EDUCATION GROWTH AND ECONOMIC GROWTH IN TAMILNADU

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Preface

The opening chapter of the book is concerned with the relationship that persists with Education and Economic Growth. The technological transformation of the Traditional Economics into the modern scientific one is based on Education which adds to the productive capacity of individuals. Education is considered as an investment. The culmination of truth, education determines employment thus the level of income and the aggregate private demand for education is by the level of income of the people, over simplifies the impetus of Education and its relation to Economic growth.

It is quite appropriate that the author has ventured to write a book based on her research having considered the significance of economic growth a hashed to educational growth.

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CHAPTER – I
INTRODUCTION

The desire for education comes from the fact that education is an asset which raises the status of the people. Facilities are provided to help individuals to acquire education and it is also a major responsibility of the government to look after these facilities. Whatever may be the type of educational institutions, students are enrolled and enabled to help themselves as well as contributes to the Nation. The technological transformation of the traditional Economies into the modern and scientific one is based on Education which adds to the productive capacity of individuals. Thus, education is considered as an investment in individuals. In India, education determines employment thus the level of income and the aggregate private demand for education is determined by the level of income of the people. This shows that they are not only inter-related but also an inter-dependent phenomena. Thus the influence of Education on Economic Growth and Economic Growth on Education is inevitable. Venkata Subramanian (1978) observes that "Education is regarded a prime factor in Economic Growth".

Existence of the inter-relationship between educational growth and economic growth may be observed by the saying that Educational programs implies the important part of Economic growth and investment in education brings a greater increase in National Income. Likewise, educational growth depends upon the availability of certain minimum facilities (or) resources. Harbison and Meyers (1964) state that "investment in education is to be more effective for rapid Economic Growth". Both the educational growth and economic growth in an Economy should be maintained by helping each other and as a result, they help the public and in turn to the Economy as a whole.

Since education influences the economic growth by increasing the Gross National Product of a country, it has got close relationship with individual's income. The influence of education in

individuals also has been highlighted by Goel (1975) who observes that “educated persons receive higher personal earnings and they are in relatively scarce supply.” It can also be seen that how people are able to educate their children more as their personal income increases. In advanced countries, people are able to make their children highly educated because their levels of income are high as their gross national product is high. This has reflected in the national picture of those countries, on the one hand, high enrolment ratio and on the other high gross national product. Further an increase in the national income is followed by the increase in the enrolment of those countries which reflects the impact of education on Economic Growth and it is regarded as one of the sure roads to Economic Growth.

The post-war history of advanced countries show that not only the human capital had been one of the most potent source of Economic Growth but also had the power to make-up for gaps (or) destruction in the physical capital of Economies in a remarkably short span of time. The under developed countries in contrast are characterized by a low investment in human beings and an upgrading of the knowledge and instilling of human abilities and motivations that are conducive to economic advancement are necessary for their accelerated growth. Though different systems of education exist in various countries, characterized by different features due to different conditions, the role of education in the Economic Growth in those countries has been widely recognized. An earlier attempt made by Bowman and Anderson (1965) confirmed the relation between the percentage of literacy and gross national product of 90 countries.

Though education claims a considerable section of the national budget helps the economy to reduce the wastage of available limited resources by imparting people in the optimum utilization and as a result the income of the nation increases and ultimately the per capita income. There is a considerable evidence to show that there is no uneducated community which has progressed far in the modern world and no educated community has remained

backward. Schultz (1961) pointed out that "Let us suppose that education were, among other things, a powerful engine in winning greater productivity and increases in real income. Under these circumstances, one should look upon education as an investment contributing to economic growth".

In any Economy, Economic activities are directly depending upon the human resources and their potentialities. Education is the most important single factor which improves their potentialities and as a result the economic benefits are increasing in the country. The main thrust of the world Bank's analysis is that "apart from its undoubted social and cultural value, education brings with it concrete economic benefits as well". In a developing economy expansion in education at all levels is inevitable. This is partly because of the need of the economy for educated and skilled manpower and partly because of government policy to universalize education. Thus enrolment in educational institutions is likely to grow progressively.

Human resources are considered as an important factor in Economic Growth. Economic growth does not depend on the mere size of the human resources (or) in other words the number of people in the country but on their contribution to the Economy. Further rapidly increasing economic needs of a nation can be met only by the potential human resources potential educational facilities should be expanded. The capabilities which individuals possess are a result of formal education usually provided in schools and colleges. As rightly observed by the Indian Education Commission (1964-66) that "the basic assumption in relating education to economic growth is the potentiality of education to contribute to the national economy". Educational institutions themselves employ a large proportion of their own products and as a result they influence the supply and also the demand for education. The adoption of Economic planning in the form of five year plans also show the efforts taken to help the public in making use of the available educational facilities. The contribution of education to economic growth has been recognized almost universally. Yet enough work

has not been done to assess the role of education, in this respect and to devise ways and means which would reveal essential facts to educationists, economists and educational planners in formulation planning for Economic Growth.

Considering the significance of economic growth attached to educational growth the present investigator thought that it is most appropriate for him to take-up a study in this respect. It is entitled as "Educational Growth and Economic Growth in Tamil Nadu between the years 1969-70 and 1978-79."

CHAPTER – II
REVIEW OF RELATED STUDIES

The investigator has reviewed the available literature about the studies already made in relating Educational Growth and Economic Growth. The available studies pertaining to this aspect alone have been presented by him. The investigator has first presented the foreign studies carried-out by (i) Ingvar Svennilson (1961), (ii) U.N. Bureau of Social Affair (1961), (iii) Harbison (1964), (iv) Denison (1962), (v) UNESCO (1970) followed by Indian studies of, (vi) Nallagounden (1965), (vii) Karnik (1967), (viii) Sinha (1967), (ix) Sharma (1973), (x) Singh (1974), (xi) Prakash (1975), (xii) Goel (1975), (xiii) Venkatasubramanian (1978), (xiv) Upadhaya and Sharma (1978) and (xv) Tilak (1979). All these deal with educational growth and economic growth.

Ingvar Svennilson (1961), U.N.Bureau of Social Affairs (1961) and Harbison (1964) attempted to study the correlation between school enrolment ratios and levels of income. All these three studies broadly established the same conclusion that richer countries have more and better education than the poorer countries. The following conclusions are given from Svennilson's study relating to 22 countries. He compares enrolment ratios in three age groups (5 to 14; 15 to 19; and 20 to 24) in 1958 for 22 countries with per capita GNP in US $ in 1959 prices.

i. A country with a low GNP per capita cannot afford to have most of its young people between 15 and 19 in full time education and thus withheld from gainful employment. On the other hand a highly industrialized country with a high GNP per capita can hardly afford to break off the education of most of its young people at the age of 14.

ii. Countries with the highest GNP per capita all have very high enrolment ratio, the countries with the lowest GNP per capita all have low enrolment ratios. The dispersion of enrolment ratios in the middle group reflects the fact that,

at a certain income level, tradition and belief in the value of education have more influence that the income level itself.

iii. The regression line indicates a high income elasticity of enrolment ratios for the groups 15-19 and 20-24… The wide dispersion around the regression line, however excludes the possibility of explorating. In particular, the ratio for the Soviet Union shows the power of political decisions to promote educational expansion beyond the level which might be expected from the average income figure. Generally speaking, the income level as expressed by GNP per capita seems to set the lower limit of educational effort. But above that limit there is a wide margin for choice, whether it be determined by private consumer preferences (or) by political decision to invest heavily in order to accelerate economic development.

Firstly, the study implies that more education is the result of rising income. This assumes that education follows economic development. Secondly, political (or), other factors can push educational expansion substantially beyond what can be expected from a given level of income.

Denision (1962) makes a sharp distinction between the contribution to economic growth of (a) improvement in the quality of labour force due to more education and (b) improvements in productivity due to advance in knowledge. The former refers to the amount of formal education received by the labour force while the latter refers to more and better information to be imparted in schools. Denison's main results regarding the contribution of the various sources to economic growth have been given in Table 2.1.

Table 2.1 Percentage Growth rates by Denison

Percent of Growth Rate 1909-29 (Kendrick-kuznets) 1929-57		
Increased Employment	35	34
Increased Education	11	23
Increased Capital	23	15
Advance of Knowledge	Not available	20
Economies of scale	10	9
Total	79	101

These results are significant in many ways. In the first instance, though confined to U.S.A., they clearly show that education makes significant contribution to economic growth. This clearly indicates that the importance to be attached to education varies from time to time.

UNESCO (1970) study classified 36 countries into two categories in which seventeen countries with per capita income of more than 500 US dollars (1960) on the one hand and nineteen countries with per capita income of less than 500 US dollars (1960). Further, this study confirms that (i) the private demand for education is greater at higher levels of per capita income, as the mean value of higher education in countries with per capita income more than 500 US dollars was 689.8 in 1960 and 1,317.7 in 1968 as compared to a mean value of 229.5 in 1960 and 403.4 in 1968 in countries with per capita income of less than 500 US dollars in 1960. The average rate of economic growth (percentage increase) in per capita income between 1960 and 1968 was 62.6 in the former group of countries and 61.2 in the letter group which shows that the rate of economic growth cannot be attributed entirely to the growth of higher education.

The fact that the rate of economic growth has been about the same in the two groups of countries but their elasticities of the demand for higher education are different would indicate the

educational gap between the two has narrowed down. These are the references revealed in the conclusion in this study.

Nallagounden (1965) attempted to assess the contribution of education to India's economic growth during the brief period of ten ears form 1950-51 to 1960-61. The objective of the study were (i) to estimate the growth of human capital being intended to devote formal education and (ii) to estimate the rate of return of education. The findings of the study are the followings: (i) cost of primary education is more from the public than from the students, (ii) Gross investment in education and physical facilities in education as percentage of adjusted national income was 8.9%, (iii) the stock of human capital in 1950-51 was worth of Rs.4956.45 crores, (iv) Growth of human capital over the period from 1950-51 to 1960-61 amounted to Rs.0.355 crores and (v) the rate of return to education was 15.9% for literate, 15.3% for primary and middle, 12.1% for matric, 8.9% for degrees and 9.6% for professional degree.

Karnik (1967) studied the educational development in the state of Gujarat during the period 1951 to 1961 in the light of the Economic Growth. The aim of the study was to find out the relation between certain growth variables in education and the economy. Mainly population, district income, per capita income, literacy are considered. The findings of the study revealed that (i) the growth of primary school was 93%, (ii) Enrolment in primary increased by 85%, (iii) the enrolment in secondary education increased by 97%, (iv) the growth of expenditure in secondary education was to the tune of 98% and (v) the expenditure in higher education increased by 385%.

Sinha (1967) analyzed the educational development in Bihar during three five year plans in terms of economics of education and draw policy conclusions. The methodology of the study was both deductive and inductive. The main focus of the study was to find the impact of economic growth on education. It was found that (i) the elementary university, cultural education consumed 71.6% of the total plan expenditure in the second five year plan, (ii) the per capita income, expenditure on education increased form Rs. 4.89 in 1960-

61 to Rs.5.61 in 1963-64 and (iii) the state income increased by sixty four per cent total cost of education by 288%, per capita cost by 208% and employment by 163% during the three plan periods.

Sharma (1973) in his attempt studied the economies of education with special reference to educational development of Madhya Pradesh. The major objective of the study was: To study the development of education in Madhya Pradesh and to study the regional inequalities of education in the state. He found out that the (i) expenditure in higher education was raised to 27.5%, (ii) the number of institutions increased from 43,822 to 45,215 – enrolment from 39.81 to 42.35 lakhs, (iii) the increase in high schools and higher secondary schools was 12.8% and it was given much importance and (iv) During this period 1961-71 the percentage of literacy increased from 17.7 to 22.12.

Singh (1974) analyzed the content of education as it is much more important than the linear growth of the system. Educational progress and economic development of Punjab in 1966 has been surveyed. The general conclusions about the progress of education in Punjab found are as follows:

i. The primary enrolment falls in spite of increased total enrolment.
ii. High school level too, the annual rate of increase of enrolment showed an increasing trend.
iii. Enrolment at the graduate and post-graduate levels had been raising faster than at the lower levels.
iv. The per capita expenditure on education increased at the rate of 8.7% per year.
v. There had been a significant growth in general education in terms of institutions, enrolment and teachers, as also in financial terms.
vi. In general, the educational system in Punjab was yet largely improductive; it carried a considerable amount of miseducation and misdirection of resource and it created an excess capacity which could be utilized at a marginal cost for further development of the system.

Prakash (1975) studied the growth of secondary education in Uttar Pradesh with special reference to the educational finance and the main objective of the study was to examine the major development in the field of secondary education. Some of the important findings of the study revealed that,

i. The relative standing of secondary education went down during 1966 and 1974.
ii. The expenditure per pupil at the lower and higher secondary stages was comparatively lower than that in all but three stages.
iii. On the basis of the present trend of expansion in enrolments at lower and higher secondary stages, the cost of secondary education in 1988-89 was estimated to be Rs.284 crores while the funds available for the purpose were expected to be Rs.200 crores only.

Goel (1975) made an attempt to study educational growth and economic growth in India during the period 1950-51 to 1970-71. He has proposed to examine if there exists a direct and significant relationship between the growth of education at primary, secondary and tertiary levels, on the one hand and economic growth as measured by the per capita income on the other. He found out that the enrolment in primary education increased from 33.6% to 64.3%, enrolment in secondary education increased from 6.4% to 20.4%, enrolment in higher education increased from 1.1% to 5.4% during this period 1951-52 to 1970-71. The per capita income at current prices increased form Rs.266.5 to Rs.633.1 during this period. It was also found out that there is appositive correlation between primary enrolment and per capita income (.85) secondary enrolment and per capita income (.94) and enrolment in higher and per capita income (.96). He has used the weighted composite index is the weighted sum of primary, secondary and higher, the weights being 1, 1.5 and 3 which have been assigned on the basis of earnings differentials between the earnings of educated persons and those with no formal education. The weighted composite index of educational growth has constantly gone-up from 1950-51 to 1970-71 and it has gone-up

steadily except during 1965-66 to 1970-71. The fact that correlations with per capita income at constant prices are lower than those with per capita income at current prices indicates that education cannot be regarded as a determinant of economic growth. From the point of view of analysis, therefore the income-education relation appears to be more important. The findings of the study revealed that,

i. Demand for education increases with the increase in the per capita income.
ii. Education becomes less elastic at higher levels of income.
iii. Demand for different levels of education does not increase with private rate of return and
iv. Educational expenditure in India increased from 1.3% to 2.9% from 1950-51 to 1968-69.

UPADHAYA and SHARMA (1978) attempted to find-out the correlation between educational growth and economic growth in the rural part of Varanasi Tashil of Uttar Pradesh. The per capita income was taken as the indicator of economic growth. It was calculated by dividing the total year income in the form of money by the total population of the village. Regarding educational growth points were allotted arbitrarily for the different levels of institutions as below.

i. 5 points for primary school
ii. 10 points for secondary school
iii. 15 points for a degree college

For Educational and Economic growth r = 0.99
Educational growth and economic growth in 8 representative village of the Tahsil = 0.95

These values are significant predictors to all the high positive correlation between education and economic growth. However, further studies are needed to confirm the findings of this study.

Venkata Subramanian (1978) in his study, considered primary education is the base on which the whole edifice of education is raised. The major aims of the study were to make a cost-benefit anlaysis of primary education in Tamil Nadu by finding

the rates of return and some other intangible effects related to economic development and also to study the internal efficiency and productivity of the system of primary education in Tamil Nadu. Educational statistics compiled at the state and national levels have been mainly utilized for the analysis in respect of enrolment and investment on education. Data relating to economic indicators published by the department of statistics have also been utilized. The findings of the study revealed that the primary education which precedes secondary, tertiary levels of education becomes the lever of development. There is an inter-relationship between primary education, literacy, agricultural productivity and family planning which produces a significant impact on other developmental programmes. The public expenditure on primary education at the all India level increased from Rs.44.30 crores in 1950-51 to Rs.500 crores (estimate) in 1973-74. The total enrolment ratios in 1950-51 for the lower primary and higher primary levels were 42.6 and 12.9 respectively. They increased to 63.8 and 36.00 in 1973-74. Per capita net state domestic product and percentage of literacy in 1970-71 showed significant correlation.

Tilak (1979) in his study, using the data on enrolment in educational institutions in 1974-75 and institutional costs as the basis of weights constructed a composite index of educational development, which presents a comprehensive and compact idea of inter-state disparities in the educational development. He found that (i) there was no strong relationship between economic development and educational development (ii) Geographical size of the state and educational development were inversely related, and (iii) social and demographic factors may also substantially influence the educational development in any region.

The relationship of education to economic growth has been a subject of intensive study. The rapid growth of research in this field has been facilitated by advances in data analysis together with the major improvements in techniques for processing large quanitities of data. From the available related literature it can be identified that Goel (1975) who studied the relationship between education and

economic growth in India during 1960-67, covered Tamil Nadu also in his study. After this, no study seems to have been made for finding out the inter-relationship between educational growth and economic growth except a case study by Venkatasubramaninan (1978) with particular reference to primary education for the year 1974-75 in Tamil Nadu. While the first, second and third five year plans had each a chapter devoted to 'Education' it was in the fourth and fifth five year plans (1969-79) that the chapter on 'Education' was appropriately combined with manpower which contribute to the economic growth of the nation. As there exists a gap since 1967, the investigator thought that it would be appropriate to make a trend analysis regarding the educational growth and economic growth in Tamil Nadu for a very recent period (1969-79) which covers the fourth and fifth five year plan periods.

CHAPTER III
METHODOLOGY

Introduction

Education is an important factor in economic growth. It is the base on which the whole Economy is dependent. The present study is an attempt to analyze the relationship between educational growth and economic growth in Tamil Nadu during 1969-70 to 1978-79, which covers the fourth and fifth five year plan periods. In relating educational growth and economic growth, the investigator has taken the relevant quantitative indicators to refer to them. By educational growth the investigator means the increase in enrolment of students in different levels and by economic growth, the increase in per capita income of Tamil Nadu during the period. Regarding the levels of education, the investigator has included four levels in this study. They are (i) primary (ii) secondary (iii) higher and (iv) special educational level. For measuring the economic growth, the per capita income at current and constant prices, both have been taken into consideration. The two variables considered in this study are Educational Growth and Economic Growth.

Definition of key terms:

Education refers to the facilities provided for pupils who are to be enrolled in the formal educational institutions to help them to complete their courses in a given orderly, planned and systematic manner.

By enrolment, the investigator means the number of students enrolled in the formal educational institutions at various levels during a given period of time.

GRAWHILL in the dictionary of education defines the Formal Education as referring “any training (or) education that is conventional, given in an orderly, logical planned and systematic manner; thus formal education is said to end with school attendance.”

By educational growth in this study, the investigator means the increase in enrolment, increase in the number of educational institutions. Educational Expenditure refers to the amount of money spent on education in a country and increase in the expenditure on education.

Per capita income refers to the average annual income of an individual in a country which is derived by dividing the National Income by the population in a country usually in a year.

Expenditure on Education refers to the money value of the resources assigned during a year to be production of education.

Economic growth refers to rate of expansion of the national income of a country.

In the Dictionary of Economics edited by Herold S. Sloem & Arnold S. Zurcher state that Economic Growth Rate refers "to the rate – a percentage of changes in the real gross national product by which the country's total production of goods and services increases (or decreases) annually.

Bhatawdekar (1965) pointed out that the term Economic Growth is usually taken to mean an increase in production that gives a country more real income over a period of time and increase in national income at constant prices are used as measure of Economic Growth".

There are indicators of economic growth like increase in population, increase in agricultural productivity, increase in industrial output, expansion of trade, increase in real national income and increase in the per capita income. In this study, the investigator has taken into consideration only the increase in per capita income as the indicator of economic growth which is an appropriate indicator to combine with the educational growth because the per capita income in a country has direct influence upon the people's activities in acquiring education and also educating their children.

Goel (1975) has taken the per capita income of India as the role indicator of economic growth in his study on "Education and Economic growth in India" which covered a period of twenty years (1950-51 to 1970-71).

Primary educational enrolment refers to the pupils enrolled at the primary level which covers the students' strength from I standards to V standards.

Secondary educational enrolment refers to the pupils enrolled at the secondary level which covers the students' strength from VI standards to XI standards except for the year 1978-79.

Higher educational enrolment refers to the pupils enrolled at the higher level which covers the students' strength of higher secondary, general arts, science and professional courses.

Special educational enrolment refers to the pupils enrolled at different courses meant for special education which are included in the Tamil Nadu educational budget. This covers, students' strength in the schools for professional education, and in the schools for other special education.

Under the category of special educational enrolment, comes enrolment in professional and other special educational institutions such as

1) Training School, Training school for Pre-Primary Training School for Music and Training School for Craft. 2) Oriental High School, Oriented Middle School and scholls for handicapped include Blind School, Blind and Deaf school, Deaf and Dumb School, Orthopaedic School, Mentally retarded School, Leper School, Reformatory and Jail School and adult School. As the break-up of the institution and enrolment in them were not available for different stages of education, the investigator has taken the enrolment in the above mentioned educational institutions under the separate category of special educational institutions.

Overall educational enrolment refers to the total number of students at all levels.

Objectives:

The objectives of the study are,

1. To find out the percentage growth of primary, secondary, higher, special and over all educational enrolment in Tamil Nadu between the years 1969-70 and 1978-79.
2. To find out the percentage growth of per capita income at current prices and per capita income at constant prices in Tamil Nadu between the years 1969-70 and 1978-79.
3. To find out the relationship between the growth of primary enrolment and per capita income; secondary enrolment and per capita income; higher enrolment and per capita income; special educational enrolment and per capita income; and over all educational enrolment and per capita income, in Tamil Nadu between the ears 1969-70 and 1978-79.
4. To fit a semi-log growth model for the educational growth in Tamil Nadu between the years 1969-70 and 1978-79.
5. To find out the percentage share of the State income to the educational expenditure, and to the total expenditure of the state.

Research Hypotheses:

1. There is a direct and positive relationship between primary enrolment and per capita income.
2. There is a direct and positive relationship between secondary enrolment and per capita income.
3. There is a direct and positive relationship between higher educational enrolment and per capita income.
4. There is a direct and positive relationship between special educational enrolment and per capita income.
5. There is a direct and positive relationship between total educational enrolment and per capita income.

The design of the study is given in the next section.

Table 3.1 Design of the Study

S.No	Details	Objective of the Study	Method Used
1.	**Variables**		
	i) Educational Growth	a. Finding out the percentage growth of enrolment	Percentage Growth
	ii) Economic Growth	b. Finding out the percentage growth of per capita income	Percentage Growth
		c. Finding out the percentage of expenditure on education to State income	Calculation in percentage
2.	**Treatment**		
		a. To find out the relationship between the educational growth and the economic growth	Spearman's rho (Co-efficient of correlation)
		b. To fit a semi-log growth model	Semi-log growth model using the formula $\log Y = a + b X$

Data Collection:

For the study, data on the number of educational institutions and the number of students enrolled at each level is required. Also data on the per capita income of Tamil Nadu for the years 1969-70 and 1978-79 are required. As the study is a documentary analysis, all the above mentioned data were collected by the investigator from (i)

Educational Statistics and (ii) Annual Statistical Abstract for Tamil Nadu for the years 1969-79.

Statistical Treatment:

The main focus of the study is to find out the educational growth and economic growth in Tamil Nadu and to find out the relationship between them.

1. Educational growth was in terms of the annual percentage in enrolment in each year over the previous year enrolment of students.
2. Similarly, the annual percentage change in per capita income over the previous year was calculated to measure the Economic Growth.
3. Using the correlation co-efficient, the relationship between Educational Growth and Economic Growth was found out.
4. To find out the trend in the growth of enrolment for educational growth the investigator has applied a semi-log growth model using the formula

   log Y = a + b X was fitted for each level of education and the insignificant of the observed growth rate for different levels was statistically found.
5. To find out the share of educational expenditure to the state income, simple percentage calculation was worked.

Limitations:

1. The period of analysis is limited to a period to ten years 1969-70 and 1978-79 which covers the fourth and fifth five year plan period.
2. The investigator confines himself to the four levels of education namely, primary, secondary, higher and special in the formal education.
3. The area of coverage is only within the state of Tamil Nadu.

CHAPTER IV
ANALYSIS OF DATA

The present study is aimed at finding out the percentage growth of enrolment and per capita income and the relationship between them for different levels of education i.e, primary, secondary, higher, special and the over all educational level. The methodology adopted and the collection of data were discussed in chapter III. In this chapter, the analyses carried-out and the results obtained from the application of statistical techniques are presented.

Increase in Educational institution:

It is appropriate to discuss here the educational institutions at various levels of education in Tamil Nadu during the period held in the study. It is a fact that enrolment directly depends upon the available number of educational institutions. It is necessary to increase the number of educational institutions as the enrolment at various levels increase. The exact number of the educational institution available at various levels in Tamil Nadu during the fourth and fifth year plan periods have been given in Table 4.1.

Table 4.1 Number of educational institutions at primary, secondary, higher and special levels in Tamil Nadu

S.No	Year	Primary	Secondary	Higher	Special	Total
1	1969-70	25, 675	8519	243	59	34,496
2	1970-71	25,917	8539	281	74	34,811
3	1971-72	26,159	8558	322	88	35,127
4	1972-73	26,431	8577	356	97	35,461
5	1973-74	26,614	8614	372	104	35,704

6	1974-75	26,797	8650	388	112	35,947
7	1975-76	26,951	8706	409	160	36,226
8	1976-77	27,306	8750	419	166	36,241
9	1977-78	27,395	8767	423	167	36,752
10	1978-79	27,505	7893	1,338*	170	36,906

** Increase due to the introduction of higher Secondary Schools.*

During 1969-70, there were 25,675 primary, 8519 Secondary, 243 higher and 59 special educational institutions. There was a steady increase in the number of educational institution in all the four levels of education in Tamil Nadu between the years 1969-70 and 1978-79. It may be observed form the table that the total number of educational institutions went up from 34,496 in 1969-70 to 36, 906 in 1978-79.

Enrolment at Different Levels:

The first objective of the study is to find out the percentage growth of enrolment at different levels of education in Tamil Nadu. The investigator obtained the data about the enrolment at different levels form the Government published reports and statistical abstracts from 1969-70 to 1978-79 which covers the fourth and fifth five year plan periods.

The term enrolment refers to the number of students enrolled at different levels of education – ie. Primary enrolment (I to V standard), secondary enrolment (VI to XI standards), higher enrolment (beyond secondary level) and special educational enrolment (other special courses).

In the following paragraphs, the enrolment at different levels has been presented.

Table 4.2 Primary enrolment and its percentage growth (1969-70 to 1978-79)

Year	Primary Enrolment	Percentage Growth	Growth in the IV & V Plan Period
1969-70	33,95,725	1.89	
1970-71	35,10,760	3.38	
1971-72	35,88,316	2.20	2.59%
1972-73	36,74,358	2.39	
1973-74	37,62,813	2.40	
1974-75	38,51,268	2.35	
1975-76	38,76,970	0.66	2.47%
1976-77	39,87,587	2.85	
1977-78	41,44,270	3.92	
1978-79	42,52,660	2.61	

Primary Enrolment:

Table 4.2 presents the steady increase of the enrolment of students at the primary level in Tamil Nadu from 1969-70 to 1978-79. The figures indicate the steady growth of enrolment which shows 25% of increase over the entire period of study.

But the difference of growth during the IV and V plan periods is shown with the figures of averages ie. 2.59% and 2.47% respectively. Hence it is evident that the percentage of growth has lower average of 2.47 during the V plan period. We find the percentage of growth during 1975-76 is to be 0.66 and this has brought down the percentage of growth of the V plan period. If we look for the reasons we find that there was an acute shortage of food supply during that period which also permits us to focus that the people might have spent most of their income on their food requirements. It may also be noted that even the highest growth of 3.92 in 1978-79 ie. during the V plan period has not raised its average growth very much.

Table 4.3 Secondary enrolment and its percentage growth (1969-70 to 1978-79)

Year	Secondary Enrolment	Percentage Growth	Growth in the IV & V Plan Period
1969-70	35,74,744	1.39	
1970-71	36,49,787	2.09	
1971-72	37,08,516	1.60	1.76%
1972-73	37,53,277	1.20	
1973-74	38,35,301	2.18	
1974-75	39,17,325	2.13	
1975-76	39,22,836	0.14	
1976-77	41,24,371	5.13	2.57%
1977-78	42,72,419	3.58	
1978-79	43,53,582	1.89	

Secondary Enrolment:

Table 4.3 shows that the enrolment of students at the secondary level in Tamil Nadu has a steady increase form 1969-70 to 1978-79. It's gradual growth is seen form the figures of enrolment and we also observe that the secondary enrolment has an increase of over the entire period of study.

However, when the percentage growth of enrolment is calculated we find ups and downs of growth of enrolment when it is calculated for every annum. Moreover, the percentage of growth indicated 0.14% in the year 1975-76 and 5.13 in the year 1976-77 are the lowest and highest percentage growth in the entire period of study.

The acute shortage of food during 1975-76 that has been attributed for the fall of primary enrolment would also hold good for the lower percentage of enrolment at the secondary level during the year. Though there is the lowest percentage growth in the V plan period we find the average annual growth is higher than the IV plan period which is evident from the respective figures of average viz. 1.76% and 2.57%.

The growth of enrolment at the higher level is presented in Table 4.4

Table 4.4 Higher enrolment and its percentage growth (1969-70 to 1978-79)

Year	Higher Enrolment	Percentage rate of Growth	Growth in the IV & V Plan Period
1969-70	1,80,403	4.20	
1970-71	1,96,477	8.91	
1971-72	2,20,649	12.30	7.63%
1972-73	2,45,897	11.44	
1973-74	2,48,643	1.32	
1974-75	2,59,444	6.92	
1975-76	2,69,631	3.92	
1976-77	2,76,655	2.60	3.35%
1977-78	2,87,010	3.74	
1978-79*	2,85,827	(-0.41)	

** In 1978-79 9,56,951 students were enrolled in higher secondary classes in Tamil Nadu, and 909 Higher secondary – Institutions were newly introduced.*

Higher enrolment:

In table 4.4, the figures of enrolment indicates that there has been a steady increase in the enrolment of students at higher level except during 1978-79. It has an increase of 59% over the entire period of study.

When the percentage growth of enrolment at Higher level is calculated, it is found that the highest growth is to be 12.3% in 1971-72 which has contributed much for the greater increase in the average annual percentage in the IV plan period. Further we also observe the average growth in the V plan period is affected which is due to the low negative percentage growth in the year 1978-79. It might be due to the abolition of pre-university course at the college level.

With the introduction of higher secondary courses (at high schools) after the secondary level form the year 1978-79, we find the enrolment is to be 9,56,951. As there was no such courses in the previous years a trend analysis has not been done.

Table 4.5 Special educational enrolment and its percentage growth (1969-70 to 1978-79)

Year	Special Educational Enrolment	Percentage Growth	Growth in the IV & V Plan Period
1969-70	9,187	-0.61	
1970-71	9,127	-0.65	
1971-72	9,066	-0.66	6.19%
1972-73	10,730	18.35	
1973-74	11,562	7.75	
1974-75	12,393	7.18	
1975-76	12,417	0.19	
1976-77	13,997	12.72	5.67%
1977-78	14,789	5.65	
1978-79	15,181	2.65	

Special Educational Enrolment:

From the table 4.5 it can be seen that the enrolment at special educational level has negative percentage growth in the years 1969-72. However, there has been a sudden increase in the year 1972-73, the highest percentage growth being 18.35 which has made the average annual percentage growth of IV plan period greater than

V plan period. But the enrolment of students at special educational level has an increase of 65% over the entire period of study.

The lowest percentage growth in 1975-76 is found to be 0.19. As in the primary and secondary level it might be due to the shortage of food supply in the state. Even though there has been a fall of enrolment in the first 3 years (1969-70 to 1971-72) a steady and continuous increase in enrolment is witnessed after 1971-72. This might be due to the realization of the importance of special education.

Table 4.6 Over all educational enrolment and its percentage growth (1969-70 to 1978-79)

Year	Total Enrolment	Percentage change over the previous year	Growth in the IV & V Plan Period
1969-70	71,60,059	102.4	
1970-71	73,66,151	102.8	
1971-72	75,26,547	102.1	102%
1972-73	76,84,262	102.0	
1973-74	78,52,319	102.1	
1974-75	80,40,430	102.3	
1975-76	80,81,854	100.5	
1976-77	84,02,610	103.9	
1977-78	87,18,488	103.7	104%
1978-79	98,64,201	113.1	

Over all educational enrolment:

It may be observed from the Table 4.6 that the total enrolment of students in the state of Tamil Nadu has steadily been increasing from 1969-70 to 1978-79. There has been an increase of 37% in the enrolment over the entire period of study.

The percentage growth of enrolment is about 102 and the average annual percentage growth in the V plan period is slightly higher than the IV plan period which is evident from the respective figures viz. 102% and 104%.

In the last year of the study (1978-79) the percentage growth has gone-up to 113 from 103 of the previous year and this might be due to the introduction of the higher secondary course after the secondary level which has an enrolment of 9,56,951 students for the higher secondary classes.

Per capita Income:

The second objective of the study was to find out the percentage growth of per capita income at current prices and at constant prices in Tamil Nadu.

Per capita income refers to the average annual income of an individual in the country. In the following paragraphs, the per capita income at current prices and constant prices are presented.

Table 4.7 Per capita income at current prices and its percentage growth (1969-70 to 1978-79)

Year	Per capita income at current prices Rs.	Percentage Growth	
1969-70	585	4.8	
1970-71	618	5.6	
1971-72	667	7.9	8.38%
1972-73	695	4.2	
1973-74	830	19.4	
1974-75	874	5.3	
1975-76	889	1.7	
1976-77	950	6.9	6.14%
1977-78	1051	10.6	
1978-79	1161	6.2	

Per capita income at current prices:

The per capita income at current prices of Tamil Nadu state shows a continuous increase from 1969-70 to 1978-79 which covers the entire period in the study and it has increased by 98%.

When we calculate the percentage growth of per capita income at current prices, it is found that the highest percentage growth to be 19.4 in 1973-74 during the IV plan period and the lowest percentage growth to be 1.7 in 1975-76 during the V plan period. The per capita income at current prices has increased form Rs. 585 in 1969-70 to 1161 in 1978-79. But it has included the inflation (increase in the price level) prevailed in the state during the period taken for the study. The percentage growth of per capita income at current prices during the year 1975-76 is observed to be 1.7 which is lowest over the entire period and that may be the resultant of low agricultural output during that year. The average annual percentage growth of per capita income at current prices during the IV plan period (1969-74) and V plan period (1974-79) are indicated as 8.38 and 6.14 respectively.

The per capita income at constant prices is calculated and presented in Table 4.8.

Year	Per capita income at constant prices (in Rs.)	Percentage Growth	
1969-70	536	4.2	
1970-71	595	11.0	
1971-72	613	3.0	4.08%
1972-73	607	-0.9	
1973-74	624	3.1	
1974-75	536	-14.4	
1975-76	612	14.2	
1976-77	606	-0.9	8.80%
1977-78	661	9.0	
1978-79	682	3.2	

Per capita income at constant prices:

It may be observed from the Table 4.8 that the per capita income at constant prices is lower than the per capita income at current prices, it may be because of the exclusion of inflation (increase in the price level) in the state of Tamil Nadu during the year 1969-70 to 1978-79.

The per capita income at constant prices of Tamil Nadu decreased during the years 1972-73, 1974-75 and 1976-77 where as in the remaining years it went up over the previous year. The per capita income at constant prices increased from Rs.536 in 1969-70 to Rs.682 in 1978-79. Though we observe three negative growth over the entire period, it has an increase of 27%. The highest percentage growth is 14.2 in 1975-76 and this has made the average annual percentage growth in V plan period higher than the IV plan period. The average annual per capita growth is found to be 4.08 and 8.8 in the IV and V plan periods respectively.

Relationship between enrolment and the per capita income:

The third objective of the study is to find out the relationship between enrolment and per capita income. The investigator applied (Spearman's rho) co-efficient of correlation to find the nature and the extent of relationship between the enrolment of different levels of education and the per capita income. Table 4.9 presents the procedure adopted to find out the value of r between the primary enrolment and the money per capita income (PCI at current price).

Table 4.9 Correlation between primary enrolment and per capita income
(PCI at current prices)

Year	Percentage growth primary enrolment	Rank 1	Percentage growth PCI at current prices	Rank 2	(d) R1 – R2	(d^2) $(R1 – R2)^2$
1969-70	1.89	9	4.8	8	1	1
1970-71	3.38	2	5.6	6	-4	16
1971-72	2.20	8	7.9	3	5	25
1972-73	2.39	6	4.2	9	-3	9
1973-74	2.40	5	19.4	1	4	16
1974-75	2.35	7	5.3	7	0	0
1975-76	0.66	10	1.7	10	0	0
1976-77	2.85	3	6.9	4	-1	1
1977-78	3.92	1	10.6	2	-1	1
1978-79	2.61	4	6.2	5	-1	1

$$r = 1 - \frac{6d^2}{n(n^2-1)}$$

$$= 1 - \frac{6 \times 70}{10(10^2-1)}$$

$$= 1 - \frac{420}{990}$$

$$= 1 - 0.4$$

$$= 0.60$$

From the table 4.9 it can be seen that the value of co-efficient of correlation for the primary enrolment and money per capita income (PCI at current prices) is 0.60. It indicates that there is a positive relationship between the primary enrolment and money per capita income. The investigator worked out spearman's rho for all other levels of education and Table 4.10 presents the values of co-efficient of correlation obtained for them.

Table 4.10 The relationship between enrolment and per capita income (At current prices)

Levels of education and Per capita Income (at current Prices)	Values of r
Primary enrolment and per capita income	0.60
Secondary enrolment and per capita income	0.76
Higher enrolment and per capita income	-0.36
Special educational enrolment and per capita income	0.33
Over all educational level enrolment and per capita income	0.42

The relationship between primary, secondary, special and overall educational level enrolment and per capita income at current prices are positive. But higher enrolment and per capita income at current prices is negatively correlated. It can also be seen that the relationship between primary, secondary and per capita income at current prices are substantial. Likewise the special and over all educational enrolment and the per capita income at current prices are low but definite. The negative relationship between the higher enrolment and per capita income at current prices probably might to due to unemployed graduates in the economy who do not contribute to the Economic Growth of the Nation.

Table 4.11 The relationship between enrolment and per capita income (at constant prices)

Levels of education and Per capita Income (at constant Prices)	Values of r
Primary enrolment and per capita income	0.10
Secondary enrolment and per capita income	-0.10
Higher enrolment and per capita income	-0.46
Special educational enrolment and per capita income	-0.76
Over all educational level enrolment and per capita income	0.39

When the different levels of educational enrolment were correlated with the per capita income at current prices, it was found that there are positive relationship except higher enrolment and per capita income at current prices. However, when the primary enrolment and per capita income at constant prices were correlated it is found that there was negligible positive relationship but the relationship between secondary, higher and special educational level enrolment and per capita income at constant prices were negatively correlated. When the overall educational enrolment and per capita income at constant prices are correlated, it is inferred that there is a low but definite positive relationship between them. This is probably might be due to the inclusion of higher secondary enrolment during the year 1978-79.

The fourth objectives of the study is to fit a growth model for different levels of education and per capita income. The investigator applied the semi-log model, for this, the enrolment was considered as 'Y' and the year as 'X' respectively. Table 4.12 presents the procedure adopted to find out the rate of growth for the primary level enrolment.

Table 4.12 Primary level (Semi-log growth model)

Year	X	Y	$\log_e y$	Log Y-	(X-	(X-	(X-X) (LogY-)	Log	(logy-
1969- 70	1	3395725	15.0371	-0.1122	-4.5	20.25	.5049	15.0426	.0000302
1970-71	2	3510760	15.0731	-0.0762	-3.5	12.25	.2667	15.0663	.0000462
1971-72	3	3588316	15.0932	-0.0561	-2.5	6.25	.1402	15.0900	.0000102
1972-73	4	3674358	15.1168	-0.0325	-1.5	2.25	.0487	15.1137	.0000062
1973-74	5	3762813	15.1407	-0.0086	-0.5	0.25	.0043	15.1374	.0000108
1974-75	6	3851268	15.1618	0.0120	0.5	0.25	.0060	15.1611	.0000000
1975-76	7	3876970	15.1706	0.0267	1.5	2.25	.0400	15.1848	.0002016
1976-77	8	3987587	15.1988	0.0495	2.5	6.25	.1237	15.2085	.0000960
1977-78	9	4144270	15.2372	0.0879	3.5	12.25	.3076	15.2322	.0000250
1978-79	10	425660	15.2640	0.1147	4.5	20.25	.5161	15.2559	.0000656
			151.4928			82.50	1.9582		.0003882

log Y = 15.1493

$$\overline{X} = \frac{55}{10} = 5.5 \quad \log\overline{Y} = \frac{151.4928}{10} = 15.1493$$

log Y = a + b X

$$b = \frac{\sum\left(X - \overline{X}\right)\left(\log Y - \log\overline{Y}\right)}{\sum\left(X - \overline{X}\right)^2} = \frac{1.9582}{82.50} = 0.0237$$

a = $\log\overline{Y} - b\overline{X}$ = 15.1493 - .0237 x 5.5

= 15.1493 – 0.1304

= 15.0819

Y = a + b X = 15.0819 + (0.0237) X

$$S.E = \sqrt{\frac{\sum\left(\log Y - \log Y\right)^2}{(n-2)\sum\left(x - \overline{x}\right)^2}} = \frac{.0003882}{8 \times 82.5} = .0000005 = .0007$$

$$t = \frac{b}{S.E} = 33.5178$$

Compound Growth Rate = [Anti-log (b) – 1] x 100

= [A.log (0.0237) – 1] x 100

= .02391 x 100

= 2.3910

The value of b is significant, implying that the increase in the enrolment is statistically significant at 1% level of significance with 8 degrees of freedom. On an average, the enrolment is increasing at a rate of 2.36% per year and the compound growth rate is 2.39%

Thus the estimated model shows that the growth in the enrolment is statistically significant.

In the next section, the consolidated growth rate for different levels are presented in Table 4.13.

Table 4.13 Consolidated growth rates of enrolments

S. No	Levels of Education	Value of a (Intercept)	Value of b (S.E)	Compound Growth Rate	Calculated 't' value	Inference	R^2
1.	Primary	15.01	0.023 (0.0007)	2.3910	16.4405	Significant at 0.01 level	0.97
2.	Secondary	15.05	0.021 (0.0014)	2.1820	14.6906	Significant at 0.01 level	0.96
3.	Higher	12.12	0.050 (0.005)	5.1391	8.6740	Significant at 0.01 level	0.90
4.	Special	9.00	0.064 (0.0047)	6.6209	13.3565	Significant at 0.01 level	0.95
5.	Overall Educational Level	15.73	0.029 (0.0036)	2.9449	7.8974	Significant at 0.01 level	0.88

(Figures in parantheses are the corresponding standard errors).

Educational expenditures:

Providing education is one of the indispensable functions of the Nation and it became the complete responsibility of the states. The growth of expenditure on education depends upon the need arising out of the growth of the educational sector. An enormous amount of money is involved in the educational programmes of a Nation. It might be the result of increase in the number of educational institutions and enrolment. The increased amount of expenditure on education is having more share of the income of the state as the demand for education increases and also for the policy of

the government of universalization of education. Though it claims a considerable part of the budget, expenditure on education is considered as a wise investment in human beings.

In the next section, the percentage share of the state income to the educational expenditure during the period 1969-70 and 1978-79 is discussed in the Table 4.14.

Table 4.14 Percentage share of the state income to the educational expenditure (1969-70 to 1978-79)

(Rupees in Lakhs)

Year	Expenditure on education	Income of the state (at current prices)	Percentage share of the state Income
1969-70	6574	214842	3.0
1970-71	7254	252046	2.8
1971-72	8285	286086	2.8
1972-73	9317	310885	2.9
1973-74	10853	378487	2.8
1974-75	11554	419135	2.7
1975-76	12256	378279	3.2
1976-77	13554	433298	3.1
1977-78	14327	476207	3.0
1978-79	19094	512041	3.7

State income and educational expenditure:

The income of the state of Tamil Nadu (at current prices) increased by 238% during the period 1969-70 and 1978-79. On the other hand, the expenditure on education shows a continuous increase form Rs.6574 lakhs in 1969-70 to Rs.19,094 in 1978-79, and it is estimated that the educational expenditure increased by 290% over the entire period of time in this study. The percentage share of the state income increased from a minimum of 2.7 to the maximum of 3.7 during the period which seems to be an increasing share of the state income. The expenditure on education thus can be

said that there is a considerable increase in its percentage share to the state income.

In the next section, the expenditure on education to the total expenditure of the state is discussed with Table 4.15.

Table 4.15 Percentage share of total expenditure of the state to the educational expenditure (1969-70 to 1978-79)

(Rupees in Lakhs)

Year	Expenditure on education	Total expenditure of the state	Percentage to total expenditure
1969-70	6574	30623	21.46
1970-71	7254	32148	22.56
1971-72	8285	36926	22.43
1972-73	9317	41704	22.34
1973-74	10853	47283	22.95
1974-75	11554	51537	22.41
1975-76	12256	55792	21.96
1976-77	13554	62727	21.60
1977-78	14327	64581	22.18
1978-79	19094	76537	24.94

Total expenditure of the state and expenditure on education:

The expenditure on education was Rs.6574 lakhs in 1969-70 and Rs.19094 lakhs in 1978-79. The educational expenditure's share on the total expenditure of the state was around 22%. The total expenditure of the state increased by 249% whereas the expenditure on education increased by 290%. This shows that the expenditure on education is maintained more or less fixed share to the total expenditure. And it also can be interpreted that it might be due to the nature of the government policy of the state.

In the next chapter, the discussion of the study has been presented.

CHAPTER V
DISCUSSION

The investigator in the present study has attempted to find out the percentage growth of enrolment and per capita income of Tamil Nadu and the relationship between them covering the period from 1969-70 to 1978-79. In this chapter, the results obtained from the analyses have been discussed and the findings and conclusions arrived have also been presented.

Enrolment at different levels:

The first objective of the study was to find out the percentage growth of enrolment of the various levels of education. Tables 4.2 to 4.6 the enrolment and the percentage growth at different levels included in the study. Students enrolled in different levels under formal education were taken into account. Primary (covers I to V standards), Secondary (include VI to XI standards), Higher (beyond secondary level) and special educational enrolment refers to students enrolled at different special courses recognized by the state government of Tamil Nadu.

In the case of primary level, there was a steady increase in enrolment from 1969-70 to 1978-79. This might be due to the importance of education realized by all and various programmes implemented through the five year plans focused on education. During the period, when the primary educational institutions increased from 25,675 in 1969-70 to 27,505 in 1978-79, the total number of primary enrolment increased by 25%. This shows that the increase in enrolment has influenced the number of primary institutions and as the emergence of new educational institution rendered facilities for more enrolment. It is seen that there is a circular influence upon each other. When the total enrolment which includes all levels of education increased by 37% during the period in the study the primary enrolment increased by 25%.

The study of Singh (1974) showed that in the case of Punjab, the primary enrolment decreased in spite of the increased total enrolment. But viewed from the growth observed in the present study, it might be inferred that the findings of Singh do not hold good in the case of Tamil Nadu which showed a 25% increase in primary enrolment as the total enrolment increased. Karnik (1967) also found that in the case of Gujarat during 1951-61 the primary enrolment went-up by 85%. This is also agreed by Goel (1975) who pointed out that there was a 18.9% increase in primary enrolment in Tamil Nadu during an earlier period which covered the years 1960-61 to 1966-67. The study of Venkatasubramaniam (1978) which covered a period from 1950-51 to 1973-74 proved that the primary enrolment increased nearly 3.3 times in 1973-74 to that of enrolment in 1950-51 in Tamil Nadu.

In case of secondary level, there was a steady increase in enrolment from 1969-70 to 1978-79. This might to be result of increasing trend existed in the primary level succeeded by the secondary. During the period, when the secondary educational institution increased from 8519 in 1969-70 to 8767 in 1977-78, there was a sudden fall in the year 1978-79 which reduced 874 secondary institutions over the previous year. This might be due to the exclusion of XI standard from the secondary level of education. This sudden negative change could be identified in the number of educational institution only but the secondary enrolment increased from 1969-70 to 1978-79 at a rate of 21%. Particularly in the last year (1978-79) the secondary enrolment had gone-up by 1.89% in spite of the reduction of 874 institutions over the previous year existence. When the growth of secondary enrolment and its corresponding number of institutions with the growth of primary enrolment with its corresponding number of institutions, it can be said that the growth of secondary education was comparatively more than that of the primary education.

Goel (1975) reported that the growth of secondary level in Tamil Nadu during 1960-61 and 1966-67 was 61.2% while at the primary level it was 18.9%. the finding of this study is supported by

the findings of Goel. Whereas, Prakash (1975) found that the relative standing of secondary education in Uttar Pradesh went down during 1966 and 1974.

In case of higher level, there was a gradual increase in enrolment from 1969-70 to 1977-78 and in the year 1978-79, it could be seen that there was a slight fall in enrolment which might be caused by the termination of Pre-University classes in that year. But the enrolment at the higher level had grown by 59% during the period taken in the study. The total number of higher educational institutions was 243 in 1969-70 and it increased up to 423 in the year 1977-78. As the higher secondary course had been introduced in the year 1978-79 which was taken as the last year in the study, 909 new higher secondary institutions came into existence and the higher secondary enrolment during that year was 9,56,951. And the result of this, the trend in the enrolment at the higher level changed. As the data regarding the enrolment of higher secondary level was given separately and the investigator could not do a separate analysis of this data. The trend at the higher level, shows a considerable percentage growth of enrolment increased over the previous years in the period taken in the study. When comparing the high enrolment growth rate of 59% with the primary and secondary it is much higher than others.

A similar finding was made by Karnik (1967) who found that the rate of growth of enrolment at higher level was more than the primary and secondary level. Goel (1975) also agreed that the rate of growth of higher enrolment was 100% while primary and secondary were 18.9% and 61.2% respectively in his study covering the period 1960-61 to 1966-67 in Tamil Nadu. A recent study made by Sharma (1977) found that there was a 12% growth of higher enrolment during 1961 to 1975.

At the special educational level, the total number of special educational institutions increased from 59 in 1969-70 to 170 in 1978-79. Likewise, the enrolment had also increased from 9,187 in 1969-70 to 15181 in 1978-79. At this level, there is no separate enrolment for particular standards of education provided. Since there

were no separate categories like primary, secondary and higher levels of education for the course under the category of special education, the enrolment of students have been consolidated and tabulated as one.

As the total number of enrolment only was available in the various institutions, any classification became impossible. During the period 1969-70 and 1978-79, the special educational enrolment grow by 65%. Under this special level of education, only the institution and enrolment which were recognized by the State Government of Tamil Nadu were taken into account for the purpose of analysis.

The investigator could not find a single study which had included special education as a category in researches on educational growth and economic growth.

The over all educational level of the state of Tamil Nadu showed that the total number of educational institutions increased from 34,496 in 1969-70 to 36,906 in 1978-79. Likewise the enrolment also increased from 71.60 lakhs to 98.64 lakhs. Similarly in the study of Sharma (1973) who attempted to study the economics of education, observed tht the number of institutions increased from 43,822 to 45,215 and enrolment from 39.81 to 42.35 lakhs in the state of Madhya Pradesh with special reference to educational development during the period 1961-71.

Per capita income:

The per capita income of a country is considered as the one of the reliable indicators of Economic Growth and it is a quantitative indicator, it can easily be compared with the educational growth in terms of increase in enrolment. The second objective of the study was to find out the growth of per capita income at current prices and constant prices. They have been discussed in the following paragraphs.

Money per capita income (PCI at current prices):

In this study, the per capita income at current prices which had included the increased price level showed a steady increase form Rs.585 in 1969-70 to Rs.1161 in 1978-79. The highest rate of growth was 19.4% in1973-74 and the lowest rate of growth was 1.7% in 1975-76. Though there was wide range of difference between these two levels, the average annual growth rate between the IV & V five year plan periods was not very different. During this period, the estimated rate of growth covering 10 years from1969-70 and 1978-79 was 98%. Goel (1975) pointed out in his study that the per capita income of Tamil Nadu increased fromRs.335 in 1960-61to Rs.508 in 1966-67 which was better than other states.

Real per capita income (PCI at constant prices):

In this study, though the per capita income at constant prices showed 27% growth over the entire period, there were ups and downs year after year. During the years 1972-73, 1974-75 and 1976-77 it was found that there was declining growth and the highest negative growth was (-14.4%) in 1974-75. The annual average rate of growth of per capita income at constant prices in the IV five year plan period (1969-1974) was 1.83% greater than that in V five year plan period (1974-1979).

Relationship between enrolment and per capita income:

In this study, the third objective was to find out the relationship between enrolment and per capita income. (Spearman's rho) co-efficient of correlation was used to find out the relationship between them. Table 4.10 presents the consolidated correlation co-efficient for different levels of education with per capita income of Tamil Nadu. The relationships between them are discussed in the following paragraphs.

Primary enrolment and per capita income (at current prices):

In this study, when the educational growth in terms of enrolment increase and economic growth in terms of increase in the

per capita income were measured and the relationship between them were found out by using Sphearman's rho. The value of r obtained for the primary enrolment and the money per capita income was 0.60. so it was inferred that the positive relationship existed between them is high. A similar finding was that of Goel (1975) who found that there was high positive relationship between the primary enrolment and per capita income of Tamil Nadu during the period 1960-61 and 1966-67. When these two studies are compared, regarding the primary enrolment and money per capita income of Tamil Nadu pertaining to two different periods, the value of co-efficient correlation for primary enrolment and money per capita income in the present study shows a higher relationship which might be due to the increasing prices of the period covered by the present study.

Secondary enrolment and per capita income (at current prices):

The value of the co-efficient of correlation between the secondary enrolment and the money per capita income found was 0.76 which showed a marked positive relationship between them. Here, the obtained value of r was higher than the primary enrolment and money per capita income. Goel (1975) found that there was very high positive relationship between secondary enrolment and money per capita income during the period of his study, but in the present study the degree of relationship had come down in the recent period. This might be due to the modification of the government policy which diverts the secondary general educational enrolment and encourages students to be enrolled at the professional and technical courses. While comparing the secondary enrolment with the money per capita income of these two studies, both the value of co-efficient coincide but it could not be taken as they were equally bound-up.

Higher enrolment and per capita income (at current prices):

Particularly in the higher enrolment level during the last year taken in the present study (1978-79) the enrolment was much affected by the introduction of higher secondary courses which

covered 9,56,951 students made the investigator to present the higher secondary enrolment separate. If the higher secondary enrolment was added with that of the higher enrolment, this would make the higher enrolment trend absurd and meaningless. So it was not correct on the part of the investigator to add higher secondary enrolment and find the relationship between the per capita income of the state. At the same time, the separation of higher secondary enrolment which included the per-university course enrolment reduced the higher enrolment during the academic year 1978-79. This might have resulted in the lower value of co-efficient of correlation which was found as -0.36. Though the value of γ in higher enrolment and money per capita income was lower than primary and secondary enrolment, it could be inferred that there was low negative relationship between them. However, there is need for further researches in the future to confirm this. On the other hand, Goel (1975) found that there was a high positive relationship between higher enrolment and money per capita income in the state of Tamil Nadu during an earlier period of time in his study.

Special educational enrolment and per capita income (at current prices):

Enrolment in the special educational institutions was tabulated separately and the relationship between the special educational enrolment and the money per capita income was found to be 0.33. The obtained value of γ shows low but definite positive relationship between them. When it was statistically tested, it was found there was no significant relationship between them.

Over all educational enrolment and per capita income (at current prices):

As the investigator was interested in finding out the relationship between the over all educational enrolment and per capita income as a whole, the correlation co-efficient for the educational sector and the money per capita income was found and the value was 0.42 which showed a positive relationship. A similar

finding was found by Upadhaya and Sharma (1978) in their attempt to find out the relationship between education and economic growth in the Varanashi Tashil of the state of Uttar Pradesh. On the contrary, Tilak (1979) observed that there was no strong relationship between the educational development and economic development in his analysis of inter-state comparison.

From the analysis of the present study it is inferred that there exists a significant relationship between educational growth and economic growth in Tamil Nadu state during the period 1969-70 and 1978-79.

The relationship between the enrolment and the real per capita income (PCI at constant prices):

When the enrolment at different levels were correlated with the real per capita income, (PCI at constant prices) it was found that the positive relationship between primary enrolment and real per capita income was negligible. The relationship between secondary enrolment and real per capita income was negative and it was also negligible. But the relationship between the higher and special educational enrolment with real per capita income were substantially negative and they were statistically significant. We find there were negative relationships between the different levels of educational enrolment correlated with the real per capita income. But the relationship between the overall educational enrolment and the real per capita income was low positive which probably might be due to the inclusion of higher secondary enrolment during the year 1978-79 and it was statistically significant.

Trend analysis:

When the time series trend is fitted to the primary enrolment the value of b is 89937. This means that the primary enrolment is increasing at a rate of 89937 number of students for one year and this growth is statistically significant.

When the time series trend is fitted to the secondary enrolment the value of b is 85078. This means that the secondary

enrolment is increasing at a rate of 85078 number of students for one year and this growth is statistically significant.

When the time series trend is fitted to the higher enrolment the value of b is 11821. This means that the higher enrolment is increasing at a rate of 11821 number of students for one year and this growth is statistically significant.

When the time series trend is fitted to the special educational enrolment the value of b is 752. This means that the special education enrolment is increasing at a rate of 752 number of students for one year and this growth is statistically significant.

When the time series trend is fitted to the total enrolment the value of b is 239786. This means that the total enrolment is increasing at a rate of 239786 number of students for one year and this growth is statistically significant.

Growth rate of enrolment:

The fourth objectives of the study was to fit a semi-log growth model for different levels of education of the state of Tamil Nadu. The consolidated growth rate for different levels were presented in the Table 4.13 and it was noticed that there were significant growth rate for primary, secondary, higher and special educational level. In the primary level, as the time period increased by one year, the primary enrolment increased by 2.3% and it was statistically significant. As the time period increased by one year, the secondary enrolment increased by 2.1% similarly for the higher level enrolment increased by 5.1% and they were also statistically significant. In the special educational level, the enrolment increased by 6.6%. It was the highest growth rate obtained among all levels of education was also statistically significant. As the investigator was interested in finding out the overall educational growth rate for the educational sector of Tamil Nadu, the semi-log growth model was also applied to the total educational enrolment and it was found that it increased 2.9% by one year time period. All growth rates were significant.

From the analysis, it was inferred that there were significant growth for all levels of education in the state of Tamil Nadu during the period 1969-70 and 1978-79 and the enrolment grew at a faster rate than the real per capita income of the state.

State income, Total expenditure and the Educational Expenditure:

The state income (at current prices) had steadily increased from Rs.214842 lakhs in 1969-70 to Rs.512041 lakhs in 1978-79 which showed an increase of 238% over the entire period on the one hand. On the other hand the total expenditure of the state increased by 249%. The percentage share of the state income to educational expenditure has also increased from 3.0% in 1969-70 to 3.7% in 1978-79 and this can be viewed that the increased share of the state income to educational sector might be due to the importance given to education by the government. In the present study, it was found out that expenditure on education which includes all levels of education increased by 290% whereas Karnik (1967) found that the expenditure in the secondary and higher education increased by 98% and 385% respectively in his study which covered the state of Gujarat during the period 1951 to 1961.

In chapter VI, the summary of the study has been presented.

CHAPTER VI
SUMMARY

Introduction:

Education is a vital factor in Economic Growth. It is through education that the state can increase the effective labour supply and hence the productive capacity of the Nation, investment in human capital is highly productive through technological changes which has a high pay-off in terms of accelerating economic growth and it is certainly true that countries which have a rapid economic growth have made heavy educational investments. On the contrary, the low investment in human capital has been responsible for the slow growth of the under developed countries. Unless such economics spread education, know-how and raise the level of skills and efficiency, the productivity cannot be increased and this would affect the National Income of the people which contributes to the Economic Growth. Considering the significance attached to the expansion of education and economic growth the investigator though that it is more appropriate for him to take-up a study on Educational growth and Economic growth in Tamil Nadu. The investigator attempted to study the educational growth and economic growth in Tamil Nadu for the period from 1969-70 to 1978-79 because in the fourth five year plan that the chapter on 'Education' was appropriately, combined with manpower. This study covers only the formal education in the state of Tamil Nadu.

Objectives:

1. To find out the percentage growth of primary, secondary, higher, special and over all educational enrolment in Tamil Nadu between the years 1969-70 to 1978-79.
2. To find out the percentage growth of per capita income at current prices and constant prices in Tamil Nadu between the years 1969-70 to 1978-79.

3. To find out the relationship between the growth of primary enrolment and per capita income, secondary enrolment and per capita income, higher enrolment and per capita income, special educational enrolment and per capita income and total enrolment and per capita income in Tamil Nadu between the years 1969-70 to 1978-79.
4. To fit a growth model for the educational growth in Tamil Nadu between the years 1969-70 to 1978-79.
5. To find out the percentage share of the state income to the educational expenditure, and to the total expenditure of the State.

Research hypotheses:

1. There is a direct and positive relationship between the primary enrolment and per capita income.
2. There is a direct and positive relationship between the secondary enrolment and per capita income.
3. There is a direct and positive relationship between the higher enrolment and per capita income.
4. There is a direct and positive relationship between the special education enrolment and per capita income.
5. There is a direct and positive relationship between the total enrolment and per capita income.

Table 6.1 Design of the Study

S.No	Details	Objective of the Study	Method Used
1.	**Variables**		
	i) Educational Growth	a. Finding out the percentage growth of enrolment	Percentage Growth
	ii) Economic Growth	b. Finding out the percentage growth of per capita income	Percentage Growth

		c. Finding out the percentage of expenditure on education to State income	Calculation in percentage
2.	**Treatment**		
		a. To find out the relationship between the educational growth and the economic growth	Spearman's rho (Co-efficient of correlation)
		b. To fit a semi-log growth model	Semi-log growth model using the formula

Table 6.2 Percentage growth of enrolments and per capita income

S.No	Levels of Education	Percentage Growth
1.	Primary Enrolment	25
2.	Secondary Enrolment	21
3.	Higher Enrolment	59
4.	Special Educational Enrolment	65
5.	Total Educational Enrolment	37
1.	Per capita income at current prices	98
2.	Per capita income at constant prices	27

It was noticed that the rates of growth of enrolment were ranged from 21% to 65%. It was also inferred that the rate of growth of secondary enrolment was the lowest and special educational enrolment was the highest.

Regarding the rate of growth of per capita income the higher rate of growth was found in the money per capita income of Tamil Nadu.

Table 6.3 Correlation co-efficient between enrolment and per capita income
(PCI at current prices)

S.No	Levels of Education	Value of r	Inference	Level of Significance
1.	Primary	0.60	significant	0.01 level
2.	Secondary	0.76	Significant	0.01 level
3.	Higher	-0.36	Insignificant	0.01 level
4.	Special	0.33	Insignificant	0.01 level
5.	Over all education	0.42	Significant	0.01 level

From the table it was inferred that there were significant relationship between primary, secondary and over all levels of education except higher, special education and money per capita income of Tamil Nadu during 1969-70 and 1978-79.

Table 6.4 Correlation co-efficient between enrolment and per capita income

S.No	Levels of Education	Value of r	Inference	Level of Significance
1.	Primary	0.10	insignificant	0.01 level
2.	Secondary	-0.10	insignificant	0.01 level
3.	Higher	-0.46	significant	0.01 level
4.	Special	-0.76	significant	0.01 level
5.	Over all education	0.39	Significant	0.01 level

From the table, it might be observed that there were negative relationship between the different levels of educational enrolment correlated with the real per capita income. But the relationship between the over all educational enrolment and the real per capita

income was low positive which probably might be due to the inclusion of higher secondary enrolment during the year 1978-79 and it was statistically significant.

Growth rates of enrolment:

The study has analyzed the growth rates of enrolment at different levels of education during the period 1969-70 and 1978-79. To find the growth rates, the investigator applied the semi-log model. For this, the enrolment was considered as 'Y' and the year 'X' respectively using the formula log y = a + bx. Table 6.3 presents the consolidated growth rates for different levels of education.

Table 6.5 Consolidated growth rates for different levels of education (Semi-log growth model)

S. No	Levels of Education	Value of a (Intercept)	Percentage growth rate Value of b	Compound Growth Rate	Calculated 't' value	Inference	R^2
1.	Primary	15.01	0.023 (0.0007)	2.3910	16.4405	Significant at 0.01 level	0.97
2.	Secondary	15.05	0.021 (0.0014)	2.1820	14.6906	Significant at 0.01 level	0.96
3.	Higher	12.12	0.050 (0.005)	5.1391	8.6740	Significant at 0.01 level	0.90
4.	Special	9.00	0.064 (0.0047)	6.6209	13.3565	Significant at 0.01 level	0.95
5.	Overall Educational Level	15.73	0.029 (0.0036)	2.9449	7.8974	Significant at 0.01 level	0.88

(Figures in the parantheses are the corresponding standard errors)

From the table 6.3 it could be inferred that the growth rates for different levels of education were all statistically significant and the respective growth rates were: 2.3% for primary, 2.1% for secondary, 5.0% for higher and 6.4% for special educational level. When the semi-log growth model was fitted for the over all level of education than it was found that the total enrolment grew by 2.9% for one year during the entire period of time taken in the study and it was statistically significant. The next para deals with the expenditure on education.

Expenditure on education:

The expenditure on education appears to be the important factor which determines the rates of growth in enrolment. It is a fact that there is an increasing percentage share of the state income to the educational expenditure. As the demand for education increases, the available facilities are to be expanded by spending more on the educational sector. In the next section, the percentage share of the state income and the total expenditure to the expenditure on education is presented with Table 6.6.

Table 6.6 Percentage share of the state income and the total expenditure to the expenditure on education (1969-70 and 1978-79)

Year	Income of the state (at current Prices) (Rs. In Lakhs)	Total expenditure of the state (Rs. In Lakhs)	Expenditure on education (Rs. In Lakhs)	Percentage share of the state income to expenditure on education	Percentage share of total expenditure to expenditure on education
1969-70	214842	30623	6574	3.0	21.46
1970-71	252046	32148	7254	2.8	22.56
1971-72	286086	36926	8285	2.8	22.43
1972-73	310885	41704	9317	2.9	22.34
1973-74	378487	47283	10853	2.8	22.95
1974-75	419135	51537	11554	2.7	22.41
1975-76	378279	55792	12256	3.2	21.96
1976-77	433298	62727	13554	3.1	21.60
1977-78	476207	64581	14327	3.0	22.18
1978-79	512041	76537	19094	3.7	24.94

From the table 6.6, it could be seen that the percentage share of the state income increased from 3.0 in 1969-70 to 3.7 in 1978-79. Likewise, the percentage share of the total expenditure also increased from 21.46 in 1969-70 to 24.94 in1978-79. This sort of increasing share of the state income and the total expenditure of the state shows that there is continuing demand for education and the importance of education realized by the government as well as the public.

In the next section, the findings of the study have been given.

Findings:

The findings of the present study are:

1. The primary enrolment has increased by 25% over a period of 10 years from 1969 to 1979. The compound growth rate of primary enrolment was 2.3% which was greater than the secondary but lower than the higher. And this is statistically significant.
2. The secondary enrolment has increased by 21% over a period of 10 years from 1969 to 1979. The compound growth rate of secondary enrolment was 2.1% which was the lowest among all other levels of education and this is statistically significant.
3. The higher enrolment has increased by 59% over a period of 10 years from 1969 to 1979. The compound growth rate of higher enrolment was 5.1% which was greater than the primary enrolment and secondary enrolment. And this is statistically significant.
4. The special educational enrolment has increased by 65% which was the highest of all levels of education. And this is statistically significant.
5. The real per capita income has increased by 27% over a period of 10 years from 1969 to 1979 which was lower than the money per capita income.
6. The enrolment has grown at a faster rate than the real per capita income of the state of Tamil Nadu 1969 and 1979.
7. The value of the co-efficient of correlation between the primary enrolment and money per capita income is 0.60. When the relationship between them is statistically tested, it is found that there is a significant relationship.
8. The correlation co-efficient for the secondary enrolment and money per capita income is 0.76. This shows that there is a significant relationship when statistically tested.
9. The value of the correlation co-efficient obtained for the higher enrolment and money per capita income is -0.36 and

this is significant which means that there is no significant relationship between them.

10. The co-efficient of correlation between the special educational enrolment and money per capita income is 0.33 when it is tested for significance it implies that there is no significant relationship between them.
11. The value of the correlation co-efficient between the over all educational enrolment and money per capita is 0.42. This implies that there exists a significant relationship between them.
12. The value of the co-efficient of correlation between the primary enrolment and real per capita income is 0.10. This shows that there is an insignificant relationship between them.
13. The correlation co-efficient for the secondary enrolment and real per capita income is -0.10. When the relationship between them is statistically tested, it is found that there is an insignificant relationship.
14. The value of the correlation co-efficient obtained for the higher enrolment and real per capita income is -0.46. This implies that there is significant relationship between them.
15. The value of the correlation co-efficient between the special educational enrolment and real per capita income is -0.76. This shows that there is significant relationship between them.
16. The co-efficient of correlation between the overall educational enrolment and real per capita income is 0.39. This implies that there is significant relationship between them.

CONCLUSION

From the above analysis, it may be concluded that:

1. In spite of the low allotment of funds for primary education comparatively to all other educational levels, the primary enrolment has been increased considerably.
2. Secondary enrolment has got the lowest growth rate among all other levels of education, probably it might be due to the changing policy of the government to divert the students from general secondary education to vocational and technical institutions.
3. The growth of higher education seems to be higher than what the economy could absorb and this would have resulted in the unemployment of graduates. With a view to avoiding this perpetuating problem it might be proper if a proper link between the Economy's need of graduates can be had.
4. The growth of special education is the highest which might be the result of the government policy of offering equal education to the disabled.
5. The real per capita income has grown at a lower rate than the money per capita income which seems to be the consequence of the inflationary pressure in the economy.
6. As the real per capita income of the state increases the enrolment at different levels of education also increase and the rate of growth of enrolment is higher than the rate of growth of the real per capita income.
7. The relationship between the overall educational enrolment and money per capita income is stronger than the relationship between the overall educational enrolment and real per capita income of the state of Tamil Nadu.
8. There has been a considerable rise of educational expenditure during the entire period in this study; but even that is not sufficient to meet the educational needs of the Nation.

Educational implications:

It has been found in this study that the enrolment increased at the per capita income of the state increased.

When the income of the people increases, the private demand for education increases. So more educational facilities likely to be provided as the demand for education increases with increase in the people's income.

In the primary, secondary and higher level, the growth of enrolment in Tamil Nadu has increased considerably but lower than the special educational level. The relationship between the primary, secondary and the higher level enrolment and real per capita income is comparatively more than the special level. So increasing trend of enrolment in these levels would have a close connection with economy's income and prosperity.

It may be predicted from the trend analysis, there would be steady increase in enrolment at all levels in the state of Tamil Nadu.

Educational growth and Economic Growth in the state of Tamil Nadu during the period 1969-70 to 1978-79 showed a positive relationship.

Suggestions for further study:

Based on the findings and conclusion of this study the investigator suggests the following:

1. Similar studies about the relationship between educational growth and economic growth can be identified for different states as well as to the whole Economy of our country.
2. While measuring the educational growth, wastage also can be taken for finding solutions for optimum utilization of available facilities.
3. Pass ratio studies can be undertaken to measure the outturn of educational institutions.
4. Educational trend analysis can be done for boys and girls separately which would give the existing gap between them.
5. Educational growth and economic growth can be studied for different districts of a state and the slow growth of the villages can be found out to bring them up in their Economic

progress with the help of the government, and avoid imbalance growth of the Economy.

6. Each plan period can be separately studied and thus help the government to concentrate on weaker states among all other states.
7. More number of indicators also can be included to measure educational and economic growth and finding the relationship between them.

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