1.0 INTRODUCTION:

Development of any society is based on many factors among which education is consider as an important one. Literacy has traditionally been described as the ability to read and write. UNESCO defines literacy as “Ability to identify, understand, interpret, create, communicate, compute and use printed and written materials associated with varying context. Literacy involves a continuum of learning in enabling individuals to achieve their goals, to develop their knowledge and potential and to participate fully in their community and wider society. Education is the key that opens the door in life which is essentially social in character. (Mukherji and verma1987) Education is necessary for self development as well as for the social development also. Education improves the thinking power of the society in many aspects. The base of the society is considered as strongest when it is educated. So this education should be equally given to two significant factors, pillars of the society that are men and women.

Swami Vivekananda had said decades back that “As a bird cannot fly on one wing, no society can make progress unless its women too join men in all activities.” So stress on the education of the female child should be more but the scenario is just the reverse. It is the male child who is more privileged and gets a better chance in every aspect (Meenakshi J 2007). But for the Socio-Economic transformation the priority should also be given to female education. Illiterate women always got secondary importance, but when women become educated they can also equally contribute for socio-economic development and when women gets educated entire family gets educated and when entire family gets educated naturally entire society gets educated. Literacy can create ability in human beings with which they can properly think about the utilization of surrounding environment and equipments for the eminence of themselves and their family (Choudhary 1970). Hence there should be an equal share of males and females in total literacy. Mother is the first teacher of every child and literate mother can betterly develop the personality of her children, with this thought the great social reformer Mahatma Jyotirao Phule had taken the first
step towards female literacy and started the first school for women in the year 1848 at Pune in the state of Maharashtra (Patil 1989). He had accomplished this difficult task in that period where there was no right of education for women. There was dominance of many undesirable customs due to which no one was ready to taught women so Mahatma Phule himself taught his wife Mrs. Savitribai Phule and appointed her as a teacher in his school. For this society had ostracized them but they continued the holy work of educating the women in such adverse conditions also.

Many other social reformers such as Gopal Ganesh Agarkar, Pandita Ramabai, Maharshi Dhondo Keshav Karve have also contributed for women literacy. All of them have established the base of women literacy. So women have got the right education through long struggle. Though women have received the right of education there are still inequalities in the literacy between men and women in India. Many factors are responsible for these inequalities such as socio-economic constraints, negative approach of the society towards female education etc. In our India, high income class people mostly we can find in cities, who expense their money equally on their girls and boys education. But low income class people mostly found in backward villages still use to follow the stubborn customs and tradition and hence they don’t use to spend their money on girls education. This fact negatively influences the female literacy rate.

The locational aspect of school, college, availability of quality education centre etc. also influences the female literacy. The physiographic, climatic conditions affect on the location of the schools and availability of quality education centers. Hence the areas having hostile physiographic conditions influence the location of schools, quality education centers in a negative manner and there by act as a hurdle in female education. Whereas areas having satisfactory physiographic conditions facilitate location of schools and quality education center also and there by positively influence the female literacy rate.

In the present study an attempt has been made to study the regional variations in educational facilities caused by heterogeneous physiography and
its effects on socio economic conditions of families which have affected on female literacy in Satara district.

1.1 STUDY AREA

Satara district lies in southern Maharashtra, particularly at the western limit of deccan table land. From the view point of physiography Sahyadri and Mahadev these are the two important ranges within the Satara district. The district is situated in the river basin of two rivers that are Bhima and Krishna river. But most probably, from the view point of peninsular drainage the entire land of Satara district belongs to the larger drainage system of the Krishna river.

The latitudinal and longitudinal extent of Satara district is 17°5’ to 18°11’ north latitude and 73°33’ to 74°54’ east longitude respectively. The district is bordered by Pune district and Sangli district in the north and south respectively and by Solapur district and Ratnagiri district in the east and west respectively. It also shares small boundary of about 24 k.m. in north west with Raigarh district. (census 2001) The district administers 10480.00sq.k.m of area. The total population of district is 3003922 including 1512524 male population and 1491398 female population. The total population of district constitutes 2.67 percent of the total Maharashtra’s population. Among the 35 district of Maharashtra Satara ranks 12th in terms of area and 13th in terms of population. The population density of district is 287 people per. Sq. km. whereas the sex ratio of district is 986. (census 2011).

The headquarter of Satara district is located at Satara town while for administrative purpose the district is being divided in to 11 talukas namely Satara, Wai, Khandala, Koregaon, Phaltan, Man, Khatav, Karad, Patan, Jaoli and Mahabaleshwar.
1.2 SIGNIFICANCE OF THE STUDY:

India got independence in 1947 and our constitution came into the existence in 1950. According to the constitution women have also got equal public rights. Hindu code bill approved in 1955 and accordingly women have received many rights such as right of heritage, alimony etc. (Rande.1991)

Most of the women who probably lives in urban area are conscious about these rights as well as with their obligations because most of them are literate, but especially rural women who live in socio-economically backward regions are not familiar with these rights and obligations because most of them have not yet obtained the basic essential right of education. Pandit Jawaharlal Nehru said long back that, “In order to awaken the people, it is the woman who has to be awakened. Once she is on the move, the household moves, the village moves and the country moves and through the women its children are brought in to the picture and given the opportunity of a healthier life and better training” (Meenakshi J 2007). But yet most of the women particularly rural women in India are not awakened because they are far away from the process of education. They are living in the darkness of illiteracy, but for brighten the future of our society women education is extremely important.

Following factors explain the significance of female education-

1.2.1 Awareness of Rights-

Education helps women to claim their rights and realize their potential in the economical, political and social sectors [www.right.to.education.org]

1.2.2 Development of Skills-

With education women can betterly develop their skills related with the writing, reading, accounting, speaking art etc.

1.2.3 Participation in Decision Making-

Education can improve the confidence level of women hence they can take successful participation in decision making process.

1.2.4 Socio-cultural Transformation-

Through education women can become able to transform the unjustified socio-cultural values, traditions, customs in a better way which would be in the
favor of women development and consequently in the favor of development of entire human community.

1.2.5 Economic Development-

Economic progress of society through poverty reduction can also be achieved by women education because with education women can become an active part of economy. They don’t need to remain at the mercy of other because they can support themselves and their family economically.

1.2.6 Health Awareness-

Through education women can acquire knowledge in the areas like health, childcare, nutrition and family planning (Meenakshi J 2007)

In short through female education, literacy the aim of women empowerment and simultaneously the aim of national empowerment can be achieved. But in our country still females are lagging behind in terms of literacy than males and this thing is dominantly responsible for the socio-economic weakness of our country. Generally heterogeneous geographical conditions are being observed in different regions. So there is a low rate of economic development where the geographical conditions are most adverse and such conditions also affects on the social development in which education is extremely important. In present study the attempt has been made to find the variations in female literacy in Satara district caused by heterogeneous geographical conditions. Many great pioneers in the field of education belong to Satara district such as Savitribai Phule, Karmveer Bhaurao Patil, great educationist Bapuji Salunkhe, our former vice Prime Minister Yashwantrao Chavan. Even though the district shows very discouraging and panic picture of female literacy.

The researcher in the field of Geography, Environmental management, Economic Planning, Sociology etc. have to deal with the data obtained from census probably the only source of authentic information. They generally deal with demographic, social and economic parameters. The scholars involved in such studies encounter with difficulty of non having latest data and hence to estimate the same. It is assumed that best suited method is application of least
square method. Population figures for any non census year may be estimated using usual formula. The present work attempts to provide methodological solution for decadal estimation.

**Linear estimation:**

The table 1.1 depicts the estimation literacy of each taluka in the Satara district of Maharashtra on the basis of linear trend by applying following formula.

\[
\text{Literacy rate of 2001} - \text{Literacy rate of 1971} = x
\]

Then,

\[
\frac{x}{30} \times 10 = x^2
\]

\[
\text{Literacy rate of 2001} + x^2 = \text{Literacy rate for 2011}
\]

In this formula,

- \(x\) = Denotes the answer obtained from subtraction of literacy rates
- \(x^2\) = Denotes the answer obtained from division and multiplication.

In this manner the female literacy rate has been estimated for the year 2011.

Following Table shows trend of female literacy in Satara district from 1971-2011
Table 1.1
Satara District : Talukawise Trend of Female Literacy (In Percent)
1971-2011

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Satara</td>
<td>34</td>
<td>45</td>
<td>64</td>
<td>77</td>
<td>91</td>
</tr>
<tr>
<td>2</td>
<td>Wai</td>
<td>29</td>
<td>41</td>
<td>59</td>
<td>71</td>
<td>85</td>
</tr>
<tr>
<td>3</td>
<td>Khandala</td>
<td>25</td>
<td>38</td>
<td>56</td>
<td>71</td>
<td>86</td>
</tr>
<tr>
<td>4</td>
<td>Koregaon</td>
<td>32</td>
<td>43</td>
<td>60</td>
<td>73</td>
<td>87</td>
</tr>
<tr>
<td>5</td>
<td>Phaltan</td>
<td>22</td>
<td>33</td>
<td>51</td>
<td>66</td>
<td>81</td>
</tr>
<tr>
<td>6</td>
<td>Man</td>
<td>15</td>
<td>23</td>
<td>39</td>
<td>58</td>
<td>72</td>
</tr>
<tr>
<td>7</td>
<td>Khatav</td>
<td>24</td>
<td>35</td>
<td>52</td>
<td>67</td>
<td>81</td>
</tr>
<tr>
<td>8</td>
<td>Karad</td>
<td>27</td>
<td>39</td>
<td>56</td>
<td>69</td>
<td>83</td>
</tr>
<tr>
<td>9</td>
<td>Patan</td>
<td>14</td>
<td>24</td>
<td>41</td>
<td>60</td>
<td>75</td>
</tr>
<tr>
<td>10</td>
<td>Jaoli</td>
<td>20</td>
<td>27</td>
<td>46</td>
<td>64</td>
<td>79</td>
</tr>
<tr>
<td>11</td>
<td>Mahabaleshwar</td>
<td>32</td>
<td>41</td>
<td>58</td>
<td>75</td>
<td>89</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>25</strong></td>
<td><strong>35</strong></td>
<td><strong>53</strong></td>
<td><strong>68</strong></td>
<td><strong>83</strong></td>
</tr>
</tbody>
</table>


In all decades from 1971 to 2011 Phaltan, Man, Khatav & Patan, Jaoli these talukas of dry zone and hilly zone respectively have registered low female literacy below than district average.

Mahabaleshwar, Wai and Khandala these talukas also lies in hilly zone and dry zone of the district but they always registered female literacy above district average. Socio-economic development of these talukas due to tourism, cultural and transportation factors is dominantly responsible for this.

Whereas Karad, Satara and Koregaon these talukas lies in the basin area. Hence the socio-economic advancement of these talukas has resulted in satisfactory female literacy. So heterogeneous physiography of Satara district divided in to dry zone, hilly zone and basin area has become responsible for the differences of female literacy within the Satara district. That’s why the study of
variations in female literacy among different talukas of Satara district is extremely important.

1.3 OBJECTIVES
1. To study spatial location of different educational facilities.
2. To measure impact of locational characteristics of educational facilities.
3. To find out and to measure variation among male and female literacy by coefficient of variation.
4. To assess the Geo-Socio-economic factors which, are most affecting on this disparity.
5. To evaluate importance of female literacy in the socio-economic equilibrium of the region.
6. To suggest a perspective plan to overcome this problem and achieve the goal of women empowerment.

1.4 DATABASE AND SOURCES:
This geographical study is based on both primary as well as secondary sources of data.
1. Primary Sources –
   a. Reconnaissance Survey:-
      The factual information about female education has been collected through primary sources by doing reconnaissance survey
   b. Questionnaires:-
      Two types of questionnaires have been prepared in order to collect information about quality of education and approaches of parents about female education.
   c. Schedules:-
      Two types of schedules have been made for collecting the information about quality of education by taking the interview of school head master/head mistress as well as for collecting the information about the approach of parents towards female education by taking the interview of parents.
2. **Secondary Sources:-**
   a. **Census, Socio-economic review, Gazetteer, Village directories DISE Data:-**

   Statistical information about physiography, climate, soil, crops, irrigation, population growth, occupation and composition of population, literacy rate etc. have been obtained from census report, socio economic review, village directories and gazetteer of Satara district. Educational information such as number of schools, teacher, student enrolment have been collected from DISE (District Information System For Education) data of Satara district.

   b. **Educational Department:-**

   Some educational information has also been acquired through educational department of zilla parishad and taluka panchayat.

   c. **Reference / Survey Report:-**

   Some information about female literacy, education etc. have been collected through various references.

   d. **Newspaper cutting, Photographs:-**

   Newspaper cuttings of related articles have been also used for acquiring the data. One of the effective mean of data collection i.e. photography is also been applied for collecting the information wherever necessary.

   e. **Website:-**

   Various kind of information related with the research work have also been obtained through various websites.

1.5 **METHODOLOGY:-**

   In the present study information is being collected from primary as well as from secondary data. The obtained data through primary and secondary sources is then tabulated and some mathematical, statistical techniques have been applied for getting the correct results as well as to draw the inferences. Predominantly following techniques have been used in present research work.
The total, male and female literacy rates have been calculated for the district as well as for every taluka within the district by using following formulas

1. **Total Literacy Rate** = \( \frac{Total \ Literates}{Total \ Population \ (above \ 6 \ age)} \times 100 \)

2. **Male Literacy Rate** = \( \frac{Total \ Male \ Literates}{Total \ Male \ Population \ (above \ 6 \ age)} \times 100 \)

3. **Female Literacy Rate** = \( \frac{Total \ Female \ Literates}{Total \ Female \ Population \ (above \ 6 \ age)} \times 100 \)

By putting values in to respective formula the total, male, female literacy rates have been obtained.

Density of total population as well as rural and urban population has been calculated by using following formula.

4. **Density of Total Population** = \( \frac{Total \ Population}{Total \ Area \ in \ sq.km.} \)

5. **Density of Rural Population** = \( \frac{Total \ Rural \ Population}{Total \ Rural \ Area \ in \ sq.km.} \)

6. **Density of Urban Population** = \( \frac{Total \ Urban \ Population}{Total \ Urban \ Area \ in \ sq.km.} \)

By putting values in respective formulas density of total population as well as of rural and urban population have been calculated.

Along with this by using following formula growth rate of population from one decade to another decade have been obtained.
7. \[ r = \frac{Pn - Po}{Po} \times 100 \]

In this formula

- \( r \) = Growth rate of population
- \( Pn \) = Current year population
- \( Po \) = Base year Population

By putting values in above formula growth rate of population for various decades have been calculated.

Sex ratio for total, urban and rural population has been acquired by using following formulas

8. \[ \text{Sex Ratio of Total Population} = \frac{\text{Total Female Population}}{\text{Total Male population}} \times 1000 \]

9. \[ \text{Sex Ratio of Rural Population} = \frac{\text{Total Rural Female Population}}{\text{Total Rural Male population}} \times 1000 \]

10. \[ \text{Sex Ratio of Urban Population} = \frac{\text{Total Urban Female Population}}{\text{Total Urban Male population}} \times 1000 \]

By putting values in respective formula sex ratio have been obtained for total, rural and urban population.

The method of co-efficient of variation has been employed to find out the variation or disparity among male and female literacy. The formula for co-efficient of variation is as follows:-

11. \[ C.V. \ for \ Male \ Literacy = \frac{SM}{\bar{X}M} \times 100 \]

Here,
- \( SM \) = Standard deviation for male literacy
- \( \bar{X}M \) = Mean for male literacy
12. \[ C.V. \text{ for Female Literacy} = \frac{SF}{\bar{Y}F} \times 100 \]

Here \( SF \) = standard deviation for female literacy
\( \bar{Y}F \) = Mean for female literacy

By putting values in the formula of co-efficient of variation disparity among male and female literacy have been calculated.

Along with this by applying following formulas teacher – student ratio, classroom-student ratio, toilet-student ratio for zilla parishad schools have been measured.

13. \[ T.S. \text{ Ratio} = \frac{SE}{NT} \]

Here, \( T.S. \) = Teacher Student Ratio

\( SE \) = Student Enrolment
\( NT \) = Number of Teachers.

14. \[ C.S. \text{ Ratio} = \frac{SE}{NC} \]

Here, \( C.S. \) = Classroom Student Ratio

\( SE \) = Student Enrolment
\( NC \) = Number of Classrooms.

15. \[ T.S. \text{ Ratio} = \frac{SE}{NT} \]

Here, \( T.S. \) = Toilet Student Ratio

\( SE \) = Student Enrolment
\( NT \) = Number of Toilet

By using above formulas Teacher-student ratio, classroom- student ratio, Toilet- student ratio has been obtained.

Stratified sampling techniques have been adopted for selecting the samples from different strata including hilly zone, dry zone and basin area. Formula of proportion allocation have been used for obtaining the sample size for each strata it is as follows.

For strata with \( N_1 \) (Hilly zone)

16. \( n_1 = n \cdot p_1 \)
For strata with N₂ (Dry Zone)
\[ n₂ = n \cdot p₂ \]

For strata with N₃ (Basin Area)
\[ n₃ = n \cdot p₃ \]

Here \( n₁ \) = Proportional allocation (of the desired sample)
\( n₂ \) = Proportional allocation (of the desired sample)
\( n₃ \) = Proportional allocation (of the desired sample)
\( n \) = Size of each strata
\( P₁ \) = Total size of primary schools
\( P₂ \) = Total size of primary schools
\( P₃ \) = Total size of primary schools

By putting values in these formulas proportional allocation for every strata within the Satara district has been obtained. Samples from each item (talukas) from each strata have also being chosen in a similar way.

Along with this some mathematical procedures have been carried out on the information acquired through questionnaire and schedule in order to understand the approach of parents about female education.

The above different research methods used in present research work have been discussed in appropriate chapter and have been represented in tabular form. Suitable graphs, diagrams, maps and photographs have been used for the representation of results and analysis. An elaborative list of reference, bibliography, appendices is being given at the end.

1.6 LIMITATIONS OF THE STUDY:

The present research work most probably deals with the female literacy within the Satara district. As per the census of India, ‘A person who can both read and write with understanding in any language has been taken as literate’. So through primary education these basic requirements of considering a person as literate can be easily fulfilled. Hence in the present research work the educational data of only primary level has been taken for the detail study as well as to draw the inferences.
1.7 **REVIEW OF LITERATURE:**

The review of literature is being given in order to emphasize, focus on the synonymous work which have been done regarding the present research work. In present research work in each chapter related references have been quoted. But the brief review of literature has been presented for understanding the trend of geographical research in literacy particularly female literacy. Some attempts have been made on this subject they are as follows.


**Hate A. (1969)** in his book “Changing status of Women” given emphasize on how the status of women is being changing from post period to present period.

**Mukherji A. B. (1971)** in his article “Female participation in agricultural labor in U.P.” has given his views about the laborious work to which females are confined.

**Krishna G. and M. Shyam (1978)** in their article “Regional aspects of Urban-Rural differential in literacy in India” explained the changing aspects from urban – rural areas in relation with the literacy.

**Manohar M.K. (1980)** in his book “Socio-economic status of women in India” attempted to give his views about how the socio-economic status of Indian women is influenced by variety of factors.

**Golden H. (1981)** in her book “Literacy and social changes in under developed countries” given her views about how literacy can positively influence the social changes in under developed countries.


**Nandi and Ramola (1984)** in their article “The paradox of inequality” emphasized on the inequalities in legal status of women in India.

**Sharma.K, Hussain.H. etal (1984)** in their book “Women in focus” given their views about sex equality, participatory approach etc.
Jain A and Nag M (1986) in their article, “Importance of female primary education for fertility reduction in India” focused on how primary education can create consciousness in female about fertility reduction.


S. raju (1988) in his article “Female literacy in India – The urban dimension” attempt to explain the significance of female literacy in terms of urban dimension.


Bhandari R and Smith F. (1997) in their article “Rural women in India: Assessment of educational constraints and the need for new educational approach” explained the different constraints influencing the education of rural women and the need of new approach for the educational development of rural women.


Victoria A. (1998) in her research paper “Women education in India” focused on educational status of Indian women.


M. Sivakumar (2008) in his article “Gender discrimination and women development in India “emphasized on the issue of gender differences which adversely affects women development.


1.8 ORGANIZATION OF WORK:

The present research work entitled “Locational analysis of educational facilities and its effects on female literacy: A Geographical study of Satara District” is being organized in to seven chapter which includes finding as well as suggestions.

The first chapter “Introduction and conceptual outline” deals with introduction of the research work, study region, significance of the study, objectives, database and sources methodology and brief review of literature.

The second chapter “The Geographical setting of the region” is confined with the many Geographical aspects of the region and with some socio-cultural aspects of the region which are influenced by the geographical aspects. These aspects include location, administrative set-up, and history of the region, physiography, drainage pattern, climate, soil, natural vegetation, and agriculture, distribution of settlement and population characteristics, and educational history of the study region.

The third chapter “Population growth and composition” deals with many elements of population such as distribution of population, growth, density, sex composition, occupational composition, sex ratio, and literacy status of population. This chapter focuses on demographic characteristics of the region.
The fourth Chapter “Growth of educational facilities in the district” focuses on many factors related with education. Such as early history of education in the district, importance of female literacy, comparison between male and female literacy, growth of schools in the district, importance of primary education and trend of primary schools and female literacy, zoning of female literacy and trend of educational system.

The fifth chapter “Qualitative education of schools and female literacy” deals with general disparity among governmental, public and private schools, hurdles in quality education and female literacy repercussions of low quality education.

The sixth chapter deals with “Approaches towards female education and challenges before female education [case studies]” This chapter mainly focuses on varying approaches of parents from hilly zone, dry zone, basin area towards female education. As well as on many challenges which influence the female education.

The seventh chapter “Conclusion and suggestions” deals with the conclusion of the research work and mainly focus on suggestions to overcome the problem of low female literacy.
1.9 REFERENCES:
Census Hand Book: Satara District 1971-2011
www.right.to.education.org.