	26891	18603	203799
				FEMALES			
1960-	9830	8136	3373	2207	1471	855	25872
1961-	10598	5446	3891	2529	1889	974	25327
1962-	12604	5925	4293	2986	2084	1187	29079
1963-	12199	6214	4221	2744	2096	1344	28818
1964-	12943	7321	5282	3450	2487	1415	32898
1965-	22142	11805	8098	5050	3916	2178	53189
1966-	26851	13584	9616	5936	4351	2513	62851
1967-	29066	17318	12083	7741	5395	3478	75081
1968-	32078	19943	15128	9598	6644	4147	87537
1969-	39798	22458	18674	12521	8890	4706	107047

Source : Ministry of Education. Department of Statistics, Development of education in Libya 1960-70.

TABLE 2

The age-class distribution of boys in primary school in 1969-70

	CLASS							
Age	First	Second	Third	Fourth	Fifth	Sixth	Total	%
6	2021	—	—	—	—	—	2021	1.0
6	23512	—	—	—	—	—	23512	11.5
7	16066	10585	—	—	—	—	26651	13.1
8	7377	10684	6740	—	—	—	24801	12.2
9	4191	8015	9445	5308	—	—	26959	13.2
10	1818	4091	7956	7084	3408	—	24358	11.9
11	785	2002	5113	6283	5369	2482	22034	10.8
12	440	842	2894	4921	5896	3284	18287	9.0
13	207	422	1370	2973	4929	3610	13511	6.6
14	204	210	650	1580	3201	3079	8924	4.4
15	—	155	413	978	2194	2790	6530	3.2
16	—	75	214	553	1734	3054	5630	2.8
17	—	—	52	77	160	293	582	0.3
Total	56621	37081	34848	29757	26891	18602	203799	100.0
%	27.8	18.2	17.1	14.6	13.2	9.1	100.0	

Source : Ministry of Education, Department of statistics Development of education in Libya 1960-70.

TABLE 3

The age class distribution of girls in primary school in 1969-70

	CLASS							
Age	First	Second	Third	Fourth	Fifth	Sixth	Total	%
6	1049	—	—	—	—	—	1049	1.0
6	15568	—	—	—	—	—	15568	14.5
7	11456	5796	—	--	—	—	17252	16.1
8	5978	6367	3399	—	—	—	15744	14.7
9	3320	4935	5147	2319	—	—	15721	14.7
10	1523	3093	4671	3122	1416	—	13820	12.9
11	749	1458	3080	3234	1919	979	11319	10.6
12	162	554	1468	2154	2202	1065	7605	7.1
13	54	182	623	1063	1747	998	4667	4.3
14	39	45	199	439	933	784	2439	2.3
15	—	21	61	135	471	551	1239	1.2
16	—	7	23	52	196	277	555	0.5
17+	—	—	3	3	6	52	64	0.1
Total	39798	22458	18673	12521	8890	4706	107047	
%	37.2	21.0	17.4	11.7	8.3	4.4	100.0	

Source : Ministry of Education, Department of statistics Development of Education in Libya 1960-70.

TABLE 4

Enrolment in 1968-79	CLASS I	II	III	IV	V	VI	Total
Boys	49280	34359	32201	26119	22933	18188	183080
Girls	32078	19943	15128	9598	6644	4147	87538
Freshers and repeaters in 1969-70							
Boys							
Freshers	39185	28725	26486	23218	19430	13850	150894
Repeaters	17436	8356	8361	6539	7461	4752	52905
Total	56621	37081	34848	29757	26891	18602	203799
Girls							
Freshers	28186	17330	14450	9903	6520	3760	80129
Repeaters	11612	5128	4224	2618	2370	966	26918
Total	39798	22458	18673	12521	8890	4706	107047
Fresher and Repeater rates							
Boys							
Fresher	.647	.757	.740	.750	.675	.738	
Repeater	.353	.243	.260	.250	.325	.262	
Girls							
Fresher	.638	.743	.721	.727	.643	.767	
Repeater	.362	.257	.279	.273	.357	.233	

Source : Maya Prasad (1971).

TABLE 5

Repetition and dropout rates for primary boys and girls

Class	Boys						Girls					
	Repetition rates			Dropout rates			Repetition rates			Dropout rates		
	1964-	1965-	1968-	1964-	1965-	1968-	1964-	1965-	1968-	1964-	1965-	1968
										+		
1	.29	.34	.33	.22	.14	.13	.48	.36	.35		.19	.12
2	.21	.27	.25	.16	*	*	.37	.31	.29		.08	*
3	.23	.27	.27	.13	.02	*	.32	.29	.28		.15	.07
4	.22	.26	.25	.12	.02	.00	.28	.27	.29		.10	*
5	.27	.30	.32	.15	.10	.07	.38	.30	.36		.20	.06
6	.26	.27	.28	—	—	—	.35	.25	.27	—	—	—

* Negative values. + not available.

Source : Based on reported repeaters and dropouts, Ministry of Education, Department of statistics.

TABLE 6

Distribution of boys and girls by age and year in preparatory schools in 1969-70

AGE	YEAR FIRST	SECOND	THIRD	TOTAL	%
			BOYS		
11	279	—	—	279	0.9
12	1021	142	—	1163	3.8
13	1762	605	91	2458	8.0
14	2319	958	381	3658	11.9
15	2537	1302	770	4609	15.1
16	2091	1332	1038	4461	14.6
17	1830	1307	1292	4429	14.5
18	1276	1068	1210	3554	11.6
19	747	836	1020	2603	8.5
20	652	682	965	2299	7.5
21+	114	326	656	1096	3.6
Total	14628	8558	7423	30609	100.0
			GIRLS		
11	68	—	—	68	1.2
12	276	117	—	393	6.9
13	556	148	46	750	13.1
14	685	257	100	1042	18.2
15	691	339	152	1182	20.7
16	443	249	239	931	16.3
17	263	229	131	623	10.9
18	125	133	133	391	6.8
19	53	66	77	196	3.4
20	21	28	32	81	1.4
21+	10	13	28	51	0.9
Total	3190	1579	938	5707	100.0

Source : Maya prasad (1971).

TABLE 6 (Contd)

Distribution of boys and girls by age and year in secondary school in 1969-70

AGE	YEAR				
	FIRST	SECOND	THIRD	TOTAL	%
			BOYS		
14	67	10	—	77	1.1
15	213	61	38	312	4.3
16	422	265	31	718	9.9
17	608	309	193	1110	15.4
18	635	451	297	1383	19.1
19	472	333	348	1153	15.9
20	306	305	404	1015	14.0
21	397	347	721	1465	20.3
Total	3120	2081	2032	7233	100.0
			GIRLS		
14	23	—	—	23	2.1
15	68	9	—	77	7.2
16	90	24	—	114	10.6
17	95	37	9	141	13.2
18	89	41	18	148	13.8
19	51	27	39	117	10.9
20	48	25	33	106	9.9
21	28	134	183	345	32.3
Total	492	297	282	1071	100.0

Source : Maya Prasad (1971).

TABLE 7

Distribution of freshers and repeaters in preparatory and secondary schools 1969-70 and estimated enrolment for 1968-69

Class	1969-70 Freshers	1969-70 Repeaters	Total	Estimated Enrolment 1968-69	Estimated rates for 1969-70 Freshers	Estimated rates for 1969-70 Repeaters
Preparatory - Boys						
First	11953	2675	14628	9756	.726	.274
Second	7081	1477	8558	7217	.795	.205
Third	5740	1683	7423	6300	.733	.267
Total	24774	5835	30609	—	—	—
Graduates	1968-69		4617			
Preparatory - Girls						
First	2768	422	3190	1867	.774	.226
Second	1445	134	1579	910	.853	.147
Third	776	162	938	629	.742	.258
Total	4939	718	5707	—	—	—
Graduates	1968-69		467			
Secondary - Boys						
First	2633	487	3120	2286	.787	.213
Second	1799	282	2081	1876	.850	.150
Third	1594	438	2032	1558	.719	.281
Total	6026	1207	7233	—	—	—
Graduates	1968-69		1120			

TABLE 7 (Contd)

Secondary - Girls

First	457	35	492	315	.889	.111
Second	280	17	297	268	.937	.063
Third	251	31	282	176	.824	.176
Total	988	83	1071	—	—	—
Graduates	1968-69		145			

Note : Estimated enrolment for 1968-69 is obtained by adding repeaters in a class to freshers in the next class. This is done for First and Second class. For third class the repeaters in third class in 1969-70 and graduates of 1968-69 are added.

Source : Maya prasad (1971).

TABLE 8

Number of students appearing and passing in primary, preparatory and secondary schools

	APPEARED			PASSED			PERCENT		
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
PRIMARY									
1969-70	18602	4706	23308	11254	2867	14121	60.5	60.9	60.6
70-71	21792	6515	28312	15260	4560	19820	70.0	70.0	70.0
PREPARATORY									
1967-68	6969*	751		3322	451		47.7	60.0	
68-69	8721	812		3986	467		45.7	57.5	
69-70	10044	1160		3975	529		39.6	45.6	
SECONDARY									
(Science subjects)									
1967-68	1469	114		601	52		40.9	45.6	
68-69	1578	111		686	61		43.4	55.1	
69-70	1693	157		817	83		48.3	52.8	
(Literary subjects)									
1967-68	925	138		279	43		30.2	31.2	
68-69	965	169		434	84		44.9	49.7	
69-70	1132	179		538	97		47.5	54.2	

Source : Maya Prasad (1971).

* Excluding evening students.

TABLE 9

Class progression rates of males and females by year and clas

Year	CLASS II	III	IV	V	VI
			MALES		
1960-61					
1961-62	.660	.915	.890	.955	.779
1962-63	.622	.962	.878	.939	.805
1963-64	.632	.967	.861	.931	.812
1964-65	.658	.969	.928	.934	.817
1965-66	.630	.827	.818	.884	.769
1966-67	.686	.962	.936	.990	.792
1967-68	.684	.952	.958	.986	.890
1968-69	.656	.940	.941	.965	.850
1969-70	.702	1.035	.974	1.043	.817
			FEMALES		
1960-61					
1961-62	.554	.478	.750	.856	.662
1962-63	.559	.788	.767	.824	.628
1963-64	.493	.712	.639	.702	.645
1964-65	.604	.850	.817	.906	.675
1965-66	.912	1.106	.956	1.135	.876
1966-67	.613	.815	.733	.862	.642
1967-68	.590	.824	.771	.894	.684
1968-69	.568	.963	.806	.880	.673
1969-70	.683	1.062	.821	.985	.721

Source : Computed from Table 1.

TABLE 10

School enrolment : Boys and Girls : 1969-70

Age	BOYS Prim-ary	Prepa-ratory	Seco-ndary	Total	Popul-ation	GIRLS Prim-ary	Prepa-ratory	Seco-ndary	Total	Popul-ation
6	25533	—	—	15533	28500	16617	—	—	16617	26600
7	26651	—	—	26651	27400	17252	—	—	17252	25600
8	24801	—	—	24801	26300	15744	—	—	15744	24600
9	26959	—	—	26959	25200	15721	—	—	15721	23700
10	24358	—	—	24358	24300	13820	—	—	13820	22800
11	22034	279	—	22313	23200	11319	68	—	11387	21900
12	18287	1163	—	19450	22200	7605	393	—	7998	21000
13	13511	2458	—	15969	21400	4667	750	—	5417	20200
14	8924	3658	77	12659	20700	2439	1042	23	3504	19600
15	6530	4609	312	11451	20000	1239	1182	77	2498	18900
16	5630	4461	718	10809	19100	555	931	114	1600	18100
17	582	4429	1110	6121	18400	64	623	141	828	17400
18	—	3554	1383	4937	—	—	391	148	539	—
19	—	2603	1153	3756	—	—	196	117	313	—
20	—	2299	1015	3314	—	—	81	106	187	—
21+	—	1096	1465	2561	—	—	51	345	396	—
	203799	30609	7233			107047	5707	1071		

Source : Tables 2, 3 and 6.

TABLE 11

Interpolated male and female population by single year age at five year intervals

	MALES (in hundreds)					FEMALES				
Age	1964	1969	1974	1979	1984	1964	1969	1974	1979	1984
0	328	342	418	500	595	305	344	405	488	580
1	310	333	396	476	568	289	329	386	464	554
2	293	323	377	452	543	274	315	368	441	529
3	278	314	358	430	518	261	302	352	420	505
4	264	304	342	410	495	248	290	336	400	483
5	247	297	314	388	470	230	278	316	377	460
6	237	285	309	372	451	223	266	306	363	441
7	227	274	304	357	433	215	256	297	350	422
8	218	263	299	344	415	207	246	288	338	406
9	210	252	293	331	398	199	237	280	326	390
10	202	244	284	321	384	191	228	270	315	376
11	194	232	279	307	367	184	218	262	303	359
12	186	222	272	297	352	176	210	253	292	345
13	180	214	263	289	339	170	202	244	283	330
14	176	207	252	285	330	164	196	235	275	323
15	171	200	240	282	318	156	189	225	268	312
16	165	191	229	276	304	149	181	216	259	300
17	160	194	220	269	294	143	174	207	251	289

Source : Interpolated from five year age groups Venkatacharya (1972).

TABLE 12

Projected male population (in hundreds) by single year of age and for each academic year 1969-83

Age	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
0	342	357	372	388	403	418	434	451	467	484	500	519	538	557	576
1	333	346	358	371	383	396	412	428	444	460	476	494	513	531	550
2	323	334	345	355	366	377	392	407	422	437	452	470	488	507	525
3	314	323	332	340	349	358	372	387	401	416	430	448	465	483	500
4	305	312	319	327	334	342	356	369	383	396	410	427	444	461	478
5	297	300	304	307	311	314	329	344	358	373	388	404	421	437	454
6	285	290	295	299	304	309	322	334	347	359	372	388	404	419	435
7	274	280	286	292	298	304	315	325	336	346	357	372	387	403	418
8	263	270	277	285	292	299	308	317	326	335	344	358	372	387	401
9	252	260	268	277	285	293	301	308	316	323	331	344	358	371	385
10	244	252	260	268	276	284	291	299	306	314	321	334	346	359	371
11	232	239	247	254	262	279	285	290	296	301	307	319	331	343	355
12	222	232	242	252	262	272	277	282	287	292	297	308	319	330	341
13	214	224	234	243	253	263	268	273	279	284	289	299	309	319	329
14	207	216	225	234	243	252	259	265	272	278	285	294	303	312	321
15	200	208	216	224	231	240	248	257	265	274	282	289	296	304	311
16	191	199	206	214	221	229	238	248	257	267	276	282	287	293	298
17	184	191	198	206	213	220	230	240	249	259	269	274	279	284	289

Source : Interpolated from Table 11.

TABLE 13

Projected female population (in hundreds) by single year of age and for each academic year 1969-83

Age	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
0	344	356	368	381	393	405	422	438	455	471	488	506	525	543	562
1	329	340	352	363	375	386	402	417	433	448	464	482	500	518	536
2	315	326	337	347	357	368	383	397	412	426	441	459	476	494	511
3	302	312	322	332	342	352	366	379	393	406	420	437	454	471	488
4	290	299	308	318	327	336	349	362	374	387	400	417	433	450	466
5	278	286	293	301	308	316	328	340	353	365	377	394	410	427	443
6	266	274	282	290	298	306	317	329	340	352	363	379	394	410	425
7	256	264	272	281	289	297	308	318	329	339	350	364	379	393	408
8	246	254	263	271	280	288	298	308	318	328	338	352	365	379	392
9	237	246	254	263	271	280	289	298	308	317	326	339	352	364	377
10	228	236	245	253	262	270	279	288	297	306	315	327	339	352	364
11	219	228	236	245	253	262	270	278	287	295	303	314	325	337	348
12	210	219	227	236	244	253	261	268	276	284	292	303	313	324	334
13	202	210	219	227	236	244	252	260	267	275	283	293	303	313	323
14	196	204	212	219	227	235	243	251	259	267	275	285	294	304	313
15	189	196	203	211	218	225	234	242	251	259	268	277	286	294	303
16	181	188	195	202	209	216	225	233	242	250	259	267	275	284	292
17	174	181	187	194	200	207	216	225	232	242	251	259	266	274	281

Source : Interpolated from Table 11.

TABLE 14

Age	Population in 1969 (1)	Reported primary enrolment in 1969 (2)	Participation rate (2)÷((1)	ADJUSTED Enrolment	ADJUSTED participation rate
6	28500	25533	.90	25533	.8958
7	27400	26651	.97	26651	.9726
8	26300	24801	.94	26000	.9885
9	25200	26959	1.07	25000	.9920
10	24300	24358	1.00	23800	.9794
11	23200	22034	.95	22400	.9655
12	22200	18287	.82	19239	.8666
13	21400	13511	.63	13511	.6313
14	20700	8924	.43	8924	.4311
15	20000	6530	.32	6530	.3265
16	19100	5630	.29	5630	.2948
17	18400	582	.32	582	.0316
Total	276700	203799		203799	
		FEMALES			
6	26600	16617	.625		
7	25600	17252	.674		
8	24600	15744	.640		
9	23700	15721	.663		
10	22800	13820	.606		
11	21900	11319	.517		
12	21000	7605	.362		
13	20200	4667	.231		
14	19600	2439	.124		
15	18900	1239	.066		
16	18100	555	.031		
17	17400	64	.004		
Total	260400	107047			

Source : Tables 1, 12 and 13.

TABLE 15

Age	MALE			FEMALES		
	Enrolment in Class 1 (1)	Enrolment in Primary (2)	Ratio (1)/(2)	Enrolment in Class (4)	Enrolment in Primary (5)	Ratio (4)/(5)
6	25533	25533	1.000	16617	16617	1.000
7	16066	26651	.603	11456	17252	.664
8	7377	24801	.297	5978	15744	.380
9	4191	26959	.155	3320	15721	.211
10	1818	24358	.075	1523	13820	.110
11	785	22034	.036	749	11319	.066
12	440	18287	.024	162	7605	.021
13	207	13511	.015	54	4667	.012
14	204	8924	.023	39	2439	.016

Source : Ministry of Education, Department of statistics Development Education in Libya 1960-70.

TABLE

The pattern of assumed primary participation rates of males and females 1969-83

Age	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
							BOYS								
6	.896	.900	.905	.910	.914	.919	.923	.928	.933	.937	.942	.946	.951	.956	.960
7	.973	.974	.975	.976	.978	.979	.980	.981	.983	.984	.985	.986	.988	.989	.990
8	.989	.989	.990	.991	.992	.992	.993	.994	.995	.995	.996	.997	.998	.998	.999
9	.992	.993	.993	.994	.994	.995	.995	.996	.996	.997	.997	.998	.998	.999	.999
10	.979	.980	.980	.981	.981	.981	.982	.982	.983	.983	.983	.984	.984	.985	.985
11	.966	.967	.968	.969	.970	.971	.972	.973	.974	.975	.976	.977	.978	.979	.980
12	.867	.867	.868	.868	.869	.870	.870	.871	.871	.872	.873	.873	.874	.874	.875
13	.631	.586	.541	.496	.451	.406	.361	.316	.271	.225	.180	.135	.090	.045	—
14	.431	.400	.370	.339	.308	.277	.246	.216	.185	.154	.123	.092	.062	.031	—
15	.327	.303	.280	.257	.233	.210	.187	.163	.140	.117	.094	.070	.047	.024	—
16	.295	.274	.253	.232	.210	.189	.168	.147	.126	.105	.084	.063	.042	.021	—
17	.032	.029	.027	.025	.023	.020	.018	.016	.014	.011	.009	.007	.005	.002	—
							GIRLS								
6	.625	.637	.650	.662	.675	.687	.700	.712	.725	.737	.750	.762	.775	.787	.800
7	.674	.687	.699	.712	.724	.737	.750	.762	.775	.787	.800	.813	.825	.838	.850
8	.660	.673	.686	.699	.712	.725	.737	.750	.763	.776	.789	.802	.815	.828	.840
9	.640	.653	.666	.679	.692	.705	.717	.730	.743	.756	.769	.782	.795	.808	.820
10	.606	.613	.620	.626	.633	.640	.646	.653	.660	.666	.673	.680	.687	.693	.700
11	.517	.523	.529	.535	.540	.546	.552	.558	.564	.570	.576	.582	.588	.594	.600
12	.362	.372	.382	.392	.402	.412	.422	.431	.441	.451	.461	.471	.481	.491	.500
13	.231	.222	.212	.202	.193	.184	.175	.165	.156	.146	.137	.128	.118	.109	.100
14	.124	.119	.114	.109	.103	.098	.093	.087	.082	.077	.071	.066	.061	.056	.050
15	.066	.061	.056	.052	.047	.042	.037	.033	.028	.023	.019	.014	.009	.005	—
16	.031	.029	.026	.024	.022	.020	.018	.015	.013	.011	.009	.007	.004	.002	—
17	.004	.003	.003	.003	.003	.002	.002	.002	.002	.001	.001	.001	.001	.001	—

Source : Assumed.

TABLE 17

The time trend of the proportion of class 1 students (out of all primary students)

	AGE									
	6	7	8	9	10	11	12	13	14	Number in Class 1
					BOYS					
1969	1.000	.603	.297	.155	.075	.036	.024	.015	.023	56662
1970	1.000	.574	.276	.144	.070	.033	.022	.014	.021	56148
1971	1.000	.545	.255	.133	.064	.031	.021	.013	.020	55573
1972	1.000	.517	.233	.122	.059	.028	.019	.012	.018	54815
1973	1.000	.488	.212	.111	.053	.026	.017	.011	.016	54019
1974	1.000	.459	.191	.099	.048	.023	.015	.010	.015	53128
1975	1.000	.430	.170	.088	.043	.021	.014	.009	.013	53156
1976	1.000	.401	.149	.077	.037	.018	.012	.008	.012	52814
1977	1.000	.373	.127	.066	.032	.015	.010	.006	.010	52606
1978	1.000	.344	.106	.055	.026	.013	.009	.005	.008	52140
1979	1.000	.315	.085	.044	.021	.010	.007	.004	.007	51662
1980	1.000	.286	.064	.033	.016	.007	.005	.003	.005	51529
1981	1.000	.257	.043	.022	.010	.005	.003	.002	.003	51216
1982	1.000	.229	.021	.011	.005	.003	.002	.001	.002	50717
1983	1.000	.200	.000	.000	.000	.000	.000	.000	.000	50036

TABLE 17 (Contd)

GIRLS

1969	1.000	.664	.380	.211	.110	.066	.021	.012	.016	39964
1970	1.000	.645	.356	.196	.102	.061	.020	.011	.015	40843
1971	1.000	.626	.333	.181	.094	.057	.018	.010	.014	41662
1972	1.000	.607	.309	.166	.086	.052	.017	.009	.013	42434
1973	1.000	.588	.286	.151	.078	.047	.015	.009	.012	43094
1974	1.000	.570	.262	.136	.071	.043	.014	.008	.011	43657
1975	1.000	.551	.238	.120	.063	.038	.012	.007	.009	44500
1976	1.000	.532	.215	.105	.055	.033	.011	.006	.008	45426
1977	1.000	.513	.191	.090	.047	.028	.009	.005	.007	45938
1978	1.000	.494	.168	.075	.039	.024	.008	.004	.006	46515
1979	1.000	.475	.144	.060	.031	.019	.006	.003	.005	46951
1980	1.000	.456	.120	.045	.023	.014	.005	.003	.004	47820
1981	1.000	.437	.097	.030	.015	.010	.003	.002	.003	48501
1982	1.000	.418	.073	.015	.007	.005	.002	.001	.002	49080
1983	1.000	.400	.050	.000	.000	.000	.000	.000	.000	49519

TABLE 18

Promotion and repitition rates for boys of primary classes 1969-83

Year		CLASS 1	2	3	4	5	6
1969/70	p	.64	.75	.73	.74	.67	
	r	.35	.24	.26	.25	.32	.26
1970/71	p	.66	.77	.75	.76	.69	
	r	.33	.22	.24	.23	.30	.24
1971/72	p	.69	.78	.76	.77	.71	
	r	.30	.21	.23	.22	.28	.23
1972/73	p	.71	.80	.78	.79	.73	
	r	.28	.19	.21	.20	.26	.21
1973/74	p	.73	.81	.80	.80	.75	
	r	.26	.18	.19	.19	.24	.19
1974/75	p	.75	.83	.81	.82	.77	
	r	.24	.16	.18	.17	.22	.18
1975/76	p	.78	.84	.83	.83	.79	
	r	.21	.15	.16	.16	.20	.16
1976/78	p	.80	.86	.84	.85	.81	
	r	.19	.13	.15	.14	.18	.15
1977/78	p	.82	.87	.86	.87	.84	
	r	.17	.12	.13	.12	.15	.13
1978/79	p	.85	.89	.88	.88	.86	
	r	.14	.10	.11	.11	.13	.11
1979/80	p	.87	.90	.89	.90	.88	
	r	.12	.09	.10	.09	.11	.10
1980/81	p	.89	.92	.91	.91	.90	
	r	.10	.07	.08	.08	.09	.08
1981/82	p	.91	.93	.93	.93	.92	
	r	.08	.06	.06	.06	.07	.06
1982/83	p	.94	.95	.94	.94	.94	
	r	.05	.04	.05	.05	.05	.05
1983/84	p	.96	.96	.96	.96	.96	
	r	.03	.03	.03	.03	.03	.03

p = Promotion rates
r = Repeater rates

Source : Assumed

TABLE 19

Promotion and repitition rates for girls of primary classes 1969-83

Year		CLASS 1	2	3	4	5	6
69/70	p	.63	.73	.71	.72	.63	
	r	.36	.26	.28	.27	.36	.23
70/71	p	.65	.75	.73	.74	.65	
	r	.34	.24	.26	.25	.34	.22
71/72	p	.68	.76	.74	.75	.68	
	r	.31	.23	.25	.24	.31	.20
1972/73	p	.70	.78	.76	.77	.70	
	r	.29	.21	.23	.22	.29	.19
1973/74	p	.72	.79	.78	.79	.72	
	r	.27	.20	.21	.20	.27	.18
1974/75	p	.74	.81	.80	.80	.74	
	r	.25	.18	.19	.19	.25	.16
1975/76	p	.77	.82	.81	.82	.77	
	r	.22	.17	.18	.17	.22	.15
1976/77	p	.79	.84	.83	.83	.79	
	r	.20	.15	.16	.16	.20	.14
1977/78	p	.81	.86	.85	.85	.81	
	r	.18	.13	.14	.14	.18	.12
1978/79	p	.84	.87	.86	.87	.84	
	r	.15	.12	.13	.12	.15	.11
1979/80	p	.86	.89	.88	.88	.86	
	r	.13	.10	.11	.11	.13	.09
1980/81	p	.88	.90	.90	.90	.88	
	r	.11	.09	.09	.09	.11	.08
1981/82	p	.90	.92	.92	.92	.90	
	r	.09	.07	.07	.07	.09	.07
1982/83	p	.93	.93	.93	.93	.93	
	r	.06	.06	.06	.06	.06	.05
1983/84	p	.95	.95	.95	.95	.95	
	r	.04	.04	.04	.04	.04	.04

p = Promotion rates
r = Repeater rates

Source : Assumed

TABLE 20

Promotion and Repitition rates for Boys 1969-83 in preparatory and Secondary schools

Year		Preparatory First year	Preparatory Second year	Preparatory Third year	Secondary First year	Secondary Second year	Secondary Third year
1969/70	p	.72	.78	.72	.78	.84	.71
	r	.27	.21	.27	.21	.15	.28
1970/71	p	.73	.79	.73	.79	.85	.72
	r	.26	.20	.26	.20	.14	.27
1971/72	p	.74	.796	.74	.80	.85	.74
	r	.25	.194	.25	.19	.14	.25
1972/73	p	.76	.804	.76	.81	.86	.75
	r	.23	.186	.23	.18	.13	.24
1973/74	p	.77	.812	.77	.82	.86	.77
	r	.22	.178	.22	.17	.13	.22
1974/75	p	.78	.819	.78	.83	.87	.78
	r	.21	.171	.21	.16	.12	.21
1975/76	p	.79	.827	.79	.84	.87	.80
	r	.20	.163	.20	.15	.12	.19
1976/77	p	.80	.835	.80	.85	.88	.81
	r	.19	.155	.19	.14	.11	.18
1977/78	p	.82	.843	.82	.86	.89	.83
	r	.17	.147	.17	.13	.10	.16
1978/79	p	.83	.851	.83	.87	.89	.84
	r	.16	.139	.16	.12	.10	.15
1979/80	p	.84	.859	.84	.88	.90	.86
	r	.15	.131	.15	.11	.09	.13
1980/81	p	.85	.867	.85	.89	.90	.87
	r	.14	.123	.14	.10	.09	.12
1981/82	p	.87	.875	.87	.90	.91	.89
	r	.12	.115	.12	.09	.08	.10
1982/83	p	.88	.883	.88	.91	.91	.90
	r	.11	.107	.11	.08	.08	.09
1983/84	p	.89	.890	.89	.92	.92	.92
	r	.10	.10	.10	.07	.07	.07

Source: Assumed.

TABLE 21

Promotion and Repetition rates for Girls 1969-83 in preparatory and Secondary schools

Year		Preparatory			Secondary		
		First year	Second year	Third year	First year	Second year	Third year
1969/70	p	.76	.84	.73	.880	.930	.810
	r	.23	.150	.26	.110	.060	.180
1970/71	p	.77	.846	.74	.884	.931	.819
	r	.22	.144	.25	.106	.059	.171
1971/72	p	.78	.851	.76	.889	.931	.829
	r	.21	.139	.23	.101	.059	.161
1972/73	p	.79	.857	.77	.893	.932	.838
	r	.20	.133	.22	.097	.058	.152
1973/74	p	.81	.863	.78	.897	.932	.847
	r	.18	.127	.21	.093	.058	.143
1974/75	p	.82	.868	.80	.901	.933	.856
	r	.17	.122	.19	.089	.057	.134
1975/76	p	.83	.874	.81	.906	.933	.866
	r	.16	.116	.18	.084	.057	.124
1976/77	p	.84	.880	.83	.910	.934	.875
	r	.15	.110	.16	.080	.056	.115
1977/78	p	.85	.886	.84	.914	.935	.884
	r	.14	.104	.15	.076	.055	.106
1978/79	p	.86	.891	.85	.919	.936	.894
	r	.13	.099	.14	.071	.054	.096
1979/80	p	.87	.897	.87	.923	.936	.903
	r	.12	.093	.12	.067	.054	.087
1980/81	p	.89	.903	.88	.927	.937	.912
	r	.10	.087	.11	.063	.053	.078
1981/82	p	.90	.908	.89	.931	.938	.921
	r	.09	.082	.10	.059	.052	.069
1982/83	p	.91	.914	.91	.936	.938	.931
	r	.08	.076	.08	.054	.052	.059
1983/84	p	.92	.92	.92	.940	.940	.940
	r	.07	.070	.07	.050	.050	.050

Source : Assumed.

TABLE 22

Year	Primary section		Preparatory section	
	Graduation rates	Entrant rates	Graduation rates	Entrant rates
		BOYS		
1969	.70	.850	.48	.70
70	.71	.855	.49	.71
71	.72	.860	.50	.72
72	.73	.865	.51	.73
73	.74	.870	.52	.74
74	.75	.875	.53	.75
75	.76	.880	.54	.76
76	.77	.885	.55	.77
77	.78	.890	.56	.78
78	.79	.895	.57	.79
79	.80	.900	.58	.80
80	.81	.905	.59	.81
81	.82	.910	.60	.82
82	.83	.915	.61	.83
83	.84	.920	.62	.84
		GIRLS		
1969	.70	.820	.53	.98
70	.71	.825	.54	.98
71	.72	.830	.55	.98
72	.73	.835	.56	.98
73	.74	.840	.57	.98
74	.75	.845	.58	.98
75	.76	.850	.59	.98
76	.77	.855	.60	.98
77	.78	.860	.61	.98
78	.79	.865	.62	.98
79	.80	.870	.63	.98
80	.81	.875	.64	.98
81	.82	.880	.65	.98
82	.83	.885	.66	.98
83	.84	.890	.67	.98

Source : Assumed.

TABLE 23

Projected enrolment of boys in primary, preparatory and secondary schools under High assumptions

BOYS — HIGH

(in hundreds)

classes	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
1	566	579	591	604	615	630	652	674	697	718	738	772	803	833	864
2	371	451	481	509	526	544	559	592	616	645	675	703	736	775	814
3	348	369	436	476	507	522	545	557	593	613	642	672	700	726	772
4	298	329	352	409	453	492	506	533	543	575	603	626	661	691	717
5	269	306	342	367	418	463	505	521	547	554	578	606	624	659	682
6	186	229	266	304	332	377	424	467	492	524	534	562	591	609	650
Total															
	2038	2263	2468	2669	2851	3028	3191	3344	3489	3630	3770	3940	4115	4293	4500
Graduates															
	113*	162	192	222	245	283	322	359	384	414	427	455	484	506	546

TABLE 23 *(Contd.)*

classes	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
							Preparatory section								
7	146	150	178	209	240	266	303	344	384	407	435	450	475	498	518
8	86	123	134	158	188	218	245	279	319	361	388	417	434	463	488
9	74	87	120	137	158	188	218	246	280	316	358	387	415	429	456
							Total								
	306	360	432	504	586	672	766	869	982	1085	1181	1254	1324	1390	1462
							Graduates								
	40*	43	60	70	82	100	118	135	157	180	208	228	249	262	288
							Secondary section								
10	31*	31	37	50	60	71	86	102	119	138	159	184	203	223	235
11	21	27	29	33	45	55	66	80	96	112	131	152	177	197	218
12	20	23	30	32	36	47	58	68	83	99	114	133	152	176	195
							Total								
	72	82	95	115	141	173	210	250	297	349	404	468	533	596	649
							Graduates								
	14	16	20	22	26	34	42	50	62	75	88	104	120	141	159

(*) Observed.

TABLE 24

Projected enrolment of girls in primary, preparatory and secondary schools under High assumptions

classes	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
							GIRLS — HIGH								
							(in hundreds)								
							Primary section								
1	398	412	425	438	450	463	479	497	513	529	546	569	591	613	637
2	225	309	342	368	384	401	415	439	459	475	501	520	547	570	604
3	187	216	288	332	363	379	397	412	435	455	473	498	513	540	563
4	125	166	199	261	310	345	369	384	403	426	443	465	490	506	532
5	89	122	165	201	259	315	355	381	395	414	433	446	467	493	500
6	47	67	94	131	165	216	267	313	345	361	387	407	425	450	481
							Total								
	1070	1293	1513	1730	1931	2119	2282	2426	2549	2660	2782	2904	3033	3172	3317
							Graduates								
	29*	47	68	95	122	162	203	241	269	285	310	330	348	374	404

TABLE 24 *(Contd.)*

classes	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
							Preparatory section								
7	32	34	47	66	93	119	157	198	236	264	281	303	319	335	357
8	16	27	30	41	58	83	108	143	182	220	249	268	293	311	329
9	9	16	26	32	42	58	83	109	144	183	221	250	269	295	308
							Total								
	57	77	103	139	192	261	348	450	562	667	751	821	881	941	994
							Graduates								
	5*	8	15	18	24	34	49	66	88	113	139	160	175	193	206
							Secondary section								
10	4.9	5.4	8.9	15.2	19.0	25	35	51	68	91	118	144	166	181	199
11	3.0	4.5	5.1	8.2	14.0	18	24	34	48	65	87	113	140	162	178
12	2.8	3.3	4.8	5.5	8.5	14	19	24	34	49	63	87	113	139	160
							Total								
	10.7	13.2	18.7	28.8	41.4	57	78	109	151	205	268	345	419	*482*	*537*
							Graduates								
	2*	2	3	4	6	10	13	17	24	35	*46*	*64*	*85*	*106*	*123*

(*) Observed

Source : Computed

TABLE 25

Projected enrolment in primary, preparatory and secondary schools under high assumptions

classes	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
							TOTAL (in hundreds)								
							Primary section								
1	964	991	1016	1042	1065	1093	1131	1171	1210	1247	1284	1341	1394	1446	1501
2	595	760	823	877	909	944	974	1032	1075	1121	1176	1222	1283	1345	1418
3	535	585	724	808	870	901	942	969	1028	1068	1114	1170	1213	1266	1335
4	423	495	552	670	763	837	876	918	946	1001	1046	1090	1151	1197	1250
5	358	428	506	567	678	777	860	902	942	968	1011	1052	1091	1152	1182
6	233	295	360	435	497	593	692	780	837	885	921	969	1015	1060	1131
							Total								
	3108	3555	3982	4398	4781	5146	5474	5771	6038	6290	6552	6844	7148	7465	7817
							Graduates								
	163	210	259	317	368	445	526	601	653	699	737	785	833	879	958

TABLE 25 *(Contd.)*

classes	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
								Preparatory section							
7	178	185	224	275	333	386	461	542	619	671	717	753	794	833	875
8	101	150	165	198	246	301	353	423	501	581	637	684	727	774	816
9	84	103	146	169	200	246	301	356	424	499	579	637	685	722	764
								Total							
	363	437	535	642	779	933	1114	1320	1544	1751	1933	2074	2206	2330	2455
								Graduates							
	41	51	75	88	106	133	167	201	244	294	347	388	424	455	494
								Secondary section							
10	36	37	45	65	79	96	121	153	187	229	277	328	369	404	435
11	24	32	34	41	59	73	89	114	144	177	218	265	317	359	397
12	23	26	34	37	45	61	76	92	117	119	177	220	265	315	355
								Total							
	83	95	114	144	183	229	287	359	448	525	672	813	951	1078	1186
								Graduates							
	15	18	24	26	31	43	55	67	65	90	134	168	205	247	282

TABLE 26

Projected enrolment of boys in primary, preparatory and secondary schools under Medium assumptions

BOYS — MEDIUM

(in hundreds)

classes	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
							Primary section								
1	566	561	556	548	540	531	532	528	526	521	517	515	512	507	500
2	371	451	470	482	481	481	475	486	486	490	492	494	493	496	497
3	348	369	436	467	484	481	486	477	489	486	489	492	494	488	495
4	298	329	352	409	446	471	470	478	468	477	480	479	486	488	483
5	269	306	342	367	418	457	487	488	494	481	482	485	479	485	483
6	186	229	266	304	332	377	420	452	463	475	466	471	474	469	480
							Total								
	2038	2245	2422	2577	2701	2798	2870	2909	2926	2930	2926	2936	2938	2933	2939
							Graduates								
	113*	162	192	222	245	283	319	348	361	376	373	382	389	390	406

TABLE 26 *(Contd.)*

classes	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
							Preparatory section								
7	146	150	178	209	240	266	303	341	373	385	397	395	401	402	401
8	86	123	134	158	188	218	245	279	316	352	368	382	383	393	396
9	74	87	120	139	158	188	218	246	280	314	350	369	383	381	389
							Total								
	306	360	432	506	586	672	766	866	969	1051	1115	1146	1167	1176	1185
							Graduates								
	40*	43	63	71	82	100	118	135	157	179	203	218	230	232	239
							Secondary section								
10	31	31	37	50	60	71	86	102	119	138	158	180	194	206	209
11	21	27	29	33	45	55	66	80	96	112	131	151	174	189	203
12	20	23	30	32	36	47	58	68	83	99	114	133	152	173	187
							Total								
	72	82	95	115	141	173	210	250	298	349	403	464	520	568	599
							Graduates								
	14*	16	20	22	26	34	42	50	62	75	88	*104*	*120*	*139*	*141*

(*) Observed

Source : Computed.

TABLE 27

Projected enrolment of girls in primary, preparatory and secondary schools under Medium assumptions

classes	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
	GIRLS — MEDIUM (in hundreds)														
	Primary section														
1	398	408	417	424	431	437	445	454	459	465	470	478	485	491	495
2	225	309	340	361	373	385	392	409	420	427	442	448	461	469	485
3	187	216	288	330	358	370	382	390	406	418	426	440	443	455	463
4	125	166	199	261	308	341	361	371	384	399	408	419	434	438	450
5	89	122	165	201	259	314	351	376	383	395	406	412	423	437	433
6	47	67	94	131	165	216	267	310	340	351	370	383	393	408	427
	Total														
	1070	1289	1502	1708	1894	2062	2198	2312	2394	2456	2522	2580	2639	2698	2753
	Graduates														
	29*	47	68	95	122	162	203	239	266	278	296	310	322	339	359

TABLE 27 *(Contd.)*

classes	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
							Preparatory section								
7	32	34	47	66	93	119	157	197	234	261	274	291	300	310	325
8	16	27	30	41	58	83	108	143	182	218	246	261	282	293	305
9	9	16	26	32	42	58	83	109	144	182	220	247	263	282	291
							Total								
	57	77	103	139	192	261	348	450	559	661	740	799	845	886	920
							Graduates								
	5*	8	15	18	24	34	49	66	88	113	138	158	171	186	195
							Secondary section								
10	4.9	5.4	8.9	15.2	19.0	25	36	51	68	91	117	143	164	177	192
11	3.0	4.5	5.1	8.2	14.0	18	24	34	48	65	87	113	139	160	174
12	2.8	3.3	4.8	5.5	8.5	14	19	24	34	49	66	87	113	138	157
							Total								
	10.7	13.2	18.7	28.8	41.4	57	78	109	151	205	270	344	416	475	523
							Graduates								
	2*	2	3	4	6	10	13	17	24	35	*48*	*65*	*85*	*105*	*122*

(*) Observed

Source : Computed.

TABLE 28

Projected total enrolment of primary, preparatory and secondary Schools under Medium assumptions

classes	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
							TOTAL (in hundreds)								
							Primary section								
1	964	970	972	972	971	968	977	982	985	987	986	993	997	998	996
2	595	760	810	844	854	866	868	895	906	916	934	942	954	964	981
3	535	585	724	797	842	851	868	868	896	904	915	932	936	944	959
4	423	495	552	670	754	812	831	849	851	876	888	898	920	926	933
5	358	428	504	567	678	771	838	861	877	876	889	897	902	923	917
6	233	295	360	435	497	593	686	762	801	826	836	854	867	877	907
							Total								
	3108	3534	3924	4285	4595	4861	5068	5217	5316	5385	5448	5516	5577	5632	5692
							Graduates								
	163	210	259	317	368	445	522	587	625	652	669	692	711	728	765

TABLE 28 *(Contd.)*

classes	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
							Preparatory section								
7	178	185	224	275	333	386	461	539	607	644	671	686	701	713	725
8	101	150	165	198	246	301	353	423	498	570	613	643	664	686	701
9	84	103	146	169	200	246	301	356	424	497	570	615	645	662	679
	363	437	535	642	779	933	1115	1317	1529	1711	1853	1943	2010	2061	2105
							Graduates								
	41	51	75	88	106	133	167	201	244	292	341	371	400	418	434
							Secondary section								
10	36	37	45	65	79	96	121	153	187	229	275	323	358	383	401
11	24	32	34	41	59	73	89	114	144	177	218	264	313	348	376
12	23	26	34	37	45	61	76	92	117	119	177	220	264	311	345
							Total								
	83	95	114	144	183	230	287	359	448	525	671	807	934	1042	1122
							Graduates								
	15	18	24	26	31	43	55	67	65	89	134	168	*204*	*244*	*263*

Source : Computed.

TABLE 29

Projected enrolment of boys in primary, preparatory and secondary schools under Low assumption

BOYS — LOW

(in hundreds)

classes	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
Primary section															
1	566	561	556	548	540	531	532	528	526	521	517	515	512	507	500
2	371	451	468	468	463	457	450	448	446	444	440	436	435	432	428
3	348	369	434	464	471	470	465	458	455	453	450	447	443	441	439
4	298	329	351	405	440	454	457	453	448	444	441	439	436	433	430
5	269	306	341	369	418	459	483	492	493	489	485	482	479	476	473
6	186	229	265	297	325	364	402	428	441	445	444	441	437	435	432
Total															
	2038	2245	2415	2551	2657	2735	2789	2807	2809	2796	2778	2760	2743	2724	2702
Graduates															
	113*	160	185	208	227	255	282	300	309	312	311	308	306	304	302

TABLE 29 *(Contd.)*

classes	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
							Preparatory section								
7	146	150	177	205	232	256	286	317	340	354	361	361	360	357	355
8	86	123	134	155	180	205	227	254	281	304	320	327	329	328	326
9	74	87	120	137	158	183	210	234	261	290	317	335	346	350	350
							Total								
	306	360	431	497	570	644	723	805	882	948	999	1024	1034	1035	1031
							Graduates								
	40*	42	57	66	76	88	101	112	125	139	152	161	166	168	168
							Secondary section								
10	31	31	36	48	56	65	75	86	97	108	121	132	140	146	148
11	21	27	29	32	42	50	58	67	77	87	98	109	119	127	132
12	20	23	30	32	36	45	55	64	75	86	97	110	122	134	144
							Total								
	72	82	95	112	134	160	188	217	249	281	316	351	*382*	*408*	*424*
							Graduates								
	14	16	20	22	24	30	37	43	*50*	*58*	*65*	*73*	*82*	*89*	*97*

TABLE 30

Projected enrolment of girls in primary, preparatory and secondary schools under Low assumption

GIRLS — LOW

(in hundreds)

classes	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
Primary section															
1	398	408	417	424	431	437	445	454	459	465	470	478	485	491	495
2	225	309	338	350	358	365	370	377	384	389	394	398	405	411	416
3	187	216	186	327	347	359	367	373	379	387	392	398	402	408	414
4	125	166	198	257	301	328	343	353	360	366	373	379	385	389	395
5	89	122	164	202	258	310	347	372	388	399	407	416	423	429	435
6	47	67	92	124	156	198	241	274	298	313	323	331	338	344	350
Total															
	1070	1289	1495	1684	1851	1996	2113	2203	2268	2319	2360	2400	2437	2472	2505
Graduates															
	29*	47	65	87	109	139	168	192	208	219	226	232	237	241	245

TABLE 30 *(Contd.)*

classes	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
							Preparatory section								
7	32	34	46	64	86	109	139	170	197	216	229	238	245	250	255
8	16	27	30	40	54	74	94	120	147	171	190	203	212	218	223
9	9	16	26	32	42	56	76	99	126	156	185	208	224	236	244
							Total								
	57	77	103	135	182	239	309	389	470	544	604	649	681	704	722
							Graduates								
	5*	8	14	17	22	30	41	52	67	83	98	110	119	125	130
							Secondary section								
10	4.9	5.4	8.8	14.7	18	24	32	43	56	72	89	106	119	130	137
11	3.0	4.5	5.0	8.0	13	17	22	29	40	52	66	82	98	111	121
12	2.8	3.3	4.8	5.5	8	14	18	24	32	43	56	72	90	107	123
							Total								
	10.7	13.2	18.6	28.2	40	55	72	96	128	166	211	260	307	348	380
							Graduates								
	2	2	3	3	5	9	12	15	20	27	35	45	56	68	78

TABLE 31

Projected Total enrolment in primary, preparatory and secondary under Low assumption

classes	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
							Primary section								
1	964	970	972	972	971	968	977	982	985	987	986	993	997	998	996
2	595	760	805	818	822	822	820	825	830	833	834	835	839	843	844
3	535	585	721	790	819	829	832	831	834	839	843	845	946	849	853
4	423	495	550	662	741	782	800	807	808	811	815	819	821	822	825
5	358	428	505	571	675	769	830	865	881	888	893	897	902	905	908
6	233	295	357	422	480	562	643	702	739	758	767	771	775	779	782
							Total								
	3108	3534	3910	4236	4508	4731	4901	5011	5077	5115	5138	5160	5180	5197	5207
							Graduates								
	163	207	250	295	336	394	450	492	517	531	537	540	543	545	547

TABLE 31 *(Contd.)*

classes	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
							Preparatory section								
7	178	185	223	269	318	365	425	487	537	570	590	600	604	608	610
8	101	150	164	195	235	279	321	373	428	475	509	529	540	546	549
9	84	102	146	169	200	240	286	333	387	446	500	542	569	585	594
							Total								
	363	437	533	633	753	884	1032	1193	1352	1492	1599	1670	1714	1739	1754
							Graduates								
	41	50	71	83	98	118	141	165	192	222	249	270	284	293	298
							Secondary section								
10	36	37	45	62	74	89	107	129	153	180	209	237	259	275	285
11	24	32	34	40	55	67	80	97	117	139	163	191	217	238	253
12	23	26	34	38	45	59	73	88	106	129	153	181	211	241	266
							Total								
	83	95	113	141	174	215	260	314	376	447	526	608	687	753	804
							Graduates								
	15	18	23	25	30	39	48	58	70	84	100	118	138	157	175

TABLE 32

Future class room and teacher requirements under *medium* assumptions (in hundreds)

Year	PRIMARY Enrolment	PRIMARY Classrooms	PRIMARY Teachers	PREPARATORY Enrolment	PREPARATORY Classrooms	PREPARATORY Teachers	SECONDARY Enrolment	SECONDARY Classrooms	SECONDARY Teachears
BOYS									
1969	2048	64*	68*	306	10*	12*	72	2*	4*
70	2255	71	75	368	12	15	82	3	4
71	2432	76	81	439	14	18	95	3	5
72	2586	81	86	538	17	22	117	4	6
73	2667	83	89	649	20	26	144	5	7
74	2763	86	92	736	23	29	176	6	9
75	2831	89	94	816	26	33	219	7	11
76	2869	90	96	893	28	36	272	9	14
77	2885	90	96	982	31	39	325	11	16
78	2906	91	97	1044	33	42	375	12	19
79	2922	91	97	1094	34	44	421	14	21
80	2938	92	98	1117	35	45	473	16	24
81	2943	92	98	1143	36	46	528	18	26
82	2939	92	98	1163	36	47	570	19	29
83	2944	92	98	1180	37	47	596	20	30
GIRLS									
1969	1070	34	36	57	2	2	11	0.4	0.5
70	1289	40	43	77	2	3	13	0.4	1
71	1502	47	50	103	3	4	19	1	1
72	1708	53	57	139	4	6	29	1	1
73	1894	59	63	192	6	8	41	1	2
74	2062	65	69	261	8	10	57	2	3
75	2198	69	73	348	11	14	78	3	4
76	2312	72	77	450	14	18	109	4	5
77	2394	75	80	559	18	22	151	5	8
78	2456	77	82	661	21	26	205	7	10
79	2522	79	84	740	23	30	270	9	14
80	2580	81	86	799	25	32	344	11	17
81	2638	83	88	845	26	34	416	14	21
82	2698	84	90	886	28	35	475	16	24
83	2753	86	92	920	29	37	524	17	26

* These are estimated from enrolments. The actual figures are different.

TABLE 33

Future class rooms and teacher requirements under Low assumptions (in hundreds)

Year	PRIMARY			PREPARATORY			SECONDARY		
	Enrol-ment	Class-rooms	Teach-ers	Enrol-ment	Class-rooms	Teach-ers	Enrol-ment	Class-rooms	Teach-ears
				BOYS					
1969	2048	64*	68*	306	10*	12*	72	2*	4*
70	2255	71	75	368	12	15	82	3	4
71	2425	76	81	437	14	18	94	3	5
72	2561	80	85	500	16	20	114	4	6
73	2667	83	89	572	18	23	137	5	7
74	2743	86	91	646	20	26	163	5	8
75	2793	87	93	727	23	29	190	6	10
76	2811	88	94	810	25	32	219	7	11
77	2810	88	94	888	28	36	250	8	12
78	2797	88	93	953	30	38	282	9	14
79	2778	87	93	999	31	40	316	11	16
80	2760	86	92	1024	32	41	351	12	18
81	2743	86	91	1034	32	41	382	13	19
82	2724	85	91	1035	32	41	408	14	20
83	2702	84	90	1032	32	41	426	14	21
				GIRLS					
1969	1070	34	36	57	2	2	11	0.4	.5
70	1289	40	43	77	2	3	13	0.4	.6
71	1495	47	50	103	3	4	19	11	1
72	1684	53	56	135	4	5	28	1	1
73	1851	58	62	182	6	7	40	1	2
74	2026	63	67	239	7	10	55	2	3
75	2120	66	71	326	10	13	72	2	4
76	2205	69	73	409	13	16	96	3	5
77	2269	71	76	488	15	20	118	4	6
78	2319	73	77	555	17	22	170	6	8
79	2360	74	79	609	19	24	220	7	11
80	2400	75	80	651	20	26	271	9	14
81	2437	76	81	682	21	27	314	10	16
82	2452	77	82	705	22	28	352	12	18
83	2495	78	83	723	23	29	382	13	19

* These are estimated from enrolments. The actual figures are different.

Source : Computed.