Many of the states in India have been characterized not only by low literacy rates but also by the regional disparities in literacy rate on a great deal. These literacy disparities obviously pose a serious problem to the socio-economic development of the country as a whole. The regional disparities in literacy rate have been largely attributed to several quantitative and qualitative factors.

An examination of the current literature, as reviewed in Chapter-I, indicates very few research studies dealt with the spatial variations of literacy in India.
by the geographers, economists and educationists. But most of those studies have analysed the literacy situation in relation to very few factors by leaving off other factors, which could have definitely influenced the literacy levels. Further, none of them have attempted to identify the factors for the spatial variations in literacy with the aid of suitable statistical techniques. Against this backdrop of lacuna in the earlier studies, an attempt has been made in the present study to analyse the spatial variations of literacy in Andhra Pradesh and to examine the relevance of socio-economic and demographic factors for such variations. Considerations for the choice of the state of Andhra Pradesh as the study area have been explained in Chapter II.

OBJECTIVES OF THE STUDY

- The specific objectives of the study are: (i) to study the trends and patterns of literacy in Andhra Pradesh; (ii) to examine the nature of relationship between the literacy and socio-economic-demographic factors; (iii) to analyse those factors which explain the variance in literacy and to assess the extent of variance explained by a set of variables on the literacy rates of different districts; and (iv) to suggest some policy recommendations for improving the literacy rates
as well as for reducing the spatial variations of literacy in Andhra Pradesh.

THE PREDICTOR VARIABLES

The predictor variables, which are socio-economic and demographic in nature, have been selected for the study. The 41 selected predictor variables are assumed to have been functionally and areally related to the literacy rate. The problems involved in the selection of the variables and the criteria followed were explained in Chapter III (see Section 3.1). The 41 predictor variables ($X_1$ to $X_{41}$) have been grouped into the following ten broad categories:

i) Literacy disparity indices ($X_1$ - $X_3$),  
ii) Population characteristics ($X_4$ - $X_9$),  
iii) Occupational characteristics ($X_{10}$ - $X_{13}$),  
iv) Urbanisation ($X_{14}$ and $X_{15}$),  
v) Primary education characteristics ($X_{16}$ - $X_{19}$),  
vi) Educational resources ($X_{20}$ - $X_{23}$),  
vii) Continuing education characteristics ($X_{24}$ - $X_{26}$),  
viii) Agricultural characteristics ($X_{27}$ - $X_{30}$),  
ix) Industrialisation ($X_{31}$ and $X_{32}$), and  
x) Socio-economic characteristics ($X_{33}$ - $X_{41}$).

The details of predictor variables involved in each of the above ten categories and the description of all
the 41 predictor variables have been provided in chapter III (see Section 3.1.2). The cross-sectional data on the predictor (socio-economic and demographic) variables were collected at district level for the year 1981. The reasons and justification for choosing the 'District' as a basic areal unit in the present study have also been explained in Chapter III.

**COLLECTION OF DATA**

The data were drawn mainly from the publications of Census of India, Bureau of Economics and Statistics, Director of School Education, Centre for Economic and Social Studies and Union Ministry of Education and Culture. List of books, reports and publications from which the data were collected was separately furnished under Bibliography. The data on literacy and the predictor variables have been computed and tabulated in Appendix-I.

**STATISTICAL TECHNIQUES USED IN THE STUDY**

In accordance with the objectives of this study, 'Growth index' and 'Rank order scores' have been employed to assess the trends and spatial patterns of literacy in Andhra Pradesh. The analysis and explanation of spatial variations in the literacy rates among the districts
of Andhra Pradesh have been done with the aid of appropriate and advanced statistical techniques (see Chapter III). The relationship of literacy with each of the 41 socio-economic-demographic variables has been studied with the help of 'Correlation coefficients'. Multiple regression analysis formed the core technique in this research. The effect of each group of variables on the prediction of literacy has been assessed by means of regression models. The variation in the amount of explanation given by each regression model (comprising a group of variables) on the literacy rates of 23 districts has been visualised by means of residual analysis.

**TRENDS AND PATTERNS OF LITERACY IN ANDHRA PRADESH**

An attempt has been made to analyse the trends and patterns of literacy in Andhra Pradesh (see Chapter IV). The analysis has revealed the following observations:

(i) The number of literates in Andhra Pradesh increased from 5.7 lakhs in 1901 (3.0% of the total population) to 160.3 lakhs in 1981 (29.9%). But the growth rate of literacy in Andhra Pradesh has not been able to keep pace with the growth rate of population. The absolute number of illiterates in the state has also tremendously increased during the same period, i.e., 1901-1981.
(ii) The growth index of literacy in Andhra Pradesh has shown negative trend during 1901-1911; and later it recorded a rapid growth until 1961. It was interesting to note that Andhra Pradesh has exceeded the India's literacy growth index during 1941-51 and 1951-61. The growth index during 1961-71 has, however, declined to 4.28 per cent and later it has increased to 7.02 per cent during the decade of 1971-81. It was undoubtedly a significant improvement over the previous decades, but the increase was slower than the all India increase of 9.61 per cent.

(iii) There was a gradual increase in the literacy rates of different districts during all the census decades, but growth rates of literacy has never been uniform among the districts of Andhra Pradesh. Some of the districts have made good progress in the literacy rate, while some others have lagged behind. Of the 23 districts, Hyderabad has consistently occupied the first rank and Adilabad has the lowest through out the period from 1951 to 1981.

(iv) According to the 1981 census, there have been wide variations in literacy rates in the districts of Andhra Pradesh. The percentage of literacy is found to be highest in Hyderabad district (58.33%), followed by Krishna (41.71%) and West Godavari (37.61%) districts. On the other hand, Adilabad district records the lowest literacy rate of 18.79 per cent, as against the state's average literacy rate of 29.9 per cent. The literacy rates in the districts of Ranga Reddi (29.41%), Prakasam (29.39%) and Anantapur (29.02%) are almost equal to the state's average.
(v) The districts, based on their literacy rates, have been grouped into the following five regions:

(a) Region of Very High Literacy (above 35 per cent)  
   East Godavari, West Godavari, Krishna, Guntur and Hyderabad.

(b) Region of High Literacy (30-35 per cent)  
   Nellore, Chittoor and Cuddapah.

(c) Region of Medium Literacy (25-30 per cent)  
   Visakhapatnam, Prakasam, Anantapur, Kurnool, Ranga Reddi and Khammam

(d) Region of Low Literacy (20-25 per cent)  
   Srikakulm, Vizianagaram, Medak, Nizamabad, Karimnagar, Warangal and Nalgonda.

(e) Region of Very Low Literacy (below 20 per cent)  
   Mahabubnagar and Adilabad.

RELATIONSHIP OF LITERACY WITH PREDICTORS

The relationship of literacy (criterion) with the 41 socio-economic and demographic (predictor) variables has been examined. Out of the 41 variables, 29 variables closely associated with the literacy rate are: $X_1$ to $X_{14}$, $X_{16}$, $X_{17}$, $X_{19}$ to $X_{21}$, $X_{25}$, $X_{27}$, $X_{28}$, $X_{30}$, $X_{33}$ and $X_{37}$ to $X_{41}$. The remaining twelve ($X_{15}$, $X_{18}$, $X_{22}$, $X_{23}$, $X_{24}$, $X_{26}$, $X_{29}$, $X_{31}$, $X_{34}$, $X_{35}$ and $X_{36}$) are not related to the literacy rate.
PREDICTION MODELS EXPLAINING THE SPATIAL VARIATIONS IN LITERACY

The 41 predictor variables, which have been grouped into ten categories, have been further used in the multiple regression analysis to build different prediction (regression) models of literacy. The multiple regression results have revealed that the nine models have well explained the variance in the literacy rate. The order of the models was: socio-economic (model-X), literacy disparity index (model-I), educational resources (model-VI), population (model-II), urbanisation (model-IV), occupation (model-III), agriculture (model-VIII), primary education (model-V) and industrialisation (model-IX). The tenth model that failed to explain the variance was 'continuing education' model (VII).

One or two significant variables in each of the above models have contributed maximum variability in the literacy rate. The crucial variables in different models are given hereunder:

I. Literacy disparity index model — Male-female disparity index \( X_1 \), and Rural-urban disparity index \( X_2 \);

II. Population model — Per cent of working population \( X_3 \);
III. Occupation model — Per cent of non-agricultural workers \( (X_{10}) \);

IV. Urbanisation model — Per cent of urban population \( (X_{14}) \);

V. Primary education model — Population per primary school \( (X_{17}) \);

VI. Educational resources model — Proportion of education expenditure to state's education expenditure \( (X_{20}) \);

VIII. Agriculture model — Per cent of net irrigated area \( (X_{28}) \);

IX. Industrialisation model — Industrial workers per lakh population \( (X_{31}) \); and

X. Socio-economic model — Per cent of female literacy \( (X_{33}) \).

The spatial variations of literacy have been examined with the aid of the residual maps (Figs.6.1 to 6.9) which could explain as to how the above generalisations are applicable to the 23 districts of Andhra Pradesh.
Since the variables, which have represented different models (viz., socio-economic, literacy disparity index, educational resources, population, urbanisation, occupation, agriculture, primary education and industrialisation) have explained most of the variation in the literacy rate, some policy recommendations/measures have been suggested in different sectors on the basis of the outcome of the models. The investment in these sectors would be indirectly helpful for the growth of literacy in different districts and thereby for reduction in the regional disparities of literacy in the State. Hereunder are the specific recommendations relevant to different districts:

(i) There is a need for an increase of female literacy in the districts of Srikakulam, Vizianagaram, Visakhapatnam, Nellore, Kurnool, Mahabubnagar, Medak, Nizamabad, Adilabad, Karimnagar, Warangal, Khammam and Nalgonda.

(ii) Reduction of male-female and rural-urban literacy disparities has been suggested for Srikakulam, Vizianagaram, Prakasam, Nellore, Cuddapah, Kurnool, Mahabubnagar, Ranga Reddi, Nizamabad, Adilabad, Karimnagar, Khammam and Nalgonda.

(iii) Increase of funds to the education budget, particularly to primary and adult education, has been suggested for Srikakulam Vizianagaram, Visakhapatnam, Prakasam, Nellore, Kurnool, Mahabubnagar, Medak, Nizamabad, Adilabad, Karimnagar, Warangal, Khammam and Nalgonda.
(iv) Increase of per capita income and literacy skills of the workers are the recommendations with respect to Srikakulam, Vizianagaram, Visakhapatnam, East Godavari, Prakasam, Chittoor, Cuddapah, Anantapur, Kurnool, Mahabubnagar, Ranga Reddi, Medak, Adilabad, Karimnagar, Warangal, Khammam and Nalgonda districts.

(v) Increase the process of urbanisation has been recommended in the districts of Srikakulam, Vizianagaram, East Godavari, Prakasam, Chittoor, Cuddapah, Anantapur, Mahabubnagar, Medak, Nizamabad, Adilabad, Karimnagar, Warangal, Khammam and Nalgonda.

(vi) Shifting of population from primary to secondary sectors has been suggested for Srikakulam, Vizianagaram, Prakasam, Nellore, Cuddapah, Anantapur, Kurnool, Mahabubnagar, Medak, Adilabad, Karimnagar, Warangal, Khammam and Nalgonda.

(vii) Better irrigation facilities have been considered to be beneficial for the districts of Visakhapatnam, Prakasam, Chittoor, Cuddapah, Anantapur, Kurnool, Mahabubnagar, Ranga Reddi, Adilabad, Karimnagar, Warangal, Khammam and Nalgonda.

(viii) Starting of more number of primary schools in the districts of Visakhapatnam, East Godavari, Anantapur, Kurnool, Mahabubnagar, Ranga Reddi, Hyderabad, Medak, Nizamabad, Adilabad, Karimnagar, Warangal, Khammam and Nalgonda has been recommended.
The four districts, viz., West Godavari, Krishna, Guntur and Hyderabad are found to have high "literacy rates in relation to their level of socio-economic development, according to the results of the study.

SUGGESTIONS FOR FURTHER RESEARCH

The present study identified the factors which are responsible for the spatial variations of literacy in Andhra Pradesh at district level. Further, research of this type may be conducted at the micro- and macro-level to identify the factors for the variations in literacy at taluk/mandal/village levels. A study of this type employing data for smaller areal units would be conducive for further analysis and for making effective recommendations. The use of taluk/mandal areal units would reveal internal variations existed within the districts themselves, especially those having larger areal jurisdiction.

The present study has analysed the cross-sectional data for 1981 to get the spatial picture; it did not, however, analyse the temporal changes over a period of time. The collection of common data for all the selected variables at district level for different periods of time would enable one to make a time series analysis so as to perceive the dynamism in the literacy trends.
The present study, it is hoped, would certainly foster the micro- and macro-level by those who are directly concerned with policy formulation in Andhra Pradesh, as well as by other scholars and researchers interested in expanding the results presented in this study.