

**FEMALE EDUCATION IN GOVERNMENT SCHOOLS
IN PUNJAB: DEVELOPMENT AND CONSTRAINTS**

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Economics

By

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2024

DECLARATION

I, hereby declared that the presented work in the thesis entitled “**Female Education in Government Schools in Punjab: Development and Constraints**” in fulfilment of degree of **Doctor of Philosophy (Ph. D.)** is outcome of research work carried out by me under the supervision of **Dr. Tushinder Preet Kaur**, working as Professor, in the Department of Economics (Mittal School of Business) of Lovely Professional University, Punjab, India. In keeping with general practice of reporting scientific observations, due acknowledgements have been made whenever work described here has been based on findings of other investigator. This work has not been submitted in part or full to any other University or Institute for the award of any degree.

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CERTIFICATE

This is to certify that the work reported in the Ph. D. thesis entitled “**Female Education in Government Schools in Punjab: Development and Constraints**” submitted in fulfillment of the requirement for the reward of degree of **Doctor of Philosophy (Ph.D.)** in the Economics, is a research work carried out by Divya Budhia, 41500179, is bonafide record of her original work carried out under my supervision and that no part of thesis has been submitted for any other degree, diploma or equivalent course.

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ABSTRACT

Education refers to any act or experience that has a formative effect on an individual's mind, character, or physical ability. Education is a basic right and is vital for the overall well-being of the people as it makes one knowledgeable, independent and capable of taking care of oneself. Not only at the individual level, but it also plays a dominant role in determining economic development of an economy. Education increases stock of skills and productive knowledge embodied in people, and educated people create new ideas. More and better education leads to better technology absorption and use and growth of physical capital, which is so essential in the earlier stages of development of a nation. Female education is all the more important as it contributes to improved quality of life; improved hygiene and nutritional practices; reduced child and maternal mortality rate. Female education creates powerful poverty-reducing synergies and yields enormous intergenerational gains. Studies have shown that giving women more access to education, markets, new technology, and greater control over household resources, mostly translates into greater well-being for the household. Female education is important for their own sake as education makes them aware of their rights and hence, promotes empowerment. These benefits of women education are just indicative and not exhaustive, but female education does not always receive the attention it deserves, especially in less developed and developing economies. Also, gender discrimination in education is widespread in developing and under developed countries and the girls don't get equal educational opportunities as boys.

Gender inequality is prevalent quite strongly across Indian states because of patriarchal nature of its society. Punjab continues to be predominantly a rural economy as more than 60 percent of its total population live in villages (Census of India, 2011). It is an agriculturally rich state and is called the "Granary of India". In spite of its economic prosperity the state is earning a bad name for its increasing disproportionate masculine composition of population and women suffer from discrimination in every sphere of life, including education. The study investigated the trends and patterns in female education in Punjab in terms of literacy and enrolment.

Trend analysis indicates improvement in female literacy during 1991-2011 but, the decadal growth rate of female literacy has slowed down due to huge stock of out-of-school age female population, and therefore, female literacy in Punjab has been projected to become 100 per cent not before than 2059. There has also been an improvement in female enrolments at all stage of school education during 1991-2021 in the state of Punjab but, female enrolments at secondary and higher secondary level are still much lesser than at elementary level. Gender differentials in literacy and enrolments are still existent but, these have reduced during the study period, however, the rate of fall has slowed down due to which Punjab is projected to attain gender parity in literacy in 2046. Convergence analysis showed that it will take around 33 years, 20 years and 6 years for male and female enrolments to converge at upper primary, secondary and higher secondary levels respectively, however, primary enrolments fail to show any convergence. Regional inequality in female education has been computed with the help of Gini co-efficient and it has been found that regional inequality in female literacy has been falling. Further, in spatial analysis, *Doaba* region has come out as the best performing region whereas *Malwa* region has been found to be worst performer in case of female education due to comparatively lesser number of schools. Further, *Majha* region is the worst performer in case of gender equality in school enrolments due to adverse child sex- ratio. There is found a lot of improvement in infrastructure facilities at government schools in Punjab, but still there is scope for improvement. Step-wise regression analysis reveals that female school enrolments are significantly influenced by increase in number of schools, both at elementary as well as at secondary level. Mid- day meal has been successful in boosting female elementary enrolments whereas availability of separate sanitation for girls has significantly enhanced female secondary enrolments. Apart from this, lower pupil-to-teacher ratio and higher percentage of female teachers also influenced female elementary and secondary school enrolments respectively however, their impact was not found to be very significant. A descriptive study of various schemes which the central as well as state governments have initiated from time to time for promoting female birth and enrolments reveals that there is a need to implement the schemes in proper manner and also to increase per student expenditure under RMSA. Also, there should be timely release of funds for various schemes. Lastly, qualitative analysis of

survey data gathered from school going girls of selected government schools, their parents and teachers, has revealed that girls have been facing a variety of challenges in their pursuit of school education, which included financial difficulties, burden of household chores, orthodox mind set of society which favors early marriage, and transportation to and from school. Also, it has been found that Covid-19 pandemic enhanced the difficulties of many girl students as they did not have the proper availability of smart phones to attend online classes.

To achieve the desired goal of 100 per cent female literacy and enrolment, there is a need to spread adult education through evening and night schools as well as to spread realization among people regarding importance of female education and also about ongoing government schemes in this regard. Special schemes should be initiated in districts lagging in female education and number of schools should be increased in *Malwa* region to boost female education in this region. Mid-day meal should be expanded to cover secondary education and availability of separate sanitation facility for girls should be ensured in all schools. Initiating more skill-oriented courses, reducing pupil-to-teacher ratio, and providing free bus facility can go a long way in promoting female school enrolments. Study also recommends providing more freebies to people stuck in poverty to induce them to send their daughters to school. At the same time, government should ensure strict implementation of existing laws to correct the adverse child sex-ratio in the state, which is the root cause of many problems. For this, government should work more strongly towards curing the diseased mind-set of those people who still consider girl child to be a burden and it can be done by organizing awareness drives at massive scale.

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Chapter - 1

INTRODUCTION

Economic Development involves expanding of resources and strengthening of capacities to achieve advancement of the society by utilizing potential of individual, firm and community in best possible way. It is measured by a continuous improvement in the quality of life and affluence through innovation, lower operation costs, and the utilization of capabilities towards sensible production and dissemination of goods and services. Though economic development is the chief aim of majority of world's nations, yet it lacks a concrete definition. The concept of economic development has evolved through many phases as different economists have defined it differently. Traditionally, economic development was defined in terms of increase in real income or per capita real income. In the words of Meier and Baldwin, "Economic development is a process whereby an economy's real national income increases over a long period of time." Economists like Dominick Salvatore, Peterson, Walter Krause, Paul Baran, Irina Adleman, Paul Albert, etc. also held the similar view about economic development, but their definitions gave a very narrow view of development as they failed to throw any light on the standard of living of the masses. Traditional definitions did not clearly distinguish between economic development and economic growth as these took the quantitative aspect of growth only whereas modern definitions successfully made the difference between economic growth and development clear. As per Herrick and Kindleberger, economic growth implies more output and input along with more efficiency, which is achieved through modifications in the procedural and organizational provisions whereas development is a broader notion which is more than just building of output and distribution of inputs (Tagar *et al.*, 2016). Further, various modern economists, such as Colin Clark, Charles P. Kindleberger, Bruce Herrick, Michael P. Todaro, Bernard Okun, R. W. Richardson, *etc.*, came up with new definitions which defined economic development in terms of rise in wellbeing and advancement in quality of life of the masses. However, in a more recent progress in the concept of economic development, Sen (1999) contended that economic development necessitates improving the

competences of economic agents so that they can utilise their full potential towards contribution in economic and social life. These agents can be individuals, firms, or industries. Distinct to a resource-based economy, where activities were constrained by natural endowments, a knowledge-based economy depends on capabilities that are developed over time (Feldman *et al.*, 2015). Modern view of economic development entails creation of prerequisites or capacities which support augmentation of capabilities of economic players. Therefore, development and welfare need to be discussed in terms of capabilities of people to grab opportunities, to perform those actions and activities that they want to participate in, and be whom that they want to be. Development can thus be envisioned as a procedure of escalating the freedoms that people enjoy. The utilitarian freedoms (such as, the independence of political participation or the liberty to receive basic education or health care) are amongst the essential constituents of development (Sen, 1999).

1.1. EDUCATION

The Latin word e-ducere, which means “to lead out”, is the origin of the word ‘education’ (Harsha, 2017). Education denotes an action or involvement which exerts a determinative impact on a person's cognizance, emotions, or physical capacity. Methodologically, the recognised procedure used by the society to purposely communicate its cultural legacy, gathered information, morals and skills to the succeeding cohort via schools, colleges, universities and other educational establishments is called education (UNESCO Report, 1993). Education is indispensable for the general well-being of people because it furthers one’s knowledge and lets a person become autonomous. Education’s role in furthering development of a country is immense as it upsurges stock of skills and industrious information that people possess and thereby, enables them to create new ideas. Better education leads to better engagement of technology along with utilization and growth of physical capital, which all are very essential in earlier stages of development of a nation.

As per The World Bank Database, adult literacy rate (15 years and above) for upper middle-income countries was 96 per cent, for middle-income countries it was 86

percent, for lower middle-income countries it was 76 per cent and for low-income countries it stood at 61 per cent in 2019. This evident relationship between literacy rate and state of development of a country reinforces the argument that education is essential for the advancement of a nation. Also, education's significant contribution in economic development and growth of a nation finds strong support in existing literature (DiCorrado *et al.*, 2015; Pegkas, 2014; Hanushek, 2013; Breton 2012; Delgado *et al.*, 2012; Afzal *et al.*, 2010; Beskaya *et al.*, 2010; Hanushek & Woessmann, 2008; and Hanushek & Woessmann, 2007). Various national researchers have also established this fact by undertaking numerous studies, where growth regressions have resulted in linkages between education variable on the one hand and growth and development on the other (Arora, 2012; Cooray, 2009; and Self & Grabowski, 2004).

1.1.1. Importance of Education

- 1) **Basic Right** : - Article 21-A of the Indian constitution provides the right of free and compulsory education to all children in the age group of 6 to 14 years. The right to education has been recognized as a human right in a number of international conventions including: Universal Declaration of Human Rights, Convention against Discrimination in Education, International Covenant on Economic, Social and Cultural Rights, Convention on the Elimination of all forms of Discrimination against Women, Convention on the Rights of the Child, *etc.* This right is a powerful tool to uplift people out of poverty and is a stepping stone to other fundamental human rights, and thus promotes sustainable development.
- 2) **Enhances Knowledge** :- Education enhances the knowledge and skill of the people, makes them aware of the world around them and gives direction to their lives. Education has an impact on the way people feel, think and behave and improves their level of personal satisfaction. An educated mind better comprehends the available information and is more willing to accept the real-world changes and challenges.

- 3) **Self Dependence :-** Education helps one in acquiring academic degrees, which open better work opportunities and thus make one self-dependent. It enables a person to work in the pursuit of achieving his/her dreams. Education also enhances self-confidence and gives one the courage to express one's opinion in an effective way and exert own choices.
- 4) **Financial Security :-** Education brings better work opportunities and thereby financial security. Education assists in acquiring additional information and skills through which one can always improve one's financial status. The financial prudence that comes with the education leads one to not only acquire but to sustain financial security.
- 5) **Equality :-** Equality among masses can only be brought by creating and providing equal opportunities of education and spreading education among them. Spread of education will lead to reduction in existing gaps in the society on the basis of income, class, gender, *etc.* Education makes everyone aware of their rights, makes them capable to claim if these are not given, and provides them with the necessary spirit to fight if these are denied.
- 6) **Peace :-** A cultivated mind is not only more capable but also more receptive and flexible towards contradictory thoughts and arguments. An educated person may not hesitate to put across his/her views on a topic but knows the difference between right and wrong and would certainly think twice before indulging in an unworthy fight. Such an attitude fosters peace in the societies and nations and thus, makes the world a safer and peaceful place to live.
- 7) **Stability :-** Education is something which, once acquired, cannot be taken away and remains with the person for ever. In the ups and downs brought by the dynamic nature of life, education acts like an anchor that keeps one floating and saves from drifting away.
- 8) **Contribution to Society :-** Education increases the capacity of human mind and makes it more productive, which is beneficial for the society in many ways

An educated person is also helpful, peace-loving, and progressive, thinks about the well-being of all and therefore, becomes a good citizen. Such an attitude enhances the welfare of the society at large. Also, educated people are aware of the political scenario of the country. They know the importance of voting and make informed choices in elections (in case of democratic countries like India), which leads to better governments and governance.

- 9) **Economic Growth :-** Education converts the manpower of a country into human resource and work force, which becomes involved in the productive activities of the economy and generates income and wealth for it. Educated people are progressive and more open to adoption of new methods and technologies, which not only leads to better utilization of production resources but also enhances their efficiency. All this boosts economic growth in the country.

1.1.2. Education in India

India has always been a leader in education since the ancient times when education was imparted through the 'Gurukul' system of education (Bilgrami, 2017). Education was given supreme importance as it was thought to put an ignorant person onto the path of wisdom and virtues and hence, attain salvation (Scharfe, 2002). Hindu and Buddhist kingdoms and dynasties attached great significance to education and it was imparted in temples and monasteries and in universities such as Taxila, Nalanda, *etc.* Later, Islamic education was introduced during the reign of Islamic empires and then the British brought western education system to our country (Bilgrami, 2017). The colonial rulers did not give any importance to education of the masses and their sole aim was to produce a class of urban educated elite to serve as clerks and 'babus' in their administration and to act as interpreters between the rulers and the ruled. Importance of educated labour force, equipped with appropriate knowledge, skill-set and attitude, cannot be ignored in an economy aiming for social and economic development. Therefore, after 1947 the responsibility to educate huge stock of illiterate people fell upon the shoulders of the government of free India.

Table 1.1: India's Total Literacy Rate during years 1951-2011

Year of Census	Total Literacy Rate	Year of Census	Total Literacy Rate
1951	18.33	1991	52.21
1961	28.3	2001	64.83
1971	34.45	2011	74.04
1981	43.57		

Source: Census of India (censusindia.gov.in)

Note: Literacy Rates for 1951, 1961 and 1971 censuses relate to population aged five years and above and for the years 1981 onwards relate to population aged seven years and above.

Table 1.1 shows that overall literacy rate in India was as meagre as 18 per cent in 1951 and has improved a lot since then. Relentless efforts of the government gave positive results and rate of literacy in India increased continuously after independence and as a result literacy rate (aged 7 years & more) was more than 50 percent in the year 1991 and in 2011 it reached about 75 per cent. World Bank data regarding literacy rate of adults (percentage of people ages 15 years and above) reveals that it was 18 percent, 61 percent and 69 percent in years 1951, 2001 and 2011 respectively. Such progress has been achieved by the nation because education has always been assigned great significance in the five year plans in India and also share of education expenditure in GDP increased from 0.64 percent in 1951 to 3.36 percent in 2011 (Dastidar & Chatterji, 2015) and further to 4.5 percent in 2020 (The World Bank Data). National Policies on Education 1968, 1986, 1992 and 2020 have been introduced to promote and regulate education in the country. In present century, introduction of momentous schemes like, Sarva Shiksha Abhiyan (SSA, 2000-01), Mid-Day Meal (1995 & 2008), Right to Education Act (2009), and Rashtriya Madhyamik Shiksha Abhiyan (RMSA, 2009) (subsumed in Samagra Shiksha Abhiyan (2018-19) along with SSA) has led to considerable improvement in school enrolment rates. As per UDISE+ Report 2021-22, school enrolments at primary level (% gross) were 103.4 per cent in 2021 as against 91.6 per cent in 1991, at secondary level also

these have gone up from 45.54 per cent in 1993 to 79.6 per cent in 2021. Various schemes focusing on promoting girls' education have also been introduced by the government like, National Programme for Education of Girls at Elementary Level (NPEGEL, 2003), National Scheme of Incentive to Girls for Secondary Education (NSIGSE, 2008), *etc.* As a consequence, Gender Parity Indices for primary, secondary and tertiary education have improved considerably from 0.81, 0.64 and 0.57 respectively in 1995 to 1.17, 1.01 and 1.0 in 2016. In India, certainly we are making headway on correct course, but the efforts are inadequate because wide disparities and biases are still prevalent in the arena of education. Lack of uniformity in literacy rates across the states in country is clear from the fact that some states have high literacy rate (like Kerala, Himachal Pradesh, Maharashtra, and Tamil Nadu *etc.*) while quite low literacy rate is found in some others (like Bihar, Arunachal Pradesh, Rajasthan, and Jharkhand *etc.*). There are variations across states in case of female literacy also. In 2011, literacy level for females in states such as Kerala, Himachal Pradesh, *etc.* exceeded 74 per cent (which is national average) whereas it was much lesser in states like Punjab, Odisha, *etc.* Thus, it becomes clear that women in India still do not get equal opportunities to gain education.

1.2. FEMALE EDUCATION

It is fortunate that the world has turned its attention to the position and education of women, and to the disproportions in male and female prospects for education. UNESCO's Ouagadougou Declaration (1993) documented that girls' education leads to better quality of life and development in the country by way of increased economic production; better cleanliness and dietary practices; and reduced child and maternal mortality rates. Female education produces robust poverty-alleviating interactions and generates massive intergenerational advantages (World Bank Report, 2008). Research from different nations and areas has proclaimed that women education is a competent way of prompting economic progress. Numerous researchers linked female education to economic growth using a variety of growth regressions (Salatin & Shaaeri, 2015; Self & Grabowski, 2004; & Benavot, 1989). Various researches have revealed that giving women a better hold on domestic finances and decisions and an easy access to market, technology and education translates into superior

welfare of the family. Female education is important for their own sake as education promotes empowerment (Sundaram *et al.*, 2014; Yadav *et al.*, 2011; & Al Riyami *et al.*, 2004). These benefits of women education are just indicative and not exhaustive, but female education doesn't always get the consideration it warrants, especially in less developed and developing economies. As per a UNESCO Report on Fast-tracking Girls' Education (2011), many girls in developing countries are still out of school, and many girls face health risks, harassment, and danger while going to and coming from their school. Wide gender disparities exist on the ground of education in these nations, which hinders the process of their development.

1.2.1 Importance of Female Education

- 1) **Women Empowerment:** - Education makes women aware of their rights and capable of asserting their viewpoints, which increases their confidence. It also helps in making them independent and enhancing their self-worth and respect in the society at the same time. All these things uplift the position of the females in the society and thereby help in promoting women empowerment.
- 2) **Improved Standard of Living:** - Educated women better understand the importance of inculcating health and hygiene promoting habits among themselves and their families. This improves general health and nutrition standards among households and sharply reduces maternal mortality and infant mortality rates. Also, educated women prefer fewer children, which is of high importance for the overly populated countries. This will further lead to reduction in poverty.
- 3) **Better Society:** - An educated woman knows the significance of education in life and therefore, gives more attention and importance to her children's education. In this way, she works to provide civilized and compassionate members to the society with good moral values and also informed citizens to the nation.
- 4) **Eradication of Social Evils:** - Education promotes late marriages among women and thereby helps in curbing the menace of child marriage. Educated

women are averse to participation in social evils like, female infanticide and at the same time are also less prone to exploitation. Horrendous menaces like human trafficking affect uneducated females more than the educated ones, and education can help in uprooting this industry.

- 5) **Reduction in Gender Gap:** - Education enables women to acquire leadership roles in both government and private sectors at local, regional, national and international levels. As educated women join the productive sectors of the economy and become financially independent, they consequently act as a source of inspiration for other women. A chain of such events starts getting building up which reduces the gender gap in the society and thus, encourages gender equality.
- 6) **Push to Economic Growth:** - Education among women props up their entry in to the work force which helps in generating more income in the country and thus, bringing about higher economic growth. Further, participation of women in productive sectors assists in realising the precious demographic dividend that the country possesses due to its huge size of working-age population.
- 7) **Preparation for Natural Disasters:** - Female education is linked with decline in injury and death, and enhanced family and community resilience, from natural disasters and extreme weather conditions resulting from climate change.
- 8) **Elimination of Violence:** - Around the world women have to face violence in one form or the other. Many women are the victims of physical and mental violence either at work or at home. Education acts as a dominant instrument for the elimination of violence from their lives. Educated women are aware of their rights, they develop the courage to take a stand and raise the voice against injustice. Also, educated women can easily take the legal recourse to avail the lawful solution of their problems.
- 9) **Prevention of HIV/AIDS:** - Education reduces the chances of a women acquiring HIV or passing HIV to their children because they come to know about the basic facts regarding this deadly disease and also the necessary precautions that they need to take to prevent its occurrence.

1.3. GENDER DISCRIMINATION

‘Gender’ is a term that is normally interpreted from diverse viewpoints and is therefore used in many ways. Biologically-motivated theories ascribe differences in gender to the diverse genetic and biological roles that males and females play while philosophies of sociology emphasize on its socio-structural determinants (Hameed & Shukri, 2014). Simply put, in common parlance the term gender connotes ‘sex’ of a person whereas in reality, it is associated with the diverse actions, roles and responsibilities that males and females perform as per their biological, emotional and physical capabilities. Word ‘gender’ has taken over the word ‘sex’ in describing biological dissimilarity, which has skewed the actual meaning of this term (Torgrimson & Minson, 2005). Merriam Webster Dictionary explains sex (noun) as the summation of those features of the organisms that differentiate between males and females, which includes physical, operational, and even behavioural features. Sex of an organism can’t be changed from that attained naturally at the time of birth whereas gender is just an expectation that evolves over time as more and more understanding and knowledge are acquired. Gender implies an outline of behaviour and conduct desired from males and females as per socially accepted norms and in this layout, females have been allotted inferior position. This variation in standing of females in relation to males, is called gender bias, and engenders damaging emotional, societal and economic effects (Pokharel, 2008). Women have to tolerate numerous kinds of biases at varying levels and areas of life including home, workplace, employment, policy making, health, education, *etc.* Some experts consider underutilization of women in productive activities to be one of the prime costs of gender bias borne by the economy (Jacobsen, 2011). Lesser women are involved in productive activities as compared to men, even lesser are involved in productive employment and many are facing wage discrimination in labour market (Buchely, 2013). Discrimination against women and their resultant underutilization adversely affects the growth performance of an economy while on the other hand, improving gender equality can contribute significantly to economic growth (Rodriguez, 2017; & Kim *et al.*, 2016). To increase the rate of economic progress, it is imperative to bring about gender parity in the field of education (Klasen &

Lamanna, 2009) as emerging economies that give due weightage to women while making investments in education are able to reap considerable gains (Balatchandirane, 2007). Gender inequality in education exists in terms that girls don't get equal educational opportunities such as boys. Reducing gender inequality in education can help in reducing gender equality in other fields such as productive activities as education not only increases one's knowledge but also makes one more aware of one's rights, improves health, reduces fertility and population and thus, promotes per capita income and economic growth. Considerable gender discrimination exists in the field of education, especially in underdeveloped and emerging nations. The factors promoting gender disparity in education range from household issues, societal challenges, financial problems and accessibility issues apart from orthodox mindset and perspectives of individuals, families and other stakeholders with regard to educating girl children (White *et al.*, 2016).

1.4. FEMALE EDUCATION AND GENDER INEQUALITY IN EDUCATION IN INDIA

In India, though the situation is improving, yet there are still wide gaps prevalent in male-female education. Among 156 countries, our country earned a ranking of 114 in Gender Gap Index for Educational Attainment in 2021 whereas neighbouring nations of Sri Lanka and China attained 88th and 103rd ranks respectively (Global Gender Gap Report, 2021). Additionally, India had a gender Parity Index for adult literacy rate as 0.75 whereas the figures were 0.976, 0.985 and 1.005 in case of South Africa, Bangladesh and Brazil. In 2011, India had adult female literacy rate (population 15+ years) of 59.28 per cent whereas the same stood at around 92 percent in Brazil and South Africa, and 94 per cent in Singapore. Further, according to World Bank data, mean schooling years (ISCED 1 or higher) were just 4.11 years in case of female population of 25 + years whereas these were 6.65 years for males. Also, Census 2011 indicates male literacy to be standing at 80 percent in contrast to female literacy of 65.46 per cent. Literacy rates for males as well as females in India since independence and the resultant gender gap in literacy have been depicted in Table 1.2.

It is evident from Table 1.2 that among all of the female population who aged 5 years and above, only about 8.86 per cent were literate at the time of freedom and the figure stood at 27.16 per cent for males, which led to a gender gap of 18.30 per cent in literacy. This gap climbed to nearly 25 per cent and then further to around 27 per cent in 1961 and 1981 respectively, which indicated low importance was accorded by the government to this aspect.

Table 1.2: Literacy Rates for Males and Females in India during 1951-2011

Year of Census	Male Literacy Rate	Female Literacy Rate	Gender Gap in Literacy Rate
1951	27.16	8.86	18.30
1961	40.4	15.35	25.05
1971	45.96	21.97	23.98
1981	56.38	29.76	26.62
1991	64.13	39.29	24.84
2001	75.26	53.67	21.59
2011	82.14	65.46	16.68

Source: Census of India (censusindia.gov.in)

Note: Literacy Rates for 1951, 1961 and 1971 censuses relate to population aged five years and above and for the years 1981 onwards relate to population aged seven years and above.

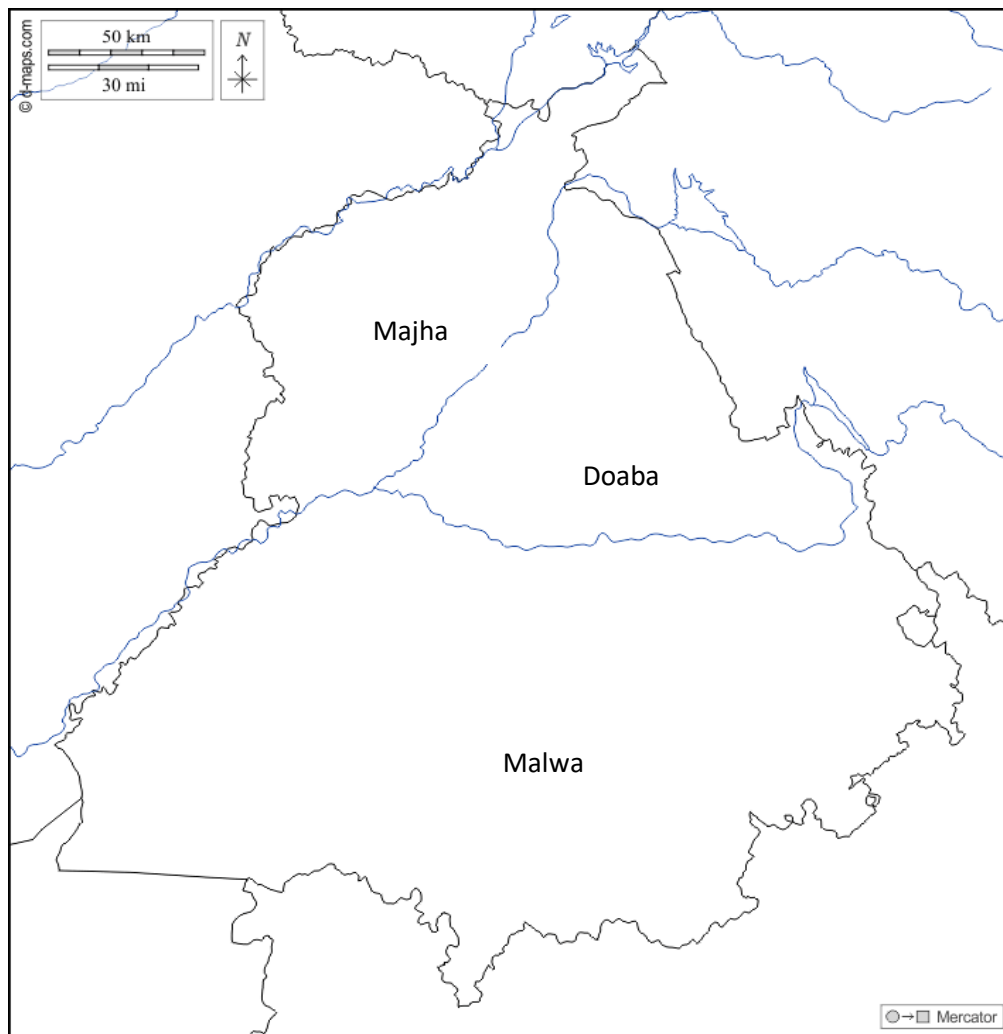
National Policy on Education was introduced in 1986 in which women education was accorded required attention and as a consequence, there were big leaps in female literacy in following decades. As a result, gender gap in literacy again fell to around 25 percent in 1991. No doubt, policy-makers have shifted focus towards the cause of women education in the country but gender differences in literacy are still existent and are noteworthy. In 1951, gender difference in literacy was around 18.3 percent whereas it came down only to 16.7 per cent in 2011. Such strong presence of gender discrimination in education negates progress on other grounds like, reduction in

poverty, fertility, child mortality, *etc.* and delays the achievement of sustainable development goals. In addition, various researchers have asserted in their studies that economic growth of a country is greatly hampered by gender differences in education (Ali 2015; Chaudhry, 2007; and Klasen, 2002). Insufficient learning among women not only deteriorates the quality of present human resource, but it also badly affects the health and education of their children. Illiteracy and inadequate education limit the women's participation in the labour force and lead to loss of precious working hours. This way, India is considerably wasting the demographic dividend that it could reap if its women were properly educated to enter the labour force and do the work which they were capable of. More women need to be given education and brought in to the work force to enhance the production and income in the economy at a faster pace. According to Economic Survey (GOI, 2017) peak of the growth boost due to demographic dividend is fast approaching in India. Including more women in to active work, by educating and training them, can extend this peak for a longer time period.

Indian states differ considerably with regard to educational development and gender bias in education. States which accorded greater importance to education and gender parity performed economically better than the ones which did not do so. The states that are witnessing larger gender gaps are not performing well economically whereas the ones that have lower gender gaps are better placed in terms of economic development. This clearly brings out the impact that the existence of huge stock of untaught women has on the economic development of a nation (Balatchandirane, 2007).

PUNJAB

Punjab is a state of India and its name is built of two terms 'Punj', meaning five, and 'Aab', meaning water i.e., place of five rivers. In undivided India, five rivers, namely Sutlej, Beas, Ravi, Chenab and Jhelum used to flow through the state of Punjab but after partition of the country only Sutlej, Beas and Ravi flow through current Indian Punjab while the remaining two rivers i.e. Chenab and Jhelum are now in the Pakistan's Punjab state.



Geographical Location, Climate and Culture :- Punjab is situated in the north-western corner of the India and extends from the latitudes 29.30° North to 32.32° North and longitudes 73.55° East to 76.50° East covering an area of 50362 sq. km (1.5 per cent of the country's total geographical area) with a mean height of 300 meters (980 ft) above sea level. It is confined on the north by the Indian Union Territory of Jammu and Kashmir, on the south by Haryana and Rajasthan, on the east by Himachal Pradesh and the Union territory of Chandigarh, and on the west, it shares an extensive border with Pakistan. Punjab is separated into three areas: Majha, Malwa and Doaba by the three rivers that flow through it. Going from west to east, Majha region starts from border and continues till Beas rivers. Doaba, which is made up of two words 'do' + 'aab' meaning two waters, lies between two rivers i.e. starting from Beas and ending at Sutlej, and beyond it lies the Malwa region.

Punjab witnesses mainly three seasons: summer, winter and rainy. Winter season persists from October to March, summer season spreads from April to June and rainy season from July to September. Summers are extremely hot in May and June and winters are quite chilly in December and January. Rainfall is heavy in the regions lying at the foothills of Himalayas, whereas it is scanty in the farther regions. State comprises mostly of plain and fertile soil and most of the cultivable land is under assured irrigation. Most of the main festivals of the state i.e., Dussehra, Diwali, Lohri, Karwa Chauth and Holla Mohalla fall in the winter season. Official language of the state is Punjabi, which is also the tenth most widely spoken language in the world.

Administrative Setup and Demographic Profile :- After re-organisation of Punjab on 1st November 1966, Haryana and Himachal Pradesh were carved out of it to make two separate states and since then the city of Chandigarh is the joint capital of Punjab and Haryana. Punjab is divided in 22 Administrative Districts, 81 Tehsils, 144 CD Blocks, and 217 ED Blocks. According to 2011 census, state's population is 2.77 crores (2.3 per cent of country's population) with decadal population growth rate of 13.9 per cent. Population density in Punjab is 551 per sq. km as compared to the national average of 382 per sq. km. Two third (66 %) of the total population resides in rural areas and the remaining one third (33 %) in urban areas. Male population is 1.46 crores (52.77 per cent) whereas female population is 1.31 crores (47.23 per cent) and adult sex-ratio is 895. Overall literacy rate in the state is 75.8 per cent, literacy level for males is 80.4 percent and that for females is 70.7 percent.

Occupational Distribution and Economic Growth: - Agriculture is the backbone of Punjab's economy. At the time of Green revolution, the state observed incredible upsurge in agricultural production because of advancement in both technological as well as institutional factors and since then much progress has taken place in this sector like, extension of irrigation facilities, rural electrification, agricultural markets, *etc.* Agriculture in state has now reached a point of saturation where it is very tough to make additional growth.

Table 1.3: Sector-wise Composition of GVA (2019-20Q) and Employment (2018-19)

(In percent)

	Employment Share (2018-19)	Share in GVA (2019-20Q)
Punjab		
Agriculture and Allied Activities	24.6	28.68
Industry	35.4	24.11
Services	40.0	47.18
India		
Agriculture and Allied Activities	42.5	18.38
Industry	25.1	26.66
Services	32.4	54.96

Source: Punjab Economic Survey 2020-21

Note: GVA = Gross Value Added, Q = Quick Estimates

The table 1.3 makes it clear that agriculture has a significant share in the GVA of the state. In 2019-20Q, GSDP in Punjab grew at 3.98 per cent and its per capita income stood at Rs. 1,61,083, which was 1.2 times the average per capita income at the national level. Thus, standard of living of people in Punjab is better than many other states in the country.

1.5. GENDER DISCRIMINATION IN PUNJAB

Punjab continues to be a predominantly rural economy as more than 60 percent of its total population lives in villages (Census of India, 2011). It is an agriculturally rich state and is called the “Granary of India”. Regardless of its economic affluence, the state is grossing a bad name for itself because of disproportionate composition of its population in favour of males. Female infanticide and male preference are dominant

in the state and both these evils, along with other social vices like, dowry, gender-based violence *etc.* have contributed towards lesser female population in the state (GOI, 2008). Table 1.4 gives details of the sex-ratio, which indicates gender bias that exists at the state and national level.

Table 1.4: Sex-Ratio (Females per 1000 Males) during 1951-2011

Year	India	Punjab	Year	India	Punjab
1951	946	844	1991	927	882
1961	941	854	2001	933	876
1971	930	865	2011	943	895
1981	934	879			

Source: Gender Statistics of Punjab, 2012 (compiled from Census of India Reports)

Table 1.4 shows that in 2011, sex-ratio in the country was 943 whereas it was just 895 in Punjab. Low sex-ratio indicates greater presence of gender bias as it means smaller number of females per 1000 males. No doubt sex-ratio in Punjab has shown improvement after country attained freedom, but it persistently remained lower than all-India average during the entire duration. It means there exists greater gender bias in the state as against the country. Ranking of various states in the nation in accordance with the existing sex-ratio has been depicted in table 1.5.

Table 1.5 is indicative of the considerable disparity in sex-ratio that exists across various states in the country.

Table 1.5: Sex-ratio (total population) in States and Union Territories of India

S.N.	India/ State/ UT	2001	Rank in 2001	2011	Rank in 2011
	India	933	15	943	17
1	Andhra Pradesh	978	5	993	4
2	Arunachal Pradesh	893	22	938	22
3	Assam	935	13	958	14
4	Bihar	919	19	918	24

S.N.	India/ State/ UT	2001	Rank in 2001	2011	Rank in 2011
5	Chhattisgarh	989	3	991	5
6	Goa	961	10	973	11
7	Gujarat	920	18	919	23
8	Haryana	861	26	879	30
9	Himachal Pradesh	968	7	972	10
10	Jammu & Kashmir	892	23	889	28
11	Jharkhand	941	12	949	15
12	Karnataka	965	8	973	11
13	Kerala	1058	1	1084	1
14	Madhya Pradesh	919	19	931	19
15	Maharashtra	922	16	929	21
16	Manipur	978	5	992	6
17	Meghalaya	972	6	989	7
18	Mizoram	935	13	976	9
19	Nagaland	900	20	931	18
20	Orissa	972	6	979	8
21	Punjab	876	24	895	26
22	Rajasthan	921	17	928	20
23	Sikkim	875	25	890	27
24	Tamil Nadu	987	4	996	3
25	Tripura	948	11	960	13
26	Uttar Pradesh	898	21	912	25
27	Uttarakhand	962	9	963	12
28	West Bengal	934	14	950	15
	Union Territories				
1	A & N Islands	846	27	876	29
2	Chandigarh	777	30	818	32
3	Dadra & Nagar Haveli	812	29	774	33

S.N.	India/ State/ UT	2001	Rank in 2001	2011	Rank in 2011
4	Daman & Diu	710	31	618	34
5	Delhi	821	28	868	31
6	Lakshadweep	948	11	947	16
7	Pondicherry	1001	2	1037	2

Source: Gender Statistics of Punjab, 2012 (compiled from Census of India Reports)

Note: State of Telangana was created in 2014 whereas state of J&K became UT in 2020.

It may be noted that sex-ratio in UTs is generally lower than in the states in both the census years. Among the states, Kerala was at the peak as sex-ratio was 1084 in 2011 while Haryana was at the bottom with sex-ratio of 879. In 2011, Punjab ranked 26th in all the states and UTs of country, which indicates the gigantic occurrence of gender disparity in the state in comparison to other states and UTs. It is gruesome that Punjab's rank has fallen from 24th in 2001 to 26th in 2011, thereby indicating the worsening of the situation in the state. When child sex-ratio is considered then this condition appears to be even worse as it indicates sex-ratio for the age group of 0-6 years.

Table 1.6: Child Sex-Ratio (0-6 years) in Punjab and India for the period 1961-2011

Year	Sex-Ratio in India		Sex-Ratio in Punjab	
	Total	Child	Total	Child
1961	941	976	854	901
1971	930	964	865	901
1981	934	962	879	908
1991	927	945	882	875
2001	933	927	876	798
2011	943	914	895	846

Source: Gender Statistics of Punjab, 2012 (compiled from Census of India Reports)

Tables 1.4 and 1.5 have already made it clear that Punjab as well as the entire country witness low sex-ratio and it was also seen that Punjab fairs poorer in this respect. In table 1.6, even lower figures of child sex-ratio at the state as well as at the country level make it evident that gender bias against females is increasing with time rather than decreasing. In 1961, child sex-ratio in India was 976 whereas overall sex-ratio was 941. Sadly, child sex-ratio in 2011 came considerably down to 914 whereas overall sex-ratio stood at 943 however, in 1961, child sex-ratio in Punjab was 901 while overall sex-ratio was 854. Child sex-ratio in the state decreased to 846 in 2011 when overall sex-ratio increased to 895. These figures are indicative of the fact that preference for male child has increased over time which has resulted in increased bias against females. Reason behind such figures is the traditional psychology, in which male child is considered superior mainly because he carries on family lineage, supports the family economically and performs rites and rituals at the time of death of the parents.

1.6. EDUCATION IN PUNJAB

Over the years, Punjab has shown great improvement in the context of literacy level that primarily indicates the state of education in any region. Total literacy rate in the state is 75.84 per cent, which is higher than the national average of 72.99 per cent, but state still has long distance to cover to get closer to the best performing states like Kerala (having literacy rate of 94 percent) and Maharashtra (having literacy rate of 82.34 per cent). State has a total population of 27.7 million, comprising of 14,639,465 males and 13,103,873 females. Only 8,271,081 females are literate out of total females as against 10,436,056 males out of total males (Census of India, 2011).

Table 1.7: State-wise Literacy Rate in India

S.N.	India/ State/ UT	2001	Rank in 2001	2011	Rank in 2011	Decadal Increase
	India	64.8		73.0		8.2
1	Andhra Pradesh	60.5	28	67.0	31	6.5
2	Arunachal Pradesh	54.3	32	65.4	34	11.1

S.N.	India/ State/ UT	2001	Rank in 2001	2011	Rank in 2011	Decadal Increase
3	Assam	63.3	24	72.2	26	8.9
4	Bihar	47.0	35	61.8	35	14.8
5	Chhattisgarh	64.7	23	70.3	27	5.6
6	Goa	82.0	4	88.7	4	6.7
7	Gujarat	70.0	15	78.0	18	8.0
8	Haryana	67.9	20	75.6	22	7.7
9	Himachal Pradesh	76.5	11	82.8	11	6.3
10	Jammu & Kashmir	55.5	33	67.2	30	11.7
11	Jharkhand	53.6	34	66.4	32	12.8
12	Karnataka	66.6	22	75.4	23	8.8
13	Kerala	90.9	1	94.0	1	3.1
14	Madhya Pradesh	63.7	25	69.3	28	5.6
15	Maharashtra	76.9	10	82.3	12	5.4
16	Manipur	70.5	19	79.2	16	8.7
17	Meghalaya	62.6	27	74.4	24	11.8
18	Mizoram	88.8	2	91.3	3	2.5
19	Nagaland	66.6	21	79.6	15	13.0
20	Orissa	63.1	26	72.9	25	9.8
21	Punjab	69.7	16	75.8	21	6.1
22	Rajasthan	60.4	29	66.1	33	5.7
23	Sikkim	68.8	17	81.4	13	12.6
24	Tamil Nadu	73.5	13	80.1	14	6.6
25	Tripura	73.2	12	87.2	5	14.0
26	Uttar Pradesh	56.3	31	67.7	29	11.4
27	Uttrakhand	71.6	14	78.8	17	7.2
28	West Bengal	68.6	18	76.3	19	7.7

S.N.	India/ State/ UT	2001	Rank in 2001	2011	Rank in 2011	Decadal Increase
	Union Territories					
1	A & N Islands	81.3	8	86.6	7	5.3
2	Chandigarh	81.9	6	86.0	9	4.1
3	Dadra & Nagar Haveli	60.0	30	76.2	20	16.2
4	Daman & Diu	81.1	9	87.1	6	6.0
5	Delhi	81.7	5	86.2	8	4.5
6	Lakshadweep	86.7	3	91.8	2	5.1
7	Pondicherry	81.2	7	85.8	10	4.6

Source: Gender Statistics of Punjab, 2012 (compiled from Census of India Reports)

Table 1.7 shows that literacy rate in Punjab was 69.7 per cent in 2001 and it ranked 16th among all the states and UTs. However, it registered a fall of 5 ranks and fell to 21st position in 2011, which was the largest fall in ranking among all states and UTs. Decadal improvement in literacy rate was just 6.1 per cent in Punjab whereas it was highest in Dadra & Nagar Haveli (16.2 per cent) among all the states and union territories. Decadal improvement was highest in Bihar (14.8 per cent) among all the states, and it was apparently quite higher in smaller states like Tripura (14.0 percent), Nagaland (13.0 percent) and Sikkim (12.6 percent). This shows that though absolute literacy level has improved to 75.8 per cent in Punjab in 2011, but the progress is very slow in comparison to other states in the country.

A glance at the literacy levels in urban and rural areas of the state given in table 1.8 clearly brings to the fore the existing educational divide in the state. Total literacy rate in rural areas was 71.4 per cent in 2011 whereas in urban areas it was 83.2 percent, which indicates a difference of around 12 per cent. Male literacy rate in rural areas was 76.6 per cent and the same for urban areas was 86.7 per cent i.e., a difference of 10.1 per cent. Also, female literacy rate in rural areas was 65.7 per cent whereas in urban areas was 79.2 per cent, giving rise to a difference of 13.5 per cent. It implies that difference in urban-rural literacy was higher for females than for males.

Table 1.8 : Urban and Rural Literacy in Punjab

	2001			2011		
	Total	Male	Female	Total	Male	Female
Rural	64.7	71.1	57.7	71.4	76.6	65.7
Urban	79.1	83.1	74.5	83.2	86.7	79.2
Total	69.7	75.2	63.4	75.8	80.4	70.7

Source: Gender Statistics of Punjab, 2012 (compiled from Census of India Reports)

It is to be noted from table 1.8 that the differences in urban-rural literacy rates have been falling during 2001 to 2011. Urban-rural difference in total literacy was 14.4 percent in 2001 and fell down to 11.8 per cent in 2011. Further, for male literacy it came down from 12.0 per cent in 2001 to 10.1 per cent in 2011 and for female literacy it reduced from 16.8 per cent to 14.5 per cent during the same period.

1.6.1. Female Education in Punjab

As per earlier discussion, it is established that serious discrimination prevails in the state against the female child and this discrimination is reflected not only in sex-ratio but in all spheres of life, including education. The difference in male-female literacy rates in the state brings to the fore the disparity that is prevalent on the ground of education. As per Census 2011, literacy level for males was 80.4 per cent in Punjab while that for females was 70.7 per cent. A glance at table 1.8 reveals two details: difference between female literacy levels in urban and rural areas is greater (14.5 percent) than that in male literacy levels (10.1 percent). Also, difference between male and female literacy levels is higher in rural areas (10.9 percent) than in urban areas (7.5 percent). Moreover, Punjab lags behind other states in the country, such as, Himachal Pradesh, Kerala, Maharashtra, West Bengal and many other small states in terms of rural as well as urban female literacy.

1.6.2. School Education in Punjab

School education comprises education from pre-nursery to twelfth class, which generally involves a duration of fifteen years (i.e., ranging approximately from 3

years to 18 years of age). Traditional education system classified school education in to pre-primary (including classes nursery, lower kindergarten and upper kindergarten), primary education (including classes 1st to 5th), upper primary or middle education (comprising classes 6th to 8th), secondary education (having classes 9th and 10th) and higher secondary education (i.e., classes 11th and 12th). Primary education and upper primary education (i.e., classes 1st to 8th) are collectively known as elementary education. However, New Education Policy (2020) has given 5+3+3+4 system of school education. It is very essential for every child to attain school education to be able to acquire basic knowledge.

1.6.3. Importance of School Education

- 1) **Formal Education:** School education is undeniably essential for the knowledge acquisition as it forms the basis of educational journey of a child where he/she gains knowledge in various fields such as literature, science, mathematics, history, *etc.* in a proper and balanced way. Curriculum of different subjects are designed and taught keeping in mind mental capabilities and inquisitiveness of the students. Appropriate information is given to them at the right age and in right way so that they succeed in retaining and using it for their advancement.
- 2) **Mental Growth:** School education proves instrumental in cultivating the thought process of the students and enhancing their cognitive abilities. As the child comes in contact with vivid sources of knowledge and is exposed to a variety of influences in the form of teachers, fellow students, *etc.*, who may belong to different culture, religion, society, *etc.*, it widens his/her scope and breeds new ideas in his/her brain.
- 3) **Physical Growth:** Children possess boundless energy which cannot be channelised efficiently in the restricted environment of home, whereas schools are able to provide an outlet to this energy in a disciplined way. Physical development of a child is ensured when the child is involved in social and gaming activities with same-aged individuals. School education also promotes

physical growth and well-being of students by engaging them in physical training (PT) and sports.

- 4) **Personality Development:** Apart from playing a major role in feeding curious minds of young children, it provides an excellent opportunity for students to learn analytical skills, social skills, communication skills, *etc.* and thereby work towards shaping their overall personality. School education provides various platforms to the child in terms of extra-curricular activities such as debates, declamations, quizzes, painting, craft-making, *etc.* where students learn to speak or express their thoughts without any fear or hesitation and gain priceless self-confidence, which works wonders for them in their career growth later in their lives.
- 5) **Moral Education:** School is the place where a child gets to experience human interaction outside the four walls of home. Spending time with same-aged persons, they tend to imbibe sociable practices such as compassion, friendliness, care, association, assistance and participation, which prove to be quite helpful in adulthood.
- 6) **Able Citizens:** School education contributes in churning-out well-informed and well-groomed young people who become good leaders, administrators, entrepreneurs, professionals, *etc.* and ultimately act as engine for country's political, social and economic growth. Such learned people are also capable of rising above their self-interest and thinking about welfare of their fellow human beings, thereby promoting peace and harmony all around.

1.6.4. Types of Schools

Schools in Punjab have been classified in to government (state-run), private (affiliated), unaided, and unrecognised schools.

- 1) **Government Schools:** Government school means a school that is funded and administered by the local, state or central government. The curriculum is decided at the state or central level and admissions are generally done on the basis of geographical zones.

- 2) **Private Aided Schools:** Private aided schools are those education institutions which are owned by the private management but are controlled by the government as it provides financial assistance to these schools. All rules and regulations like regarding admissions, appointment of faculty, *etc.* are same as that for government schools. The curriculum, study materials, syllabus, examinations, *etc.* are also done as per government guidelines.
- 3) **Private Un-aided Schools or Private Schools:** Private schools are fully owned and controlled by private management but these also have to follow government rules to some extent, especially in financial matters. Main source of funds in these schools is the tuition fees of students. Here, criteria for admissions, fee structure, *etc.* may differ significantly from government-controlled schools.
- 4) **Unrecognised Schools:** These are the schools that run without government license, generally because they are unable to fulfil the prerequisites of recognition stipulated by the government such as infrastructure requirements, salary structure of the faculty, *etc.*

Total number of schools in Punjab in 2016 was 28,962 of which approximately 67 per cent (nearly 19262) are public and rest belong to other categories of schools. Girl students made a very low proportion of only 45.9 percent in a total of 54.91 lakh students studying in schools in Punjab. At primary level, girl students made a percentage of 46.1 per cent out of the total students whereas this percentage was 46.08, 45.4 and 45.6 at upper primary, secondary and higher secondary levels respectively (GOI, 2021). These figures indicate that there are lesser number of girls in comparison to boys at each stage of school education in Punjab. Additionally, lesser girls are attaining secondary and higher secondary education than those attaining primary and upper primary education. This is also indicated by dropout rates for female students that were 3.25 per cent, 3.55 per cent, 8.39 per cent and 3.67 per cent at primary, upper primary, secondary and higher secondary levels respectively.

1.7. GOVERNMENT EFFORTS

Everything requires a strong foundation to grow upon; like even a small seedling requires fertile soil, adequate water and sunlight to grow into a plant; and the weaker the thing is the more protection it requires initially. Government's role is of a facilitator as well as that of a provider of services, especially in case of social sector (i.e. education, health, *etc.*) to bring millions of people out of the state of ignorance and deficiency. Government education spending is of huge significance as large population in India depends on subsidized public education system for their education. Moreover, only government can create the requisite outer framework, in the form of good school infrastructure facilities, to provide fillip especially to girl education that it desperately requires.

Government of Punjab has been working tirelessly to promote education level in the state by implementing Right to Free and Compulsory Education (2009) in letter and spirit and bringing about quality improvements in school education. The government every year allocates some part of financial resources from the budget for the cause of education, and has implemented various central schemes to promote education, like *Sarva Shiksha Abhiyan (SSA)*, *Rashtriya Madhyamik Shiksha Abhiyan (RMSA)*, *etc.*, as well as State schemes, such as *Parho Punjab Parhao Punjab*, *etc.* Also, specific schemes like *Bebe Nanaki Laadli Beti Kalyan Scheme*, *Mai Bhago Vidya Scheme*, *etc.* and various scholarships have also been started by the policy makers to promote female education, yet there is huge distance to cover. No doubt the state had already achieved cent per cent enrolment rates in primary education even before the Right to Education (RTE) Act was introduced in 2009 but, there is high rate of dropout among girls due to variety of reasons such as household work, taking care of siblings *etc.* State lags behind many others when it comes to female enrolment rates in middle level school education. Many girls still remain outside the ambit of secondary education on account of reasons such as financial problems, safety issues, reaching puberty, early marriages, *etc.* Even after the initiation of dedicated scheme of RMSA in 2009 to promote secondary education, enrolment in secondary education is still far from the desired level of 100 per cent. Also, the dropout rates are disappointingly high at secondary and higher secondary school level.

1.8. NEED OF THE STUDY

The state of Punjab is known for its prosperity but, the social atmosphere in the state is marred by culture of patriarchy and male dominance, which is evident from strong presence of son preference and skewed sex-ratio in the state. Sex-ratio in Punjab is 895 i.e., for each 1000 male, and this figure is much below national average of 943 (Census of India, 2011). Child sex-ratio (0 to 6 years) stands abysmally low at 846. This highly skewed sex-ratio asserts the fact that women are grossly discriminated against in almost all the spheres of life, like education, health, employment, politics, *etc.* Gender discrimination in field of education in Punjab has been highlighted by various studies (Talwar & Meenu, 2014; and Saiyed & Pathania, 2015) and is apparent from the fact that male literacy was 80.4 per cent in 2011, whereas that of females was 70.7 per cent (GOI, 2012). Also, girls formed just 45.91 percent of the overall number of school-going children in Punjab in 2021 (UDISE+ Report, 2021-22). Various researchers have asserted in their studies that economic growth of a country is greatly hampered by gender differences in education (Ali 2015; Chaudhry, 2007; and Klasen, 2002). Therefore, to increase the rate of economic progress, it is imperative to bring about gender parity in the field of education (Klasen & Lamanna, 2009). Even after numerous efforts put in by governments at the state and central levels, as well as Non-governmental Organisations (NGOs) working in this area, there is still long way to go in the field of women education. Thus, need for a study regarding female education in government schools of Punjab is established.

1.9. OBJECTIVES

The study aims to achieve following objectives:

1. To study the trends and patterns in female school education in Punjab.
2. To analyse the gender differentials in school education in Punjab.
3. To examine the relationship between availability of school infrastructure facilities and female school education in Punjab.
4. To assess the role of government in enhancing female school education in Punjab.

5. To identify constraints in the attainment of education by females in Punjab & to recommend possible solutions.

1.10. HYPOTHESES

- **H01:** Over a span of time female school education has remained time invariant.
- **H02:** Over a period of time gender gap in school education has not undergone any significant change.
- **H03:** There is no interdependence between variables of physical and social infrastructure of schools and the variables of girls' education.
- **H04:** Various schemes of government have led to no improvement in parameters of girls' education.

1.11. SIGNIFICANCE OF THE STUDY

The study will highlight the state of female school education in Punjab, and the existing gender differentials at the district level to identify the regions that are lagging behind others in terms of female education. It will provide empirical evidence regarding relationship between availability of school infrastructure and female school education. The study will add to the academic literature regarding role of government policies in promoting female school education. It will also create awareness among people and the school administration regarding the hurdles that girls face in the attainment of education, and will also generate useful policy implications for the government.

1.12. CHAPTER SCHEME

The study is divided in to nine chapters:

Chapter 1. Introduction: The first chapter gives introduction of the topic and also explains area of the study, its scope, objectives, hypotheses, significance and a chapter scheme of the entire thesis.

Chapter 2. Review of literature: Second chapter gives an account of review of literature encompassing various relevant international, national and state level studies.

Chapter 3. Data Sources, Concepts and Research Methodology: This chapter explains various definitions, concepts, data sources and methodology used for the study.

Chapter 4. Trends and Patterns in Female School Education in Punjab: This chapter deals with the first objective of the study that is trends and patterns in female school education in Punjab. The chapter depicts trends in female literacy and school enrolments and also identifies patterns by classifying districts and regions as leaders and laggards.

Chapter 5. Gender Differentials in School Education in Punjab: Chapter five is associated with second objective of the study and presents the analysis of gender gap in literacy and school enrolments. Estimations regarding time required for closing these gaps have also been computed and presented in this chapter.

Chapter 6. Availability of School Infrastructure and Female School Education in Punjab: Sixth chapter depicts the relationship between female school education and school infrastructure, which can play an instrumental role in promoting girl education at elementary and secondary level.

Chapter 7. Role of Government in Enhancing Female School Education in Punjab: Role of government in uplifting the status of women in the state through advancement of female education cannot be side-lined. Therefore, this chapter discusses various policies and schemes initiated by the central and the state governments to promote the cause of female school education in Punjab.

Chapter 8. Constraints in Attainment of School Education by Females in Punjab: Eighth chapter elaborates the challenges faced by girls in the attainment of school education in the state.

Chapter 9. Summary and Conclusion: This chapter summarizes the findings of the study and gives recommendations relating to each objective.

1.13. CONCLUSION

The importance of female education cannot be over emphasized in a state, where sex-ratio was just 895 in 2011 (GOI, 2012) which is one of the lowest among Indian states. Further, in 2012, labour force participation rate of females was about 27 percent (World Bank Report, 2017). Labour force participation rate for males was 78 percent in urban areas as against 18 percent in case of females whereas it was 79 percent for males in rural areas as against 32 percent in case of females. This percentage of labour force participation for females is much lower in comparison to other states. Insufficient progress in the field of female education will obstruct the path of empowerment of women as low level of education among women will reduce their participation in varying areas i.e., social, economic and political. Even after numerous efforts put in by the governments at the state and central levels, and also Non-governmental Organisations (NGOs) operational in this field, there is still much to achieve in the field of education, especially female education.

Undoubtedly, acts such as Right to Education (2009), programmes such as NPGEL (National Programme of Education for Girls at Elementary Level, 2003), financial assistance-based schemes like *Dhanlakshmi* (2008), developments under the *Swachh Vidyalaya* Initiative like installation of separate girls' toilets and movements like *Beti Bachao, Beti Padhao* have played a dominant part in enhancing female literacy. It is also to be noted that in a traditional civilisation, the challenges in women education are not only of enhancing the accessibility, enlarging the scope and developing the quality however, the greatest obstacle is of transforming the attitude of parents and persuade them to direct their daughters towards school education. For this, it is crucial to educate parents and the adults in the society. The National Literacy Mission (NLM) that was introduced in 1988, was directed towards providing practical literacy to illiterates in 15-35 years age group. Lately, a novel variation of the NLM called *Saakshar Bharat* (2009) was launched to strengthen skill development and education for adults. Additionally, for educating the ones who work during the day time or are beyond the age-limit of formal education, evening and night schools have been playing a significant part. It is evident that education of older adults as a policy measure has not been entirely abandoned by the officials, yet it

surely warrants extra attention than what is being given to it. Undeniably, educating young girls should remain state's topmost preference but, it must also be borne in mind that educating parents is a significant step towards educating, empowering and liberating daughters.

Chapter - 2

REVIEW OF LITERATURE

2.1. INTRODUCTION

Education is the premeditated process of encouraging those attitudes and spreading those skills that are indispensable for local, regional and national development (Vil'anilam, 2012). Thinkers have for long documented the part education plays in improving the society and the economy. In the late 1980's economists, like Lucas, started placing larger stress on the significance of human capital as a determining factor of growth and efficiency. Since then, there has been no dearth of theoretical and empirical estimations which formalized role of human capital in the process of development. Several pragmatic researches have subsequently observed that accrual of human capital (measured in terms of education variable), gender neutral as well as gender-separate, is an important determinant of economic growth (Barro, 2001; and Klasen, 2002). Moreover, economic historians and growth economists have asserted that the "Great Divergence" between the developed and underdeveloped world in the 19th century was strengthened – if not instigated – by swift advances in schooling that happened in the developed economies (Chaudhary et al, 2011). According to Balatchandirane (2007), primary education is most essential as it forms the base of industrialisation and development. It is also important because rate of return is maximum in it whereas it is lower in secondary and lowest in tertiary education. As a country progresses, demand for higher human capital leads to expansion of secondary education, while tertiary education is the last to develop but it does not mean that higher education is not required in the initial stages of modernisation. Industries and businesses in a country cannot wait for long for considerable share of population to be endowed with higher education. Therefore, these have to be developed simultaneously. It is for policy makers to decide what combination of varying weights of different levels of education is desirable for the country keeping in mind its developmental needs and budgetary constraints.

Many researchers have attempted to explore the relation between education and economic growth at various times. Ample evidence exists in literature that suggests association between education and economic growth however, the evidence points in various directions. Some have found positive and significant relationships, some found negative whereas some found no effect at all. Early on, human capital theories of Lucas in 1988 and Mankiw, Romer, and Weil in 1992 detected that build-up of human capital could raise yield of other factors and thereby enhance growth whereas theory of Nelson and Phelps in 1966 stated that labour force equipped with education would emulate frontier technology faster. These findings are in harmony to the results obtained by Aghion *et al.* (2009) who developed a multi-state endogenous growth model in which "high-brow" education nurtures technological innovation and "low brow" education nurtures technological duplication. Although they could not make much progress on the causal effect of primary and secondary education on growth but, they found positive growth effects of investments in higher education and research type education for all states which were close to technological frontier. An investment of thousand dollars in research type education raised growth rate by 0.04 percentage points whereas an investment of same amount in four-year college education increased growth rate by 0.07 percentage points. However, they did not find any relation between investment in two-year college education and development. However, Yanez (2012), applied Mincerian Regression Model using three different databases on five set of countries to observe the effect of education on economic growth. In nations with a very effective compulsory schooling policy effect was far lower (and even negative in few cases) than in nations where school enrolments had increased merely because of upgrading of school environment. According to him, reason for this result was that some individuals, who were more industrious at work, were compelled to spend their time in schools. Hence, incentive-based strategies are more likely to generate a positive return on education. To sum up, the fact that education contributes substantially to economic growth of countries finds immense support in existing literature. Linkage of education and economic growth is direct as well as indirect. Education increases people's stock of skills and productive knowledge, which leads to increased participation in work force. More and better education leads to better technology absorption, which is essential in the earlier stages of development of a nation.

2.2. FEMALE EDUCATION

Women form almost fifty percent of the entire world's population (The World Bank Database), and are at the heart of any society. Researches from around the globe have documented the direct and indirect benefits of educating girls and women (UN Report, 2022). Educated women have a better understanding of health and hygiene that translates in to improved education and health status of offspring in the family, and reduced mortality rates (Kumar & Sangeeta, 2013). Girls' right to education is fundamental in practically every facet of development, economic growth and prosperity (UN report, 2022). However, the initial studies exploring linkage between female education and growth rate suggested a negative link between the two. Barro (2001) stated that average years of school attainment at the secondary and higher levels only for males have a positive and significant effect on economic growth. Later studies (Klasen, 2002), however, established that there was a positive impact of female education on economic development. Moreover, educational capital stock of females has a higher effect on economic development than that of males (Lorgelly, 2000). Similar results were proposed by Sarwar *et al.* (2014). They argued that additional year of schooling enhanced the income for male and female population and relation was stronger for females, thereby reducing income disparity between males and females. Generally, women with advanced levels of education bear lesser number of children than women having lower level of education (Economic Growth in Developing Countries: Education Proves Key, 2008). Furthermore, women education encourages economic growth (Salatin & Shaaeri, 2015; Self & Grabowski, 2004; and Benavot, 1989) and promotes women empowerment (Sundaram *et al.*, 2014; Yadav *et al.*, 2011; and Al Riyami *et al.*, 2004). Empowerment is a process of acquiring knowledge and awareness which enables women to lead life with greater dignity and self-assurance (Dominic & Jothi, 2012). Education is the single most important factor to ensure gender equality and empowerment (GOI, 2016). Thus, education can be used as a tool to promote women empowerment because education has the inherent ability of introducing social change in the context of gender relations. Women who are more educated and employed are relatively more empowered (Nayak & Mahanta, 2009). Educating women develops their potentials,

increases social and economic return, improves the quality of life, produces educated and healthy children and reduces fertility and mortality rates. Education makes them able to know their rights and gain confidence (Meera & Jumana, 2015). Also, education is vital in a democracy for enhancing women's participation in policy-making (Bera, 2016). Sunadaram *et al.* (2014) ran a multiple regression analysis on the data collected from 455 women respondents in Madurai district to find that education played a significant role in effecting overall women empowerment. Education empowerment also had positive effect on all other types of empowerments i.e., personal, economic, social, psychological, technical, and political. Similar conclusions were drawn by Shetty & Hans (2015). They are of the view that education assists in making women financially strong which forms the basis for all other types of empowerments like, social, psychological, technological, and political. In another study conducted by Yadav *et al.* (2011) of 149 women in reproductive age-group of 15-49 from rural, slum and non-slum urban areas of Jamnagar district, it was found that involvement of women in policymaking relating to household matters and spending decreased with decrease in the number of years of schooling they had received. Al Riyami *et al.* (2004) also used education and employment status as proxies for decision-making and freedom of movement in their study related to use of family planning methods by married women in Oman. When women are informed and enabled, the gains are massive but, women education and advancement has not been getting the required attention. On the other hand, a lot of success has been already achieved in this respect by the advanced nations. In a research relating U.S.A., Jacobs (1996) asserted that women were at a disadvantage in terms of learning outcomes while in schools whereas they did comparatively better as far as access to college education and its experience were concerned.

In India, women enjoyed high status during early Vedic period but it gradually started deteriorating and made little progress during British rule (Jyothsna, 2016). After independence, government of India took various measures to empower and educate women. Sing *et al.* (2020) undertook a study regarding women education in India in which they analysed development indicators of women education in India since independence, and found that there had been noteworthy advancement in

women education. It is evident from female literacy rate and school enrolments. Though the female literacy rate has improved immensely since then, yet the pace of progress is quite slow and also, it is way behind male literacy rate (Kumar & Sangeeta, 2013). Female education is in a terrible state at elementary and secondary level than at the higher stage (Sahoo, 2016). Also, rate of school dropout is higher in case of girls than for boys. Sabanna (2007) in his study of Hyderabad-Karnataka region of India found huge gender gap in education and employment. Majority of women had only primary or secondary level education and 67 per cent did not have any encouragement from family to continue the education thereby resulting in high drop out. Insufficient education to women not only deteriorates the quality of present human resource, but it also badly affects the health and education of their children. Illiteracy and inadequate education limit the female labour force participation. This leads to loss of precious working hours. This way, India is considerably wasting the demographic dividend that it can reap if its people are properly educated to enter the labour force and do the work which they were capable of doing. India is among the few nations in the world that possess huge demographic advantage due to its large work age population where most of the advanced nations are facing population implosion. In case of India, there is still vast unutilized potential in terms of its non-working women. More women need to be given education and brought in to the work force to enhance the production and income in the economy at a faster pace. According to Economic Survey (GOI, 2017), peak of the growth boost due to demographic dividend is fast approaching in India. Including more women in to active work, by educating and training them, can extend this peak for a longer time period. Also, it is stated in National Curriculum Framework (2005) that for making it possible for ignored students, and mainly girls, to assert their rights and also perform a dynamic role in society, education must enable them to overcome the shortcomings of inadequate socialisation and empower them to nourish their capabilities of becoming independent and equal citizens.

Women in Punjab are disadvantaged in almost all spheres of life. There is low sex-ratio, lesser education, lesser health care, and fewer employment opportunities

available to them and there are high incidences of crime against them. Punjab's popular culture and strong presence of patriarchy are main reasons for subordination of women. Males need to be sensitised and public opinion needs to be mobilised on the subject to bring the change (Bala, 2014). One reason for this is there is lower percentage of schools for girls in Punjab. The percentage of girl's school was at its lowest i.e., 0.8% for the year 2011 (Talwar & Meenu, 2014). Similar conclusions were drawn by Kaur (2017) in her study related to Burj Ladha Singh village in Bathinda district of Punjab. Her analysis showed that women in rural areas had quite low level of education and scheduled caste women were at greater disadvantage among all the social groups. Poor financial condition of the family and lack of school in village were the major reasons behind educational deficiency of rural women. In a study conducted by Kaur and Siwach (2014) in Malwa region of Punjab, 32.43 per cent of respondents asserted that illiteracy and ignorance among women were the impediments confronting the motive of women empowerment.

2.3. GENDER DIFFERENTIALS IN SCHOOL EDUCATION

'Gender' is a term that is normally interpreted from diverse viewpoints and is therefore used in many ways. Biologically-motivated theories ascribe differences in gender to the diverse genetic and biological roles that males and females play while philosophies of sociology emphasize on its socio-structural determinants (Hameed & Shukri, 2014). Simply put, in common parlance the term gender connotes 'sex' of a person whereas in reality, it is associated with the diverse actions, roles and responsibilities that males and females perform as per their biological, emotional and physical capabilities. Word 'gender' has taken over the word 'sex' in describing biological dissimilarity, which has skewed the actual meaning of this term (Torgrimson & Minson, 2005). Merriam Webster Dictionary explains sex (noun) as the summation of those features of the organisms that differentiate between males and females, which includes physical, operational, and even behavioural features. Sex of an organism can't be changed from that attained naturally at the time of birth whereas gender is just an expectation that evolves over time as more and more understanding and knowledge are acquired. Gender implies an outline of behaviour and conduct desired from males and females as per socially accepted norms and in

this layout, females have been allotted inferior position. This variation in standing of females in relation to males, is called gender bias, and engenders damaging emotional, societal and economic effects (Pokharel, 2008). Moreover, achievement of homogeneity in the society is essential for the eradication of gender bias from the society and it can be achieved through the spread of knowledge. Therefore, society needs to be made aware regarding significance of women education so that more and more women are educated (Singh & Rabindranath, 2020).

In most of the advanced nations, education attainment by females is ready to surpass or has already surpassed educational attainments of males and therefore, gender differentials in these advanced nations have been showing reverse trend for sometime now (Pekkarinen, 2012). Dorius and Firebaugh (2010) conducted a cross-national study and also concluded that gender disparity is falling in practically all principal areas but the population growth is hindering the fall as populations are increasing quicker in countries where there is the extreme gender disparity. In emerging nations, many fields like, health, education, employment, *etc.* witness the existence of gender inequality. For example, women in South Asia suffer from mortality rates that are extremely higher than men, leading to "missing women" as referred to by Amartya Sen (Chaudhry, 2007). Further, there are wide disparities related to gender in educational attainment not only at the provincial but also at the district level in Pakistan, and inequalities in educational and economic opportunities lead to inequality of economic outcomes (Hamid *et al.*, 2013). Khan *et al.* (2015) also recognised the presence of gender inequality in education in Pakistan and pointed out culture and traditions, cost, safety, medium and feudalism as reasons for it. But, according to them, income inequality is the major reason behind differences in educational attainment of males and females. The factors promoting gender disparity in education range from household issues, societal challenges, financial problems, and accessibility issues to safety & hygiene issues to traditional mores (Rena, 2004), apart from orthodox mindset and perspectives of individuals, families and other stakeholders with regard to educating girl children (White *et al.*, 2016). Depicting the importance of female education, many studies have stated that to increase the pace of economic progress, it is essential to materialise gender parity especially in the field of

education (Klasen & Lamanna, 2009). Klasen (2002) stated that South Asia would have had 0.9 percent of quicker economic progress every year if it had endorsed gender-balanced growth in education since 1960. Similar results were reported by Chaudhry (2007) who assessed the impact of gender inequality on economic growth in Pakistan during the period 1970-2005 using econometric analysis. He asserted that gender disparity in education has a strong and significant effect on economic growth in Pakistan. Therefore, government should concentrate particularly on girls' education in the rural areas as majority of the population in Pakistan lives in the rural areas and agriculture sector contributes roughly one quarter of Pakistan's GDP. Many other researchers also established the fact that increase in women education and reduction in gender inequality in education have a positive relation with economic growth (Salatin & Shaaeri, 2015; and Ali, 2015). Arora (2012), in her study at sub-national level in India, also found that higher per capita income was escorted by lower gender bias, barring a few exceptions. Rakhis (2015), however, did not find any noteworthy association of gender disparity in labour force and education with economic progress in her study comprising 19 countries from the Arab region during the period 1990-2014. She used OLS & Fixed Effects Regressions to arrive at the conclusion that growth of population along with capital formation were the main factors accelerating the economies of the countries in the Arab region. Braunstein (2011) went to the extent of concluding that under certain circumstances, gender inequality may actually contribute to economic growth. Self & Grabowski (2004) go one step further to evaluate the relationship between gender inequality at various education levels and economic growth. They applied time series techniques to determine whether education, at primary, secondary and tertiary level, has a causal impact on growth in India for the period 1966-96. The results showed that education is causal only at the primary and secondary level. Male education seemed to exert a causal effect on growth just at the primary level or may be insignificantly at secondary level whereas female education at all stages accelerated economic growth. These results are similar to the ones proposed by Benavot (1989). He undertook a panel regression analysis on cross national data from 96 countries between 1960 and 1985. The results showed that effect of enrolment rates of both females and males at

primary level on economic growth is strongly positive, however their impact weakens when labour force measures and fertility are considered. Further, it was found that the parameter related to primary education of females (.0064) was higher than that related to primary education of males (.0056). However, Qureshi *et al.* (2007), in a study related to Pakistan for the period 1963-07, found that female enrolment at primary level boosts economic growth but not at middle level.

India has a patriarchal structure of society that leads to robust prevalence of gender disparity where females continue to be disadvantaged in terms of essential health care, education and political participation. Most of them are victims of social evils like, sexual harassment, early marriage, dowry, etc (Sivakumar, 2008). In the field of education also, females have to face gender bias in terms of literacy rates, enrolment rates, dropout rates, *etc.* Though the situation is improving, yet there are still wide gaps prevalent in male-female education. Except for Goa, Kerala and a few north-east states, literacy rates are not favourable to females in most of the states. The range for female literacy in the country is 40.6 percent whereas the same is 24.9 percent for males, indicating that there is higher inequality in female literacy (Katiyar, 2016). Some districts of Rajasthan are facing problem of high gender disparity in literacy (Kumar, 2017). In another study, same results were reported for Punjab and Haryana also, in addition to Rajasthan (Kumar *et al.*, 2016). As per a study by Mohamed and Singh (2014) in Rajasthan, gender differences play a major role in education enrolment; girls have lesser chance of attaining education. Girls face higher prospects of being out-of-school and these prospects are around 16 percent greater than that for boys. Further, girls belonging to minority groups such as Muslim girls and girls belonging to backward castes, scheduled tribes and rural areas have even higher chances of being out-of-school (Mitra *et al.*, 2022). According to Population Census of India 2011, female literacy (population 7+ years) in India was 65.46 per cent as against male literacy rate of over 80 per cent. Additionally, India had a gender Parity Index for adult literacy rate as 0.75 whereas the figures were 0.976, 0.985 and 1.005 in case of South Africa, Bangladesh and Brazil. Achievement of various development goals like, reducing population growth, child mortality, poverty, *etc.* may be jeopardised in the prevalence of gender disparity as

high as this. Indian states differ significantly in their performance regarding educational advancement and also regarding fall in the gender disparity in education. Though all the states have witnessed fall in literacy differentials among males and females yet, disparity among states has augmented during 1991 to 2011. Value of coefficient of variation across selected states was 28.28 in 1991 and it rose to 34.07 in 2011. Disparity is also quite high across states in gender parity index at higher secondary level (Kaur & Meenakshi, 2016). This has happened because some states succeeded in improving female education levels considerably while others failed to do so. States which are faring better than the others indulged in advancement of education quite earlier and preserved gender equity whereas states that ignored this aspect of education for a longer time, failed to achieve gender equality. Their performance on these grounds has linkages to economic status as well. The states that are witnessing larger gender gaps are not performing well economically whereas the ones that have lower gender gaps are better placed in terms of economic development. This surely brings out the impact that the existence of huge stock of untaught women has on the economic development of a nation (Balatchandirane, 2007).

Gender inequality is all pervasive in Punjab, more than in the other states of the country. Data of sex-ratio in the state makes it quite clear because the figure is amongst the lowest in the nation. Though, sex- ratio in Punjab has increased from 876 in 2001 to 895 in 2011, yet it is considerably lower than the national average of 940. It is even lower at 846 in the 0-6 years age group (GOI, 2012). This shows low status of women and high son preference still prevalent in the state. This discrimination is reflected in almost all spheres of life, from education to health and employment. In case of school enrolments at primary level in the age-group of 6 to 11 years, Punjab has attained gender parity but, there is still large gap of 10 per cent in male-female literacy rates in the state (Saiyed & Pathania, 2015). Pushkarna (2017) argued that in Punjab, total literacy rate had been increasing over time however, the pace of improvement had been falling. Further, the state observed existence of high male-female and urban-rural disparities in literacy levels. Districts in the eastern region of Punjab had higher rural literacy rate than districts in the

western region. Also, urban-rural differences were greatly noticeable in Amritsar, Ferozepur, Faridkot, Muktsar, Moga, Bathinda, Mansa and Patiala and lower in Gurdaspur, Kapurthala, Jalandhar, SBS Nagar, Hoshiarpur, Rupnagar, SAS Nagar, Ludhiana and Fatehgarh Sahib. Districts having differential index that equalled the state's average included Tarn-Taran, Sangrur and Barnala. In a district level spatial study concerning rural-urban differences in literacy levels in Punjab, conducted by Lal (2019), it was stated that districts lying in south-western and southern areas of the state lagged much behind districts forming north-east and northern areas of the state. The study also confirmed that vast gaps in literacy in rural and urban areas of the state were persisting. In a related study by Kaushik (2018), it was observed that just four districts that is, Amritsar, Jalandhar, Ludhiana and Patiala, had good levels of literacy due to greater urbanization and consequently better access to education in these areas. In a related study of Haryana undertaken by Sharmila (2019) prevalence of high gap in male-female literacy rates was observed. Furthermore, district-wise gaps in literacy levels for females were strikingly greater than that for males. It was claimed that this was because of the male-dominant social atmosphere in the state and greater gender bias against females. Likewise, rural areas witnessed greater variances in levels of literacy as against urban areas of the state. In a study comparing literacy rates in Punjab and Haryana, conducted by Singh (2017), it was found that in terms of literacy levels both the states were analogous in 2011 as literacy levels in both the states had exhibited a jump over the years. In addition, both were equivalent in terms of substantial occurrence of literacy gaps in terms of gender and space however, male-female literacy differential index in Haryana was found to be almost double than that in Punjab. According to Statistical Abstract of Punjab (2017), there is higher percentage of boys than the girls in schools for all the years, which is also an indicator of gender inequality. Vidushy (2015), in a study related to gender inequality in districts of Punjab found that though gap in male-female literacy rate is falling over the years i.e., 11.9 per cent in 2001 to 9.7 per cent in 2011, the decrease is quite slow. According to World Bank Report (2017), fewer adult women in Punjab (38 per cent) had secondary education in 2012 as compared to adult men (44 per cent). Further, there was a huge gap between rural and urban females as only 30 per

cent of rural females had completed secondary or higher education, whereas 52 per cent of urban females belonged to that category. No doubt many approaches exist which can solve the issues in way of female school education, especially gender related challenges, yet gaps are still existent because these approaches do not isolate results as per gender and are unable to separately identify impact of every intervention element (Psaki *et al.*, 2022).

2.4. SCHOOL INFRASTRUCTURE AND FEMALE SCHOOL EDUCATION

Infrastructure consists of the basic physical, social and organisational facilities that act as a facilitator for socio-economic and human development. Education infrastructure means physical facilities which attract children to learn in school (Samanta, 2017). Buildings, classrooms, laboratories, equipment, and sanitation and drinking water facility, *etc.* are the most basic elements necessary to ensure access to education and are crucial elements of learning environment in schools. Ample studies relate availability of school and distance to school to increased enrolments and literacy levels (Giri & Shrestha, 2017; Muralidharan & Prakash, 2017; Mohanty *et al.*, 2016; Burde & Linden, 2013; and Rahji). An improved access is especially beneficial for girl children as distance increases the opportunity cost of schooling for girls and will lead to an increase in the enrolment gap between boys and girls. Giri and Shrestha (2017) asserted that building of an extra school (per 1,000 square kilometres) enhanced the possibility to read and write among females by 1.5 percentage points and augmented their highest level of schooling achieved by 0.12 units. If the schools do not have adequate basic infrastructure, that is, if they do not possess sufficient learning space per child, they are not safely constructed, lack in separate sanitary facilities, drinking water, and electricity, *etc.*, then enrolments fall (UNICEF Report, 2005). In a study conducted by Teixeira *et al.* (2017) in Romania, it was found that overcrowding in schools lead to high repetition and drop-out rates, and thus affected students negatively. Girls are particularly more likely not to attend or to discontinue school if the facilities are inappropriate. Dreze and Kingdon (2001) found a significant impact of waterproof roofs on girl school enrolment in primary schools in northern states of India. Kazianga *et al.* (2013), in their study related to

Burkina Faso, found that construction of BRIGHT schools with “girl friendly” features (such as meals, take away ration, toilets, separate toilets, and day care), better school resources and teachers increased overall enrolment by 19 percentage points and increased girls’ enrolment by 5 percentage points more than boys’ enrolment. School atmosphere which is unfriendly or unpleasant and lacks in distinct amenities for girls (e.g., toilets, boundary wall around the school, *etc.*) is not favourable for the enrolment of girls. Absence of girl’s toilet facility, especially, may become a hindrance in way of girls’ attendance in schools and impact their learning negatively (Bhunia *et al.*, 2012). Also, Njuguna *et al.* (2008), after conducting a survey of 100 schools in 3 districts of Kenya, argued that when the school had the whole WASH (Water, Sanitation & Hygiene) package, absenteeism among girls was quite less ($p < .001$). This relation recommends that the successful implementation of the WASH package in a school can diminish girls’ absenteeism considerably. Birdthistle *et al.* (2011) in their extensive review of 78 studies, however, did not find any conclusive evidence of impact of separate toilet facility for girls on their education outcomes but, they found four such studies which reported a beneficial effect on enrolment and attendance whereas Hanushek *et al.* (2008), asserted that as the quality of school and student achievement increased chances of grade completion also increased. In another study, Cohen and Bhatt (2012) stated that a common core approach to raise standards and professional advancement of teachers is required to develop literacy. Tamilenthil *et al.* (2011) also gave the argument that compromising with the standards of qualifications of teachers leads to loss of interest of the students, which further leads to their failure in achieving their true potential. Moreover, Unterhalter *et al.* (2013) found strong evidence of correlation between girls’ identification of obstacles to claiming education and possible solutions and teachers’ qualifications. That is, teachers’ qualifications play a dominant role in empowering girls to claim their right to education. According to Wanjama and Njuguna (n. d.), Gender Responsive Pedagogy (GRP) model is seen as an impactful approach for refinement of the instruction and learning methods and enhances access, enrolment, preservation, and performance of girls in schools. Similar conclusions were drawn by Marcus and Page (2016) in their review of 150 studies from all over the world. As per the review, gender responsive pedagogy, gender sensitised

curriculum and open learning promoted girl education. Improved teaching methods, through teacher training, also lead to improved performance of girls. Further, female teachers and role models lead to increased attendance and retention of girl students. Positive impact of female teachers on girls' education was also stated by Coleman (2017), but she cited school-based gender violence as the major reason behind parents keeping their daughters at home rather than sending them to school. A statistically significant impact of child-teacher ratio, teacher regularity and parent-teacher co-operation on girls' primary school enrolment and grade attainment in north India was reported by Dreze and Kingdon (2001).

Sharma and Gaur (2018), in their study related to school-relating factors and women education in India, found that availability of electricity, sanitation facility and female teachers in schools improved female education. These results were significant for states with high female literacy rates. India has a large school going population of 259.5 million (GOI, 2016) and it requires a strong educational infrastructure to involve such an enormous school-going population. In this way only, it will be able to provide its developing economy with quality manpower and maintain its growth momentum. Majority of the recent studies reveal that basic infrastructure facilities are still lacking in Indian schools (Kalota, 2017; Samanta, 2017; and Bhunia *et al.*, 2012). There is huge deficiency in school infrastructure in rural areas in comparison to urban areas (Sharmila & Dhas, 2010) and in Government schools as compared to Private schools (Kant, 2014). Kalota (2017), in her study related to infrastructure deprivation in schools of Uttar Pradesh, found that there existed high deprivation in indicators like electricity, toilets for CWSN and hand washing facilities, which badly affected quality of education and urged that causes of deprivation in educational infrastructure need to be explored. Sing *et al.* (2020), in their work regarding women education in India, found that there were numerous infrastructural blockades in the path of educating women in India. They argued that to improve the female education in India and to plug-in the girl drop-out from school education, it was necessary to initiate dedicated efforts to expand women-centred educational infrastructure. Therefore, there is much to be done for India to achieve the target of universal access to elementary school education.

Though school infrastructure has developed immensely in Punjab, yet it still remains far from satisfactory. As per NSSO Report (2014), 945 households in 1000 have access to a primary school with in a distance of 1 kilometre but, this figure falls sharply to 763 for upper primary schools whereas it is 853 for Haryana, 809 for Gujarat and 815 for Rajasthan. Only 409 and 370 students out of 1000 at primary and upper primary level respectively received free education. These figures are much below the national average of 599 and 604 per thousand respectively. Also, 452 and 461 per thousand students received mid-day meal as against national average of 625 and 616 at primary and upper primary levels respectively (NSSO Report, 2014). According to (Kainth, 2016), successive governments completely neglected rural schools by not providing satisfactory number of teachers as well as infrastructural amenities which has resulted in the downfall of elementary education in rural areas of Punjab. Kumar et al (2014), in their study related to Sikh Charitable Schools in Punjab, found that sports policy was not appropriately placed in maximum Sikh Charitable schools and infrastructure facilities were available but were not up to the mark, which marred the performance in sports. According to National Achievement Survey (GOI, 2017), 23 per cent of the school buildings need significant repair. One in four students in class 3 and 5 and one in five students in class 8 did not go out in playground during games period. About a quarter of students in all the three class levels surveyed (i.e., Class 3, 5 and 8) found it difficult to travel to school and a significant 22 per cent teachers in the state opined that they were overloaded with work. Adequate toilet and drinking water facilities were still found lacking. Thereby, boy and girl students in the state achieved mean test scores lesser than the national average in all the classes and in all the subjects because education infrastructure is required not only to increase quantity of education, but also to enhance quality in performance. Its deficiency proves to be an obstacle in the learning process of a child.

2.5. ROLE OF GOVERNMENT IN ENHANCING FEMALE SCHOOL EDUCATION

As government has assumed the role of a welfare state, need for government spending is constantly increasing, especially in developing countries. In India, after

the economic reforms were introduced in 1991, presence of private sector has increased in almost every sphere. But, government is nonetheless omnipresent, and rightly so when a huge population lacks basic amenities and achievement of Millennium Development Goals is still at a distance. Government spending on social sector (i.e., education, health, *etc.*) is important to bring millions of people out of the state of ignorance and deficiency. Government education spending is of excessive relevance to national development and has a crucial part in expanding knowledge and encouraging growth (Obi *et al.*, 2016). Huge population in India depends on subsidized public education system to be able to attain education because decisions of private sector are influenced by cost-benefit analysis and thus, it fails to approach the most vulnerable sections and the far-flung areas that require attention the most. Effect of government policies on women education is of substantial interest with regard to this study. There is ample literature linking public spending on education to increase in school enrolments. Ebi and Ubi (2017) affirmed that access to all levels of education in Nigeria had a strong and positive relationship with expenditure on education. According to them, 10-times increase in access to education at all levels can be achieved if education expenditure is enhanced to 26 percent of the total expenditure as is outlined in UNESCO declaration. Positive and significant effect of state's education expenditure on education outcome measured by primary school enrolment rate was also obtained by Obi *et al.* (2016). Iyer (2009) found that primary educational spending improved enrolment rates in Karnataka and transition rates in Andhra Pradesh while it had an insignificant effect on educational outcomes in Uttar Pradesh. Such diversified impact of education expenditure demonstrates the relevance of study at more localized levels. Craigwell *et al.* (2012), however, did not find any appreciable influence of public spending on education on either primary or secondary school enrolment but, they explained that devotion of most of the expenditure budget to higher education level or to salaries and wages rather than on supplies, equipment, and resources required for students to enrol in school might be the reason of inconsequential relationship. Sabir (2002) found that public spending on education benefitted males more than females in Pakistan in 1998-99 as households chose to enrol more males than females. Further, government expenditure was not correctly focused towards areas having higher gender gaps and as a result,

public spending was not suitably contributing to reduce gender disparity. Stotsky and Zaman (2016) also reported that gender-budgeting had a significant positive impact on primary enrolment equality. States with gender budgeting efforts have made greater advancement on gender equality in primary school enrolments rather than those which have not. Manimagala (2012) asserted that school inducements in the way of uniforms, stationery items and textbooks for girls of primary education appear to considerably increase their enrolment rates. Further, the attendance of upper primary school girls in schools is considerably improved with increase in attendance scholarships. Similar results were obtained by Muralidharan and Prakash (2017) in their study related to Cycle Program initiated by Bihar government. Under this scheme, free cycles were distributed to girls in secondary school going age that led to increase in enrolment of girls in secondary schools by 32 per cent. Dreze and Kingdon (2001) also reported a significant positive impact of Mid-day meal on girls' primary school enrolment and grade attainment in northern states of India. Thus, these studies highlight the importance of more focused spending on female education rather than just increase in spending.

In case of Punjab, Sethi and Kaur (2014) highlighted the dismal state of affairs with regard to government spending on education, especially in post-reform period. Education expenditure as percentage of GSDP remained very low consistently for 21 years (1984-85 to 2005-06) i.e., 2.5 per cent on average. Also, share of education expenditure as percentage of government budget continuously kept on falling, from 20.3 percent in 1985-86 to 15.9 percent in 1995-96 and further to 13.2 percent in 2005-06. Similar results were drawn by Brahmachari (2016) in a study related to fifteen large states of India, where Punjab was the only state in which ratio of actual expenditure to normative expenditure had decreased in 2007-08 in all the three subsectors, primary, secondary and higher; thereby indicating low importance attached to education sector by the state.

2.6. CONSTRAINTS FACED BY FEMALES IN ATTAINING EDUCATION

It has been observed that female education promotes economic growth of a country and therefore, there is a need to identify the challenges in the way of female

education that are responsible for its weak growth. Several researches have been conducted around the world to find out hurdles that women face in their academic journey, and found that problems included: safety concerns, financial issues, household chores, school and hygiene related issues, *etc.* (Singh, 2016; Meera & Jumana, 2015; UNICEF Report, 2005; UNICEF Report (n.d.); and Rena, 2004). Financial status of the family was observed to be the deciding factor in case of schooling decisions for girls (Misra *et al.*, 2017; Sharma & Ng, 2014; Malik, 2013; and Basumatary, 2012). Apart from these, familial issues such as illiteracy among parents, separation of parents, orthodox mentality, *etc.* were considered to be prime causes of drop-out from school education (Marwaha, 2018; and Yadav *et al.*, 2011). However, Chauhan and Kumar (2022) asserted that besides financial troubles, early marriage and gender discrimination also hindered education among females. Many researchers found evidence in support of household chores coming in way of female school education (Njie *et al.*, 2015; Assad *et al.*, 2010; and Kruger & Berthelon, 2007). To overcome this problem, it is imperative to change the mentality of parents and members of the society. On the other hand, Sharmila and Dhas (2010) argued that rural poverty, rather than restraining, in reality promoted female education. In a study conducted by Samudra (2014) it was stated that age at the time of marriage and male literacy had a positive impact on female education whereas the impact of work participation rate of females was negative.

Likewise, several researches at national level observed numerous school-linked obstacles in way of female education like, violence and safety concerns at school, distance from school, *etc.* (Jain *et al.*, 2016; Bhattacharjee, 2015; King & Winthrop, 2015; Yadav *et al.*, 2011; and Rena, 2004). On the other hand, issues concerning academic atmosphere of the school like, behaviour of instructors, pedagogy, *etc.* are also found to be influencing female school education and leading to high school drop-out among them (Sampath, 2016; Singh, 2016; and Sharma & Ng, 2014). Additionally, lack of female teachers, inefficient teaching or supervision, gender biased syllabi, and insufficient teaching-learning resources also hinder female school education in India (Meera and Jumana, 2015). Besides these, unwillingness to attain modern education and misunderstanding the ethos of formal education by the girls,

lack of resources, orthodox and restricting culture that pressurises for performing prescribed gender roles, apart from inadequate policy support from the government has inhibited the growth of female school education in the country (Ahamad & Narayana, 2015). Challenges in way of women education are not uniform across different levels of school education (Nair, 2010). Primary education is influenced more by the personal or household related issues like, psychology of the student and social atmosphere whereas secondary level education is more influenced by financial and school related issues like, remunerative occupation and safety concerns. Women are discouraged from registering into and completing higher education because little or no importance is given to the economic relevance of their knowledge. No doubt the advancement in terms of school enrolments is noteworthy, yet there is still much to be done to retain girls in schools due to high drop-outs among them, especially at secondary level (Malik, 2013). Pandemic-related interruptions in education systems have worsened the access and intensified learning disparities even more for vulnerable groups of girls and young women (UN Report, 2022). Covid-19 has exacerbated issues in education such as that of access, safety, privacy, *etc.* (Madhav & Tyagi, 2022; and Nair & Tyagi, 2021) and it has even worsened the gender disparity in the field of education (UNICEF Report, 2020). In addition, GIRL Centre (2022), in a study concerning India, observed that closure of schools during the pandemic resulted in different impact on boys and girls in terms of access and use of digital resources for online classes. It was also found in the study that as the girls stayed at home during this time, they faced increased burden of household chores.

2.7. RESEARCH GAP

The study has been inspired from the plight of girl child in the state of Punjab, as is depicted in the existing literature. A good number of international, national and state level studies relating to female education were reviewed which articulated the need for further research in this field. Also, there is a dearth of literature at the state level focusing on female school education. This study is required to identify challenges in the path of female school education in Punjab. Further, the association between sound infrastructural facilities and female access to school education finds support in

numerous foreign and domestic based studies, but remains to be deeply explored in case of Punjab.

2.8. CONCLUSION

Review of literature reveals that there has been an increasing trend in women education and also gender disparity in education is falling, but the rate of this decline has slowed down in Punjab. Also, it has been found that urban-rural gap in literacy is more pronounced in case of females than males. Various studies have been found to be in support of school infrastructure exerting a positive influence on female school education. Considerable number of studies have stated that girls face variety of challenges in attainment of school education that need to be addressed to boost female education. Studies also recommend expansion and precision in government policies for these to have a considerable impact on female education. Literature discussing school-relating factors that promote female school education and girls' specific obstacles that curb female school education is severely lacking in case of Punjab, and needs to be enriched.

Chapter - 3

DATA SOURCES, CONCEPTS AND RESEARCH METHODOLOGY

3.1. INTRODUCTION

Research methodology is a well-placed strategy to discover a resolution of the research problem and embraces various steps involved in the conduct of research i.e., identifying and outlining the research problem, finding the research gap and stating questions, clearly mentioning the objective of research and its propositions. It also gives a detailed account of research design, type of data, data sources, procedure of data collection, scope of research as well as the technique applied for analysing data. A straightforward and robust procedure makes research extremely smooth and dependable. In this chapter, a detailed account of objective-wise methodology, and also concepts and definitions used in research have been given that will act as a guide in understanding the research.

In this chapter, an effort has been made to throw light upon the different sources of the database available regarding female education in the state. The chapter also elucidates the concepts, definitions and methodology used to achieve different objectives of the study. Trends in female literacy rates and gender differentials in literacy and future projections regarding number of years required to achieve 100 percent female literacy and 100 per cent gender parity have been gauged for different districts of the state from Census data of the state since 1991. Similar analysis is also done for school enrolments using school enrolments data since 1991. Moreover, the effort is also made to find the model through multi-regression equation which explains relationship between variables like number of schools, percentage of girls' schools, pupil-teacher ratio, *etc.* and enhancement in female school enrolments in the state. The chapter also clarifies the methodology adopted for collecting primary data to identify challenges in the way of female school education.

3.2. DATA SOURCES

For objectives first and second, study period has been taken from 1991 to 2021 (in case of school enrolments) and from 1991 to 2011 (in case of literacy); for third objective, study period has been taken from 2002 to 2017; and for fourth objective, study period has been taken from 1986 to 2020. Secondary data has been collected from government reports and publications (like Census Reports, Statistical Abstracts of Punjab, State Report Cards, *etc.*), websites (like, esopb.gov.in) and various government offices. For fifth objective, interviews have been conducted to gather primary data. Details of the variables used in the study along with their data source has been mentioned below:

- Data regarding literacy from Census of India Reports for the years 1991, 2001, and 2011.
- Data regarding school enrolments from 1991 to 2021 from Statistical Abstracts of Punjab, Reports of UDISE and UDISE+. Data regarding number of schools, percentage of girls' only schools and pupil- teacher ratio from Statistical Abstracts of Punjab 1991 to 2017.
- Data regarding percentage of schools with female teachers, percentage of schools with drinking water facility, percentage of schools with separate toilet facility for girls, and percentage of schools with kitchen shed for mid-day meal from State Report Cards (UDISE Reports) from 2002 to 2017.
- Data regarding administration and geography of the state through ESOPB website (www.esopb.gov.in).
- Data regarding state-wise decadal population, rural and urban literacy rates, sex-ratio, child sex-ratio and density of population from Gender Statistics of Punjab, 2012.
- Data regarding population and few other parameters were collected from Population Statistics of Punjab.

- Data on macro-economic variables like composition of gross value added (GVA) and employment, female work-force participation rate, etc, have been taken from Economic Survey of Punjab.
- Data on budgeted expenditure on education for Punjab and India has been taken from Ministry of Education reports on Analysis of Budgeted Expenditure on Education for Various Years.
- Various reports of newspapers, journals, periodicals, reports of national and international bodies (like, World Bank, UNESCO, Economics and Statistics Organisation of Punjab, *etc.*) and online websites were also used for the study.
- Primary data for the fifth objective of this research have been gathered via semi-structured interview schedules.

3.3. DEFINITIONS & CONCEPTS

- **Education:** Latin word e-ducere, which means “to lead out”, is the origin of the word ‘education’ (Harsha, 2017). Education denotes any action or experience bearing a determinative impact on a person's cognizance, emotions, or bodily capability. In methodical way, education is the recognised procedure by which society intentionally communicates its cultural legacy and its gathered information, ethics and skills to the next generation via schools, colleges, universities and other educational establishments (UNESCO Report, 1993).
- **Gender:** ‘Gender’ is a term that is normally interpreted from diverse viewpoints and it therefore is used in many ways. Biologically-motivated theories ascribe differences in gender to the diverse genetic and biological roles that males and females play while philosophies of sociology emphasize on its socio-structural determinants (Hameed & Shukri, 2014).
- **Gender Discrimination:** Gender implies an outline of behaviour and conduct desired from males and females as per socially accepted norms and in this layout, females have been allotted inferior position. This variation in standing

of females in relation to males, is called gender bias, and engenders damaging emotional, societal and economic effects (Pokharel, 2008).

- **Sex Ratio:** Sex ratio illustrates number of females per thousand males. A low sex-ratio represents smaller number of females per 1000 males and hence, suggests greater gender discrimination and vice-versa.
- **Child Sex Ratio:** Child sex-ratio gives the number of females per 1000 males in the 0-6 years age group.
- **Literacy:** A person of age seven or more having the ability of reading and writing along with comprehension in any language, is called literate. “Literacy means a person who can read and write a simple message in any language with understanding is considered literate” (Census of India, 2011).
- **Literacy Rate:** Literacy rate describes ratio of people of age seven or more having the ability of reading and writing along with comprehension in any language.

$$\text{Literacy Rate} = \left(\frac{\text{Number of Literate People}}{\text{Total Number of People}} \right) \times 100$$

As per the World Bank, literacy rate is a result indicator to assess educational achievement. It may be employed as a substitute tool to understand the efficacy of education arrangement; a higher literacy rate indicates the success of an education arrangement in providing people with prospects of acquiring literacy skills.

- **Adult Literacy Rate:** It is the ratio of people of age 15 years or more having the ability of reading and writing along with comprehension in any language.
- **School Enrolment:** Total number of pupils enumerated and/or attending classes at a school in various classes. As per the World Bank, enrolment pointers are constructed on the basis of annual school surveys, but do not essentially indicate authentic turnout or dropout rates during the year.

- Gross Enrolment Ratio:** Gross enrolment ratio is the proportion of overall registration, irrespective of age, to the population of the age group that formally matches to particular education level. Gross enrolment ratios specify the success of every stage of the education system however, a high proportion may also depict a considerable number of overage children registered in each class due to reappearance or delayed admission instead of an efficacious education arrangement. Gross enrolment ratio, for example, in event of primary education is computed by dividing the number of students registered in primary education irrespective of age by the population of the age group that formally matches with primary education, and multiplying by 100.
- Stages in School Education:** There are roughly two stages in school education in India, which are further classified into two categories each. The stages of school education in India are depicted in the chart below:

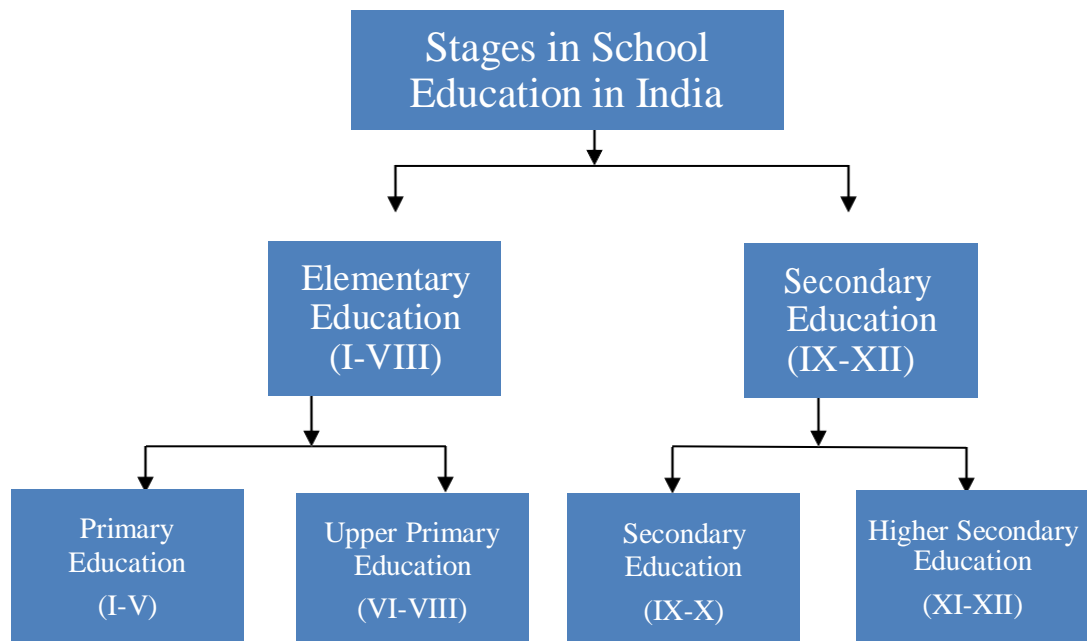


Figure 3.1: Levels in School Education

- Trend:** Oxford English Dictionary defines a trend as a general course in which something is developing or changing. Trends include observing the statistical scrutiny of historical data over a particular time frame and recording the movement. If the data indicate continuous increases, decreases or flatness, a

trend exists (Rosing et al, 2015). Studying trends assists us in making comparison over diverse time periods, forecast the future, make significant choices and chalk-out strategies.

- **Patterns:** As per Cambridge Dictionary, “A pattern is a particular way in which something is done or organized, or in which something happens”. After analysing patterns in female literacy, it is logical to check if there emerge any patterns in female literacy in the state of Punjab. For this, a spatial study of female literacy is done for the years 1991, 2001 and 2011 to bring out the inter-regional variations and hence highlight patterns.
- **Cultural Regions of Punjab:** Punjab has basically been divided in to three regions, i.e., *Majha*, *Malwa* and *Doaba*, because of the rivers *Beas* and *Sutlej* flowing through the land of Punjab. It is believed that in past times, it was quite difficult to go across the rivers. Therefore, these areas, divided by these rivers, were taken to be distinct regions and were frequently ruled by different rulers. There was limited communication between people residing in these divided regions, and hence, there was a difference in their language and culture; which exists even today. The regions differ significantly in terms of demographics also.
- **Regional Inequality:** Regional inequality denotes variances in the quality of life, affluence and standard of living of people residing and/employed in diverse places (Dunford, 2007). Regional inequality in education means that education parameters are not consistent across the region.
- **Access to School:** According to Oxford Dictionary, access is the means or opportunity to approach or enter a place. Therefore, ‘access to school’ implies the opportunity to enter a school. Entry into the system will support and direct the achievement of educational goal. Each individual must be given the opportunity to access the resources that will enable them to achieve their potential.

- **Pupil-Teacher Ratio:** It implies number of pupils (students) per teacher in a class and is computed by dividing the number of students at the particular level of education by the number of teachers at the matching level.

3.4. RESEARCH METHODOLOGY

3.4.1. Trends & Patterns in Female Education

The first and foremost objective of the study is to analyse trends and patterns in female education in Punjab. The methodology used for the analysis of this objective includes:

- a) Trend analysis of the female literacy and female school enrolments using graphic method.
- b) Future projections regarding number of years required by each district for achievement of 100 per cent female literacy.
- c) Identification of leading and lagging districts in terms of female literacy and establishing patterns by classifying districts in to various categories.
- d) Measuring Stage-wise Share in Enrolment

Calculating Female Illiteracy Rate

Illiteracy Rate is the proportion of persons who lack the ability of reading and writing with comprehension in any language. It can be computed by deducting the literacy rate from 100 or by dividing the figure of illiterate persons by the overall number of persons and afterwards multiplying the result by 100.

$$\text{Illiteracy Rate} = (\text{Maximum Achievable Literacy Rate i. e. } 100) - (\text{Literacy Rate}) \quad \text{Eq. (3.1)}$$

Computing Decadal Growth in Literacy Rate

Decadal growth in literacy rate is computed as:

$$\text{Decadal Growth in Literacy} = (\text{Literacy Rate in Current Census Year} - \text{Literacy Rate in Previous Census Year}) \quad \text{Eq. (3.2)}$$

Making Future Projections Regarding Female Literacy

For the purpose of computing time period to achieve 100 percent female literacy rate, following formula has been used:

$$P_n = P_0 \left(1 + \frac{r}{100}\right)^n \quad \text{Eq. (3.3)}$$

where $P_n = 100$ (literacy to be achieved), $P_0 =$ present literacy and $r =$ rate (change in literacy rates between periods) (Katiyar, 2016). Here, $r = ((r_1 - r_0) / (1 + r_0 / 100)) / 10$ (Sethi, 2008).

Undertaking Spatial Study of Female Literacy in Punjab for 1991, 2001 & 2011

Spatial studies are generally undertaken to understand the regional disparities in the variables. To undertake the spatial study of female literacy in Punjab, districts in the three regions of the state viz. Majha, Malwa and Doaba, and have been classified into following categories:

Table 3.1: Colour Codes for Different Categories of Female Literacy Rate

Female Literacy Rate	
Between 20 and 29.99	Between 60 and 69.99
Between 30 and 39.99	Between 70 and 79.99
Between 40 and 49.99	Between 80 and 89.99
Between 50 and 59.99	

Number and width of classes have been decided using Sturge’s Rule i.e.,

$$K = 1 + 3.3 * \text{Log}(n) \quad \text{Eq. (3.4)}$$

Where $K =$ Number of classes and $n =$ sample size

Performing Trend Analysis for Female School Enrolments in Punjab

Trend analysis is the use of past data to spot patterns, so you can better predict and forecast what the future will look like. It can be described as a method of study that

organises data and then tries to determine patterns, or tendencies, within that data for the purpose of comprehending or forecasting behaviours (Rae, 2014). Trend analysis is a popular technique of collecting time series data on a variable and attempting to spot a pattern. The technique is quite frequently used in fields of business, investments, and stock markets *etc.* to make predictions for future but the technique has wide applications and is also used in many other fields, such as population, national income, consumption, *etc.* Many researchers have also used it in the study of education related variables (e.g., Grip, 2004; and Lavilles & Arcilla, 2012).

Computing Growth in Female School Enrolments

Growth rates of enrolments in different stages of school education have been worked out using the following formula:

$$GRE = \frac{ECY - EPY}{EPY} \times 100 \quad \text{Eq. (3.5)}$$

Where GRE is growth in enrolments in current year, ECY is enrolment in current year and EPY is enrolment in previous year.

Measuring Stage-wise Share in Enrolment

Stage-wise share of school enrolments have been computed to gauge as to which stage of school education is witnessing a rise or fall in its share of enrolments in comparison to other stages.

$$\text{Stage - wise Share in Enrolment} = \left(\frac{\text{Enrolment in a Stage}}{\text{Total Enrolment}} \right) * 100 \quad \text{Eq. (3.6)}$$

Female School Enrolments as Percentage of Age-Specific Female Population

Female school enrolments as a percentage of female population in the school-going age-group has been computed for all the districts in the state, which indicates what percentage of female population in 6 – 17 years age group in a district has been enrolled in to school education

Enrolment as Percentage of Population

$$= \left(\frac{\text{Female School Enrolment}}{\text{Female Population in School Going Age}} \right) * 100$$

Eq. (3.7)

Percentage of 100 is considered to be ideal and a percentage lesser than that indicates that not all girls in the school-going age are going to school.

Area Covered by School

Area covered by a school has been calculated for the three regions to explain the reason for apparent backwardness of Malwa region as compared to Doaba and Majha regions in terms of female education. For this, square kilometres covered per school have been computed, which indicate how much area is covered by one school. Smaller the area per school, lower will be the distance to school, which will increase the ease of access for girl students and thereby enhance female school enrolments.

$$\text{Sq. Km Per School} = \frac{\text{Area}}{\text{Total Number of Schools}}$$

Eq. (3.8)

3.4.2. Gender Differentials in Education

The second objective of the study is to analyse gender differentials in school education in Punjab. The methodology used for the analysis of this objective includes:

- a) Computing gender differentials in literacy and school enrolments.
- b) Percentage fall in gender differential and Future projections regarding number of years required by each district for achievement of 100 per cent gender parity in literacy.
- c) Identification of leading and lagging districts in terms of gender differentials in literacy and establishing patterns by classifying districts in to various categories.
- d) Measuring regional inequality in gender gaps in literacy.
- e) Stage-wise Future projections regarding number of years required by female enrolments to converge with male enrolments, using convergence analysis.

Measuring Gender Differentials in Literacy

Difference in literacy rates for male and female population of the region is computed to know the gender differential in literacy. The formula is:

$$\text{Gender Differential in Literacy Rate} = \text{Male Literacy Rate} - \text{Female Literacy Rate} \quad \text{Eq. (3.9)}$$

Measuring Decadal fall in Gender Differential in Literacy

$$\begin{aligned} \text{Decadal Fall in Gender Differential in Literacy} \\ = (\text{Gender Differential in Literacy in Previous Census Year}) \\ - (\text{Gender Differential in Literacy in Current Census Year}) \end{aligned} \quad \text{Eq. (3.10)}$$

Identifying the Leaders and the Laggards

In order to identify the good and bad performers, a two-way classification of the districts has been carried out. Districts have been classified according to “Gender Gap in Literacy” and “Decadal Fall in Gender Gap in Literacy”. Differentiating value for gender gap i.e., 9.7 and differentiating value for decadal fall in gender gap (2.1) show state’s average.

Table 3.2: Classification of Districts according to Gender Gap & Decadal Fall in Gender Gap

Category	Gender Gap	Decadal Fall in Gender Gap	Description	Performance
I	Less than or equal to 9.7	Less than or equal to 2.1	Low gender gap and low decadal fall in gender gap	Second best
II	More than 9.7	Less than or equal to 2.1	High gender gap and low decadal fall in gender gap	Worst
III	Less than or equal to 9.7	More than 2.1	Low gender gap and high decadal fall in gender gap	Best
IV	More than 9.7	More than 2.1	High gender gap and high decadal fall in gender gap	Third best

Source: Author’s Calculations

Making Future Projections Regarding Gender Differentials in Literacy

Time period required to achieve equalisation of male and female literacy can be known with the aid of the concept of gender parity. Gender parity is the percentage of female literacy expressed in terms of male literacy and it indicates distance already covered in terms of gender equality.




$$\text{Gender Parity in Literacy} = \left(\frac{\text{Female Literacy Rate}}{\text{Male Literacy Rate}} \right) \times 100 \quad \text{Eq. (3.11)}$$

Thus, it is the opposite of gender gap which indicates distance still left to be covered. So, the places with high gender gap will have low gender parity and vice versa. To compute time period required to attain 100 per cent gender parity in literacy, Eq. (3.3) has been used, which was used by Katiyar (2016) to compute time period to attain 100 per cent female literacy in India. Here, $r = ((r_F - r_M) / (1 + r_M / 100)) / 10$ (Sethi, 2008).

Undertaking Spatial Study of Gender Differentials in Literacy in Punjab (1991-2011)

Spatial study of gender differentials in literacy in Punjab has been done to highlight patterns and bring to fore the inter-regional variations in gender differentials in literacy during the period 1991 to 2011. It assists in identifying leading and dawdling regions in the state in terms of female literacy rates. For this purpose, various districts in the state have been distributed in to different class groups based on gender differential in literacy achieved. State's average in 1991 and 2011 i.e., 15 and 10 approximately have been taken as the differentiating points. Gender gap below 10 (i.e., between 5 and 9.99) is considered to be low, between 10 and 14.99 as medium whereas above 15 (i.e., between 15 and 19.99) as high. To highlight the class groups, these have been allotted diverse colours.

Table 3.3: Colour Codes for Different Categories of Gender Gap in Literacy

Gender Gap in Literacy Rate		
Between 5 and 9.99		Low
Between 10 and 14.99		Medium
Between 15 and 19.99		High

The districts have further been classified into three regions of Majha, Malwa and Doaba so as to identify the good and bad performing regions.

Measuring Regional Inequality through Gini Coefficient

Although there are other methods to understand variations in the data, yet Gini Index measures comparative disparity quite efficiently. Gini Index is the prime technique to measure statistical dispersal. It was introduced in 1912 by Corrado Gini to gauge income disparity in the economy however, in current times its usage has been expanded to gauge disparity in various fields in the economy such as disparity in opportunities, usage of natural resources; to gauge the effect of government tax-rate and welfare measures, *etc.* (Greselin and Zitikis, 2018). Correspondingly, it is being usually applied to measure differences in the arena of education (e.g., Thomas et.al. 2001; Digdowiseiso, 2010; and Cuaresma et. al. 2012). Disparity in education has been measured via various variables by various investigators like, years of schooling (Digdowiseiso, 2010; Cuaresma et. al. 2012; Ziesemer, 2015), enrolment ratios and quality of schooling (Thomas *et al.* 2001), and literacy rates (Bhakta, 2015). The calculation of Gini index is done using Lorenz Curve as its graphic illustration. Lorenz curve is a continuous function that is obtained by plotting the cumulative percentage of population against the cumulative percentage of population with desired feature. Area between the forty-five-degree line, that is, the line of parity and the Lorenz curve, indicates the level of disparity in the distribution. The greater the area the higher is the disparity; and vice-versa. Afterwards, Gini Coefficient is computed as the proportion between this area and the area of the whole triangle

below the “line of equality” (Cuaresma, 2012). Generally, the Lorenz curve is defined for quintiles or deciles (Fellman, 2012) but, in situation of big population, any proportion between 0 and 1 can be created and it can be presumed that the Lorenz curve is continuous and calculus can be used to compute Gini coefficient (Catalano et. al. 2009).

Gini Coefficient has been computed for total literacy, female literacy and male literacy in Punjab for the years 1991, 2001 and 2011. Initially, Lorenz curve has been constructed by calculating cumulative percentages of total population and literate population; and total female population and literate female population by totalling percentages for various districts of the state. Afterwards, line of parity and Lorenz curve have been plotted by taking cumulative percentage of literate population on vertical axis and cumulative percentage of overall population on horizontal axis. Then area under the Lorenz curve has been computed by method of integration:

$$Gini\ Coefficient = 1 - 2 \left\{ \int_0^1 F(X) dx \right\} \quad (Catalano\ et\ al.,\ 2009)$$

Eq. (3.12)

Gini value near zero implies greater parity in the distribution however, Gini value near to unity means greater disparity in the distribution. As per Lorenz curve, farther the curve from the line of parity, greater is the disparity, and vice versa.

Calculating Gender Parity in School Enrolments

Gender Parity in school enrolments has been assessed by computing female school enrolments as percentage of male school enrolments at various stages. That is,

$$Gender\ Parity\ in\ School\ Enrolments = \frac{Female\ School\ Enrolments}{Male\ School\ Enrolments} \times 100$$

Eq. (3.13)

This percentage indicates level of gender parity in school education. Percentage closer to 100 indicates parity whereas percentage farther from 100 indicates disparity.

Undertaking Convergence Analysis

In convergence analysis, we check whether the difference between two series is reducing or increasing. If the difference is decreasing, we conclude the series are convergent whereas if the difference is rising, we conclude that the series are divergent in nature. Concept of convergence analysis was initially discussed in the field of economic growth, but later on it had been applied to other fields also where a comparison regarding growth of two variables was to be made. According to Sala-i-Martin (1996), two foremost notions of convergence are discussed in the classical literature. They are called β -convergence and σ -convergence. If deprived economies incline to progress quicker than affluent ones, it is said that there is absolute β - convergence. Let

$$Y_{i,t,t+T} = \log(Y_{i,t+T} / Y_{i,t}) / T \quad \text{Eq. (3.14)}$$

be economy i 's annualised growth rate of GDP (Y) between base year (t) and current year ($t + T$) where T indicates number of years lapsing during the period.

To estimate the time period that female enrolment is supposed to take to converge with male enrolment, given the enrolment levels and rate of growth, following formula has been used:

$$t = \frac{\log Y_{im} - \log Y_{if}}{\log(1 + R_f) - \log(1 + R_m)} \quad \text{Eq. (3.15)}$$

Where t = Time Period, Y_{im} = Initial Male Enrolment (2021), Y_{if} = Initial Female Enrolment (2021), R_f = Annual Average Growth Rate in Female Enrolment (1991-2021), and R_m = Annual Average Growth Rate in Male Enrolment (1991-2021). Formula has been taken from Iancu (2007), who had given it to study the convergence between Gross Domestic Products of Romania and EU. Notations in the formula have been adapted as per this study.

3.4.3. School Infrastructure & Female School Education

Third goal of the study is to scrutinise the association amongst availability of school infrastructure facilities and female school education in Punjab. The methodology

used for the analysis of this objective includes finding the model through multi-regression equation which explains the relationship between variables like number of schools, percentage of girls' schools, pupil-teacher ratio, *etc.* with enhancement in female enrolments at elementary and secondary level of school education in the state.

Table 3.4: Variables Used in Regression Analysis

Aspect	Variable
Female School Education	Log of Female School Enrolments
Access to School	Log of Number of Schools
Schools for Girls	Percentage of Girls' Schools
Presence of Female Teachers	Percentage of Female Teachers in Total Teachers
Personal Attention to the Student	Pupil Teacher Ratio
Drinking Water Facility	Percentage of Schools with Drinking Water Facility
Separate Sanitation for Girls	Percentage of Schools with Separate Girls' Toilet
Mid-Day Meal	Percentage of Schools with Kitchen Shed

Source: Author's Elaboration from Literature Review

Female school enrolment is considered as predicted variable and various predictors relating to school infrastructure that have been extracted from the existing literature and taken up for this analysis are given in Table 3.4. All the variables, except school enrolments and number of schools are either in percentage or ratio form therefore, log of these variables have been taken to make data more symmetric as well as to meet the assumptions of normality and constant variance.

Undertaking Multiple Regression Technique

Regression is the technique of evolving a statistical model that is applied to forecast the value of a predicted variable by minimum one predictor variable. Normally, the purpose of multiple regression is to know more about the association among numerous predictor or independent variables and a criterion or dependent variable.

The general multiple regression with k predictor variables is given by:

$$Y = a + b_1X_1 + b_2X_2 + \dots + b_nX_n + \mu_i \quad \text{Eq. (3.16)}$$

Where, Y is dependent variable, X_s are independent variables, a is constant term, b_s are regression coefficients and μ_i is the disturbance term, which satisfies all the usual assumptions of Ordinary Least Squares (OLS) i.e., (i) The error term (μ_i) is a random real number (ii) The mean value of μ_i is zero i.e., $E(\mu_i) = 0$ (iii) The variance of μ_i is constant i.e., $E(\mu_i^2) = \sigma^2$ (iv) The variable μ_i has a normal distribution i.e., $\mu_i \sim N(0, \sigma^2)$ (v) There is no autocorrelation between the disturbances i.e., $E(\mu_i, \mu_j) = 0$ (vi) μ_i is independent of the explanatory variable i.e., $\text{Cov}(\mu_i, X_i) = 0$

A) Multiple Regression Model for Elementary School Education

Multiple-regression model depicting the impact of various independent variables on female elementary school education is:

$$\begin{aligned} \text{LogEFE} = \alpha + \beta_1\text{LogES} + \beta_2\text{PerEGS} + \beta_3\text{PerEFT} + \beta_4\text{EPTR} + \beta_5\text{PerEW} + \\ \beta_6\text{PerES} + \beta_7\text{PerEM} + \mu_i \end{aligned} \quad \text{Eq. (3.17)}$$

Where LogEFE is log value of female enrolments in elementary education, LogES is log value of number of elementary schools, PerEGS is percentage of girls schools in total number of elementary schools, PerEFT is proportion of female teachers in overall teachers in elementary schools, EPTR is pupil-teacher ratio in elementary schools, PerEW is percentage of elementary schools with drinking water facility, PerES is percentage of elementary schools with separate sanitation facility for girls, PerEM is percentage of elementary schools with kitchen shed facility (for mid-day meal), α is intercept term, β_s are regression coefficients and μ_i is the disturbance term.

B) Multiple Regression Model for Secondary School Education

Multiple-regression model depicting the impact of various independent variables on female secondary school education is:

$$\begin{aligned} \text{LogSFE} = \alpha' + \beta'_1\text{LogSSC} + \beta'_2\text{PerSGS} + \beta'_3\text{PerSFT} + \beta'_4\text{SPTR} + \beta'_5\text{PerSW} + \\ \beta'_6\text{PerSS} + \mu'_i \end{aligned} \quad \text{Eq. (3.18)}$$

Where LogSFE is log value of female enrolments in secondary education, LogSSC is log value of number of secondary schools, PerSGS is percentage of girls schools in total number of secondary schools, PerSFT is proportion of female teachers in overall teachers in secondary schools, SPTR is pupil-teacher ratio in secondary schools, PerSW is percentage of secondary schools with drinking water facility, PerSS is percentage of secondary schools with separate sanitation facility for girls, α' is intercept term, β 's are multiple regression coefficients and μ'_i is the disturbance term.

3.4.4. Government Role in Promoting Female School Education

Fourth objective of the study involves elaborating on the role of government in enhancing female school education in the state. In order to achieve this objective, a descriptive type of analysis of the policies and schemes of the central as well as the state government, which are relevant in this direction, has been attempted.

3.4.5. Constraints in Attainment of Education by Females

Fifth objective of the study involves identification of obstacles in acquiring education by females in Punjab. To achieve the objective, personal interviews have been conducted to gather primary data, which has subsequently been exposed to qualitative examination and explanation. Qualitative approach to research is increasingly finding acceptance in education related research in order to identify reasons behind a problem. Several qualitative studies make use of the technique of triangulation, which is an analytic procedure used while fieldwork as well as afterwards during proper examination to validate a result with evidence from two or more distinct sources (Yin, 2011). In this study triangulation has been applied in collecting the data i.e., apart from school going girls, data have also been collected from parents and teachers of the girls in order to increase rationality of the statistics and strength of the findings. Data was collected during the April 2022 to September 2022.

Sampling Technique

- First of all, using purposive sampling, two districts having high female literacy and two districts having low female literacy were selected so as to make the

sample representative of the population. Districts were selected on the basis of convenience, where contact of the researcher could be established with one of the teachers through some acquaintance.

Table 3.5: Top five and Bottom five Districts in Punjab in Female Literacy

Top Five Districts	Female Literacy Rate	Bottom Five Districts	Female Literacy Rate
Hoshiarpur	80.3	Mansa	55.7
Pathankot	79.31	Muktsar	59.2
SAS Nagar	79.2	Fazilka	60.66
Jalandhar	78.5	Bathinda	61.9
Ludhiana	77.9	Tarn Taran	61.9
Punjab	70.7		

Source: Economic and Statistical Organisation, Punjab, Director, Census Operation, Punjab

- Government schools from each of the four selected districts (i.e., Jalandhar, Hoshiarpur, Bathinda and Muktsar) from where data were gathered are:
 - (i) Government Girls Senior Secondary School, Nehru Garden, Jalandhar
 - (ii) Government Senior Secondary School, Sikri, Hoshiarpur
 - (iii) Government Senior Secondary Smart School, Bhodipura, Bathinda
 - (iv) Government Senior Secondary Smart School, Faqarsar Their, Muktsar
- Apart from one teacher each from the selected school, a teacher acquaintance from Government School, Village Jamsher Khas, Jalandhar was also interviewed.
- Next, interview of those girl students of 7th to 12th classes were conducted who showed their willingness for it.
- Lastly, parents of those girls were interviewed who gave their consent for the same.

Sample Size

Data have been gathered from 50 students, 18 parents, and 5 teachers from government schools in Punjab so as to incorporate the information through diverse sources. Selection of sample size has been based on the judgement of the researcher in relation to reaching the point of satiety in additional evidence pursued and this finds support in arguments of Sandelowski (1995) that “An adequate sample size in qualitative research is one that permits-by virtue of not being too large-the deep, case-oriented analysis that is a hallmark of all qualitative inquiry, and that results in-by virtue of not being too small-a new and richly textured understanding of experience.”

Instrument

Semi-structured interview schedules were used to conduct a survey. Schedules were prepared in advance and helped in maintaining focus and flow of the interview. However, as the interviews were semi-structured, sequence of the questions could be modified and probing questions could be asked as and when required. Such interviews provided more flexibility to the interviewer and also allowed respondents to give elaborated replies to the questions (Conroy, 2010). Every respondent was presented with a similar set of questions relating to their views and experiences of female school education. Each interview lasted for about 30-40 minutes as majority of the questions were open-ended with a small number of closed questions relating to information such as age, class, school, *etc.*

Chapter - 4

TRENDS AND PATTERNS IN FEMALE SCHOOL EDUCATION IN PUNJAB

4.1. INTRODUCTION

Education makes one well-informed, autonomous and proficient in taking care of oneself. It benefits the person and correspondingly leads to a better society and an advanced nation because educated people are more open to adoption of new ideas and latest technology. Such progressive human force leads a nation towards high economic growth and overall development. Female education is even more vital as it is not only important for the progress of any nation but leads to transformation of future generations of a nation. Educated women promote education and health in the household leading thereby to rise in literacy levels, improved hygiene and nutrition among children and reduced infant and maternal mortality rates (UNESCO Report, 1993). Education also makes women aware of the world and the environment and also alters the society's attitude towards them. In modern times, well educated, skilled and progressive female population is desirable to a nation, and more so if it is a developing nation like ours as this will raise personal as well as national income and give an upward push to the economy. Many researchers have linked women education with economic growth (e.g., Benavot, 1989; Self & Grbowski, 2004; and Salatin & Shaaeri, 2015), societal development (e.g., Kaur & Siwach, 2014) and welfare of the household (e.g., Yadav et. al. 2011; and Kaur, 2017). But still there exists vast under-utilised potential in the form of uneducated women folk of the country. Adult female literacy rate in the world stood at 83.02 per cent in 2019 (World Bank Data) whereas it was only 66 per cent in India in 2018. The uneducated women population work in agricultural fields as disguisedly unemployed leading thereby to loss of demographic dividend, which we can reap if this ignored human force is utilised efficiently. But there are wide discriminations present across the states in the country with respect to female education. There are some better performers like Kerala and Mizoram, with high female literacy of 92 percent and

89.4 percent respectively; whereas there are some worse performers like Rajasthan and Bihar with female literacy at 52.7 percent and 53.3 percent respectively; and still there are average performers like the state of Punjab with female literacy rate at 71.34 per cent (Census, 2011).

4.2. FEMALE EDUCATION IN PUNJAB

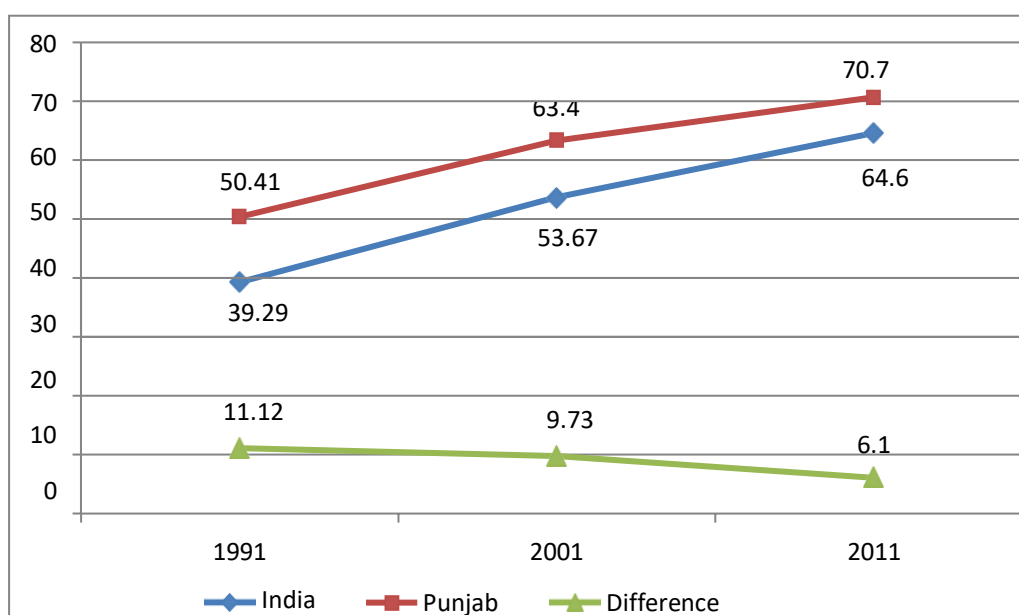
The state of Punjab that was once quite rich in healthy and progressive human resource is now a symbol of disarrayed youth. The prime occupation of the state's populace has been agriculture and related activities but, it has failed to lure the young minds since the gains of the Green Revolution that occurred in 1966-67 have faded (Dutta, 2012, Gulati *et al.*, 2021). Moreover, the industrial base of the state is not sound enough to provide ample employment opportunities. No doubt service sector is expanding in the state but it can't solely absorb the ever-rising human force. Most of the youth is either falling prey to the devastating drug menace or prefers to leave the state for better career and life opportunities. Furthermore, the social atmosphere in the state is marred by orthodoxy and a culture of patriarchy and male dominance. This fact can be reiterated by strong presence of son preference and skewed sex-ratio in the state. Sex-ratio in Punjab is 895 i.e., for every 1000 males there are only 895 females, which is below national average of 943 (Census of India, 2011). Child sex-ratio (0 to 6 years) stands abysmally low at 846. The situation is not good for the growth of society and economy of the state. Low level of education among the populace is also a factor responsible for this position, as uneducated people are generally orthodox and averse to changes, modernisation and technology adoption; which is very essential in a fast-changing world of today. But, data of female education in Punjab indicates that there is still a lot to be done to be able to keep pace with the requirements of these times. Gross Enrolment Ratio (GER) was 99.31 percent and 97.72 percent for primary and upper primary level in 2016-17, but Net Enrolment Ratio was 82.7 percent and 73.36 percent respectively (School Report Card, 2017). GER was even lower at 77.4 percent and 50.9 percent for secondary and higher secondary in 2011-12 (GOI, 2012). Thus, enrolment rates are not satisfactory for elementary education and even poorer for secondary as well as higher secondary education.

Not only education, women in Punjab are disadvantaged in almost all spheres of life including, birth, education, health, employment, decision-making, *etc.* (Bala, 2014). Incidences of crime are also quite high against women. Other than parochial mindset and sexual prejudice, unsatisfactory education is also responsible for the subordination of women in the state (Kaur & Siwach, 2014). In such circumstances, education of the masses becomes all the more important, to change their mindset as per contemporary environment. Female education has an added significance as it will not only bring equality of opportunity to all; but will also empower women to be able to stand for themselves, assert their choices for themselves and their families, bring about better standard of living of the households, more health and education among children, enhanced economic participation, and hence, national development (Yadav *et al.*, 2011; and Sundaram *et al.*, 2014). Therefore, it is imperative that female education is given due attention. In this chapter state of female education in terms of female literacy and female school enrolments has been discussed.

Female education in the Punjab has made huge progress during the period 1991-2011 and it is indicated by the improved female literacy level in the state. Female literacy rate in the state was 70.7 per cent in the year 2011, which means that around 70 females in every 100 females have ability of reading and writing with comprehension, but at the same time it also means that around 30 females in every 100 females are still unable to do so. Female literacy rate in the year 2001 was 63.4 per cent and it was 50.41 per cent in 1991, which indicates that more females than before have ability of reading and writing with comprehension. However, it is noteworthy here that female literacy level is lower than the overall literacy level (literacy rate of entire population including males and females) of 75.8 per cent during the year 2011. It depicts that literacy level for males in the state is higher than that for females i.e., there is gap in male-female literacy. Gap in male-female literacy means that there is inequality in terms of literacy in the society and fewer females than males are literate. Existence of such gaps is not healthy for the progress of any society or nation. These figures make it clear that no doubt there has been a lot of improvement in the literacy statistics during last two decades, but still a lot of effort needs to be put in to educate more and more female population in the state to improve their situation as well as to bridge the gap in education.

4.2.1. Trends in Female Literacy in Punjab

Trends in female literacy in Punjab and in India during the period 1991-2011 have been shown in figure 4.1, which shows that female literacy has been increasing in both India as well as in Punjab during 1991-2011. Also, female literacy rate has been higher in Punjab than in India throughout the study period.



Source: Census of India 1991-2011

Figure 4.1: Trends in Female Literacy Rate in India & Punjab (1991-2011)

In Figure 4.1, female literacy rate in India was miserably low at 39.29 percent in 1991. It increased to 53.67 percent in 2001 and again to 64.6 percent in 2011. On the other hand, female literacy in Punjab was 50.41 percent in 1991, 63.4 percent in 2001 and 70.7 percent in 2011. No doubt Punjab has persistently been better placed than India in terms of literacy, but the difference between female literacy at Punjab and at India level has been consistently declining. It was 11.12 per cent in 1991 which declined to 9.73 percent in 2001 and then to 6.1 percent in 2011. This means that literacy among female population has been improving at a faster rate in other states in India than in Punjab. This is also evident from the fact that Punjab ranked as poor as 18th in terms of female literacy among all the states and UTs in the nation in 2011. Another thing to be noted here is that nearly 35 per cent female population in the

country and nearly 30 percent of the female population in Punjab continue to be engulfed in illiteracy meaning thereby that performance of the state is still far from satisfactory in terms of female literacy rates. In order to have a better grasp of the status and growth of female literacy in the state of Punjab, an analysis of the district level data has been done. Table 4.1 and figure 4.2 present district wise female literacy rates and also female illiteracy rates for years 1991, 2001 and 2011. Female illiteracy rate is calculated as below:

$$\text{Female Illiteracy Rate} = \text{Maximum Achievable Literacy Rate (i.e., 100)} \\ - \text{Female Literacy Rate}$$

Eq. (4.1)

Table 4.1: District-wise Female Literacy Rate & Female Illiteracy Rate in Punjab during 1991, 2001 and 2011

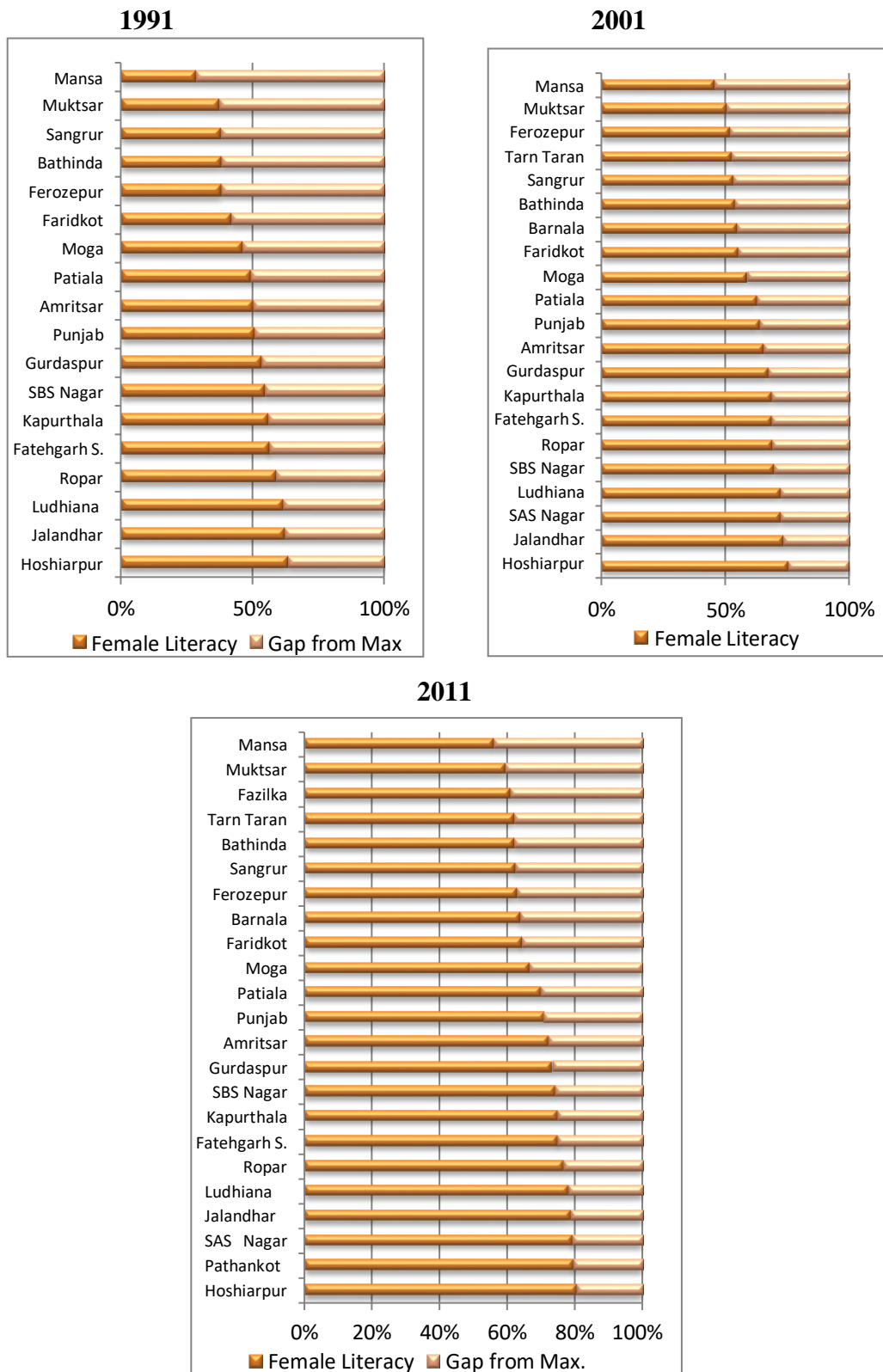
(In Percentage)

S.No.	District	Female Literacy Rate			Female Illiteracy Rate		
		1991	2001	2011	1991	2001	2011
1	Gurdaspur	53.33	67.1	73.02	46.67	32.9	26.98
2	Pathankot	-	-	79.31	-	-	20.69
3	Amritsar	50.1	65.2	72.0	49.9	34.8	28.0
4	Tarn Taran	-	52.3	61.9	-	47.7	38.1
5	Kapurthala	55.83	68.3	74.6	44.17	31.7	25.4
6	Jalandhar	62.05	73.1	78.5	37.95	26.9	21.5
7	SBS Nagar	54.55	69.5	73.9	45.45	30.5	26.1
8	Hoshiarpur	63.34	75.3	80.3	36.66	24.7	19.7
9	Ropar	58.52	68.7	76.4	41.48	31.3	23.6
10	SAS Nagar	-	72.1	79.2	-	27.9	20.8
11	Ludhiana	61.25	71.9	77.9	38.75	28.1	22.1
12	Ferozepur	38.13	51.7	62.74	61.87	48.3	37.26

S.No.	District	Female Literacy Rate			Female Illiteracy Rate		
		1991	2001	2011	1991	2001	2011
13	Fazilka	-	-	60.66	-	-	39.34
14	Faridkot	41.88	55.0	63.9	58.12	45.0	36.1
15	Muktsar	37.05	50.3	59.2	62.95	49.7	40.8
16	Moga	45.84	58.5	66.5	54.16	41.5	33.5
17	Bathinda	38.04	53.7	61.9	61.96	46.3	38.1
18	Mansa	28.5	45.2	55.7	71.5	54.8	44.3
19	Sangrur	37.67	53.0	62.2	62.33	47.0	37.8
20	Barnala	-	54.5	63.6	-	45.5	36.4
21	Patiala	48.94	62.6	69.8	51.06	37.4	30.2
22	Fatehgarh Sahib	56.13	68.3	74.8	43.87	31.7	25.2
Total	Punjab	50.41	63.4	70.7	49.59	36.6	29.3

Source: Economic and Statistical Organisation, Punjab, Director, Census Operation, Punjab; Annual Rate of Increase in Female Literacy Rate has been calculated by the Author

Table 4.1 shows that female literacy rate has increased across all the districts of the state. Hoshiarpur retained the top spot in all the three years and in 2011, it topped the chart with female literacy rate at 80.3 per cent whereas Mansa continued to remain at the last place for all the years and in 2011, female literacy rate in Mansa stood abysmally low at 55.7 per cent. Another point to be noted here is that exactly half of the districts have female literacy level lower than the state's average and the other half of these have female literacy rates higher than the state's average for all the three years i.e., 1991, 2001 and 2011. Same districts which had female literacy levels lower than the state's average in the year 1991 continue to do so in years 2001 and 2011. Newly created districts of Tarn Taran, Fazilka and Barnala also have female literacy rates lower than that of the state's average.



Source: Author's Elaboration based on data in Table 4.1

Figure 4.2: Gap in Female Literacy in Districts of Punjab in 1991, 2001 and 2011

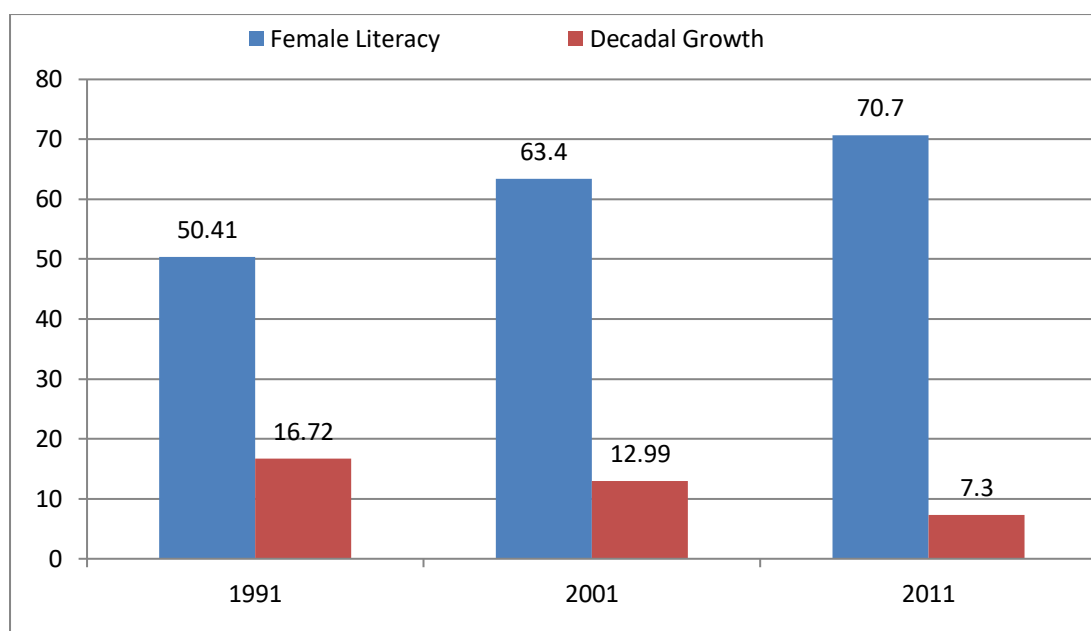
Table 4.1 also reveals that though female illiteracy has been decreasing for all the districts, yet huge gaps still persist. Female illiteracy is highest for Mansa district at 44.3 per cent, which means that nearly half of the female population in the district is still uneducated. In many districts more than 2/3rd of the female population is illiterate i.e., Muktsar (40.8), Fazilka (39.34), Bathinda and Tarn Taran (38.1), Sangrur (37.8), Ferozepur (37.26), Barnala (36.4), Faridkot (36.1) and Moga (33.5). More than 1/4th of female population is illiterate in Patiala (30.2), Amritsar (28.0), Gurdaspur (26.98), SBS Nagar (26.1), Kapurthala (25.4) and Fatehgarh Sahib (25.2). Rest of the six districts have illiteracy spread amongst approximately 1/5th of the female population i.e., Ropar (23.6), Ludhiana (22.1), Jalandhar (21.5), SAS Nagar (20.8), Pathankot (20.69) and Hoshiarpur (19.7). Such huge gaps in female literacy in districts of the state indicate that government schemes in this direction have not been able to cover the entire female population in the state and many are still left outside the ambit of education.

In Figure 4.2, female literacy rate in the district has been shown with the help of “dark orange” bar while female illiteracy rate has been shown by “light orange” bar. It is evident from the figure that female illiteracy was very high in the year 1991 and majority of the districts had more than half of the female population as illiterate which is indicated by smaller length of “dark orange” bars in contrast to “light orange” bars. But the gaps have reduced in the year 2001 and also in 2011 as is clear by the increased length of “dark orange” bars as compared to “light orange” bars. This is due to introduction of various schemes by the Indian and the Punjab government to encourage female education, such as Kanya Jagriti Jyoti Scheme (1996), National Programme for Education of Girls at Elementary Level (2003), National Scheme of Incentives to Girls for Secondary Education (2008), *etc.* But it is to be checked here that the amount by which the “dark orange” bars have enhanced in the decade of 2001-2011 has declined in comparison to that in the decade of 1991-2001. To understand this phenomenon, decadal growth in female literacy has been computed. Decadal growth in literacy rate is computed as:

$$\begin{aligned}
 & \textit{Decadal Growth in Literacy} \\
 & = (\textit{Literacy Rate in Current Census Year} \\
 & \quad - \textit{Literacy Rate in Previous Census Year})
 \end{aligned}$$

Eq. (4.2)

Figure 4.3 shows female literacy rates and the decadal growth rates of female literacy in Punjab for the years 1991, 2001 and 2011.

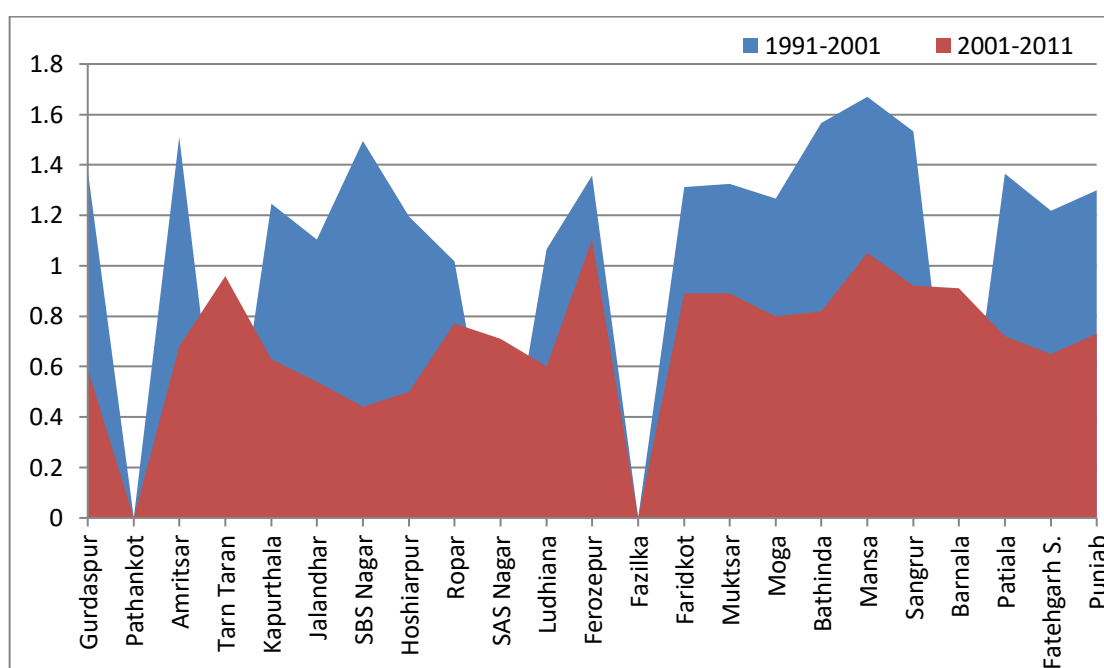


Source: Economic and Statistical Organisation, Punjab, Director, Census Operation, Punjab

Figure 4.3: Trends in Female Literacy Rate in Punjab (1991-2011)

Figure 4.3 depicts that the rate of decadal growth in female literacy is persistently falling in Punjab. It was 16.72 per cent in the period 1981-1991, which fell to 12.99 per cent in 1991-2001, and again to 7.3 per cent during 2001-2011. Thus, no doubt progress is taking place, but rate of progress has slowed down. The reason for this has been aptly discussed by Shukla and Mishra (2019) in their study in which they concluded that in spite of execution of universal elementary education (UEE), realisation of the target of cent per cent literacy is not appearing to be pragmatic in instantaneous future due to prevailing volume of out-of-school-age ignorant population. It means that there is a huge stock of female population which has

outgrown the school going age and hence, can be made literate only with the help of special schools and not normal schools. Further, the rate of progress in female literacy is not uniform across all the districts in the state and this fact has been asserted by other investigators as well (e.g., Pushkarna, 2017; and Singh, 2017). Therefore, a detailed discussion on female literacy rate in various districts of the state is warranted and has been undertaken. In figure 4.4 an account of female literacy levels in the districts of the state along with annual rate of increase in female literacy is given for the years 1991, 2001 and 2011.



Source: Author's Calculation based on the Census data

Figure 4.4: District Wise Annual Rate of Increase in Female Literacy Rate in Punjab

It is evident from the figure 4.4 that annual rates of increase in female literacy across various districts in the state were higher in the decade of 1991-2001 than in the next decade i.e., 2001-2011. During 1991-2001, all the districts had annual rate of increase higher than one percent. In this decade, the annual rate of increase was maximum in Mansa district at 1.67 percent and lowest in Ropar district at 1.018 per cent. During 2001-2011, the annual rates of increase for all the districts were below 1 per cent, except for Ferozepur (1.104 per cent) and Mansa (1.05 per cent) districts. It

was highest in case of Ferozepur district at 1.104 per cent and lowest in the district of SBS Nagar at 0.44 per cent. Annual rate of increase in female literacy for the state as a whole was 1.3 per cent (approximately) during 1991-2001, whereas it was just 0.73 per cent during 2001-2011. As discussed earlier, it is mainly due to prevailing amount of out-of-school-age people (Shukla & Mishra, 2019). It, therefore, means that together with UEE, an effectual literacy programme for adults is indispensable so as to achieve the ambition of 100 per cent literacy. The districts with lower literacy rates need to be given more attention in this regard.

As it is clear from the figure 4.4 that different districts in the state have shown different levels of performance in terms of female literacy and its growth, therefore these will take different amounts of time to reach the target figure of 100 per cent. An analysis has been done to predict the number of years each district will take to reach the maximum level of female literacy i.e., 100 per cent. Future projections regarding female literacy levels in districts of Punjab are elucidated in the following section.

4.2.2. Future Projections Regarding Female Literacy

For computing the time period required to attain 100 percent female literacy rate, following formula has been used:

$$P_n = P_0 \left(1 + \frac{r}{100}\right)^n \quad \text{Eq. (4.3)}$$

where $P_n = 100$ (literacy to be achieved), $P_0 =$ present literacy, $r =$ rate (change in literacy rates between periods) (Katiyar, 2016). Here, $r = ((r_L - r_P)/(1 + r_P/100))/10$ (Sethi, 2008). Putting different values of P_0 and corresponding values of r for different districts in the above equation and solving, different values of n have been calculated and highlighted in the table that follows.

Table 4.2 shows that it will take nearly 30 more years from 2011 to eliminate female illiteracy from the state of Punjab, if all the conditions remain unchanged in future. This means that Punjab will achieve total female literacy sometime around 2041. But it is only an average figure based on the average rate of growth of literacy across different districts in the state.

Table 4.2: Future Projections Regarding Female Literacy Rates in Districts of Punjab

		Female Literacy Rate (P₀)	Annual Growth Rate of Female Literacy (r)	Years to Achieve 100 Per Cent Female Literacy (n)
S.No.	District	2011	2001-2011	From 2011
1	Gurdaspur	73.02	0.88	35.80
2	Pathankot	79.31		-
3	Amritsar	72.0	1.04	31.66
4	Tarn Taran	61.9	1.84	26.37
5	Kapurthala	74.6	0.92	31.91
6	Jalandhar	78.5	0.74	32.89
7	SBS Nagar	73.9	0.63	47.93
8	Hoshiarpur	80.3	0.66	33.15
9	Ropar	76.4	1.12	24.15
10	SAS Nagar	79.2	0.98	23.80
11	Ludhiana	77.9	0.83	30.05
12	Ferozepur	62.74	2.14	22.06
13	Fazilka	60.66		-
14	Faridkot	63.9	1.62	27.90
15	Muktsar	59.2	1.77	29.89
16	Moga	66.5	1.37	30.04
17	Bathinda	61.9	1.53	31.65
18	Mansa	55.7	2.32	25.48
19	Sangrur	62.2	1.74	27.59
20	Barnala	63.6	1.67	27.33
21	Patiala	69.8	1.15	31.44
22	Fatehgarh S.	74.8	0.95	30.65
Total	Punjab	70.7	1.15	30.29

Source: Author's Calculation Based on Census Data for 2001 and 2011

It is clear from table 4.2 that years to achieve cent per cent female literacy are not same across the districts in the state. Therefore, the state will not be free from the evil of female illiteracy till the last of its district succeeds in making all of its female population literate. If all the conditions remain same then the lowest number of years to achieve full female literacy i.e., nearly 22 years has been projected for the district of Ferozepur. Only two more districts, SAS Nagar and Ropar, have a projected number of years less than 25 i.e., 24 years. Mansa and Tarn Taran are projected to take around 26 years, Barnala 27 years whereas Sangrur and Faridkot 28 years. Muktsar, Moga and Ludhiana are expected to take around 30 years; Fatehgarh Sahib and Patiala 31 years; whereas Bathinda, Amritsar and Kapurthala will take around 32 years. 33 years are projected in case of Jalandhar and Hoshiarpur while Gurdaspur and SBS Nagar are expected to take 36 years and 48 years respectively.

Table 4.3: Frequency Distribution of Districts for Years to Achieve Full Female Literacy

Years to Achieve Full Female Literacy	Number of Districts
20-30	9
30-40	10
40-50	1
Lowest number of years	22
Highest number of years	48
Range (Highest-Lowest years)	26
District having lowest number of years	Ferozepur
District having highest number of years	SBS Nagar Nawanshahr)
Number of districts less than States' years	11
Number of districts more than States' years	09

Source: Author's Elaboration Based on Table 4.2

It is evident from Table 4.3 that nine districts have been projected to achieve complete female literacy in less than 30 years. Ten districts are expected to accomplish this feat in more than 30 but less than 40 years and one district is anticipated to do this in more than 40 years. As many as eleven districts have been projected to take lesser number of years for achieving 100 percent female literacy than states' average whereas nine districts have been projected to take more than that.

Lowest number of years i.e., 22 has been projected for Ferozepur while the highest number of years i.e., 48 has been predicted for SBS Nagar. Such enormous figures give a bitter realisation that the state is nowhere near complete female literacy. Dedicated steps are required to increase literacy rate in these nine districts where number of years to achieve full literacy are more than the state's average. Thus, along with the ongoing efforts, there is a need to introduce new proactive measures by the government so that the target of cent per cent female literacy in the state is achieved much before the projected time.

Another observation to be made from Table 4.3 is that the inter-district disparity in number of years estimated to achieve cent per cent female literacy, in terms of range, is 26 years, which is quite high. This means there is high regional inequality in context of female literacy in the state and some regions are performing better than the others. A spatial analysis has been done to bring out patterns in female literacy level in Punjab and also to underscore inter regional variations in the state in context of female literacy.

4.2.3. Patterns in Female Literacy in Punjab

Cambridge dictionary defines a pattern as “a particular way in which something is done or organized, or in which something happens”. Patterns offer us the visual clues to an underlying situation and their study helps us to better understand it and also gives the opportunity to change these patterns in order to achieve some objective. After analysing trends in female literacy, it is logical to check if there emerge any patterns in female literacy in the state of Punjab. For this, a spatial study of female literacy is done for the years 1991, 2001 and 2011 to bring out the inter-regional variations and hence highlight patterns. It will also assist in identifying leading and dawdling regions in the state in context of female literacy rates.

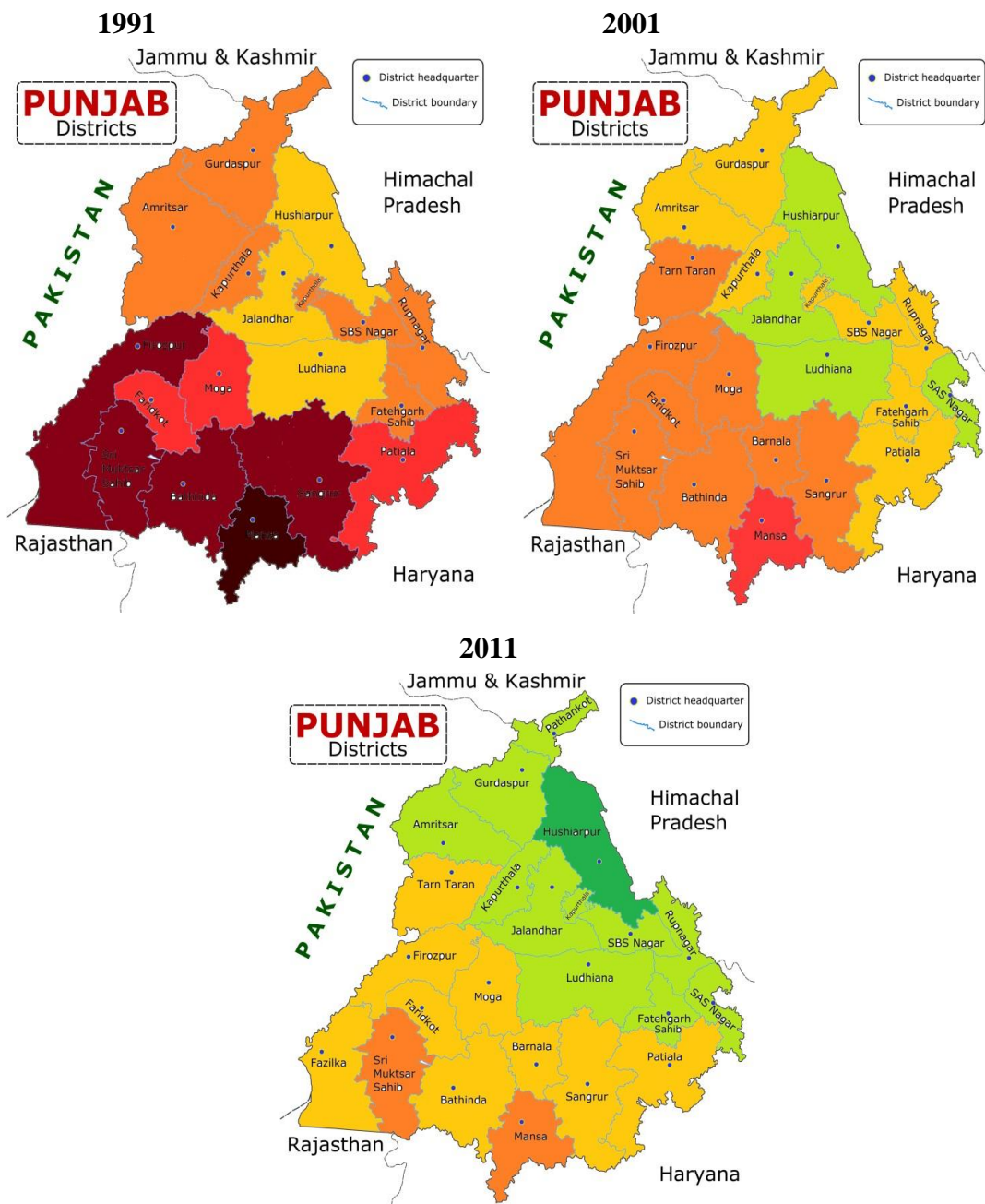
A. Female Literacy in Geographical Regions of Punjab

Various districts in the state have been distributed in to different class groups based on female literacy rate achieved and Sturge's rule has been applied to decide number and width of class intervals. Class intervals created for this purpose are “between 20

and 29.99” per cent, “between 30 and 39.99” per cent, “between 40 and 49.99” per cent, “between 50 and 59.99” per cent, “between 60 and 69.99” per cent, “between 70 and 79.99” per cent and “between 80 and 89.99” per cent. To highlight the class groups, these have been allotted diverse colours.

Spatial studies are generally undertaken to understand the regional disparity in the variables. Many researchers have used this technique to understand regional inequalities in education (e.g., Islam & Mustaqim, 2015; Pushkarna, 2017; and Singh, 2017). Figure 4.5 makes it evident that there has been substantial enhancement in female literacy levels in all the districts of state during the period 1991 to 2011. Red zone depicting literacy rate below 49.99 per cent contracted enormously during 1991 to 2001, and entirely disappeared in 2011. Alternatively, green zone depicting literacy rate higher than 70 percent was absent in the year 1991, but it had been escalating unceasingly subsequently, engulfing about 50 percent area in 2011. Orange zone depicting literacy rate between 50 and 70 percent increased immensely in 2001 to cover 75 percent districts in the state. The orange zone had condensed in 2011, comprising exactly half of the districts while the other half of these moved to the green zone. Mostly the districts that were in below 49.99 per cent category (i.e., red zone) in 1991 moved up to orange zone (i.e., between 50 and 59.99 per cent) with an exception of Mansa and an addition of Tarn Taran (which was carved out of Amritsar). The districts belonging to orange zone in 1991 had gone up to yellow zone (i.e., between 60 and 69.99 per cent) in 2001 with an addition of Patiala (which had made a huge jump from red zone to yellow zone, skipping orange zone altogether). The few districts that were in yellow zone in 1991 moved up to green zone (i.e., between 70 and 79.99 per cent) in 2001, with an addition of SAS Nagar (which was carved out of Rupnagar and Patiala). From 2001 to 2011, almost all the districts in the yellow zone moved up to the green zone (i.e., above 70 per cent category) with an exception of Patiala. Of the districts that were already in green zone, only Hoshiarpur moved ahead to a higher category of “between 80 and 89.99”. Further, all districts that were in orange zone in 2001 rolled over in to yellow zone with an exception of Sri Muktsar Sahib. This district continued to remain in the orange zone along with Mansa district, which had moved to orange zone in 2011 from red zone in 2001.

Female Literacy Rate					
Between 20 and 29.99	Maroon		Between 60 and 69.99	Yellow	
Between 30 and 39.99	Dark Red		Between 70 and 79.99	Green	
Between 40 and 49.99	Red		Between 80 and 89.99	Dark Green	
Between 50 and 59.99	Orange				



Source: Author's Elaboration based on data in Table 4.1

Figure 4.5: Spatial Study of Female Literacy in Districts of Punjab for 1991, 2001 & 2011

Although there has been development in female literacy across the districts in the state, yet there appears a distinct north-south division. Districts in the north region of the state have an advantage in terms of female literacy rate over the districts in the south region. Other researchers have also stressed upon this variation (e.g., Pushkarna, 2017; and Singh, 2017). This variation has existed there during the entire period covering two decades, though in slightly decreased form. It means, to bring parity among regions in terms of female literacy and thus, bring about equality in the society, additional efforts are required from the government and the society.

B. Female Literacy in Cultural Regions of Punjab

Punjab has basically been divided in to three regions, i.e., *Majha*, *Malwa* and *Doaba*, because of the rivers Beas and Sutlej flowing through the land of Punjab. It is believed that in past times, it was quite difficult to go across the rivers. Therefore, these areas, divided by these rivers, were taken to be distinct regions and were frequently ruled by different rulers. There was limited communication between people residing in these divided regions, and hence, there was a difference in their language and culture; which exists even today. The regions differ significantly in terms of demographics also. One region may seem to excel in one parameter where other may lag behind miserably. Therefore, an analysis comparing these regions has been done on grounds of female literacy rate. In the following table a comparison of female literacy rate in all the districts has been made for the years 1991, 2001 and 2011. Further, districts have been classified in to seven categories used in figure 4.5.

Table 4.4 makes it clear that Doaba region is ahead of the rest of the two regions in terms of female literacy, as all the districts comprised in the region have female literacy rate more than the state's average i.e., 70 percent (approximately), with one district i.e., Hoshiarpur touching the 80 per cent mark as well. Majha region fares better than the Malwa as three out of four districts have high literacy rate of more than 70 percent, while just one i.e., Tarn Taran had a moderate literacy level of 61.9 percent. In Malwa region more than half of the districts still have female literacy levels below 70 per cent, with Muktsar and Mansa having as low as 59.2 percent and 55.7 percent respectively. Female literacy rate in most of the districts in Malwa was

below 50 per cent in 1991. There has been continuous improvement as in most of the districts female literacy was above 50 percent in 2001. But, in a span of next 10 years, only Ropar and Fatehgarh Sahib districts managed to join Ludhiana and SAS Nagar in the category of above 70 per cent. Similar observations were made by Singh (2017) in a comparative analysis of literacy in Punjab and Haryana states.

Table 4.4: Region-wise Classification of Districts on the Basis of Female Literacy Rate

	Majha	Malwa	Doaba
1991			
Between 20 and 29.99	-	Mansa	-
Between 30 and 39.99	-	Ferozepur, Muktsar, Bathinda, Sangrur	-
Between 40 and 49.99	-	Faridkot, Moga, Patiala	-
Between 50 and 59.99	Gurdaspur, Amritsar	Ropar, Fatehgarh Sahib	Kapurthala, SBS Nagar (Nawanshahr)
Between 60 and 69.99		Ludhiana	Jalandhar, Hoshiarpur
Between 70 and 79.99	-	-	-
Between 80 and 89.99	-	-	-
2001			
Between 20 and 29.99	-	-	-
Between 30 and 39.99	-	-	-
Between 40 and 49.99	-	Mansa	-
Between 50 and 59.99	Tarn Taran	Ferozepur, Faridkot, Muktsar, Moga, Bathinda, Sangrur, Barnala	
Between 60 and 69.99	Gurdaspur, Amritsar	Ropar, Patiala, Fatehgarh Sahib	Kapurthala, SBS Nagar (Nawanshahr)
Between 70 and 79.99	-	SAS Nagar, Ludhiana	Jalandhar, Hoshiarpur
Between 80 and 89.99	-	-	-

	Majha	Malwa	Doaba
2011			
Between 20 and 29.99	-	-	-
Between 30 and 39.99	-	-	-
Between 40 and 49.99	-	-	-
Between 50 and 59.99		Muktsar, Mansa	-
Between 60 and 69.99	Tarn Taran	Ferozepur, Fazilka, Faridkot, Moga, Bathinda, Sangrur, Barnala, Patiala	-
Between 70 and 79.99	Gurdaspur, Pathankot, Amritsar	Ropar, SAS Nagar, Ludhiana, Fatehgarh Sahib	Kapurthala, Jalandhar, SBS Nagar
Between 80 and 89.99	-	-	Hoshiarpur

Source: Author's Elaboration Based on Table 4.1

Clearly, improvement in female literacy has taken place in the districts within a particular region, but relative positions of the regions remain more or less same. The above discussion clearly reveals that region *Doaba* fared much better than the remaining two regions in terms of female literacy throughout the three decades. Though *Majha* fared better than *Malwa*, yet the performance cannot be termed as satisfactory. However, *Malwa* region continues to depict a really worrisome picture in terms of education parameters which may be because of vast presence of bigger land holdings in the Malwa region. Therefore, agriculture being the principal source of livelihood insignificant stress is laid on education (GOI, 2009). Further, female education is even more neglected in Malwa as it tends to be male-dominated, patriarchal and feudal (GOI, 2009). Thus, there is a need to change people's mindset in this region to bring it at par with other regions. Now, to know about the extent of inequality, it is required to measure the regional inequality in literacy for the state of Punjab.

To get a better understanding of the position of female education in the state, it is essential to study female enrolments in various stages of the school education in Punjab.

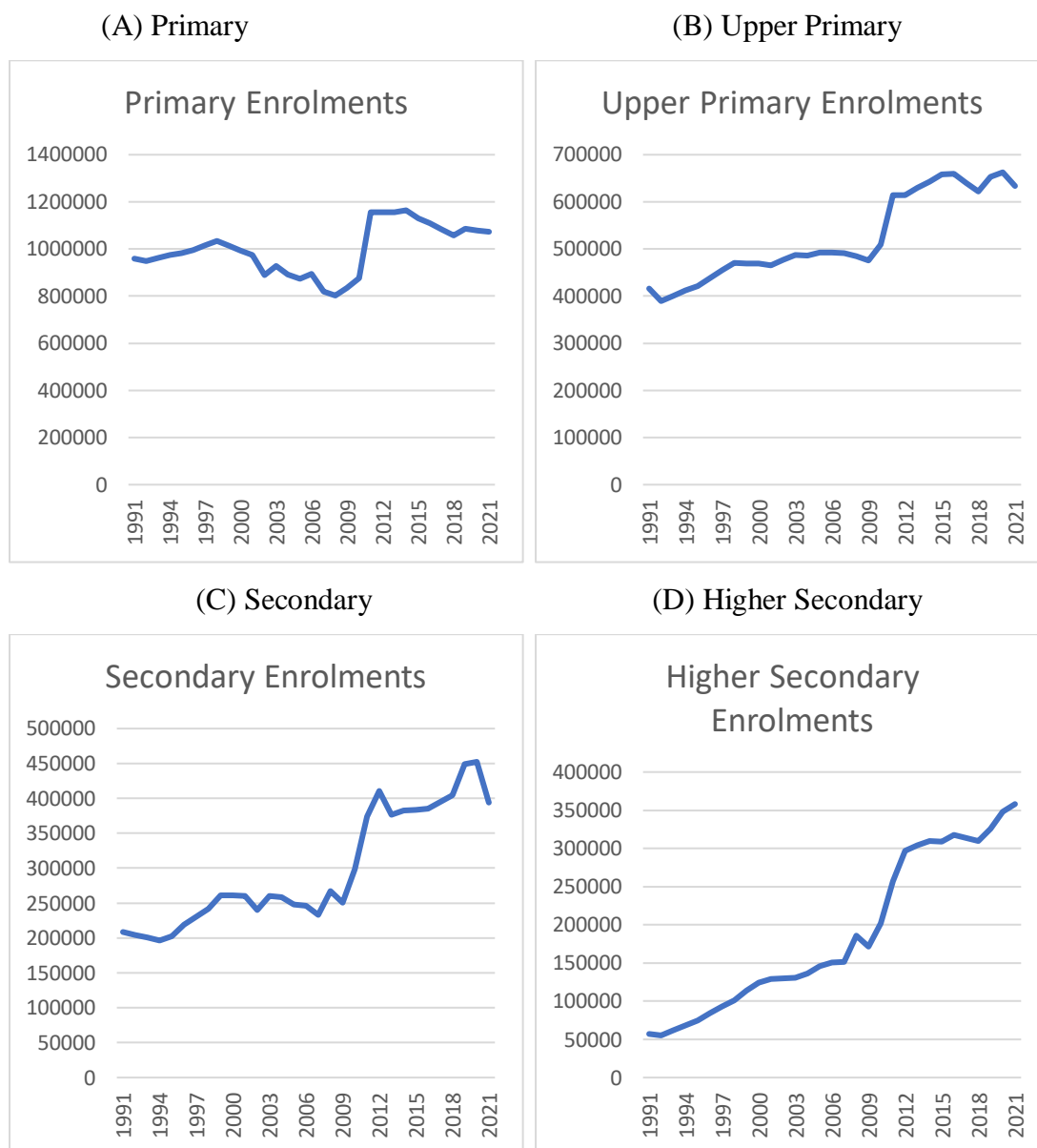
4.3. FEMALE SCHOOL ENROLMENTS IN PUNJAB

Access to schooling in a population can be measured as school enrolment, which is simply a count of the number of children who have registered with all schools (Baker & Halabi, 2014). School enrolment is the basic variable to measure the spread of education among children in a region. In this section, time-series data of female enrolments in school education in Punjab has been studied. Enrolments have been taken for a span of 31 years i.e., from the year 1991 to 2021. Further, enrolments have been taken for each level of school education i.e., primary (classes I to V), upper primary (classes VI to VIII), secondary (classes IX to X), and higher secondary (classes XI to XII). Data has been analysed using the techniques of trend analysis, annual growth in enrolments, and percentage share of different stages in total enrolments.

4.3.1. Trend Analysis of Female School Enrolments in Punjab

Trend analysis is a popular technique of collecting time series data on a variable and attempting to spot a pattern. The technique is quite frequently used in fields of business, investments, and stock markets *etc.* to make predictions for future but the technique has wide applications and is also used in many other fields, such as population, national income, consumption, *etc.* Many researchers have also used it in the study of education related variables (e.g., Grip, 2004; and Lavilles & Arcilla, 2012). Trend in female school enrolments for various stages of school education have been shown in figure 4.8.

Figure 4.6 reveals that there has been upward trend in female enrolments at all stages of school education in Punjab during the period 1991 to 2021. Part (A) of the figure shows enrolments in primary education that have been much higher than in other stages of school education. Female enrolments in 1991 were 957851 at primary level, which grew to 1071757 in 2021. In Part (B) of the figure female enrolments at upper primary level have been shown. These stood at 415832 in 1991, which grew up to 633572 in next 31 years. During the same period, female enrolments in secondary education increased from 208724 to 394014 as shown in Part (C) of the figure.



Source: Statistical Abstract of Punjab for 1991-2013. Data for 2014 to 2017 have been taken from State Report Cards (UDISE). Data for 2018 to 2021 have been taken from UDISE+

Figure 4.6: Trends in Female Enrolments at Various Stages of School Education in Punjab

Lastly, Part (D) reveals that female enrolments in higher secondary education leaped from 57166 to 358064. Thus, female enrolments have raised at every stage of school education, but the distance between primary enrolments and enrolments at other stages is very high due to high drop-out rate at various levels of school education.

Further, it is apparent from figure 4.6 that enrolments in primary education grew sluggishly during 2000 and 2005, and took a dip during 2005 and 2010. Increase in enrolments in upper primary education has also been low during that period, and picked up 2009 onwards mainly because of extension of Mid-Day Meal scheme to cover upper primary level. Enrolments in secondary education remained sluggish earlier and picked up in later half of the study period, but have maintained an upward trend throughout the study period. In contrast, upward movement in enrolments in higher secondary education has been smoother and sharper i.e., enrolments have been increasing at an increasing rate. Thus, rise in enrolments in secondary and higher secondary education has been faster than that in primary and middle level education. This is due to the fact that gross enrolment rates have been near to 100 for primary and upper primary levels. Also, secondary and higher secondary stages witnessed lesser enrolments in the start of the study period but, due to government interference through multiple schemes to boost enrolments, enrolments later picked up in these stages of school education.

Trends in enrolment tell about the direction of change, but not about the extent of change. To have a better idea about behaviour of female school enrolments and its growth, annual growth in female school enrolments has been ascertained.

Growth in Female School Enrolments

Growth rates of enrolments in different stages of school education have been worked out using the following formula:

$$GRE = \frac{ECY - EPY}{EPY} * 100 \quad \text{Eq. (4.4)}$$

Where GRE is growth in enrolments in current year, ECY is enrolment in current year and EPY is enrolment in previous year. These have been shown in table 4.5 and figure 4.7.

Table 4.5: Stage-wise Annual Growth Rate of Female School Enrolments in Punjab

Year	Class I-V	Class VI-VIII	Class IX-X	Class XI-XII
1991	-	-	-	-
1992	-1.07	-6.34	-2.03	-3.44
1993	1.43	2.87	-1.99	12.18
1994	1.41	2.79	-2.03	10.86
1995	0.77	2.40	3.23	9.0
1996	1.38	4.02	8.20	12.41
1997	1.93	3.58	5.04	10.23
1998	1.90	3.46	4.80	9.28
1999	-2.13	-0.24	7.99	12.35
2000	-2.03	-0.006	0.25	9.40
2001	-1.77	-0.67	-0.37	3.51
2002	-8.65	2.50	-7.90	0.80
2003	4.33	2.10	8.42	0.27
2004	-3.99	-0.12	-0.59	4.82
2005	-2.09	1.23	-4.01	6.50
2006	2.47	0.04	-0.67	3.77
2007	-8.39	-0.43	-5.35	0.46
2008	-2.05	-1.11	14.47	22.41
2009	4.18	-1.86	-6.04	-7.78
2010	4.67	6.93	19.0	18.06
2011	32.0	20.65	25.29	27.31
2012	0.003	0.004	9.72	15.56
2013	0.17	2.58	-8.29	2.29

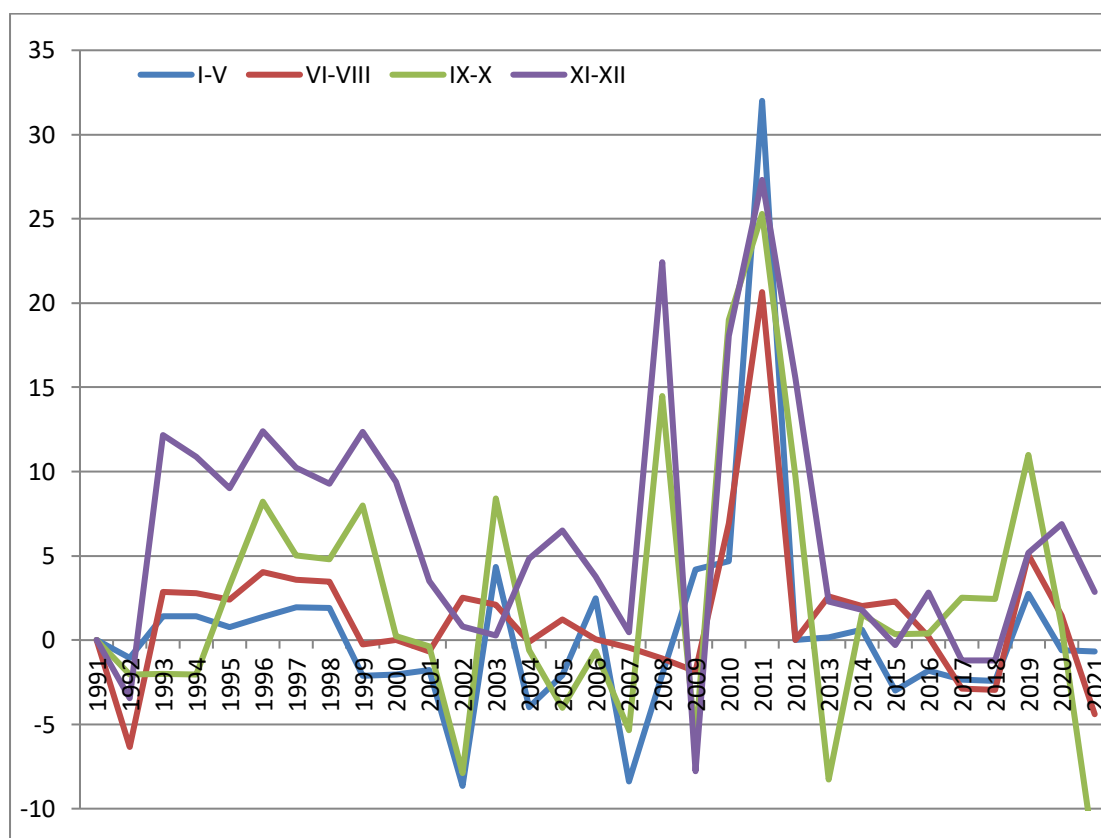
Year	Class I-V	Class VI-VIII	Class IX-X	Class XI-XII
2014	0.62	2.04	1.54	1.79
2015	-3.00	2.29	0.35	-0.30
2016	-1.82	0.21	0.38	2.82
2017	-2.36	-2.86	2.50	-1.19
2018	-2.42	-2.94	2.44	-1.20
2019	2.75	5.08	10.98	5.16
2020	-0.60	1.45	0.80	6.89
2021	-0.66	-4.39	-12.89	2.85

Source: Author's Calculation from Various Data Sources

It is clear from Table 4.5 and Figure 4.7 that growth in enrolment of female students in secondary and higher secondary school education has been higher than that of primary and middle school education. Growth in enrolments in various stages of school education depict almost similar pattern. Growth in female school enrolments was positive during 1990s due to the boost given by New Education Policy, 1986 and 1992. Thereafter, growth rates started to become zero or negative, and with introduction of Sarva Shiksha Abhiyan in 2001 growth in enrolments increased at secondary and higher secondary level but not at elementary level. This may be due to enrolments in unrecognised elementary schools, as found in a study conducted by Mehta (2005), for National Institute of Education Planning and Administration (NIEPA). According to Mehta (2005), share of enrolment in unrecognised schools was 26 percent of the overall enrolment in all the schools. The main reasons for preference of unrecognised schools over recognised schools by parents was that these were better in terms of facilities and infrastructure and mostly offered instructions in English medium. This study was based on the survey results of only seven districts of Punjab, viz. Kapurthala, Jalandhar, Nawanshahr, Ludhiana, Muktsar, Bathinda and Patiala. It means that the actual amount and percentage of enrolments in unrecognised schools would be higher than this figure. Such situation could create an education divide in the society which is certainly not good for its health. So, more

consideration towards improvement in the quality of education and infrastructure in government schools needs to be given, so that this gap is bridged and economic divide in the society doesn't lead to education divide.

After the introduction of Mid-Day Meal in 2008 and Right to Education Act in 2009, growth in female enrolments at primary and upper primary level increased for a while but soon it again turned sluggish and growth rates moved closer to zero during 2012 to 2018 because gross enrolment had already touched the 100 percent mark for primary level whereas it was quite closer to 100 percent in case of upper primary level. In 2013, GER in primary education was 105.6 percent; whereas it was 95.3 percent in upper primary education (State Report Card, 2013).



Source: Based on Table 4.5

Figure 4.7: Trends in Annual Growth Rate of Female School Enrolments in Punjab

In Figure 4.7, boost in secondary education during the period 2007 to 2012 can be explained by introduction of schemes like, Rashtriya Madhyamik Shiksha Abhiyan,

2009 and Mai Bhago Vidya Scheme, 2011 but high growth rates could not be maintained due to faulty implementation of these schemes. Further, massive schemes like “Beti Bachao Beti Padhao” and “Padho Punjab Padhao Punjab” were introduced by the government to give an impetus to female school education but before their impact on school enrolments were beginning to get visible, female enrolments got a huge hit due to occurrence of Covid-19. As a result of the pandemic, people lost their dear ones and jobs, businesses were shut and families were ruined. This effected every aspect of their lives, including education, and particularly girls’ education as they were denied education for want of resources. Therefore, female school enrolments showed a decline after 2019.

Trends in Stage-wise Percentage Share of Female School Enrolments

Trends in stage-wise share of female school enrolments have been computed to gauge as to which stage of school education is witnessing a rise or fall in its share of female enrolments in comparison to other stages.

$$\boxed{\begin{array}{l} \text{Stage – wise Share in Enrolment} \\ = \left(\frac{\text{Enrolment in a Stage}}{\text{Total Enrolment}} \right) * 100 \end{array}}$$

Eq. (4.5)

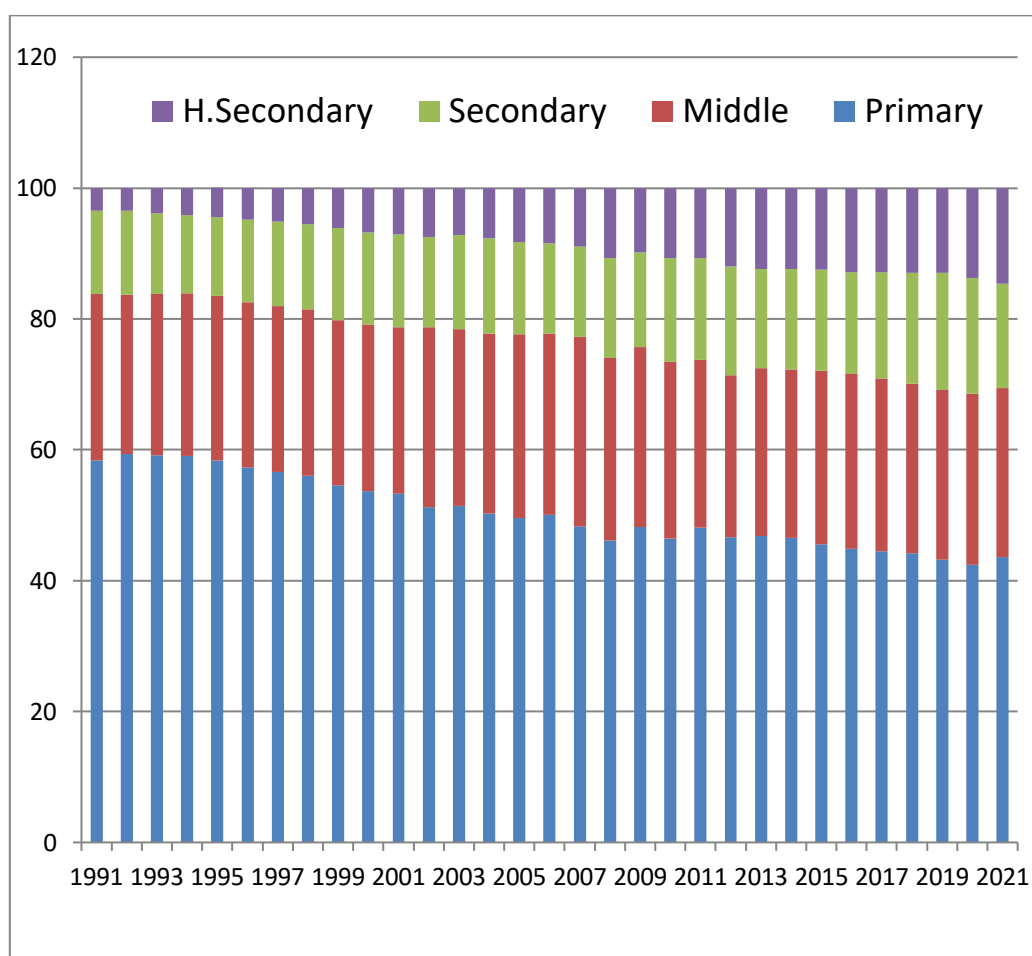
Stage-wise shares of female enrolments have been shown in table 4.6 and figure 4.8. It is clear from the table and the figure that out of total female enrolments in school education in Punjab, the share of primary education has fallen from 58.42 percent in 1991 to 43.61 percent in 2021. The share of upper primary education has remained more or less stable as it was 25.36 per cent in 1991 and 25.78 per cent in 2021. The share of secondary education has enlarged somewhat from 12.73 percent to 16.03 during the same period, and that of higher secondary education has enlarged significantly from 3.49 percent to 14.58 percent. As discussed earlier, decline in percentage share of primary and constancy in share of upper primary enrolments is due to high gross enrolment ratio (GER). However, share of secondary and higher secondary stages in total enrolments have increased.

Table 4.6: Stage-wise Distribution of Female School Enrolments in Punjab

Year	Percentage Share of Primary Enrolments	Percentage Share of Upper Primary Enrolments	Percentage Share of Secondary Enrolments	Percentage Share of Higher Secondary Enrolments
1991	58.42	25.36	12.73	3.49
1992	59.35	24.39	12.81	3.46
1993	59.18	24.67	12.34	3.81
1994	59.02	24.93	11.89	4.16
1995	58.42	25.08	12.05	4.50
1996	57.30	25.24	12.62	4.84
1997	56.63	25.35	12.85	5.17
1998	55.99	25.45	13.07	5.48
1999	54.55	25.27	14.05	6.13
2000	53.71	25.39	14.15	6.74
2001	53.26	25.45	14.24	7.05
2002	51.24	27.47	13.81	7.48
2003	51.41	26.98	14.40	7.21
2004	50.27	27.45	14.58	7.70
2005	49.62	28.01	14.11	8.27
2006	50.11	27.62	13.81	8.46
2007	48.34	28.95	13.76	8.95
2008	46.11	27.88	15.34	10.66
2009	48.21	27.46	14.47	9.87
2010	46.42	27.02	15.84	10.72
2011	48.11	25.59	15.58	10.71
2012	46.63	24.80	16.57	11.99
2013	46.88	25.54	15.25	12.32
2014	46.58	25.74	15.30	12.38
2015	45.55	26.54	15.47	12.45

Year	Percentage Share of Primary Enrolments	Percentage Share of Upper Primary Enrolments	Percentage Share of Secondary Enrolments	Percentage Share of Higher Secondary Enrolments
2016	44.88	26.69	15.59	12.84
2017	44.53	26.34	16.23	12.90
2018	44.16	25.99	16.90	12.95
2019	43.19	25.99	17.86	12.96
2020	42.44	26.07	17.79	13.70
2021	43.61	25.78	16.03	14.58

Source: Author's Calculations from Various Data Sources



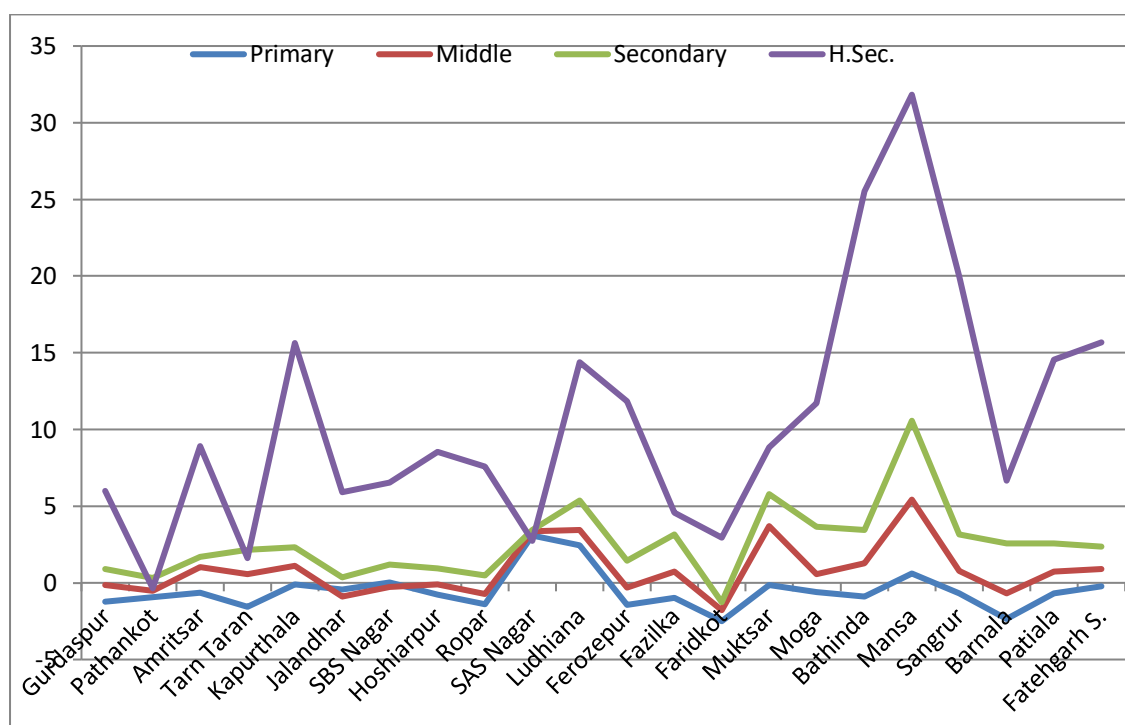
Source: Based on Table 4.6

Figure 4.8: Stage-wise Distribution of Female School Enrolments in Punjab

Considerable increase in share of higher secondary education is a good indicator, meaning that more girls are getting inclined towards completing school education than before. This is due to the fact that growth rate of secondary and higher secondary enrolments has been higher than that of elementary enrolments across the districts in the state as is shown in section 4.3.2. But shares of upper primary and secondary education are still quite low and hence, continued efforts are required to bridge the gap between primary enrolments and enrolments at other stages by plugging the drop-outs at various stages.

4.3.2. Patterns in Female School Enrolments in Punjab

To understand the patterns in female school enrolments, growth rates of female school enrolments at various stages of education have been worked out for various districts in the state and are shown in the figure 4.9.



Source: Author's Calculations from Data in Statistical Abstracts of Punjab (Various Years)

Figure 4.9: District-wise Average Annual Growth Rate of Female School Enrolments in Punjab between 1991 and 2021

Note: Average Annual Growth Rate for SBS Nagar, Muktsar and Moga has been computed using enrolment data of 2001 and that for Pathankot, Tarn Taran, SAS Nagar, Fazilka and Barnala using data of 2011.

It is clear from above figure that there has been either negative or zero growth in primary enrolments throughout the districts except SAS Nagar, Ludhiana and Mansa, which registered positive average annual growth rates. Growth rate of female enrolments in upper primary stage of school education has also been negligible except for districts of SAS Nagar, Ludhiana, Muktsar and Mansa, where it was more than 3 percent. There were observed greater variations in the growth rates of female enrolments in secondary education among the districts. It was the highest in case of Mansa district at 10.57 percent, it was greater than 5 per cent in case of Muktsar and Ludhiana and remained below 5 per cent for the remaining districts. Growth rate of enrolments in case of higher secondary level has been highest in case of Mansa at 31.8 percent and it was more than 15 per cent in case of Bathinda, Sangrur, Fatehgarh Sahib, and Kapurthala whereas districts of Patiala, Ludhiana, Firozpur and Moga registered growth rates higher than 10 per cent. Thus, it can be said that average annual growth rate of female enrolments is higher in case of secondary education than in elementary education for all the districts but has varied hugely among them. Moreover, growth rate of female school enrolments has been higher for districts belonging to Malwa region of the state in comparison to districts belonging to Majha and Doaba regions due to low base effect.

Female School Enrolments as Percentage of Age-Specific Female Population

Female school enrolments have shown an upward movement at the state level, but it is also seen that there is variation among districts in the state regarding growth in female school enrolments. To have a better understanding of this variation in female school enrolments, female school enrolments as a percentage of female population in the school-going age-group has been computed for all the districts in the state, which indicates what percentage of female population in 6 – 17 years age group in a district has been enrolled in to school education

Enrolment as Percentage of Population

$$= \left(\frac{\text{Female School Enrolment}}{\text{Female Population in School Going Age}} \right) * 100$$

Eq. (4.6)

Percentage of 100 is considered to be ideal and a percentage lesser than that indicates that not all girls in the school-going age are going to school. The results are given in the table 4.7. The table shows that in Punjab, around 88 per cent of the females in the school-going age of 6-17 years were registered in schools in the year 2011 which also means that approximately 12 percent of the females in school-going age-group were not registered in schools. It is evident from table 4.7 that female school enrolments as percentage of female population in school-going age group were not uniform across the districts in the year 2011. The percentage of female school enrolments in terms of female population in school-going age was highest for Kapurthala district at 102.39 percent and it was lowest for SAS Nagar at 79.64 percent. A percentage higher than 100 indicates that girls outside the school-going age are also enrolled in schools.

Table 4.7: Female School Enrolments as Percentage of Female Population (in 6-17 years age group) in Punjab in 2011

District	Female Population in 6-17 years in 6-17 years age group	Female School Enrolments	Female School Enrolments as Percentage of Female Population in 6- 17 years age group
Gurdaspur	227528	203891	89.61
Pathankot	-	-	-
Amritsar	247438	208444	84.24
Tarn Taran	121384	99907	82.31
Kapurthala	79417	81318	102.39
Jalandhar	206224	200461	97.21
SBS Nagar	58774	56636	96.36
Hoshiarpur	155347	146578	94.36

District	Female Population in 6-17 years in 6-17 years age group	Female School Enrolments	Female School Enrolments as Percentage of Female Population in 6- 17 years age group
Ropar	66695	62160	93.20
SAS Nagar	92518	73683	79.64
Ludhiana	335883	267713	79.70
Ferozepur	218497	176584	80.82
Fazilka	-	-	-
Faridkot	60605	54093	89.26
Muktsar	89404	75246	84.16
Moga	98776	92362	93.51
Bathinda	130550	113141	86.66
Mansa	77863	69214	88.89
Sangrur	161233	144891	89.86
Barnala	58258	53498	91.83
Patiala	179967	169844	94.38
Fatehgarh S.	54793	51116	93.29
Punjab	2721154	2400780	88.23

Source: Author's Calculations from Various Data Sources

Note: Population & Enrolments of Pathankot are included in Gurdaspur and that of Fazilka are included in Ferozepur

These districts have been classified in to two groups on the basis of percentage of female school enrolments greater than or lesser than that of Punjab. Results have been compiled in table 4.8. Table 4.8 reveals that thirteen districts have more than 88.23 per cent of age-specific female population enrolled in to school education, whereas there are seven districts where a lesser percentage of female population is enrolled in to school education.

Table 4.8: Classification of Districts on the basis of Percentage of Female Enrolments

Percentage of Female Enrolments in Terms of Total Female Population	Districts
Lesser than 88.23	Amritsar, Tarn Taran, SAS Nagar, Ludhiana, Ferozepur, Muktsar, Bathinda
Greater than 88.23	Gurdaspur, Kapurthala, Jalandhar, SBS Nagar, Hoshiarpur, Ropar, Faridkot, Moga, Mansa, Sangrur, Barnala, Patiala, Fatehgarh Sahib

Source: Author's Elaborations Based on Table 4.9

Five out of these seven districts i.e., SAS Nagar, Ludhiana, Ferozepur, Muktsar, and Bathinda belong to Malwa region and two districts i.e., Amritsar and Tarn Taran belong to Majha region whereas no district of Doaba region features in to this category meaning thereby that comparatively higher percentage of total female population is enrolled in school education in this region than the other two regions. The reason for this regional disparity can be explained by density of schools in different regions of the state.

Density of schools has been calculated for the three regions to explain the reason for apparent backwardness of Malwa region as compared to Doaba and Majha regions in terms of female education. For this, one parameter is “square kilometres covered per school” which indicates how much area is covered by one school. Smaller the area per school, lower will be the distance to school, which will increase the ease of access for girl students and thereby enhance female school enrolments.

$$Sq. Km Per School = \frac{Area}{Total Number of Schools}$$

Eq. (4.7)

Another parameter used for explaining the density of schools is the “number of schools per 10000 population”. In case of this variable, values for different regions have been computed by taking simple average of the values for component districts.

Higher number of schools per 10000 population is better than lower number of schools. The results have been presented in the table 4.9.

Table 4.9: Region-wise Density of Schools in 2020

Region/ State	Sq. Kilometres Per School	Number of Schools Per 10000 Population		
		Primary	Middle	Secondary & Higher Secondary
Majha	1.37	5.5	2	3.5
Doaba	1.39	6.75	2	3.75
Malwa	2.05	4.71	1.71	3.35
Punjab	1.75	5	2	3

Source: Author's Calculations Based on Various Data Sources

As per Table 4.9, Sq. Kms per school is 1.75 for the state of Punjab, which means that there is one school in 1.75 sq. km area in Punjab. The figure is 1.37 sq. km for Majha region, 1.39 sq. km for Doaba region and 2.05 sq. km for Malwa region. Therefore, Majha and Doaba regions are faring better than Malwa region as both Majha and Doaba regions have a school for less than every 1.5 square kilometres, whereas Malwa region has a school for approximately every 2 square kilometres of area. Thus, density of schools is lowest for Malwa. Further, there are five primary schools, two middle (or upper primary) schools, and three secondary and higher secondary schools for every 10000 people in the state. Thus, density of primary schools is the highest and that of middle schools is the lowest. Density of schools among population is highest in the Doaba region as it has highest number of schools per 10000 population in all the three categories, whereas it is lowest in case of Malwa region for all the categories. Numbers of schools per 10000 population are higher than state's average in both Doaba and Majha regions where as these are lower in Malwa region at every stage of school education. Thus, we can conclude that density of schools, both in terms of area as well as population, is lowest for Malwa region, which leads to lower female school enrolments in this region as compared to other two regions.

4.4. CONCLUSION

Thus, above discussion makes it clear that there has been continuous progress since 1991 in female education in the state of Punjab, both on grounds of female literacy as well as female school enrolments. Therefore, the first hypothesis, that over a span of time female school education has remained time invariant, is rejected. But, growth in female literacy rates has slowed down in the decade 2001-2011 as compared to previous decades due to presence of large out-of-school-age population in the state which can't be made literate by normal schooling because this section has out-grown their school going age. This segment of the population can only be made literate by expanding evening or adult schools and also by spreading awareness about importance of education for them. If the same situation persists then Punjab is going to take nearly 30 years more to achieve the target of 100 per cent female literacy rate. Further, growth in female elementary enrolments has been lesser in comparison to growth in female secondary enrolments, due to near 100 per cent Gross Enrolment Ratios at elementary level. Doaba region is the best performer in terms of female education and Malwa region is the worst. No doubt Malwa region is lagging behind Doaba and Majha regions in female education measured in terms of female literacy and female school enrolments, but growth rate of female school enrolments is highest for Malwa region meaning thereby that the region is making progress and is catching up with the other two regions. Government should undertake dedicated steps to improve educational infrastructure in this region of the state, particularly the number of schools as their density is lower in Malwa region as compared to Majha and Doaba regions. Only devoted efforts, as mentioned above, will succeed in removing regional inequalities in female education and bringing the region of Malwa at par with the other two regions in the state.

Chapter – 5

GENDER DIFFERENTIALS IN SCHOOL EDUCATION IN PUNJAB

5.1. INTRODUCTION

Prejudice or discrimination has been a prominent feature of our society since time immemorial and takes many forms like, on the basis of sex, race, colour, caste, region, religion, *etc.* however the most rampant form of prejudice is on the basis of sex. Gender discrimination is preference for one gender as against the other because the former is considered intrinsically superior than the latter. It manifests itself in terms of gender roles and stereotypes, and primarily affects women and girls. Gender discrimination is the severest among all the forms of discrimination because it puts half of the population on earth at a disadvantage. Its occurrence is quite intense as it cuts across region, religion, race, and colour and is spread across all the aspects of human life. Females have to bear the injustice apportioned to them everywhere and at all the stages. Though discrimination at any stage is equally bad, biasness at an early age has a lasting impact on the psyche of a child and affects his/her overall personality. Gender discrimination in education is even worse, as it takes away chance from the society to remove the evil of gender discrimination in the beginning itself by making the girl child aware of her rights. Though gender discrimination is prevalent around the world but its presence is felt more profoundly in India due to patriarchal character of the social order. As per Census 2011, sex-ratio was 943 in India meaning thereby that there were 943 females per thousand males in India in 2011, whereas it stood at 1160 for Russian Federation, 1040 for Germany and 1030 for U.S.A and U.K (GOI, 2012). Thus, sex-ratio is quite low in India as compared to advanced nations in the world, and child sex-ratio was even lower at 918. Also, gender discrimination is not uniform across different states in India. Sex-ratio was highest for the state of Kerala (1084) and was also high for other southern states, like Tamil Nadu (996) and Andhra Pradesh (993) whereas sex-ratio was lowest in the state of Haryana (879) and was quite low in states like Punjab (895), Uttar Pradesh

(912), *etc.* (GOI, 2012). There exists a clear regional divide in the country in terms of sex-ratio as states in north-eastern and southern parts have higher sex-ratio than the states belonging to northern and western parts.

Education sector in the country is also marred by the occurrence of the evil of gender discrimination. Male literacy level in the country stood at around 80 percent in 2011 whereas female literacy level was just 65.46 per cent (Census of India Report, 2011). Further, according to World Bank data, mean schooling years (ISCED 1 or higher) were just 4.11 years in case of female population of 25 + years whereas these were 6.65 years for males. Additionally, India had a Gender Parity Index in case of adult literacy rate as 0.75 whereas the figures were 0.976, 0.985 and 1.005 in case of South Africa, Bangladesh and Brazil. Numerous investigators are of opinion that gender disparity in education seriously hinders economic progress of countries (Ali 2015; Chaudhry, 2007; and Klasen, 2002).

5.2. GENDER DISCRIMINATION IN EDUCATION IN PUNJAB

Punjab has a male-controlled society with dominant culture of preference for son, which has led to the state having one of the least sex-ratio in the nation. The adult sex-ratio in the state was 895 in 2011, and child sex-ratio (0-6 age group) was even lower at 846 (Census, 2011). This highly skewed sex-ratio asserts the fact that women are grossly discriminated against in almost all the spheres of life, like education, health, employment, politics, *etc.* Gender discrimination in field of education is apparent from the differential in literacy levels of males and females. Male literacy was 80.4 percent in 2011, whereas female literacy rate was 70.7 percent (GOI, 2012), giving rise to a difference of 9.7 per cent in literacy rates of males and females. No doubt this difference is smaller than that existing at national level, i.e., 16.3 per cent (Census, 2011), but it is still high. Also, girls formed just 45.9 percent of all the school-going children in Punjab in 2021 (Statistical Abstract of Punjab, 2021).

5.2.1. Gender Differentials in Literacy Rates

To understand the gender differentials in literacy, firstly it is necessary to study the literacy levels of males and females. Figure 5.1 depicts the comparative position of

male and female literacy levels in India and in Punjab for the years 1991, 2001 and 2011. It is apparent from the figure below that literacy level for females has been lower than that for males, both in India and in Punjab, throughout the study period. But, the distance between male and female literacy curves is more at India level in comparison to that in Punjab.

Table 5.1: Male and Female Literacy Rates in India and in Punjab (1991-2011)

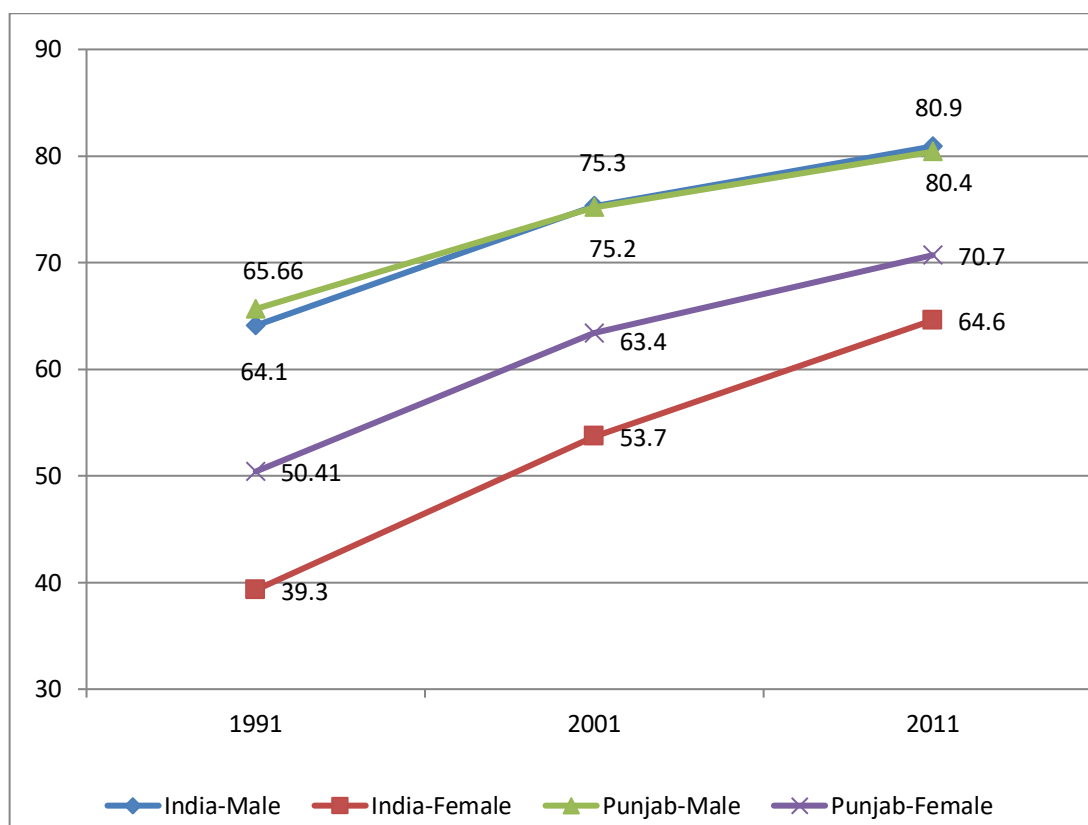
	India-Male	India-Female	Punjab-Male	Punjab-Female
1991	64.1	39.3	65.66	50.41
2001	75.3	53.7	75.2	63.4
2011	80.9	64.6	80.4	70.7

Source: Census Reports for Various Years

Table 5.1 shows literacy levels for males and females in India and in Punjab in the census years of 1991, 2001 and 2011. Literacy rates have been escalating during this period, both for males as well as females, but literacy level for females is visibly lower than that for males both in Punjab and in India. Trends in literacy levels for males and females during this period have been elaborated with the help of figure 5.1.

In figure 5.1 the green curve (representing male literacy rate in Punjab) is overlapping the blue curve (showing male literacy rate in India), which shows that male literacy rate in Punjab has been comparable to that in India during the study period. Also, it is to be noted that in 1991 male literacy curve of Punjab was slightly higher than that of India but in 2001, male literacy curve of India has risen past male literacy curve of Punjab and turned marginally higher than the latter in 2011. Further, female literacy rate in the state has consistently been higher than female literacy rate in the country, but red curve (depicting female literacy in India) is fast approaching purple curve (depicting female literacy in Punjab). Thus, it can be said that Punjab is at same position as that of India in terms of male literacy and at better position than it

in terms of female literacy but literacy rates in India are becoming relatively better, which means that growth in female literacy in Punjab is not matching the growth in female literacy in India.



Source: Based on Table 5.1

Figure 5.1: Male and Female Literacy Rates in India and in Punjab (1991-2011)

5.2.2. Trends in Gender Differentials in Literacy Rates in Punjab

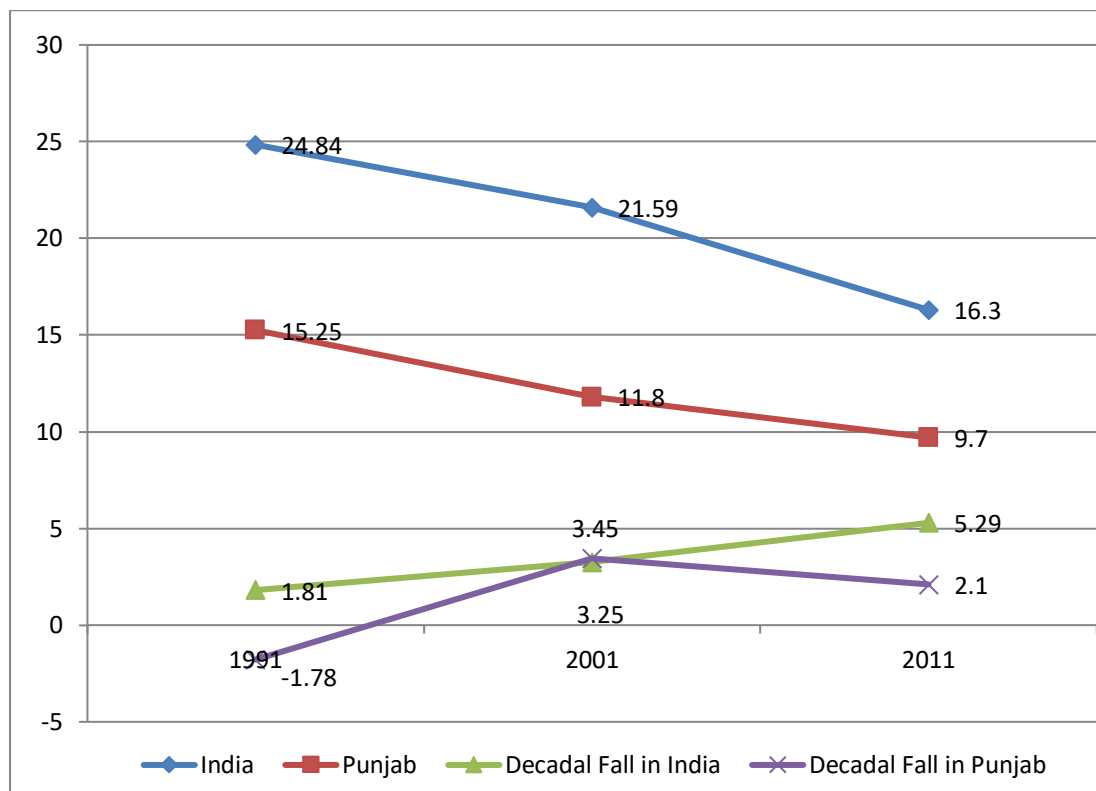
Now, it is perceptible from the above analysis that there exists noteworthy gap in magnitude of male and female literacy rates. It, therefore, becomes vital to gauge the extent of difference between literacy levels of males and females. For this purpose, differences in literacy rates of male and female population in India and in Punjab have been computed.

$$\boxed{\textit{Gender Differential in Literacy}}$$

$$\boxed{= \textit{Male Literacy Rate} - \textit{Female Literacy Rate}}$$

Eq. (5.1)

Difference in male-female literacy rates for the years 1991, 2001 and 2011 are shown in the following graph.



Source: Author's Calculations based on Census Data

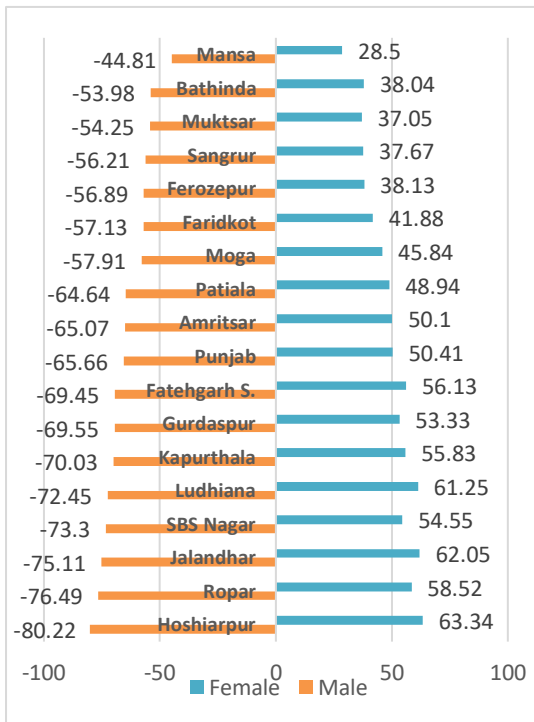
Figure 5.2: Difference in Male-Female Literacy Rate in India and Punjab (1991-2011)

Figure 5.2 reveals that difference in male-female literacy has been falling both in India as well as in Punjab during 1991-2011. Gender disparity in literacy in India was 24.84 per cent in 1991, which came down to 21.59 percent in 2001 and again to 16.3 percent in 2011. However, gender disparity in literacy in Punjab was 15.25 percent in 1991 that declined to 11.8 percent in 2001 and then to 9.7 per cent in 2011. Another observation to be made from the chart is that decadal fall in literacy gap for India has been consistently increasing during the study period, where as it is not so in the case of Punjab. During 1981-1991, decadal fall in literacy gap was 1.81 per cent in India, but during this decade, the gap actually increased in Punjab by 1.78 per cent. In the decade of 1991-2001, decadal fall in literacy gap was comparable at the country and

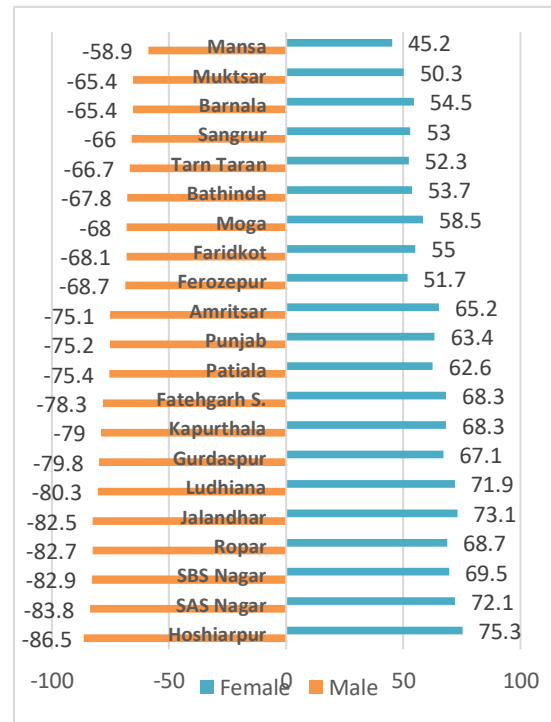
the state levels. It was 3.25 per cent in India and 3.45 per cent in Punjab. During 2001-2011, decadal fall in literacy gap was 5.29 per cent in India whereas it was just 2.1 per cent in Punjab. Thus, we can say that though gender gap in literacy is falling at countrywide and also at state level, yet the rate of fall has slowed down in Punjab. This slow-down in the fall is due to existence of gender gap in literacy among older adults, who are outside the ambit of school education. Same trend was observed in case of India by Chandra (2019) where it was found that gender gap was falling steadily in case of child (6-14 years) and youth (15-24 years) literacy during 1987-2017 but this was not the case with older adults. Gender gap in literacy was not closing at a fast pace in case of working-age population (24-65 years) and elderly (65+ years) meaning thereby that there existed higher stock of illiterate adult female population than illiterate male population. Thus, situation in Punjab is similar and spreading education among children and youth will not suffice but, equivalent focus needs to be laid on spreading education among adult female population so that gender gaps disappear swiftly.

From the analysis done in chapter 4, it was found that female literacy rate was not uniform across various districts of Punjab. A similar analysis at the local level is therefore required to bring to the fore behaviour of male and female literacy across the districts in the state. Literacy pyramids have been constructed to present a comparative picture of male and female literacy levels in various districts of the state. Figure 5.3 has been drawn in three parts, first part showing literacy pyramid for the year 1991 and second and third parts showing literacy pyramids for 2001 and 2011 respectively. Female literacy rate is shown with red bars and male literacy is shown with blue bars. Literacy pyramids for the years 2001 and 2011 have grown in height than in previous decades as the number of districts rose from 16 in 1991 to 17 in 2001 and then again to 22 in 2011.

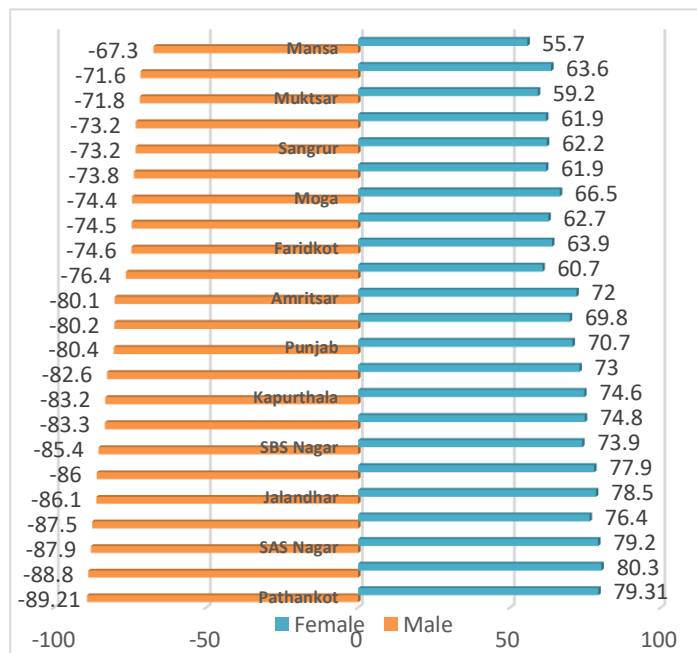
Part (A): Literacy Pyramid for 1991



Part (B): Literacy Pyramid for 2001



Part (C): Literacy Pyramid for 2011



Source: Based on Census Data for Various Years

Figure 5.3: Literacy Pyramids showing Male and Female Literacy in Punjab (1991-2011)

In literacy pyramid for the year 1991, the length of blue (male literacy) as well as red bars (female literacy) is short depicting thereby low literacy levels among male and female population in most of the districts of the state. But, the position of male literacy was much better than female literacy as length of red bars was significantly shorter than the length of blue bars. Only one district i.e., Mansa had male literacy less than 50 per cent, whereas there were as many as 8 districts with female literacy rate lesser than 50 percent. Both, male and female literacy rates were lowest in the district of Mansa (44.81 percent and 28.5 percent respectively) whereas these were highest in Hoshiarpur (80.22 percent and 63.34 percent respectively).

In literacy pyramids for the year 2001, length of both the blue and the red bars increased suggesting improvement in male as well as female literacy rates across the districts. Also, all the districts had female literacy above 50 percent whereas only one district i.e., Mansa, had female literacy less than 50 percent. But, the length of red bars was still much shorter than that of blue bars thereby indicating huge differences in literacy levels of males and females. Again, male and female literacy rates were lowest in Mansa (58.9 and 45.2 per cent respectively) and highest in Hoshiarpur (86.5 and 75.3 per cent respectively). In literacy pyramids of 2011, length of both the bars increased further and all the districts had majority of the male and female population literate. Length of red bars is still shorter than blue bars for each district but the difference in comparative lengths of blue and red bars has reduced than before. Mansa continues to be the district with lowest male and female literacy rates (67.3 and 55.7 respectively). While Hoshiarpur continues to be at the top in female literacy rate at 80.3 per cent, Pathankot has surpassed it in terms of male literacy with 89.21 percent of the male population being literate in this newly created district.

The literacy pyramids show that there exists wide disparity in male and female literacy among the districts in the state. Consequently, gender difference in literacy is also not uniform throughout the state. So, gender gaps in literacy have been computed for all the districts to identify the districts with high gender gaps. Male and female literacy rates as well as gap in male and female literacy rates for various districts in the state have been shown in the table 5.2.

Table 5.2: District Wise Male, Female and Gender Gap in Literacy Rate in Punjab (1991-2011)

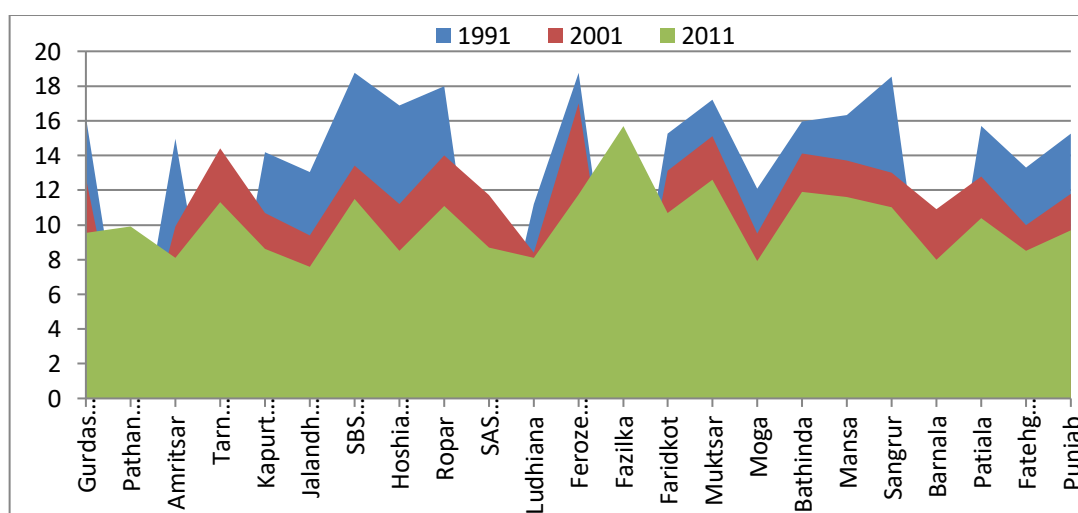
S.N	District	1991			2001			2011		
		Male	Female	Gender Diff	Male	Female	Gender Diff	Male	Female	Gender Diff
1	Gurdaspur	69.55	53.33	16.22	79.8	67.1	12.7	82.57	73.02	9.55
2	Pathankot	-	-	-	-	-	-	89.21	79.31	9.9
3	Amritsar	65.07	50.1	14.97	75.1	65.2	9.9	80.1	72.0	8.1
4	Tarn Taran	-	-	-	66.7	52.3	14.4	73.2	61.9	11.3
5	Kapurthala	70.03	55.83	14.2	79.0	68.3	10.7	83.2	74.6	8.6
6	Jalandhar	75.11	62.05	13.06	82.5	73.1	9.4	86.1	78.5	7.6
7	SBS Nagar	73.3	54.55	18.75	82.9	69.5	13.4	85.4	73.9	11.5
8	Hoshiarpur	80.22	63.34	16.88	86.5	75.3	11.2	88.8	80.3	8.5
9	Ropar	76.49	58.52	17.97	82.7	68.7	14.0	87.5	76.4	11.1
10	SAS Nagar	-	-	-	83.8	72.1	11.7	87.9	79.2	8.7
11	Ludhiana	72.45	61.25	11.2	80.3	71.9	8.4	86.0	77.9	8.1

S.N	District	1991			2001			2011		
		Male	Female	Gender Diff	Male	Female	Gender Diff	Male	Female	Gender Diff
12	Ferozepur	56.89	38.13	18.76	68.7	51.7	17	74.5	62.74	11.76
13	Fazilka	-	-	-	-	-	-	76.35	60.66	15.69
14	Faridkot	57.13	41.88	15.25	68.1	55.0	13.1	74.6	63.9	10.7
15	Muktsar	54.25	37.05	17.2	65.4	50.3	15.1	71.8	59.2	12.6
16	Moga	57.91	45.84	12.07	68.0	58.5	9.5	74.4	66.5	7.9
17	Bathinda	53.98	38.04	15.94	67.8	53.7	14.1	73.8	61.9	11.9
18	Mansa	44.81	28.5	16.31	58.9	45.2	13.7	67.3	55.7	11.6
19	Sangrur	56.21	37.67	18.54	66.0	53.0	13.0	73.2	62.2	11.0
20	Barnala	-	-	-	65.4	54.5	10.9	71.6	63.6	8.0
21	Patiala	64.64	48.94	15.7	75.4	62.6	12.8	80.2	69.8	10.4
22	Fatehgarh S.	69.45	56.13	13.32	78.3	68.3	10.0	83.3	74.8	8.5
Total	Punjab	65.66	50.41	15.25	75.2	63.4	11.8	80.4	70.7	9.7

Source: Economic and Statistical Organisation, Punjab, Director, Census Operation, Punjab

Table 5.2 shows that there are high gaps in male-female literacy in various districts of Punjab during 1991, 2001 and 2011; and none of the districts have gender parity in terms of literacy. In 1991, highest gender gap was in the district of Ferozepur (18.76 per cent) and lowest was in Ludhiana (11.2 per cent). As many as 10 districts out of 17 had literacy gap more than state's average i.e., 15.25 per cent. In 2001, gender difference in literacy became lesser than the previous decade but these were still very high. Highest gender gap was in the district of Muktsar (15.1 per cent) whereas the lowest was in Ludhiana (8.4 per cent). Also, 75 percent of the districts had literacy gaps in double digits and 11 districts out of 20 had literacy gap more than state's average i.e., 11.8 per cent. In 2011, 12 districts out of 22 had literacy gap more than state's average of 9.7 percent. Highest gender gap in literacy was in the newly created district of Fazilka (15.69 per cent) and lowest was in Jalandhar (7.6 per cent). Though literacy gaps have been reducing during the period under consideration, yet 50 per cent of districts still have literacy gaps in double digits in 2011. These include Fazilka (15.69 per cent), Muktsar (12.6 percent), Bathinda (11.9 percent), Ferozepur (11.76 percent), Mansa (11.6 percent), SBS Nagar (11.5 per cent), Tarn Taran (11.3 percent), Ropar (11.1 percent), Sangrur (11.0 percent), Faridkot (10.7 percent) and Patiala (10.4 percent).

District wise gender gaps in literacy for the years 1991, 2001 and 2011 have been shown in the following chart.



Source: Constructed on the basis of Table 5.2

Figure 5.4: District Wise Gap in Male and Female Literacy Rate in Punjab

Figure 5.4 shows a glimpse of comparative position of the districts at different time periods i.e., 1991, 2001 and 2011 with regard to gender gap in literacy. Area under the blue curve represents gender gap in literacy for the period 1991. It has highest peaks meaning thereby that gender gaps in literacy were highest for the period 1991 in all the districts, most of these having gender gaps greater than 10 per cent. Area under the red curve stands for gender gap in literacy in 2001. Clearly, area under the red curve is smaller than the area under the blue curve, implying that there has been noticeable reduction in gender gaps in literacy across the districts in the state. Area under the green curve embodies gender gaps in literacy in 2011 and it is visibly smaller than area under the red curve, suggesting a further reduction in gender gaps during 2001-2011. Mostly gender gaps in the districts lie in the band of 7.6-12.6 per cent with an exception of Fazilka, where gender gap in literacy stood at enormous 15.69 per cent.

Thus, it can be concluded that though there has been continuous decline in gender gaps in literacy across the state, profound differences still persist. Moreover, the fall in gender differences has not been uniform throughout the state. Decadal fall in gender differential in literacy at the district level has been worked out in table 5.3.

Decadal Fall in Gender Differential in Literacy

$$= (\text{Gender Differential in Literacy in Previous Census Year}) \\ - (\text{Gender Differential in Literacy in Current Census Year})$$

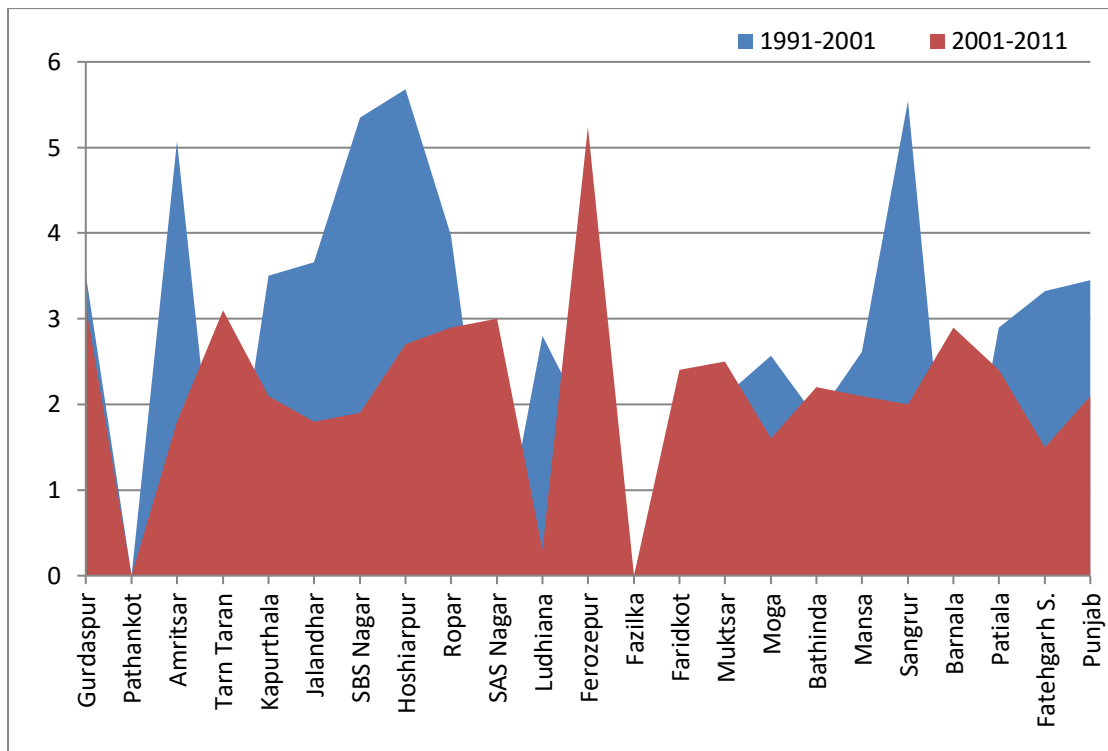
Eq. (5.2)

Table 5.3. shows that in 2001 largest decrease in gender gap was in the district of Hoshiarpur (5.68 per cent) and decrease of more than 5 per cent has been observed in the districts of Sangrur (5.54 percent), SBS Nagar (5.35 percent), and Amritsar (5.07 percent). In 2011, the greatest reduction in gender gap in literacy was witnessed by Ferozepur (5.24 per cent) due to carving out of lesser developed district of Fazilka from it. Reduction in gender gap of more than 3 per cent has been detected in Gurdaspur (3.15 per cent), Tarn Taran (3.1 per cent), and SAS Nagar (3.0 per cent).

Table 5.3: District-wise Decadal Fall in Gender Differential in Literacy in Punjab

S.N.	District	1991	2001	2011	Decadal Fall (1991-2001)	Decadal Fall (2001-2011)
1	Gurdaspur	16.22	12.7	9.55	3.52	3.15
2	Pathankot	-	-	9.9	-	-
3	Amritsar	14.97	9.9	8.1	5.07	1.8
4	Tarn Taran	-	14.4	11.3	-	3.1
5	Kapurthala	14.2	10.7	8.6	3.5	2.1
6	Jalandhar	13.06	9.4	7.6	3.66	1.8
7	SBS Nagar	18.75	13.4	11.5	5.35	1.9
8	Hoshiarpur	16.88	11.2	8.5	5.68	2.7
9	Ropar	17.97	14.0	11.1	3.97	2.9
10	SAS Nagar	-	11.7	8.7	-	3.0
11	Ludhiana	11.2	8.4	8.1	2.8	0.3
12	Ferozepur	18.76	17	11.76	1.76	5.24
13	Fazilka	-	-	15.69	-	-
14	Faridkot	15.25	13.1	10.7	2.15	2.4
15	Muktsar	17.2	15.1	12.6	2.1	2.5
16	Moga	12.07	9.5	7.9	2.57	1.6
17	Bathinda	15.94	14.1	11.9	1.84	2.2
18	Mansa	16.31	13.7	11.6	2.61	2.1
19	Sangrur	18.54	13.0	11.0	5.54	2.0
20	Barnala	-	10.9	8.0	-	2.9
21	Patiala	15.7	12.8	10.4	2.9	2.4
22	Fatehgarh S.	13.32	10.0	8.5	3.32	1.5
Total	Punjab	15.25	11.8	9.7	3.45	2.1

Source: Author's Calculations



Source: Based on Table 5.3

Figure 5.5: District Wise Decadal Fall in Gender Differential in Literacy (1991-2011)

Figure 5.5 makes it clear that decadal fall in gender difference in literacy has been higher during 1991-2001 than in 2001-2011. Consequently, decadal fall in Punjab also retarded, it was 3.45 per cent during 1991-2001 whereas it was just 2.1 per cent in the next decade. Thus, the gap in literacy rate is reducing, but the pace has slowed down. This is due to the fact that pace of growth in female literacy has slowed down because of existence of large quantity of out-of-school-age uneducated female population. Quantity of out-of-school-age uneducated female populace is higher than out-of-school-age uneducated male populace and consequently, there has been a slower decline in gender differences in literacy. Thus, it can be concluded that female population is at disadvantage in terms of literacy, but older age group of female populace suffers from greater disparity than the younger ones (Shukla & Mishra, 2019). Universal Elementary Education (UEE) to bring illiterate out-of-school-age populace under the purview of education, with a special focus on illiterate out-of-school-age female populace, is the need of the hour.

5.2.3. Identifying the Leaders and the Laggards

It has been revealed in the earlier discussion that female literacy has been rising in the state and gender gap has been falling but, it has been observed that the rate of improvement has not been same for all the districts, some are performing better than the other. So, in order to identify the good and bad performers, a two-way classification of the districts has been carried out. Districts have been classified according to “Gender Gap in Literacy” and “Decadal Fall in Gender Gap in Literacy”.

Table 5.4: Classification of Districts according to Gender Gap & Decadal Fall in Gender Gap

Category	Gender Gap	Decadal Fall in Gender Gap	Description	Performance
I	Less than or equal to 9.7	Less than or equal to 2.1	Low gender gap and low decadal fall in gender gap	Second best
II	More than 9.7	Less than or equal to 2.1	High gender gap and low decadal fall in gender gap	Worst
III	Less than or equal to 9.7	More than 2.1	Low gender gap and high decadal fall in gender gap	Best
IV	More than 9.7	More than 2.1	High gender gap and high decadal fall in gender gap	Third best

Source: Author's Elaborations

In table 5.4. differentiating value for gender gap is taken as 9.7, which is the state's average and differentiating value for decadal fall in gender gap is taken to be 2.1, which is also state's average. Districts are thus categorised on the basis of whether they have gender gap and decadal fall in gender gap higher or lower in comparison to the state's average. The distribution of the districts in to various categories is shown in table 5.5.

Table 5.5: Distribution of Districts as Per Gender Gap in Literacy and Decadal Fall in Gender Gap in Literacy

	Gender Gap in Literacy (2011)	
Decadal Fall in Gender Gap in Literacy (2001-2011)	Less than or equal to 9.7	More than 9.7
	Category I (Second Best)	Category II (Worst)
Less than or equal to 2.1	Ludhiana Jalandhar, Moga Amritsar, Fatehgarh, Kapurthala	SBS Nagar Mansa, Sangrur
	Category III (Best)	Category IV (Third Best)
More than 2.1	SAS Nagar, Hoshiarpur, Barnala, Gurdaspur	Tarn Taran, Ropar, Faridkot, Patiala, Ferozepur, Muktsar, Bathinda

Source: Author's Calculations

Note: Districts of Pathankot and Fazilka have not been included here as both of these were created in 2011 and therefore, decadal fall in gender gap in literacy could not be computed in their case.

The division of the districts in the above table shows that districts of SAS Nagar, Hoshiarpur, Baranala and Gurdaspur belong to Category III and are the best performers as these districts not only have lower gender gaps, but are also witnessing high decadal fall in gender gap in literacy. Therefore, these districts are performing much better in comparison to other districts in the state. Districts in Category I are second best performers as these have quite low gender gaps along with low rate of decadal fall in gender gaps. This category includes Jalandhar, Moga, Ludhiana, Amritsar, Fatehgarh Sahib, and Kapurthala. Districts of Tarn Taran, Ropar, Faridkot,

Patiala, Ferozepur, Muktsar, and Bathinda belong to Category IV and are the third best performers as these have large gender gaps in literacy but at the same time are witnessing high decadal fall in gender gap, thereby making fast progress. Districts in Category II are the worst performers as these have high gender gaps in literacy and low rate of decadal fall in gender gaps i.e., they have high gender gap in literacy and are showing little progress. This category comprises of SBS Nagar, Mansa, and Sangrur districts.

So, it can be concluded that in context of gender difference in literacy, districts of SAS Nagar, Hoshiarpur, Baranala and Gurdaspur are the best performers and therefore, are termed as *Leaders*, whereas districts of SBS Nagar, Mansa, and Sangrur are the worst performers and are therefore termed as *Laggards*. Therefore, special policies targeting gender gap in literacy should be designed for these districts.

5.2.4. Future Projections

Time period to achieve equalisation of male and female literacy can be known with the aid of the concept of gender parity. Gender parity is the percentage of female literacy expressed in terms of male literacy and it indicates distance already covered in terms of gender equality. That is,

$$\text{Gender Parity in Literacy} = \left(\frac{\text{Female Literacy Rate}}{\text{Male Literacy Rate}} \right) * 100$$

Eq. (5.3)

Thus, it is the opposite of gender gap which indicates distance still left to be covered. So, the places with high gender gap will have low gender parity and vice versa. Table 5.6 shows that gender parity in Punjab was 87.94 per cent in 2011 and has been continuously increasing during the study period. It is also evident that none of the district has achieved cent per cent gender parity in literacy. Maximum gender parity in literacy is in Jalandhar district (91.17 per cent) and lowest is in Fazilka (79.45 per cent). Also, annual rate of growth in gender parity in literacy has been computed for the period 2001-2011. The annual rate of increase in gender parity in literacy was .363 per cent in Punjab in 2001-2011. During this period, the highest rate was

recorded in Ferozepur (.896 per cent) and the lowest was observed in Ludhiana (.104 per cent). For computing time period required to attain 100 percent gender parity in literacy, following formula has been used:

$$P_n = P_0 \left(1 + \frac{r}{100}\right)^n$$

Eq. (5.4)

where $P_n = 100$ (gender parity in literacy to be achieved), $P_0 =$ present gender parity in literacy in 2011, $r =$ rate (difference in gender parity in literacy between periods) Katiyar (2016). Here, $r = ((r_F - r_M) / (1 + r_M / 100)) / 10$ (Sethi, 2008) and $n =$ regarding number of years it will take to attain 100 per cent gender equality in literacy. The formula was used by Katiyar (2016) for computing time period required to attain 100 percent female literacy in India. It has been adapted to compute number of years it will take to attain 100 per cent gender equality. Putting different values of P_0 and corresponding values of r for different districts in the above equation and solving, different values of n have been calculated and presented in table 5.6.

Table 5.6 shows that it will take nearly 30 more years from 2011 to achieve 100 percent gender equality in literacy in the state of Punjab, if all the conditions remain unchanged in future. This means that Punjab will achieve cent per cent gender parity in literacy sometime around 2041 but it is only an average figure based on the average rate of growth of gender parity in literacy across different districts in the state. The table makes it evident that years to achieve cent per cent gender parity in literacy are not same across the districts in the state. Therefore, the state will not be free from the evil of gender discrimination in literacy till the last of its district succeeds in removing gap in male and female literacy rates.

Table 5.6: Gender Parity in Literacy, Annual Rate of Increase in Gender Parity in Literacy and Future Projections Regarding Gender Parity in Literacy in Punjab

		Gender Parity in Literacy	Annual Rate of Growth in Gender Parity 2001-11	Years to Achieve 100 Per Cent
S.No.	District	2011 (P₀)	2001-2011 (r)	Gender Parity (n)
1	Gurdaspur	88.43	0.52	23.89
2	Pathankot	88.9	-	-
3	Amritsar	89.89	0.35	30.20
4	Tarn Taran	84.56	0.78	21.47
5	Kapurthala	89.66	0.37	29.54
6	Jalandhar	91.17	0.29	32.04
7	SBS Nagar	86.53	0.32	45.16
8	Hoshiarpur	90.43	0.39	25.96
9	Ropar	87.31	0.51	26.66
10	SAS Nagar	90.1	0.47	22.14
11	Ludhiana	90.58	0.12	85.23
12	Ferozepur	84.21	1.19	14.52
13	Fazilka	79.45	-	-
14	Faridkot	85.66	0.61	25.59
15	Muktsar	82.45	0.72	26.89
16	Moga	89.38	0.39	28.89
17	Bathinda	83.88	0.59	29.84
18	Mansa	82.76	0.78	24.22
19	Sangrur	84.97	0.58	28.09
20	Barnala	88.83	0.66	18.00
21	Patiala	87.03	0.48	28.83
22	Fatehgarh S.	89.8	0.29	36.57
Total	Punjab	87.94	0.43	29.91

Source: Author's Computations Based on Table 5.1

Table 5.6 depicts that if all the conditions remain same then Ferozepur has been projected to take the least number of years i.e., 15 years to attain complete gender equality in literacy. Another district, Barnala has been projected to take less than 20 years to attain complete gender equality in literacy i.e., 18 years. Tarn Taran (21 years), SAS Nagar (22 years), and Gurdaspur and Mansa (24 years) are expected to take less than 25 years. Seven districts are projected to take more than 25 but less than 30 years i.e., Hoshiarpur and Faridkot (26 years); Ropar and Muktsar (27 years); Sangrur (28 years); and Patiala and Moga (29 years). Kapurthala, Bathinda and Amritsar are expected to take around 30 years. It is estimated that three districts will take more than 30 years to attain maximum level of gender parity in literacy i.e., Jalandhar (32 years) and Fatehgarh Sahib (37 years) and SBS Nagar (45 years). It has also been observed that in all the districts 100 per cent level of gender parity in literacy will be achieved before 100 percent female literacy is achieved, except in case of Ludhiana. Gender parity in literacy will only be achieved if gap between male and female literacy falls, which has not happened in case of Ludhiana. Gender gap in literacy in the district was 8.4 per cent in 2001 and 8.1 per cent in 2011. Clearly, the fall is negligible, meaning thereby that both male and female literacy are growing at the same rate and therefore, the two will not converge before cent percent female literacy is achieved in next 30 years (approximately). Another point to note is that Ferozepur has come out to be the best performer as it will take comparatively lesser number of years to achieve both gender parity (15 years) as well as complete female literacy (22 years) whereas SBS Nagar has turned out to be worst in both categories i.e., 45 years and 48 years respectively because rate of growth in female literacy is very low in this district.

Table 5.7 makes it clear that six districts are expected to achieve complete gender parity in literacy in less than 25 years. Seven districts are projected to take more than 25 but less than 30 years and four districts are anticipated to do this in around 30 years whereas three districts have been projected to take more than 30 years to bring about gender parity in literacy. As many as 13 districts have been projected to take number of years to do this lesser than states' average whereas seven districts have been projected to take equal to or more than that.

Table 5.7: Frequency Distribution of Districts in Respect of Years to Achieve Gender Parity in Literacy

Years to Achieve Gender Parity in Literacy	Number of Districts
Below 25	6
25-30	7
30 and above	7
Lowest number of years	15
Highest number of years	48
Range (Highest-Lowest years)	33
District having lowest number of years	Ferozepur
District having highest number of years	SBS Nagar (Nawanshahr)
Number of districts less than States' years (< 30 years)	13
Number of districts more than States' years (> = 30 years)	7

Source: Author's Elaboration Based on Table 5.6

Note: In Ludhiana, gender parity will be achieved when 100 per cent female literacy is achieved i.e., after 30 years. Therefore, it has been included in class-interval 30 and above.

Lowest number of years i.e., 15 has been projected for Ferozepur district while the highest number of years i.e., 48 has been predicted for SBS Nagar. Thus, there is a need for increasing the pace of female literacy more in comparison to pace of male literacy in these seven districts namely, Kapurthala, Bathinda, Amritsar, Ludhiana, Jalandhar, Fatehgarh Sahib and SBS Nagar (where number of years to achieve gender parity in literacy are equal to or more than the state's average) to speed up the process of achieving 100 percent gender equality in literacy in the state. This can be done by introducing new and popularising the already existing incentive based educational schemes for females in these districts. These outcomes are comparable to those obtained in the section 5.1.3. where SBS Nagar belonged to Category II (worst category) of high gender difference in literacy and low decadal fall in gender gap in

literacy. Districts Jalandhar, Ludhiana, Amritsar, Kapurthala and Fatehgarh Sahib belonged to Category I and depicted low gender gap in literacy but decadal fall in gender difference in literacy was also low in these districts due to which they have been projected to take longer time to achieve gender parity in literacy. Further, district of Bathinda belonged to Category III of high gender disparity in literacy and high decadal fall in gender disparity in literacy. This district is projected to take longer time in attaining gender equality in literacy because gender disparity in literacy in this district is quite high at around 12 percent.

Another observation to be made from the table is that the inter-district disparity in number of years estimated to achieve gender parity in literacy, in terms of range, is 33 years, which is quite high. This means there is high regional disparity in context of gender parity in literacy in the state and some regions are performing way better than the others. A spatial analysis has been done to bring out patterns in gender differences in literacy rate in Punjab and also to underscore inter regional variations in the state in context of gender differentials in literacy.

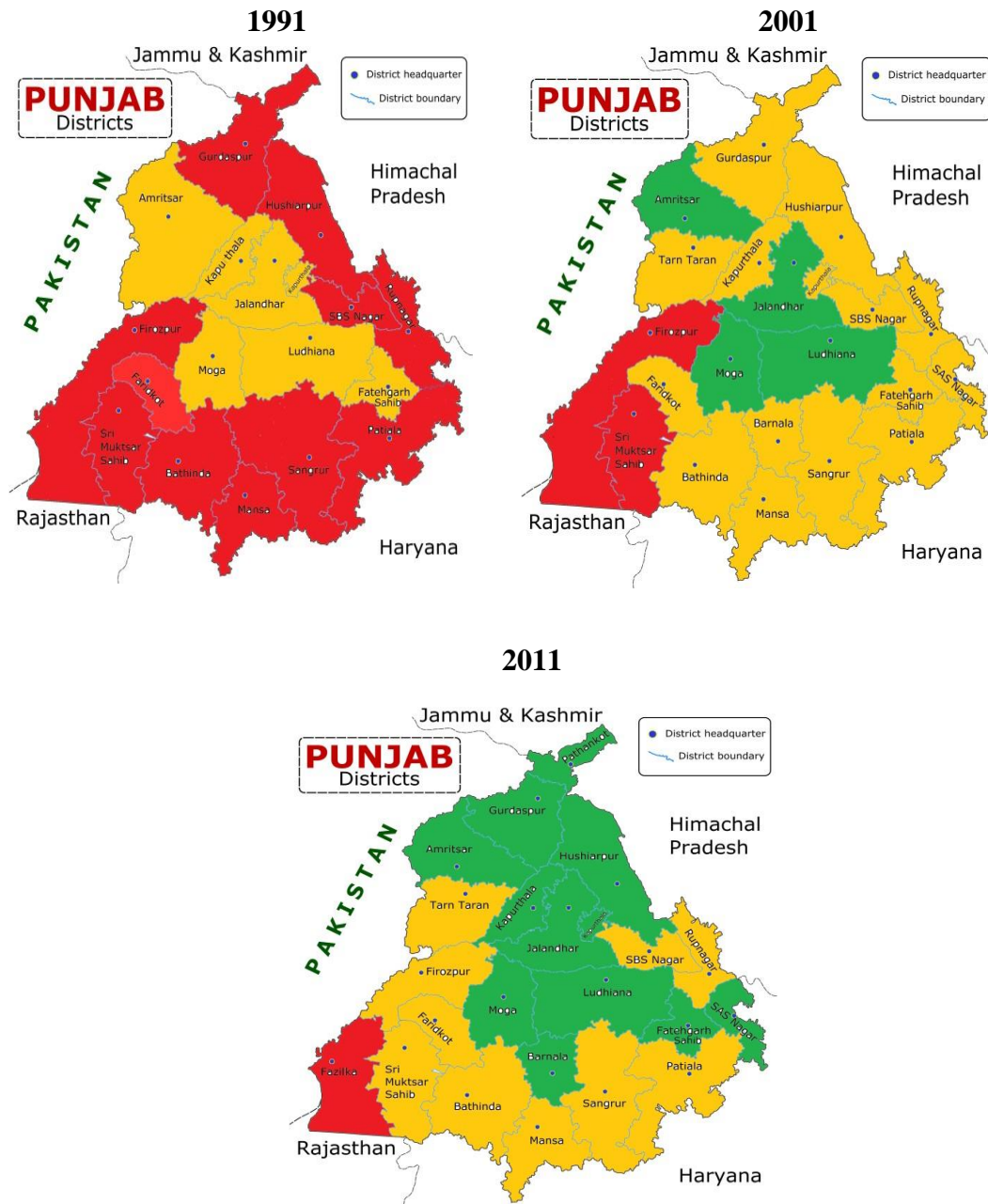
5.2.5. Patterns in Gender Differentials in Literacy Rates in Punjab

In this section, patterns in gender differentials in literacy in the state of Punjab have been highlighted. For this purpose, spatial study of gender differentials in literacy in Punjab has been done for the years 1991, 2001 and 2011 to highlight the inter-regional variations over a period of time. It will also assist in identifying leading and dawdling regions in the state in context of gender parity in literacy.

A. Gender Differentials in Geographical Regions of Punjab

Various districts in the state have been distributed in to different class groups based on gender differentials in literacy achieved. State's average in 1991 and 2011 i.e., 15 and 10 approximately have been taken as the differentiating points. Gender gap below 10 (i.e., between 5 and 9.99) is considered to be low, between 10 and 14.99 as medium whereas above 15 (i.e., between 15 and 19.99) as high. To highlight the class groups, these have been allotted diverse colours. To highlight the class groups, these have been allotted diverse colours.

Classification as per Gender Gap in Literacy (in percentage)		
5 - 9.99		“Green” = Low Gender Gap in Literacy
10 - 14.99		“Orange” = Medium Gender Gap in Literacy
15 - 19.99		“Red” = High Gender Gap in Literacy



Source: Author's Elaboration Based on Data in Table 5.1

Figure 5.6: Spatial Study of Gender Gap in Literacy in Districts of Punjab (1991-2011)

It is clear from figure 5.6 that there has been substantial reduction in gender disparity in literacy throughout the districts in Punjab during the period ranging from 1991 to 2011. Many districts in the state including Gurdaspur, Hoshiarpur, SBS Nagar, Rupnagar, Patiala, Sangrur, Mansa, Bathinda, Muktsar, Faridkot and Ferozepur were in Red zone in 1991. However, the Red zone shrunk immensely between 1991 and 2001 and covered just Muktsar and Ferozepur in 2001. The Red zone almost vanished in 2011 and covered only the district of Fazilka. On the other hand, Green zone was absent in the year 1991 but had been incessantly escalating subsequently. In 2001, it just covered the districts of Amritsar, Jalandhar, Ludhiana and Moga but increased to include Gurdaspur, Pathankot, Kapurthala, Hoshiarpur, Barnala, SAS Nagar and Fatehgarh Sahib in 2011. Orange zone consisted of almost 30 per cent of the districts in 1991 i.e., Amritsar, Jalandhar, Kapurthala, Ludhiana and Moga. It expanded hugely in 2001 to include Gurdaspur, Tarn Taran, Hoshiarpur, Kapurthala, SBS Nagar, Rupnagar, SAS Nagar, Fatehgarh Sahib, Patiala, Sangrur, Barnala, Mansa, Bathinda and Faridkot and therefore covered nearly 70 percent of the districts in the state. Orange zone shrunk in 2011 because more districts i.e., Gurdaspur, Hoshiarpur, Kapurthala, Barnala, Fatehgarh Sahib and SAS Nagar moved out of it and became a part of green zone whereas fewer districts i.e., Ferozepur and Muktsar joined the Orange zone after moving out of the Red zone. Therefore, the Orange zone still comprised of about 50 per cent districts in the state in 2011. Several districts included in red zone displayed remarkable progress during the duration of twenty years and leaped to green zone like, Gurdaspur, Hoshiarpur, S.A.S. Nagar and Barnala. Remaining districts in this zone shifted to orange zone however, Fazilka was the alone district to continue in red zone in 2011 because of highest gender gap in literacy i.e., 15.69 percent. However, it can be said that in context of gender disparity in literacy, performance of districts in the state has shown an overall improvement.

B. Gender Differentials in Literacy in Cultural Regions of Punjab

As discussed above, gender differentials in literacy are not uniform across the state, so an attempt has been made in this section to check whether gender differentials show any patterns across cultural regions of the state i.e., *Majha*, *Malwa* and *Doaba*. The table that follows depicts a relative examination of these divisions in relation to

gender disparity in literacy rates. Here, districts in the state are classified in to three groups: “between 5 and 9.99”, “between 10 and 14.99” and “between 15 and 19.99”. This examination is performed for 1991, 2001 and 2011 thereby evaluating the performance of the regions during three decades.

Table 5.8: Region-wise Classification of Districts on the Basis of Gender Gap in Literacy Rate (in percentage)

	Majha	Malwa	Doaba
1991 (Avg.= 15.25)			
5 - 9.99	-	-	-
10 - 14.99	Amritsar	Ludhiana, Moga, Fatehgarh Sahib	Jalandhar, Kapurthala
15 - 19.99	Gurdaspur	Ropar, Ferozepur, Faridkot, Muktsar, Bathinda, Mansa, Sangrur, Patiala	SBS Nagar (Nawanshahr), Hoshiarpur
2001 (Avg.= 11.8)			
5 - 9.99	Amritsar	Ludhiana, Moga	Jalandhar
10 - 14.99	Gurdaspur, Tarn Taran	SAS Nagar, Barnala, Fatehgarh Sahib, Ropar, Faridkot, Bathinda, Mansa, Sangrur, Patiala	SBS Nagar (Nawanshahr), Kapurthala, Hoshiarpur
15 - 19.99	-	Ferozepur, Muktsar	-
2011 (Avg.= 9.7)			
5 - 9.99	Gurdaspur, Amritsar, Pathankot	SAS Nagar, Moga, Ludhiana, Barnala, Fatehgarh Sahib	Kapurthala, Jalandhar, Hoshiarpur
10 - 14.99	Tarn Taran	Ropar, Ferozepur, Faridkot, Muktsar, Bathinda, Mansa, Sangrur, Patiala	SBS Nagar
15 - 19.99	-	Fazilka	-

Source: Based on table 5.2

In 1991, all the three regions of *Majha*, *Malwa* and *Doaba*, fared almost equal with nearly half of their respective districts lying in the 10-14.99 percent group and other half in 15-19.99 percent group. None of the district featured in the low range of 5-9.99 percent gap in literacy. Even after a decade only four districts, namely Amritsar, Ludhiana, Moga and Jalandhar came in to this category. *Majha* and *Doaba*, however, fared better than *Malwa* as rest of the districts belonging to these two regions belonged to 10-14.99 percent group, whereas two districts in *Malwa* region i.e. Ferozepur and Muktsar lagged behind in the 15-19.99 percent range. In 2011, again *Majha* and *Doaba* regions fared better than *Malwa* as most of the districts belonging to these regions jumped in to low gap range of 5-9.99 percent while majority of the districts in *Malwa* region still remained in 10-14.99 percent category. Moreover, gender gap was ruefully high in Fazilka which belonged to the 15-19.99 percent group. Therefore, there is great regional disparity in Punjab in context of gender difference in literacy. *Malwa* has a greater gender difference in literacy in comparison to *Majha* and *Doaba*. This calls for renewed steps to remove this gap with a special focus on *Malwa* region.

It is apparent from the above discussion that male and female literacy and gender gaps are not homogeneous across the districts in the state. Also, these variables are not consistent over the period of study. Thus, a study of measurement of regional inequality in literacy has been undertaken.

5.2.6. Measuring Regional Inequality in Education

Regional inequality in education means that education parameters are not consistent across the region. Measurement of regional inequality in literacy and gender gap in literacy has been undertaken here to gauge the status of regional disparity. Gini Coefficient is computed to gauge regional inequality in female and male literacy rates, whereas Range and Coefficient of Variation have been worked out to gauge regional variation in gender gap in literacy.

Regional Inequality in Male and Female Literacy through Gini Coefficient

In this segment Gini Coefficient is computed for overall, female and male literacy in the state for 1991, 2001 and 2011 by applying area under the Lorenz Curve method. Area under the Lorenz curve is computed by the method of integration:

$$\text{Gini Coefficient} = 1 - 2 \int_0^1 F(X) dx \quad (\text{Catalano } et al., 2009)$$

Eq. (5.5)

Gini value near to zero implies greater parity in the distribution whereas, Gini value near to one means greater disparity in the distribution. In terms of Lorenz curve, further the curve from the line of parity, greater is the disparity, and vice versa. Following table shows the value of Gini coefficient for total, male and female literacy during 1991, 2001 and 2011.

Table 5.9: Gini Coefficient for Total, Female & Male Literacy in Punjab (1991-2011)

Gini Coefficient for:	1991	2001	2011
Total Literacy	.33	.1104	.0684
Female Literacy	.273	.1374	.0904
Male Literacy	.4514	.0886	.0545

Source: Author's Calculations

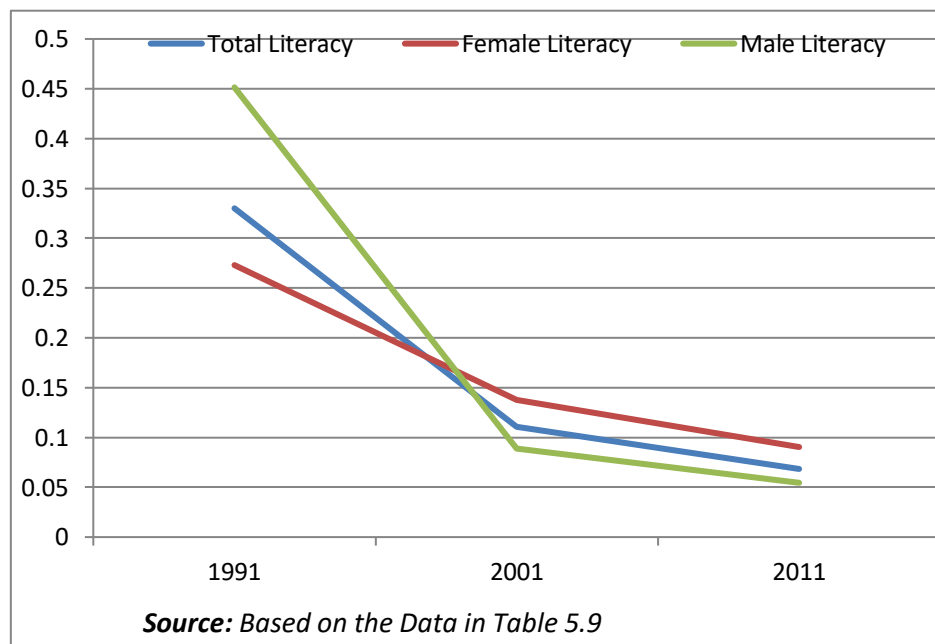


Figure 5.7: Trends in Gini Coefficient for Total, Female and Male Literacy in Punjab (1991-2011)

The table 5.9 and figure 5.7 make it clear that in 1991, disparity in male literacy rates was greater than in female literacy levels. Gini coefficient for female literacy was .273 but for male literacy was .4514. But during the decade 1991-2001, the regional inequality in literacy rates fell sharply for males, as indicated by Gini coefficient (from .4514 to .0886). It also declined in case of females but not as considerably as for males (from .273 to .1374). During 2001-2011, again, regional inequality declined both for males (from .0886 to .0545) as well as females (from .1374 to .0904). Thus, Gini coefficient had been reducing both for male and female literacy in Punjab during the years 1991 to 2011 but, it has reduced more in case for male literacy rates than for female literacy rates during the period of two decades. It can be said that regional disparities in relation to literacy still exist in Punjab, and higher in instance of females.

5.3. GENDER DIFFERENTIALS IN SCHOOL ENROLMENTS

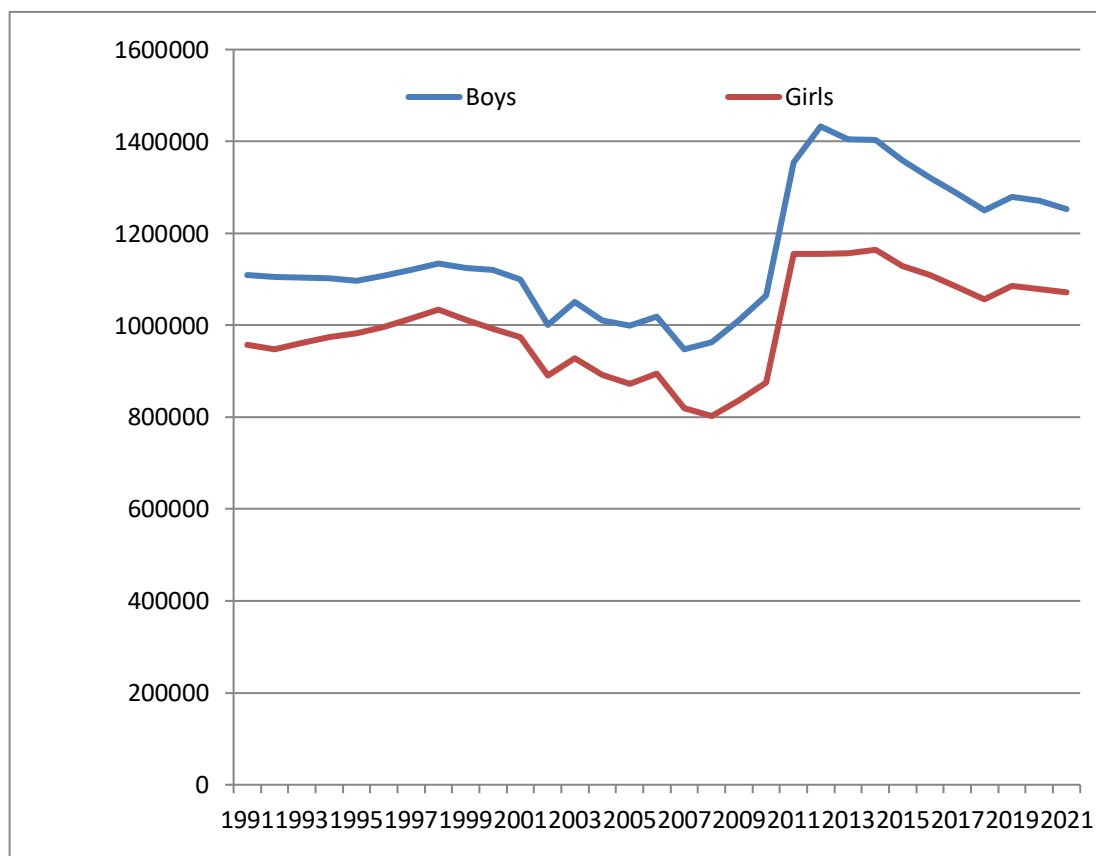
In this section, time-series data on male and female enrolments in school education in Punjab has been studied. Enrolments have been taken for a span of 31 years i.e., from the year 1991 to 2021. Further, enrolments have been taken for each level of school education i.e., primary (classes I to V), upper primary (classes VI to VIII), secondary (classes IX to X), and higher secondary (classes XI to XII). Data has been analysed using the techniques of trend analysis, annual growth in enrolments, convergence analysis, and girls' enrolment as percentage of boys' enrolment.

5.3.1. Trends in Gender Differentials in School Enrolments in Punjab

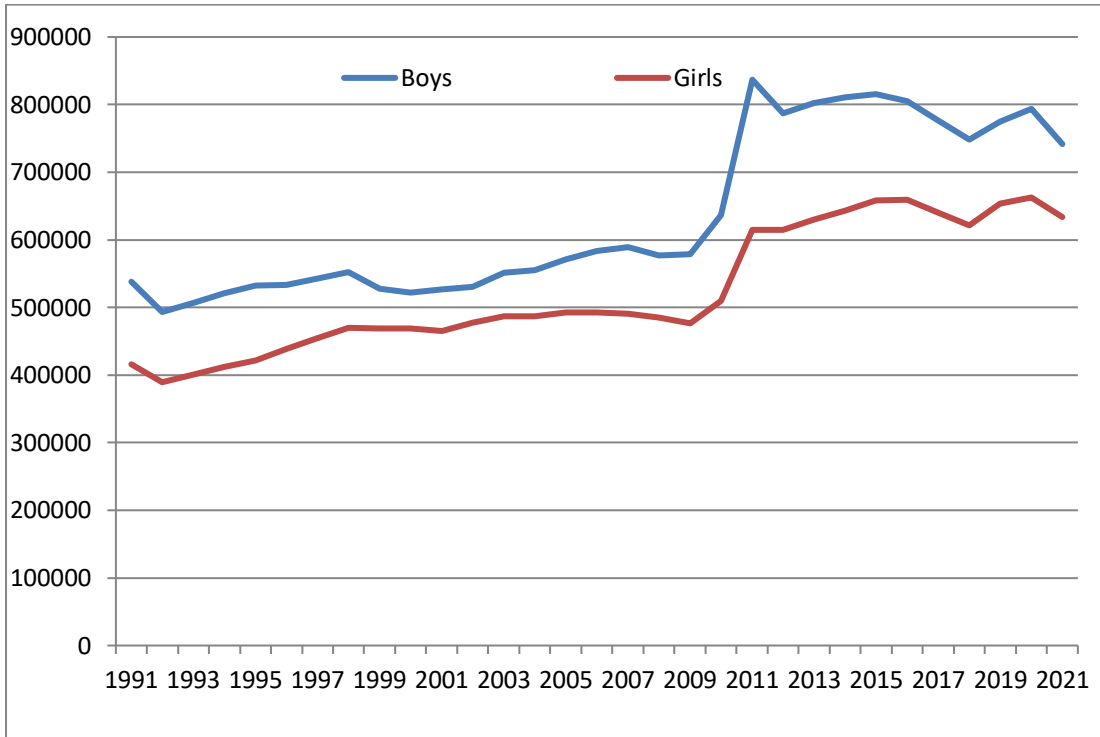
There is found to be upward trend in both, male and female, enrolments at all stages of school education in Punjab as shown in figure 5.8. It is shown that primary enrolments are higher than enrolment at other stages and also female enrolments are lesser than male enrolments at all the stages of school education. Both these facts are worrisome as these assert that not only there has been failure in bringing up the amount of school enrolments at middle and secondary levels, but also in bringing up the number of female enrolments at par with male enrolments.

Figure 5.8 clearly indicates that boys' enrolments are higher than girls' enrolments at every level of school education in Punjab however, both boys' and girls' enrolments are increasing at all the stages and are also following similar path during the entire study period. In Part (A), enrolments in primary education for boys and girls were almost stable between the period 1991 and 2000. These dwindled between 2001 and 2007 due to higher enrolments in unrecognised educational institutions (Mehta, 2005), but started picking up during 2007 and 2012 mainly because of the introduction of Mid-Day Meal Scheme (2008) and Right to Education Act (2009). But these measures could not sustain the momentum in enrolments and these again started to decline after 2012. Similar behaviour was observed in case of upper primary education in Part (B) of the figure. Enrolments had been lacklustre till the year 2000, and thereafter these started to lift-up. These showed a sudden jump between 2009 and 2012 due to same reasons as in the case of primary stage and have remained almost stable since then.

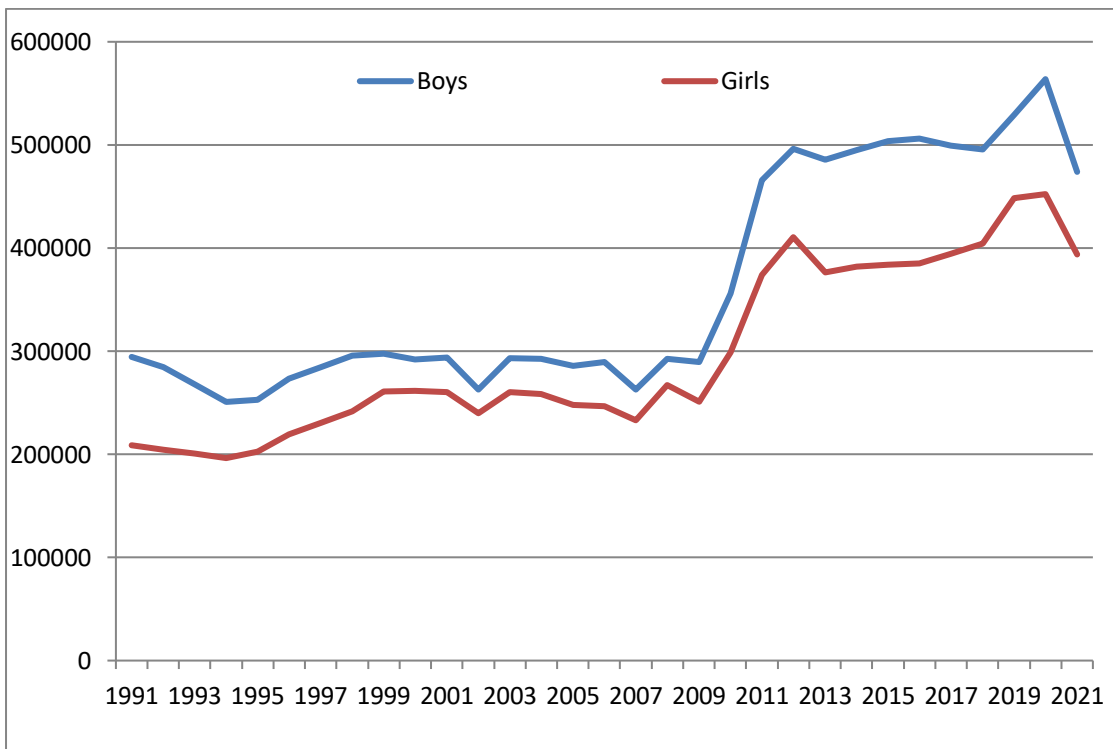
A) Primary



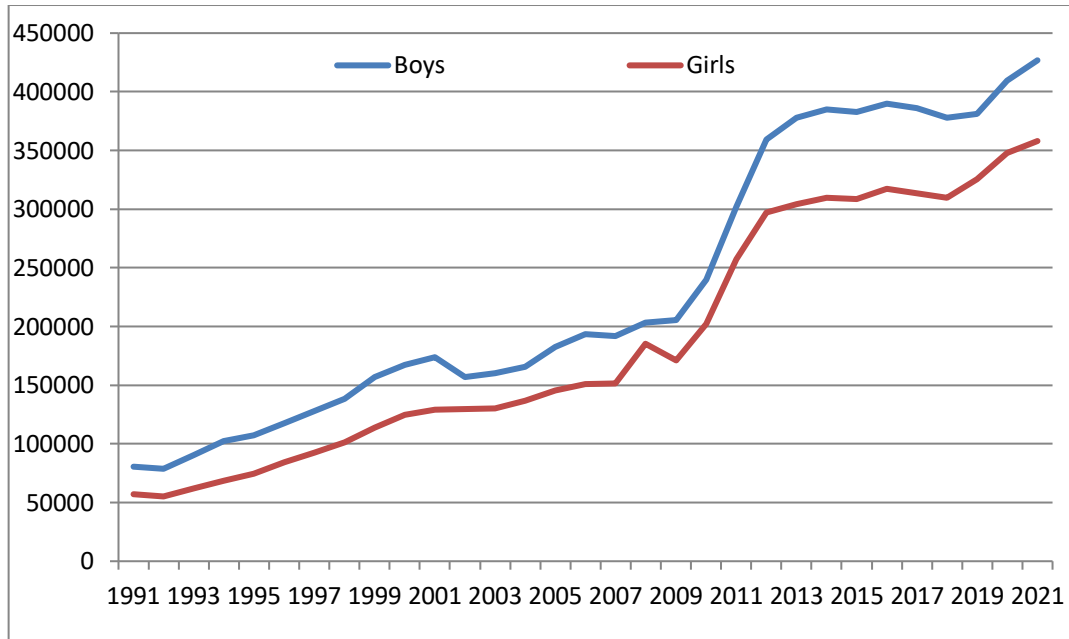
B) Upper Primary



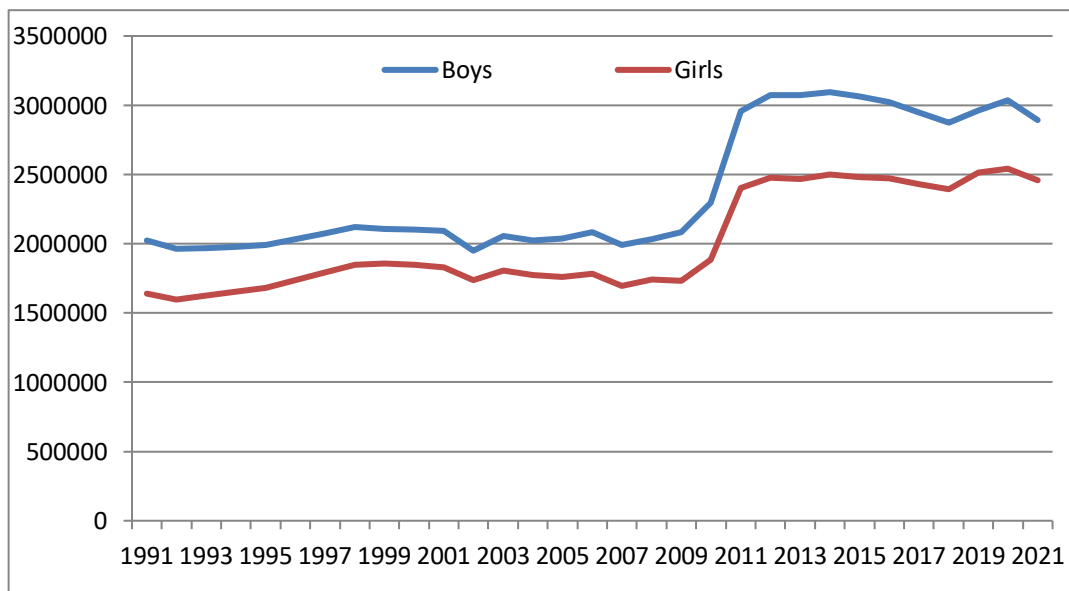
(C) Secondary



(D) Higher Secondary



(E) Total



Source: Statistical Abstract of Punjab for 1991-2013. Data for 2014-17 have been taken from State Report Cards (UDISE) and for 2018-21 from Reports of UDISE+

Figure 5.8: Male and Female Enrolments at Various Stages of School Education in Punjab

Part (C) and (D) of figure 5.8 make it evident that enrolments in secondary and higher secondary school education have been much lesser than those in primary and upper primary education throughout the period of study because initially the main emphasis of the government schemes was on primary education. However, between 2009 and 2012, both boys' and girls' enrolments in secondary and higher secondary education took a big leap mainly due to introduction of Rashtriya Madhyamik Shiksha Abhiyaan (2009); and had remained steady afterwards. Enrolments in higher secondary education, as shown in Part (D), were extremely low in 1991 but have increased incessantly throughout after that. One reason for its leap may be the inclusion of 10+2 class in to the school system from 1992 onwards, as announced in National Education Policy, 1992. In Part (E), it is evident that overall boys' and girls' enrolments in all the stages of school remained almost constant till 2008 and have bounded swiftly between 2009 and 2012 consequent upon the introduction of major acts and schemes by the government, as mentioned above. Subsequently, enrolments became stable at their new level meaning thereby that another major push is required to resume their growth.

To conclude, male and female enrolments have shown similar pattern during the period of study. On the one hand though both female as well as male school enrolments have increased at all the levels over the period of study, yet enrolments in primary education far exceed enrolments at other levels. This means that many children are still not completing their school education and significant drop-out is taking place after primary education. On the other hand, it is alarming that despite numerous steps taken by the government, gaps between male and female school enrolments have been persisting during this entire duration.

Stage-wise Distribution of Male-Female Enrolments

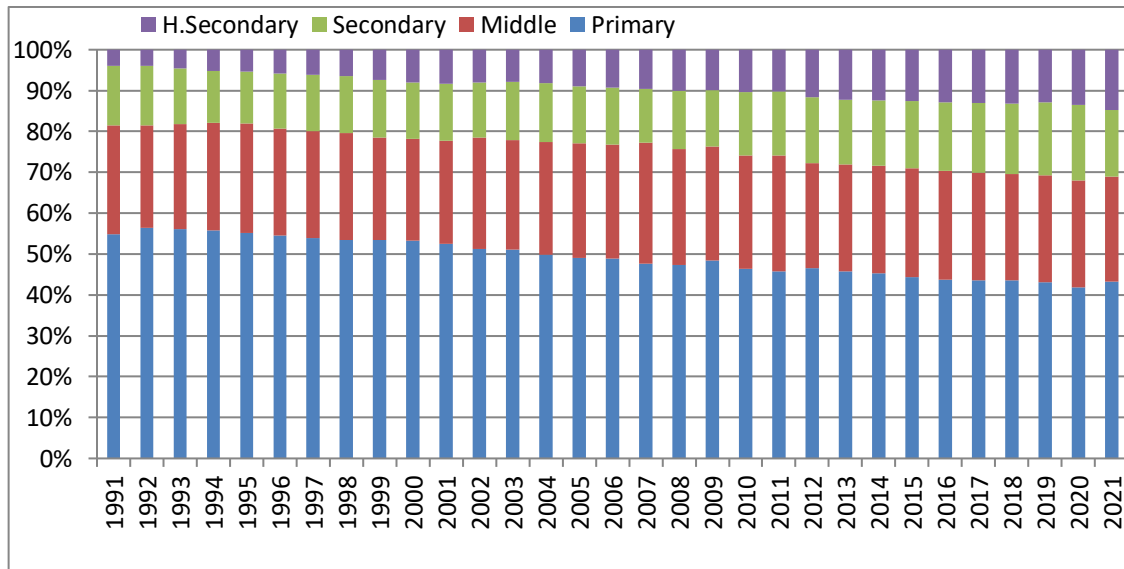
Now, percentage share of each stage as against total enrolments in the school education has been worked out to check the relative position of different stages with regard to overall enrolments. This analysis will show trends in stage-wise enrolments in relation to each other. Also, a comparison has been made of the percentage share of enrolments at each stage for both male as well as female enrolments. This will reveal in which stage of school education male as well as female enrolments are dominant as compared to other stages of school education. Stage-wise share of school enrolments have been computed to gauge as to which stage of school

education is witnessing a rise or fall in its share of enrolments in comparison to other stages.

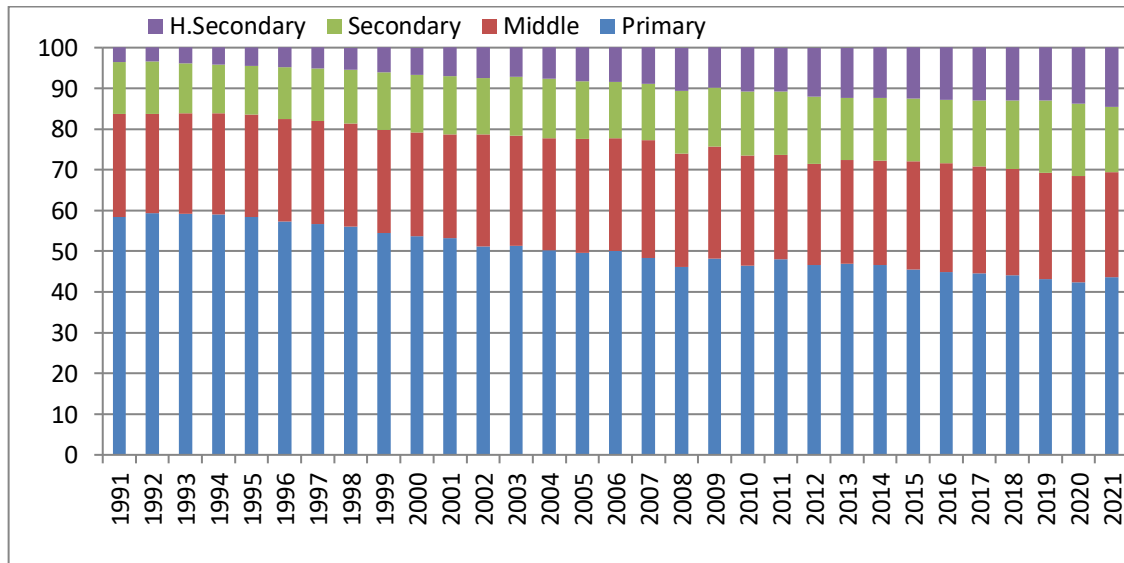
$$\text{Stage – wise Share in Enrolment} = \left(\frac{\text{Enrolment in a Stage}}{\text{Total Enrolment}} \right) * 100$$

Eq. (5.6)

(A) Male



(B) Female



Source: Author's Elaboration Based on Various Data Sources

Figure 5.9: Share of Different Stages of School Education in Total Enrolments

In Part (A) of the figure 5.9, percentage share of male enrolments in each stage of school education against total male enrolments has been given while Part (B) shows percentage share of female enrolments in each stage of school education against total female enrolments. It is clear from the above figure that percentage share of each stage in total enrolments is almost similar in case of both male and female students. Share of primary enrolments has reduced from 54.86 percent in 1991 to 43.27 percent in 2021 in case of male students whereas it has decreased from 58.42 percent to 43.61 percent during the same period for female students. That is a decline of 11.59 percent in the share of primary enrolments in case of male students and of 14.81 per cent in case of female students, implying that share of primary enrolments has fallen more in case of female students than in the case of male students. Share of upper primary enrolments has continued to be stagnant during the study period. It declined marginally from 26.59 percent in 1991 to 25.61 percent in 2021 for male students whereas it rose slightly from 25.36 percent to 26.78 per cent over the same period for female students. Share of secondary enrolments rose somewhat from 14.56 per cent to 16.37 per cent for male students and from 12.73 per cent to 16.03 per cent for female students i.e., an increase of 1.81 per cent for males and of 3.3 per cent for females. Share of higher secondary enrolments in total enrolments rose considerably from 3.99 percent to 14.75 percent for male students and from 3.49 per cent to 14.58 per cent in case of female students thereby indicating an increase of 10.76 per cent and 11.09 per cent for male and female students respectively.

It is be noted that there exists lesser disparity in percentage of male and female enrolments at every stage in 2021 than that existed in 1991. To conclude, it can be stated that percentage share of enrolments has fallen in case of primary education, has remained almost constant in case of middle, has risen marginally for secondary education, and has risen significantly in case of higher secondary education for both males as well as females. Fall in percentage share of enrolments in primary education has been due to 100 percent Gross Enrolment Ratio at this stage of school education but, there is still a long way to go before 100 percent Gross Enrolment Ratio is achieved in secondary and higher secondary education. So, it is a positive scenario where more of boys and girls are getting registered in secondary and higher secondary education.

Now, to determine the degree of gender disparity in school education, relative position of female school enrolments as against the male enrolments has been computed for different stages of school education.

5.3.2. Gender Parity in School Enrolments

Gender Parity in school enrolments has been assessed by computing female school enrolments as percentage of male school enrolments at various stages. That is,

$$\text{Gender Parity in School Enrolments} = \frac{\text{Female School Enrolments}}{\text{Male School Enrolments}} \times 100$$

Eq. (5.7)

This percentage indicates level of gender parity in school education. Higher the percentage, greater the gender parity and vice-versa.

Table 5.10: Gender Parity at Various Stages of School Education

	Primary	Upper Primary	Secondary	Higher Secondary	Total
Year	%age	%age	%age	%age	%age
1991	86.35	77.34	70.89	70.89	81.09
1992	85.72	78.95	71.88	70.09	81.39
1993	87.09	78.99	74.88	68.45	82.49
1994	88.46	79.03	78.28	67.19	83.58
1995	89.60	79.15	80.22	69.71	84.54
1996	89.88	82.19	80.20	71.64	85.50
1997	90.56	83.67	80.95	72.45	86.33
1998	91.24	85.09	81.65	73.14	87.12
1999	89.97	88.95	87.60	72.64	88.09

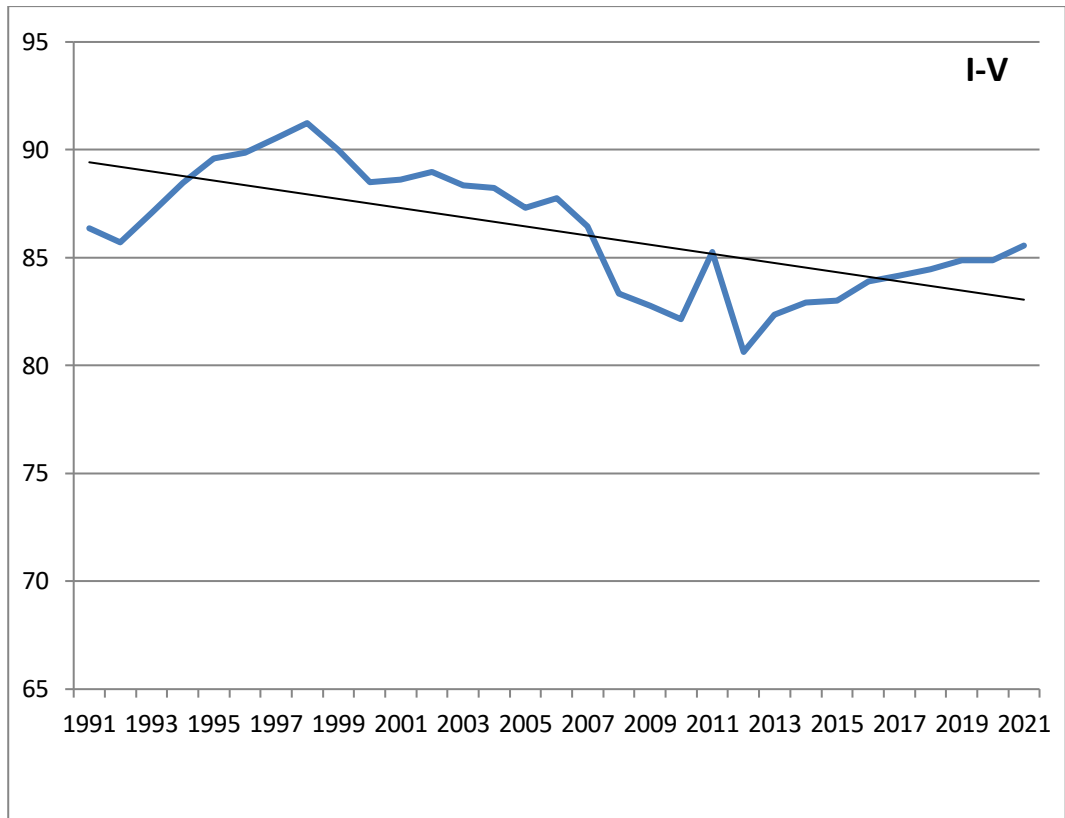
	Primary	Upper Primary	Secondary	Higher Secondary	Total
2000	88.51	89.81	89.60	74.32	87.85
2001	88.63	88.32	88.71	74.21	87.37
2002	88.99	90.00	91.33	82.88	89.09
2003	88.35	88.39	88.63	81.29	87.85
2004	88.24	87.60	88.30	82.50	87.60
2005	87.31	86.27	86.76	79.67	86.26
2006	87.75	84.39	85.21	77.89	85.54
2007	86.45	83.25	88.82	79.02	85.09
2008	83.33	84.17	91.35	91.35	85.52
2009	82.78	82.29	86.68	83.38	83.24
2010	82.15	79.99	83.92	84.16	82.04
2011	85.27	73.42	80.27	85.17	81.12
2012	80.63	78.08	82.73	82.73	80.56
2013	82.35	78.60	77.48	80.42	80.36
2014	82.93	79.37	77.19	80.39	80.76
2015	83.01	80.64	76.13	80.58	80.97
2016	83.89	81.87	76.03	81.37	81.71
2017	84.17	82.48	79.05	81.19	82.47
2018	84.46	83.07	81.53	81.98	83.27
2019	84.88	84.36	84.85	85.49	84.82
2020	84.87	83.51	80.23	85.05	83.68
2021	85.57	85.46	83.15	83.89	84.89

Source: Author's Calculations

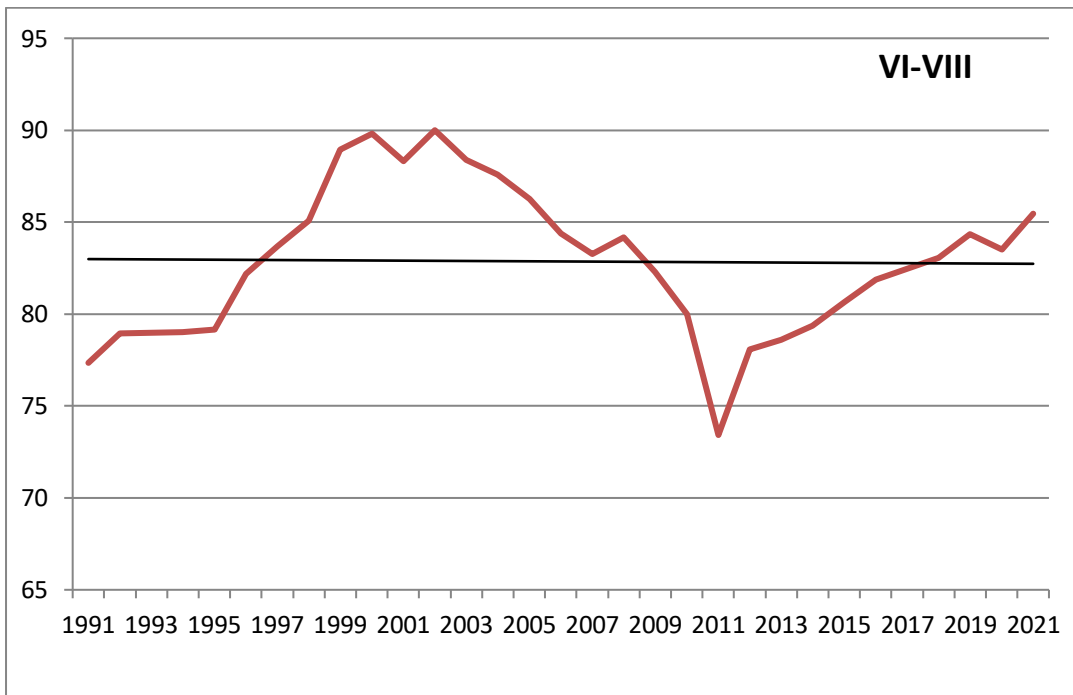
It is clear from table 5.10 that girls' enrolment as proportion of boys' enrolment in case of primary education has remained more or less stable around 86 per cent whereas it increased in case of all the other stages of school education. For upper primary education, gender parity showed a rise from 77.34 per cent in 1991 to 85.46 per cent in 2021, from 70.89 percent to 83.15 percent in case of secondary education and it jumped from 70.89 percent in 1991 to 84.89 percent in case of higher secondary enrolments. In case of overall enrolments, gender parity showed an increase from 81.09 per cent in 1991 to 84.89 per cent in 2021, which is same as that of child sex-ratio in the state i.e., 846. This means that gender disparity in school enrolments is due to lesser number of girl children for every 1000 male children in Punjab.

Figure 5.10 depicts the long-term trend in percentage of female enrolments in terms of male enrolments for different stages of school education. It is clear from figure 5.10 that long term trend in girls' enrolment as percentage of boys' enrolment is declining for primary education, it has remained stable for upper primary education, it has shown a mild rise for secondary level whereas it has been clearly increasing higher secondary education. It is a good indication that gender parity has been increasing at secondary and higher secondary levels of school education i.e., more girls as compared to boys are getting enrolled in these stages but, long term trend in gender parity in overall school enrolments has not been impressive. It appears from figure 5.10 that gender parity in school enrolments was increasing till around the year 2000 and fell sharply during the decade 2001-2011 but it picked up later on.

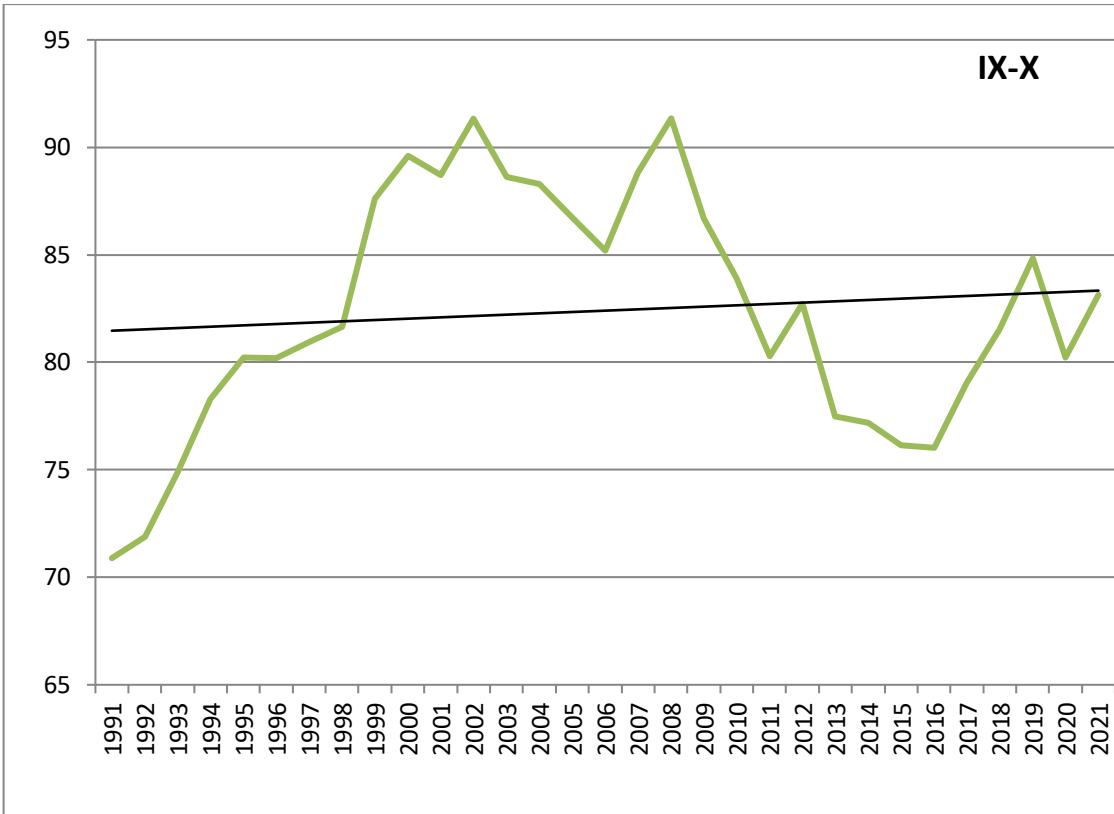
It may be noted that the child sex-ratio in the state fell during 1981-2001 (from 908 in 1981 to 798 in 2001), which led to lesser girls' school enrolments in relation to boys' school enrolments in subsequent years. The rise in gender parity in school enrolments after 2011 can be due to an improvement in child sex ratio during the decade 2011-2021 (from 798 to 846). Thus, it becomes necessary to increase the sex ratio, especially child sex ratio in the state so as to enhance gender parity in school enrolments.



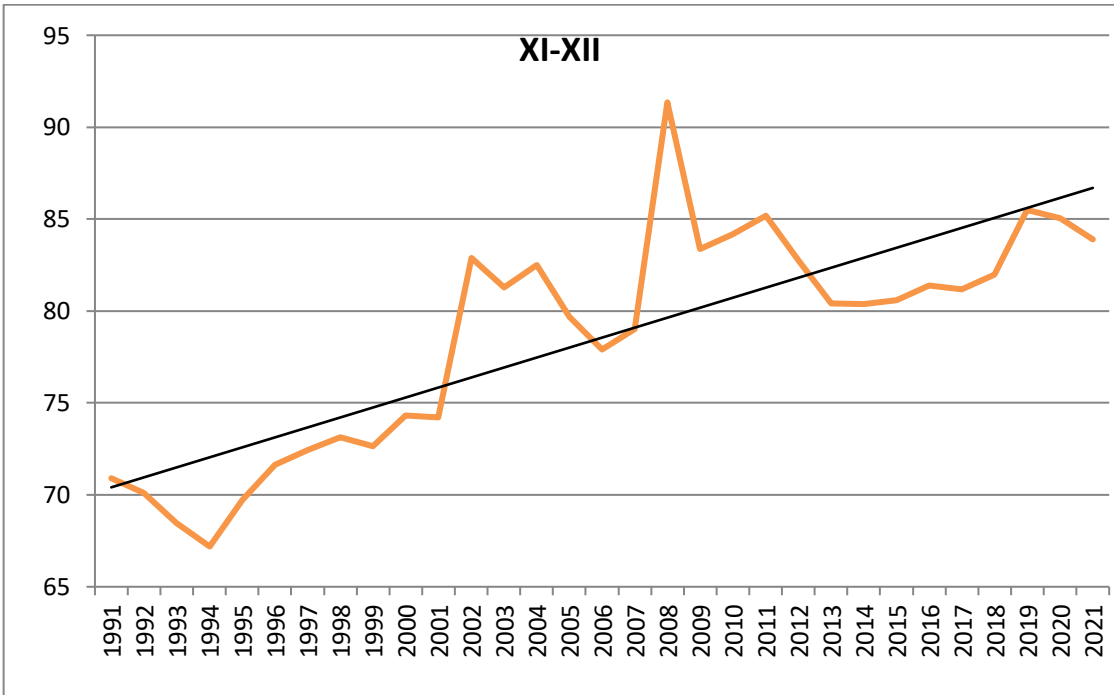
(A)



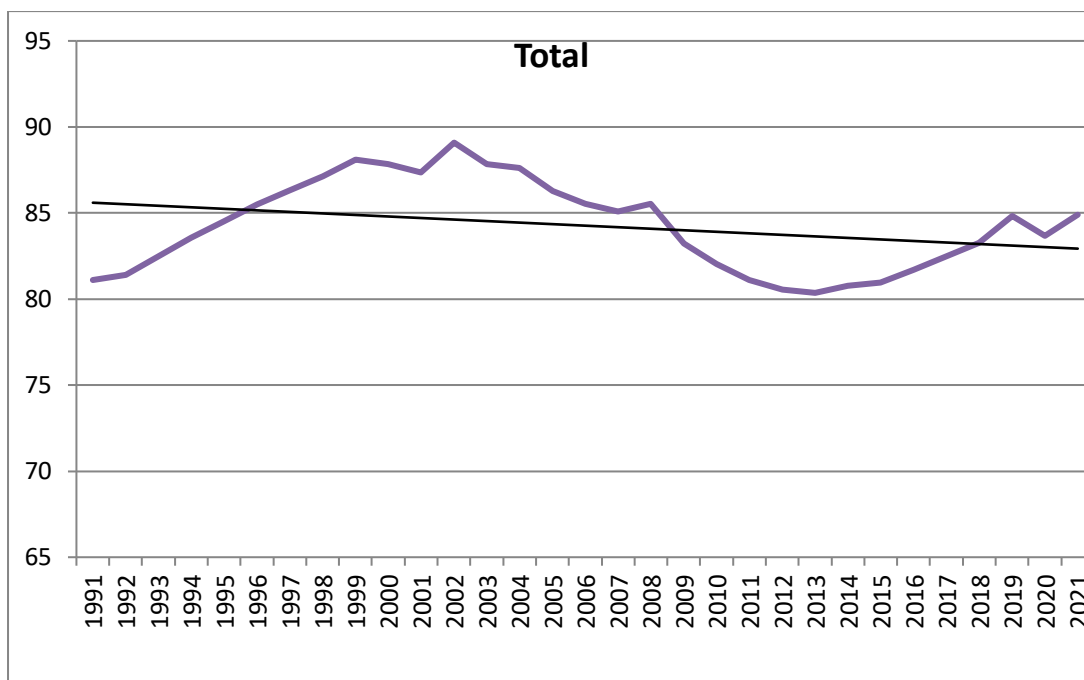
(B)



(C)



(D)



(E)

Source: Author's Elaboration Based on Table 5.10

Figure 5.10: Girls as Percentage of Boys in Stage Wise School Enrolments in Punjab

In order to estimate whether male and female enrolments will ever converge or not and to predict the number of years these will take to converge, a convergence analysis has been performed in the next section.

5.3.3. Patterns in Gender Parity in School Education in Punjab

Gender parity in school enrolments have also been studied at district and regional level to identify patterns in it.

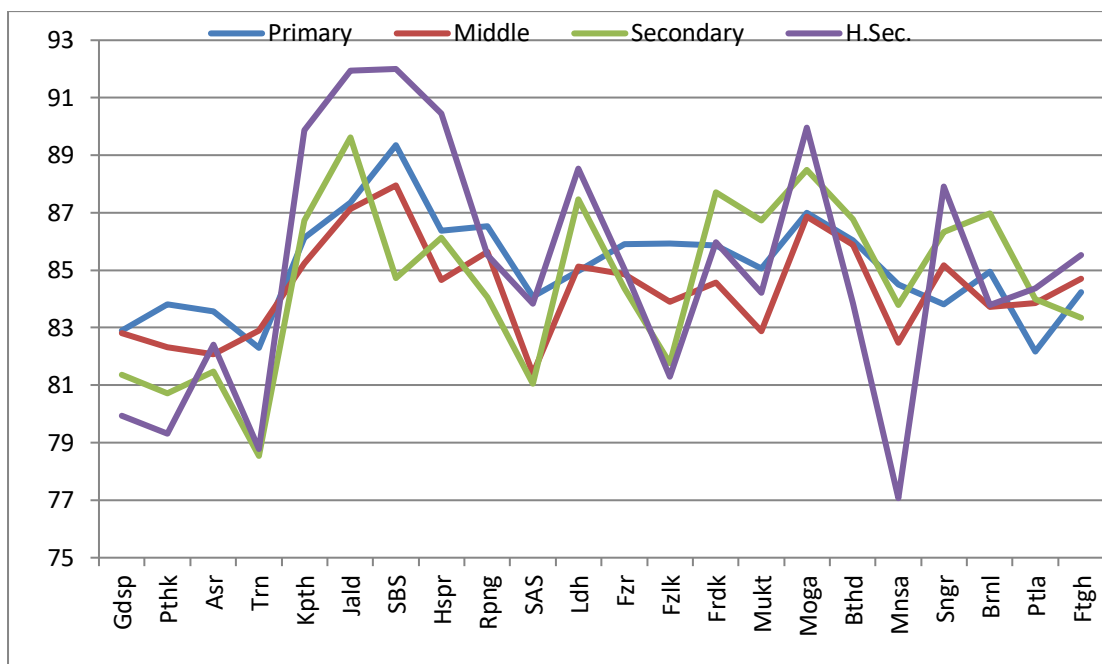
A) District-wise Gender Parity in School Enrolments in Punjab

In this section, a district-wise analysis of gender aspect in school enrolments has been done. For this purpose, district-wise percentage of female enrolments in terms of male enrolments has been computed to assess gender parity in school enrolments at the district level (Refer Eq. 5.7). Results have been presented in table 5.11 and figure 5.11.

Table 5.11: District –wise Gender Parity for School Enrolments in 2021

Districts	Primary	Middle	Secondary	H. Secondary
Gurdaspur	82.90	82.82	81.36	79.94
Pathankot	83.82	82.33	80.71	79.32
Amritsar	83.57	82.08	81.47	82.42
Tarn Taran	82.29	82.89	78.54	78.78
Kapurthala	86.12	85.23	86.72	89.88
Jalandhar	87.36	87.13	89.62	91.94
SBS Nagar	89.35	87.95	84.72	92.00
Hoshiarpur	86.38	84.67	86.12	90.45
Rupnagar	86.52	85.64	84.05	85.53
SAS Nagar	84.08	81.40	81.05	83.83
Ludhiana	84.98	85.13	87.46	88.54
Ferozepur	85.91	84.85	84.36	85.04
Fazilka	85.93	83.91	81.76	81.30
Faridkot	85.86	84.56	87.72	85.98
Muktsar	85.06	82.87	86.73	84.21
Moga	86.99	86.86	88.48	89.95
Bathinda	86.05	85.89	86.77	83.86
Mansa	84.50	82.48	83.80	77.07
Sangrur	83.81	85.17	86.33	87.92
Barnala	84.94	83.73	86.97	83.80
Patiala	82.17	83.86	83.98	84.38
Fatehgarh Sahib	84.24	84.71	83.34	85.53
Punjab	85.57	85.46	83.15	83.89

Source: Author's Calculations



Source: Based on Table 5.11

Figure 5.11: District –wise & Stage-wise Gender Parity in School Enrolments in 2021

Table 5.11 and figure 5.11 make it clear that no district has complete gender parity in school education however, there is a lot of variation across districts in terms of gender parity in school enrolments. Clearly, gender parity in school enrolments is highest in case of SBS Nagar, except for secondary level where it is highest in Jalandhar district. However, gender parity is lowest at all the stages in case of district Tarn Taran, except for higher secondary level for which it is lowest in district Mansa.

B) Region-wise Gender Parity in School Enrolments in Punjab

A region-wise analysis of gender aspect in school enrolments has also been done to make a comparison of the performance of different regions in the state in this regard. For this purpose, Gender Parity at different stages has been computed for different cultural regions in the state and results have been presented in table 5.12.

Table 5.12 makes it evident that girl enrolments as percentage of boys’ enrolments are highest in case of Doaba region and this region has gender parity higher than state’s average at each level of school education. Also, Malwa region has higher

levels of gender parity than the state's average at secondary and higher secondary levels.

Table 5.12: Region-wise Gender Parity for Different Stages of School Enrolments in 2021

Level	Majha	Doaba	Malwa	Punjab
Primary	83.18	87.09	84.86	85.57
Middle	82.46	86.18	84.51	85.46
Secondary	80.80	87.50	85.54	83.15
H.Secondary	80.69	91.14	85.48	83.89

Source: Author's Calculations

On the other hand, gender parity in school enrolments in Majha region is lower than the state's average at all the levels. Moreover, this region has the lowest levels of gender parity at all the stages of school education. Thus, it is concluded that Doaba region is the best performer while Majha the worst in case of gender parity in school enrolments. The reason for this outcome is that the child-sex ratio, which depicts the number of female per 1000 males in 0-6 years age-group, is worst in case of Majha region. District-wise child-sex ratio for Punjab is given in the table 5.13.

Table 5.13: District-wise Sex Ratio in 0-6 Age Group in Punjab in 2011

S.No.	District/Region	Child Sex Ratio	S.No.	District/Region	Child Sex Ratio
1	Gurdaspur	821	13	Fazilka	-
2	Pathankot	-	14	Faridkot	851
3	Amritsar	826	15	Muktsar	831
4	Tarn Taran	820	16	Moga	860
	Majha	822	17	Bathinda	854
5	Kapurthala	871	18	Mansa	836
6	Jalandhar	874	19	Sangrur	840

S.No.	District/Region	Child Sex Ratio	S.No.	District/Region	Child Sex Ratio
7	SBS Nagar	885	20	Barnala	843
8	Hoshiarpur	865	21	Patiala	837
	Doaba	874	22	Fatehgarh S.	842
9	Ropar	863		Malwa	847
10	SAS Nagar	841	Total	Punjab	846
11	Ludhiana	860		India	914
12	Ferozepur	847			

Source: Gender Statistics of Punjab, 2012

Table 5.13 shows that child sex-ratio in Punjab is 846, which is much lower than that in India i.e., 914. This means that there are only 846 female children for every 1000 male children in Punjab as against 914 female children for every 1000 male children in India. Child sex-ratio is lower than adult sex-ratio both at the state (895) and also at the country level (943), but it is much lower in case of the state. Also, there is a lot of variation in child sex-ratio in different districts in the state. Highest child sex-ratio is 885 in SBS Nagar and lowest is 820 in Tarn Taran. A further analysis of the data reveals that child sex-ratio for different regions (calculated as simple average of child sex-ratio in different districts in that region) is quite different. It is highest in case of Doaba region at 874, lowest in case of Majha region at 822 and 847 in case of Malwa region. Thus, Majha region has the worst child sex-ratio and this results in lowest gender parity in school enrolments in the region.

The above discussion makes it clear that there exists variation in gender parity in school enrolments in different regions of the state. Therefore, in following section, measurement of extent of regional inequality in school enrolments has been done.

5.3.4 Convergence Analysis

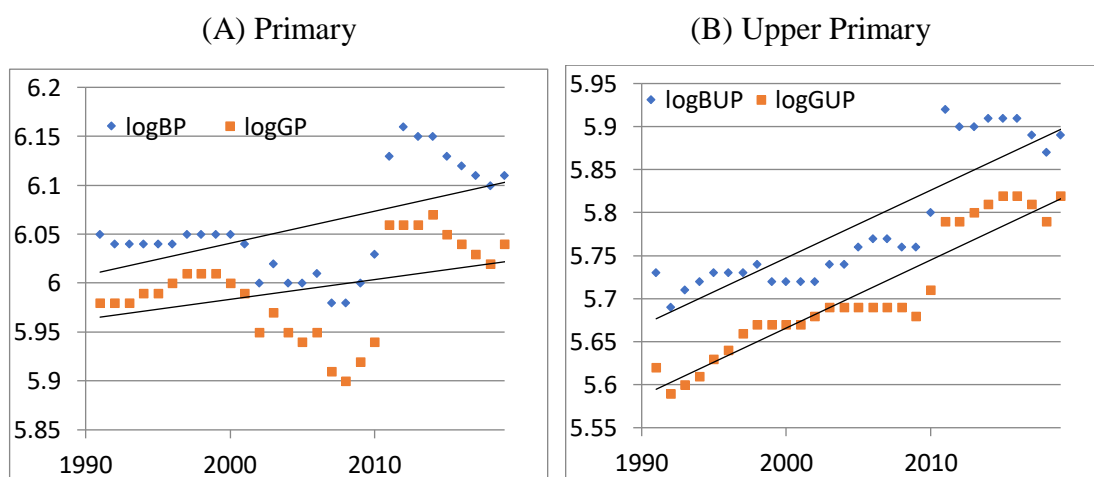
In convergence analysis, we check whether the difference between two series is reducing or increasing. If the difference is decreasing, we conclude the series are convergent whereas if the difference is rising, we conclude that the series are

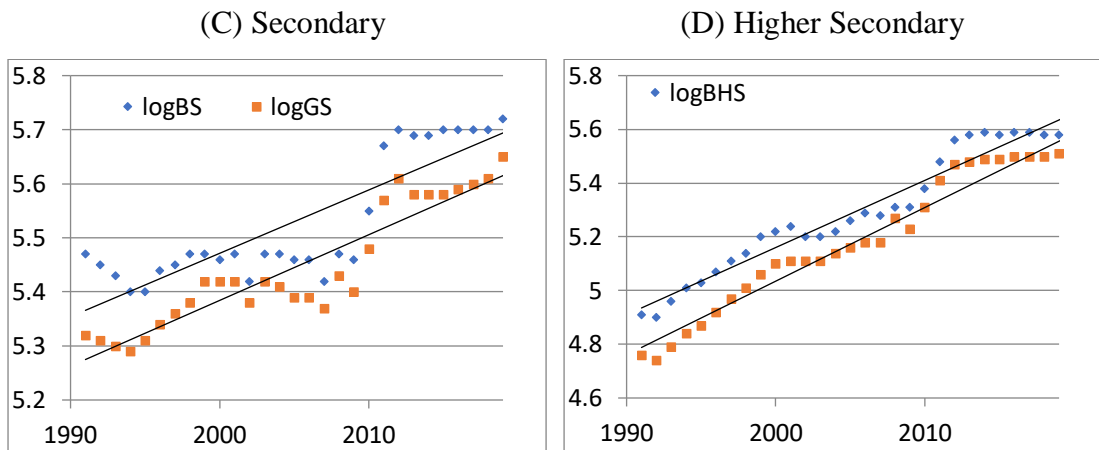
divergent in nature. Concept of convergence analysis was initially discussed in the field of economic growth, but later on it had been applied to other fields also where a comparison regarding growth of two variables was to be made. According to Sala-i-Martin (1996), two foremost notions of convergence exist in the classical literature i.e., β -convergence and σ -convergence. It said that there is absolute β -convergence if deprived economies incline to progress quicker than affluent ones. Let

$$Y_{i,t,t+T} = \log(Y_{i,t+T}/Y_{i,t}) / T$$

Eq. (5.8)

be economy i 's annualised growth rate of GDP (Y) between base year (t) and current year ($t + T$) where T indicates number of years lapsing during the period. Here, female enrolments have been lower than male enrolments initially in 1991 and to check whether male and female enrolments are converging or not, growth rates of stage-wise school enrolments have been calculated and presented in table 5.14. The table shows that in case of primary education, growth of male enrolments is higher than that of female enrolments therefore, the series are divergent. The growth rates of female enrolments are higher than male enrolments in upper primary, secondary and higher secondary education, meaning thereby that male and female enrolments in these stages are convergent. This has also been shown with the help of figure 5.12. Log of male and female enrolments in different stages of school education have been plotted on y-axis against time on x-axis.





Source: Author's Elaboration

Figure 5.12: Stage-wise Trends in Female School Enrolments in Punjab

Part (A) of figure 5.12 shows that male and female enrolments are divergent in case of primary education because growth rate of male school enrolments is higher than that of female school enrolments during the period under consideration. Part (B) and (C) of the figure depict that male and female school enrolments are converging quite slowly at upper primary and secondary levels due to the fact that the rate of growth of female enrolments is just slightly higher than rate of growth of male enrolments.

Part (D) of figure shows that convergence between male and female enrolments at higher secondary level is taking place at fast speed because growth rate of female enrolments is significantly higher than that of male enrolments. Now, to estimate the time period that female enrolment is supposed to take to converge with male enrolment, given the enrolment levels and rate of growth, following formula has been used.

$$t = \frac{\log Y_{im} - \log Y_{if}}{\log(1 + R_f) - \log(1 + R_m)}$$

Eq. (5.9)

Where t = Time Period, Y_{im} = Initial Male Enrolment (2021), Y_{if} = Initial Female Enrolment (2021), R_f = Annual Average Growth Rate in Female Enrolment (1991-2021), and R_m = Annual Average Growth Rate in Male Enrolment (1991-2021). Formula has been taken from Iancu (2007), who had given it to study the

convergence between Gross Domestic Products of Romania and EU. Notations in the formula have been adapted as per this study.

Following table presents the average annual growth rates of male and female enrolments for different stages of school education.

Table 5.14: Average Annual Growth Rate (AAGR) of Male & Female School Enrolments in Punjab during 1991-2021

Level of School Education	Primary		Upper Primary		Secondary		Higher Secondary	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
AAGR	0.43	0.40	1.26	1.75	2.03	2.96	14.3	17.5

Source: Author's Computations

Table 5.14 shows that average annual growth rate of female enrolments during 1991-2021 is higher than average annual growth rate of male enrolments during the same period at all the stages, except at primary level. Consequently, enrolments at primary stage will not converge and will rather diverge. For these to converge, rate of growth of female enrolments will have to be raised in comparison to growth rate of male enrolments.

Table 5.15: Stage-wise Years for Female Enrolment to Converge with Male Enrolment from 2021 in State of Punjab

	Primary	Middle	Secondary	Higher Secondary
Time Period (in years)	-	33.1 years	20.4 years	6.3 years

Source: Author's Calculations

In table 5.15, it is stated as to how many years it will take for female school enrolments at different stages of school education to converge with male school enrolments. In case of upper primary stage, if the growth rate of female enrolments is not enhanced, it will take another 33 years for it to converge with male enrolments. Also, female enrolments at secondary level will take nearly 20 years to converge with male enrolments if it continues to grow at the prevailing rate. On the other hand,

girls' enrolments at higher secondary stage are expected to take around 6 years to converge with male enrolments, but this early convergence is due to lower enrolments of both male as well as female students at higher secondary level as compared to those at other levels. Thus, it becomes clear that rate of growth of female enrolments is not as much as required for an earlier convergence except at higher secondary level. This low growth rate of girls' enrolment is not only due to greater number of out-of-school girls than boys, but also because of smaller size and growth of female child population as against male child population i.e., due to adverse child sex ratio in the state. Thus, it can be said that to bring about convergence in school enrolments of male and female children in lesser time period, it is necessary to not only raise the girl school enrolments at a comparatively faster rate, but also to bring about gender parity in child population also.

Convergence analysis has also been attempted at district level to gauge which districts are moving ahead than others in terms of achieving equality in male and female school enrolments, and which ones are lagging behind. Table 5.16 shows the number of years to achieve convergence in male and female enrolments for all the districts in the state. As level of female school enrolments is lower than male enrolments therefore, these will converge with male enrolments only when their growth rate is higher than that of male enrolments. So, number of years for achieving convergence in enrolment has been mentioned only in those cases where growth rate of female school enrolment is higher than that of male school enrolment. Convergence is not possible in three scenarios: first when male and female enrolments are already equal, second where growth rate of female enrolments is lesser than growth rate of male enrolments, and third when growth rate of male and female enrolments are almost equal. However, it has already been shown in previous sections that male and female enrolments are not equal and cent per cent gender equality in school enrolments has not yet been attained in any district in Punjab. Therefore, male and female school enrolments have failed to display convergence either due to second or third reason. In all such cases, number of years are indicated by a dash '-' in table 5.16.

In Gurdaspur, growth rate of female enrolments was lesser than that of male enrolments in case of primary level whereas it was almost equal to that of male enrolments in case of upper primary level and therefore, male and female enrolments did not converge at these stages of school education. However, it will take around 36 years and 21 years for these to converge at secondary and higher secondary level respectively. In Pathankot, primary and upper primary enrolments are showing convergence whereas secondary and higher secondary enrolments are not, implying that growth rate of female enrolments is not supporting convergence with male enrolments. Moreover, in case of upper primary level, convergence is expected in not less than approximately 75 years due to low growth rate of female enrolments and its extremely lower difference from growth rate of male enrolments. In Amritsar, primary and higher secondary enrolments did not converge whereas upper primary and secondary enrolments did in 49 years and 34 years respectively. Due to inegligible difference in growth rates of female and male primary enrolments in Tarn Taran district, these will take next 75 years to equalise whereas around 16 years at upper primary and secondary levels and 10 years at higher secondary level. It is evident that all the districts in Majha region show different kind of behaviour in terms of convergence of male and female school enrolments, therefore, specific policy for each district is required for improving female enrolments at those stages where these are lagging in that particular district.

Table 5.16: Stage-wise Years for Female Enrolment to Converge with Male Enrolment from 2021 in Districts in Punjab

Region	Districts	Primary	Upper Primary	Secondary	Higher Secondary
Majha	Gurdaspur	-	-	36.13	20.99
	Pathankot	32.15	74.87	-	-
	Amritsar	-	48.58	33.95	-
	Tarn Taran	74.61	15.88	16.3	9.52

Region	Districts	Primary	Upper Primary	Secondary	Higher Secondary
Doaba	Kapurthala	-	-	33.12	5.86
	Jalandhar	-	58.13	11.1	3.33
	SBS Nagar	-	-	-	-
	Hoshiarpur	-	-	63.62	9.04
Malwa	Ropar	-	42.19	20.86	6.56
	SAS Nagar	17.87	20.35	31.82	-
	Ludhiana	-	-	26.96	10.98
	Ferozepur	78.01	30.91	10.15	3.26
	Fazilka	31.87	20.29	15.27	7.57
	Faridkot	-	-	-	-
	Muktsar	-	-	19.17	14.81
	Moga	-	-	-	12.16
	Bathinda	-	16.53	7.96	3.04
	Mansa	51.65	11.39	3.80	-
	Sangrur	-	22.97	8.38	2.23
	Barnala	28.93	21.23	20.24	-
	Patiala	-	36.87	14.05	4.90
	Fatehgarh S.	-	-	19.01	3.95

Source: Author's Calculations

In Doaba region, all the districts showed almost similar behaviour with regard to convergence of school enrolments. In Kapurthala, growth rate of female enrolments was lower than that of male enrolments at primary stage while both stood equal at upper primary stage and therefore, convergence was not possible but it will take another 33 years and 6 years to achieve the goal at secondary and higher secondary levels correspondingly. Similar is the case of Hoshiarpur where elementary enrolments did not show convergence whereas approximately 64 years and 9 years

were required for it at next two stages separately. In Jalandhar, primary enrolments are projected to converge in next 58 years whereas these will take just 11 years and 3 years respectively at secondary and higher secondary level. SBS Nagar, on the other hand, failed to show convergence at any level of school education as growth rate of female enrolments was lower than that of male enrolments at all the stages except at higher secondary level, where it was equal. Thus, single policy with an objective to improve growth rate of female enrolments particularly at elementary level can be framed for the entire region. However, a specific scheme to boost growth rate of female secondary and higher secondary enrolments is required for SBS Nagar.

Districts in Malwa region also depicted a lot of variation in results of convergence analysis. Districts of Ferozepur and Fazilka showed convergence at all the stages of school education but it will take as many as 78 years for male and female enrolments to match at primary level in Ferozepur. SAS Nagar, Mansa and Barnala showed convergence at all stages except at higher secondary level whereas Ropar, Bathinda, Sangrur and Patiala are likely to achieve it at all levels except at primary level. Districts of Ludhiana, Muktsar, Moga and Fatehgarh Sahib failed to show any convergence at elementary level whereas a probable convergence at secondary and higher secondary levels has been predicted. District Faridkot is not likely to achieve convergence at any stage of school education because growth rate of female enrolments equals growth rate of male enrolments at primary, upper primary and secondary stage while it is lesser than that of male enrolments at higher secondary level. Thus, schemes boosting growth rate of female enrolments precisely at elementary level should be initiated in Ropar, Bathinda, Sangrur, Patiala, Ludhiana, Muktsar, Moga and Fatehgarh Sahib whereas steps should be taken to increase growth rate of female enrolments at secondary and higher secondary level in SAS Nagar, Mansa and Barnala. However, a comprehensive measure to enhance growth rate of female enrolments at each level of school education needs to be started in Faridkot district.

Thus, there is a lot of variation across districts in results of convergence analysis but some observations can still be made. Convergence is predicted for majority of the cases and is not projected to happen in situations where growth rate of female

enrolments has failed to surpass growth rate of male enrolments. Lacklustre growth rates of enrolments particularly at elementary level may be due to the reason that strong government initiatives at this level (such as mid-day meal, Right to Education, etc.) have led to Gross Enrolment Ratios (GERs) already touching 100 per cent mark. Now, the existence of gender disparity in school enrolments even after achieving 100 per cent GER is due to lesser number of girls per 1000 boys i.e., adverse sex ratio in the state.

Further, the difference in growth rate of female school enrolments and growth rate of male school enrolments was higher in districts belonging to Malwa region in comparison to districts in Majha and Doaba regions. Therefore, convergence of male and female school enrolments is likely to happen earlier in Malwa region of the state than in other two regions. This is because of the fact that level of education in terms of literacy and school enrolments has remained quite low in this region and therefore, there is larger scope to increase. Thus, impact of state schemes in this aspect is highest in this region and as a result growth in school enrolments is faster. Also, as people's mindset towards female education is improving, they are sending more and more girls to schools and thus, female enrolments are rising even faster.

5.4. CONCLUSION

The analysis reveals that gender parity in literacy has increased in Punjab during the period 1991 to 2011. Therefore, second hypothesis, that over a period of time gender gap in school education has not undergone any significant change, stands rejected. However, the rate of increase has slowed due to existence of literacy gender gap among older adults, who are outside the ambit of formal schooling and so, adult education programmes with a special focus on women need to be initiated in the state to bridge the gender disparity in literacy otherwise, at current rate of fall in gender gap, the state will take another 30 years to attain gender equality in literacy. There occurs regional disparity in Punjab in context of literacy gender gap but regional inequality has fallen during 1991-2011. Further, *Malwa* area has great gender disparity in literacy in comparison to *Majha* and *Doaba* areas. Further, 100 percent gender parity in school enrolments doesn't exist at any stage of school education in

Punjab however, it has been increasing at all the stages during 1991-2021 except at primary level. Further, it has been observed that the regional disparity in the state with regard to gender parity in school enrolments is quite high. Doaba has the highest gender parity in school enrolments whereas Majha has the lowest, which is due to lowest child sex-ratio in this region. Lastly, convergence analysis revealed that if rate of growth of female school enrolments is not increased then these will fail to converge with male school enrolments at primary level, and will take 33 years, 20 years and 6 years respectively from the year 2021 to converge at upper primary, secondary and higher secondary level. Results of the convergence analysis performed for various districts in the state also show that convergence is predicted for majority of the cases. In most of the districts, convergence is not predicted for primary enrolments, which may be due to Gross Enrolment Ratio touching 100 per cent mark and adverse sex ratio in the state. Moreover, convergence of male and female school enrolments is likely to happen earlier in districts belonging to Malwa region of the state because in these districts growth rate of female school enrolments is higher than growth rate of male school enrolments by a greater margin than that in other districts.

Chapter - 6

AVAILABILITY OF SCHOOL INFRASTRUCTURE AND FEMALE SCHOOL EDUCATION IN PUNJAB

6.1. INTRODUCTION

Infrastructure is commonly described as physical setting of facilities with the aid of which goods and services are made available for people. Its connections with the economy are multiple and complex: it affects the economic activities of production and consumption, generates several positive and negative spillover impacts and requires heavy influx of spending. Infrastructure is a precondition for economic growth because it represents the ‘wheel’, if not the ‘engine’, of economic activity (World Development Report, 1994). For a rapidly developing economy, infrastructure availability of sufficient quality, quantity and reliability is the key determinant. Infrastructure development promotes growth of economy by raising efficiency and providing facilities, which augment the quality of life (Gaal & Afrah, 2017). Provision of quality and efficient infrastructure services also acts as a facilitator in the social, economic and human resource development of a nation. Sound infrastructure has a very significant part in the growth of education. In a nation such as India, where huge public is deprived of even basic necessities and they are unable to properly fulfil the educational needs of their children, government interference in the development of educational infrastructure becomes imperative. Government has immense role in the development and provision of required educational facilities s. a. schools and colleges, buildings, teachers, materials, *etc.* to make education available for all.

Educational facilities and infrastructure not only facilitate the teaching and learning process in school but also determine the effectiveness and quality of teaching and learning (Santika *et al.*, 2021). Infrastructure facilities in schools have considerable impact on school environment and these are significant pointers for judging whether the schools are giving a favourable education atmosphere to students (Bandyopadhyay, 2016). School infrastructure facilities include school building,

classrooms, playground, laboratories, furniture, learning materials, nutritious and hygienic mid-day meal, clean drinking water, clean toilets, *etc.* During the last three decades, many government schemes and programmes like, Operation Blackboard, Sarva Shiksha Abhiyan, District Primary Education Program and so forth have laid stress on providing school infrastructural amenities to the children. These infrastructural facilities act as a foundation and are indispensable for the growth of education. Existence of a safe and sound building and premises are the first and foremost requirement for any school and have a strong impact on the minds of students and parents. Properly ventilated classrooms, adequate number of teachers, benches, availability of blackboards and other learning materials also help in uninterrupted flow of education. Supporting facilities like playgrounds, laboratories and libraries facilitate overall development of body and mind of the child. Besides these, availability of clean drinking water, hygienic toilets and safe and healthy mid – day meal are extremely essential for the retaining the students in the school and reducing the rate of absenteeism and drop-outs.

6.2. SCHOOL INFRASTRUCTURE AND FEMALE SCHOOL EDUCATION

Indian parents, especially those with limited means are more averse to education of their female children as compared to their male children as male children are considered to be prospective bread earners while female children are not as they have to move to their in-laws' house after marriage. Therefore, their education seldom brings any monetary reward for their parents and they are not motivated to make expenditure or efforts towards education of their girl children. Thus, gender differences play a major role in education enrolment in India and girls have lesser chance of attaining education (Mohamed and Singh, 2014). It is very essential that government accelerates its hard work in this direction so that more and more girl children are attracted towards schools and remain there till completion. Role of infrastructure here is not only to provide facility or comfort but also to improve access, use, safety and hygiene and that too at minimum or no cost so that there is no monetary burden on the financially weak parents of girl child and she is not denied her educational opportunities.

Ample studies relate availability of school and distance to school to increased enrolments and literacy levels (Giri & Shrestha, 2017; Muralidharan & Prakash, 2017; Mohanty *et al.*, 2016; Burde & Linden, 2013; and Rahji). Girls are particularly more likely not to attend or to discontinue school if the facilities are inappropriate (Teixeira *et al.*, 2017). One of the most important aspects relating to school education infrastructure is the ease of access, meaning the convenience with which girl child can approach the school. Shorter distance to school means travel time to school is reduced and safety of the girl child is enhanced. Shorter distance also diminishes transportation cost, which sometimes is also a hurdle in the path of schooling of female children. This means that greater number of schools is preferred to smaller number of schools in an area as it will become easier for girl students to attend the school and therefore, female school enrolments will increase. Thus, addition in number of schools will positively influence level of schooling and literacy among the girl children (Giri and Shrestha, 2017). Besides, to address the safety issues, some parents prefer only for girls' schools for their female children to save them from the possible bullying from the male students. In this context, low pupil to teacher ratio and high presence of female teachers in the school too work very well as better supervision and communication among the teacher and the learner leads to healthier and safer learning environment in the class. Numerous researchers in their studies have affirmed that increasing the number of female teachers in the schools improves the accessibility of primary and secondary education for girls (Dhal, 2021; Rajni, 2018; Coleman 2017; and UNESCO Report, 2006). In addition, adequate privacy and hygienic surroundings help in retaining girl students and ensuring their regular attendance. Specifically, absence of sanitation facility for girls may act as a hindrance in way of girls' attendance or learning in schools (Bhunia *et al.*, 2012). Therefore, clean drinking water and sanitation must be available in all schools. Apart from the above-mentioned issues, some parents do not want their girls to attend the school as they are needed at home or fields to do work. In this case, mid-day meal can prove to be helpful for such girls as parents may send them to schools in order to save cost of one meal per day. Schools with "girl friendly" features (such as meals, take away ration, toilets, separate toilets, and day care), better school resources and teachers are reported to have positive impact on girl school enrolment (Kazianga *et al.*, 2013).

In India, though infrastructure facilities have improved greatly, yet many schools in the country are lacking in basic school infrastructure facilities (Kalota, 2017; Samanta, 2017; and Bhunia *et al.*, 2012). There is wide difference in school infrastructure in rural-urban areas (Sharmila & Dhas, 2010) and in government-private schools (Kant, 2014). Similarly, educational infrastructure in the state of Punjab has also developed immensely but certain lacunas still exist like, distance to school increases at higher levels of school education (NSSO, 2014); lack of teachers and proper infrastructure facilities in rural areas (Kainth, 2016); inadequate sports facilities (Kumar *et al.*, 2014); significant percentage of schools requiring repair of building, drinking water and sanitation facilities (GOI, 2017), *etc.* Deficiency in school infrastructure proves to be an obstacle in the learning process of a child and therefore, needs to be addressed.

Net Enrolment Ratio (NER) for girl students in Punjab was 96.2 per cent at the elementary stage of school education, whereas it was 54.6 percent at the secondary level and just 47.5 percent at the higher secondary level (UDISE+ Report, 2021-22), which implies that still many girls are out of school at all the stages but especially at secondary and higher secondary level of school education and there is a need to undertake measures to bring them into the ambit of school education. In this section an analysis has been made to gauge the impact of infrastructural facilities on the school enrolment of the girl child. Analysis has been done with the help of multiple regression analysis, separately for elementary and secondary level of school education. Female school enrolment has been taken as predicted variable and various predictor variables relating to school infrastructure that have been extracted from the existing literature and taken up for the study have been given in Table 6.1. All the variables, except school enrolments and number of schools are either in percentage or ratio form therefore, log of these variables have been taken to make data more symmetric as well as to meet the assumptions of normality and constant variance.

Table 6.1: Variables Used in Regression Analysis

Aspect	Variable
Female School Education	Log of Female School Enrolments
Access to School	Log of Number of Schools
Schools for Girls	Percentage of Girls' Schools
Presence of Female Teachers	Percentage of Female Teachers in Total Teachers
Personal Attention to the Student	Pupil Teacher Ratio
Drinking Water Facility	Percentage of Schools with Drinking Water Facility
Separate Sanitation for Girls	Percentage of Schools with Separate Girls' Toilet
Mid-Day Meal	Percentage of Schools with Kitchen Shed

Source: Author's Elaboration from Literature Review

Data on these variables has been taken from Statistical Abstracts of Punjab for various years and State Report Cards (UDISE Reports for Elementary and Secondary Education) for various years. Data is for the period 2002 to 2017 as UDISE data in this form are available for this duration only. After that, UDISE was upgraded to UDISE+, which released similar data 2018 and onwards, but due to concerns with uniformity of data for some variables, data for 2018 onwards has not been incorporated into the present study.

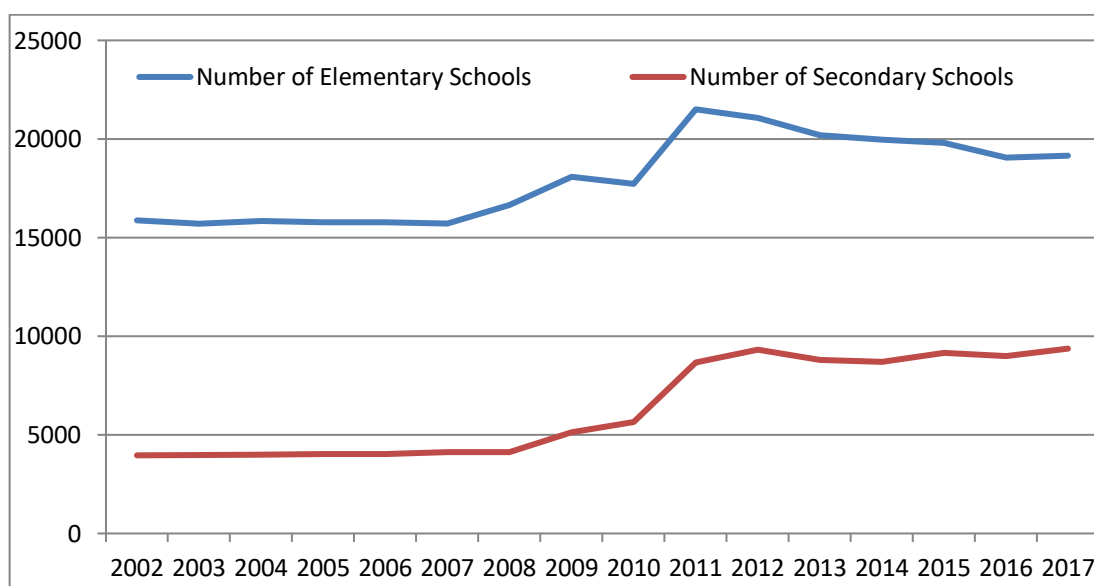
6.3. TRENDS IN SCHOOL INFRASTRUCTURE FACILITIES IN PUNJAB

First of all, it is important to know the extent of availability of school infrastructure facilities and therefore, trends in variables related to school infrastructure taken up for the study have been shown for the state of Punjab during 2002-2017.

6.3.1. Access to School

To spread education, the first step is to provide schools to the children within comfortable distance from their homes. This becomes all the more important for girl

children as they have an increased threat to their safety while pursuing their journey to and from school. Therefore, more distance to school works as a hindrance in the attainment of education for many girl children. Access to school, that is, the ease with which a child can approach the school, depends on distance to school which in turn is dependent on the existing number of schools. Thus, greater number of schools in an area implies smaller distance to school and therefore, higher approachability or ease of access. Therefore, more number of schools is preferred to lesser number of schools. Figure 6.1 presents the number of elementary and secondary schools in the state between 2002 and 2017.



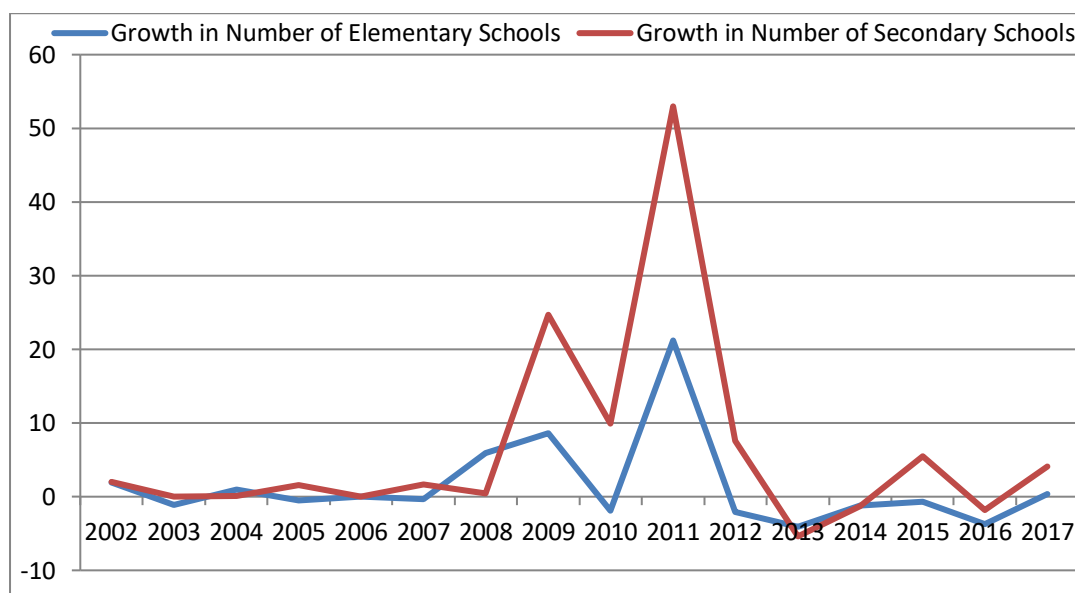
Source: Statistical Abstract of Punjab (various years)

Figure 6.1: Number of Schools in Punjab between 2002 and 2017

Figure 6.1 shows that number of elementary schools was way more than that of secondary schools during the study period. Number of elementary schools remained close to 16,000 between 2002 and 2007, and there was no perceptible change during this period. The number then increased from 15,715 in 2007 to over 20,000 in 2011, but it continuously declined after that and was 19,141 in 2017. This decline in the number of elementary schools between 2012 to 2015 had been due to closure of 1170 private schools (Rajni, 2018). Number of secondary schools also remained steady till 2008 and then increased between 2008 and 2017. Number of secondary schools was

3,978 in 2002, which increased to 4,128 in 2008 and reached 9,372 in 2017. This acceleration in the number of secondary schools after 2008 was due to the introduction of *Rastriya Madhyamik Shiksha Abhiyan* (RMSA) in 2009, which aimed at increasing the enrolments in secondary education by increasing the number of secondary schools and thereby improving the access to secondary education. The rise in the number of schools will lead to advancement of school education as it leads to greater penetration of schools than before and therefore, decrease in distance to school and travel time. Growth in the number of elementary and secondary schools has been shown in the following chart.

(in percentage)



Source: Author's Calculations

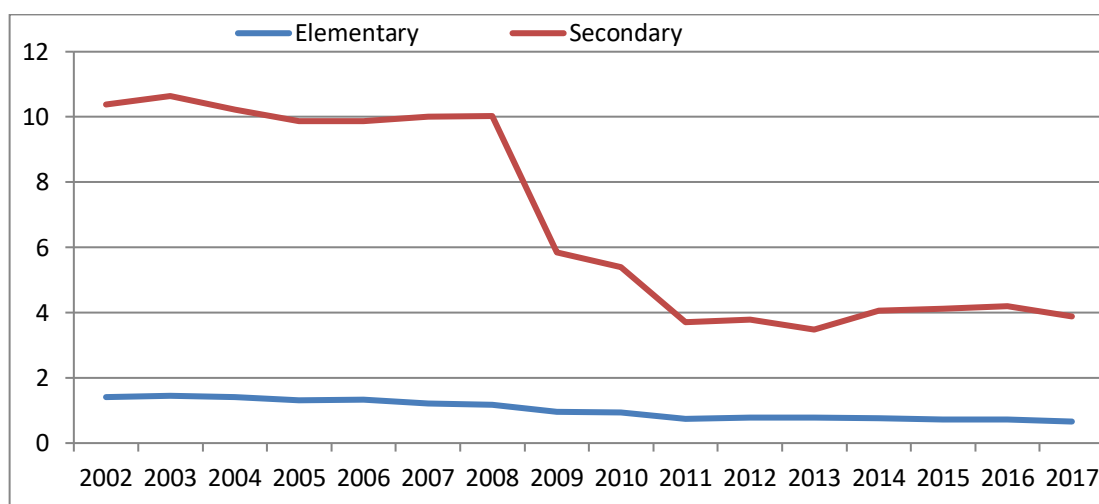
Figure 6.2: Growth in Number of Schools in Punjab (2002-17)

Figure 6.2 shows that growth in number of schools both for elementary as well as secondary education remained subdued during 2002 to 2007 and picked up momentum after that. This may be attributed to the introduction of Right to Education Act in 2009 due to which elementary education was made compulsory for all kids in 6-14 years age-group, thereby giving a huge push to school education in the country and led to increase in number schools in the state. Increase in number of elementary schools got marred after 2011 because of closure of around 1200 private

schools whereas growth in number of secondary schools continued during that period also. Number of secondary schools showed an increase of a meagre four percent between 2002 and 2008, but exhibited an increase of more than 100 percent between 2008 and 2017. Overall growth in number of secondary schools during entire study period i.e., 2002-2017 was 135 percent whereas number of elementary schools registered an overall growth of around 20 percent during the same period. Thus, there has been substantial improvement in the number of both elementary as well as secondary schools in the state of Punjab.

6.3.2. Girls' Schools

Crimes against women are committed worldwide, but their occurrence is frequent in India and also in Punjab. Therefore, parents feel fearful in sending their daughters to school, especially co-educational institutions for the fear of bullying, molestation, abduction, *etc.* by the fellow boys. Therefore, it becomes imperative to provide girls and their parents with the choice of “girls’ only” schools so that they feel safe and hence are encouraged to send their daughters to schools. Following chart presents the percentage of girls’ only elementary and secondary schools out of total elementary and secondary schools in the state between 2002 and 2017.



Source: Author's Calculations based on Statistical Abstract of Punjab (various years)

Figure 6.3: Percentage of Girls' Schools in Punjab between 2002 and 2017

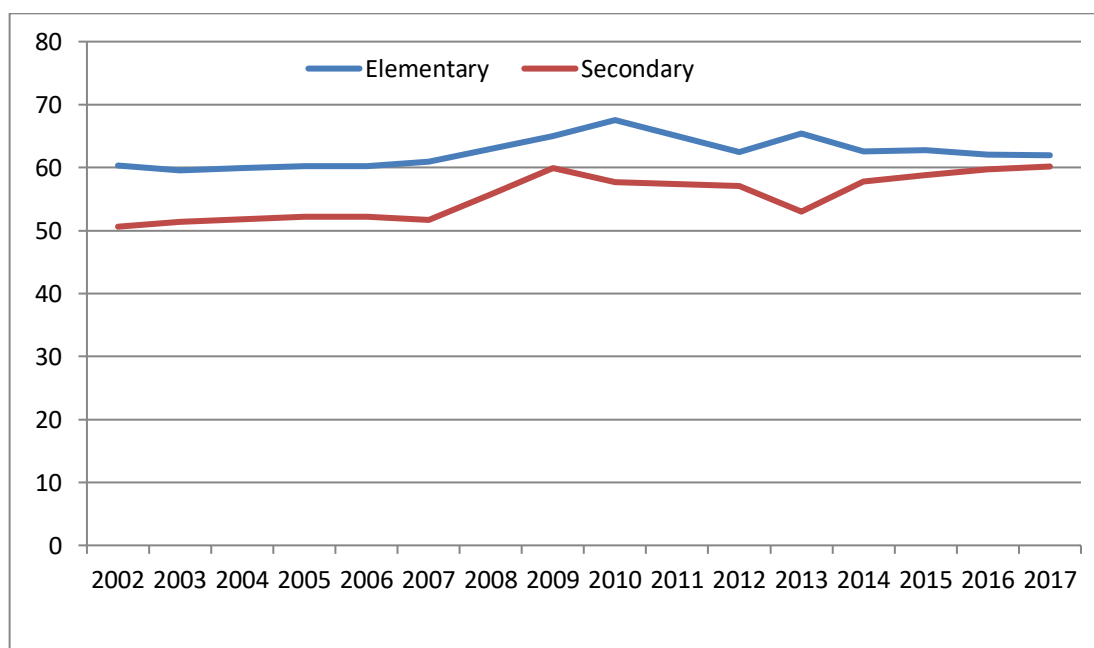
Figure 6.3 depicts that percentage of girls' schools at secondary level is significantly higher than that at elementary level, which may be due to the fact that generally parents are not averse to sending their girls to coeducational schools at primary level but at secondary level when their daughters enter into teen-age then they become more concerned. Due to this reason, percentage of elementary schools meant only for girls is abysmally low and has also been declining during the period of study. It was just 1.41 per cent in 2002 and remained above one per cent mark till 2008 after which it declined to 0.96 per cent in 2009 and further to 0.66 per cent in 2017. Percentage of secondary schools meant only for girls was 10.38 per cent in 2002 and remained above 10 per cent level till 2004. It stayed close to 10 per cent mark between 2005 and 2008 and after that took a sudden dip to 5.85 per cent in 2009. It remained above 5 per cent in 2010 also but had been moving around 4 per cent mark during 2011-17. This fall in percentage of girls' schools corresponding to the rise in total number of schools during the study period is due to the fact that there has not been any perceptible rise in number of girls' schools and most of the surge in total number of schools is due to growth in number of co-educational schools. Those girls who are still out of school due to their own or their parents' fear of bullying by male students or any other such fear can be brought to schools by increasing the number of schools meant only for girls, especially at the secondary level.

6.3.3. Female Teachers

Sending off their girls to school is more difficult for some parents than sending off their boys as they face numerous apprehensions with regard to safety of their daughters, and need to take in to consideration a lot of factors before letting them go to the school. Presence of female teachers in the school premises is one of the most important factors in this context (Dhal, 2021). Parents of the girl child undoubtedly feel much more confident and assured about the well-being of their daughters under the supervision and vigilance of female teachers. Moreover, girls themselves also feel more secure and lesser hesitant with lady teachers being there to take care of them. Some studies also suggest that one of the important reasons for the preference of

female teachers by parents may be the positive impact of presence of female teachers on students' achievements (Chudgar & Sankar, 2008).

Figure 6.4 shows the percentage of female teachers out of overall number of teachers in schools in Punjab at elementary and secondary level, during the period 2002-2017.



Source: Author's Computations

Figure 6.4: Percentage of Female Teachers in Schools in Punjab during 2002-2017

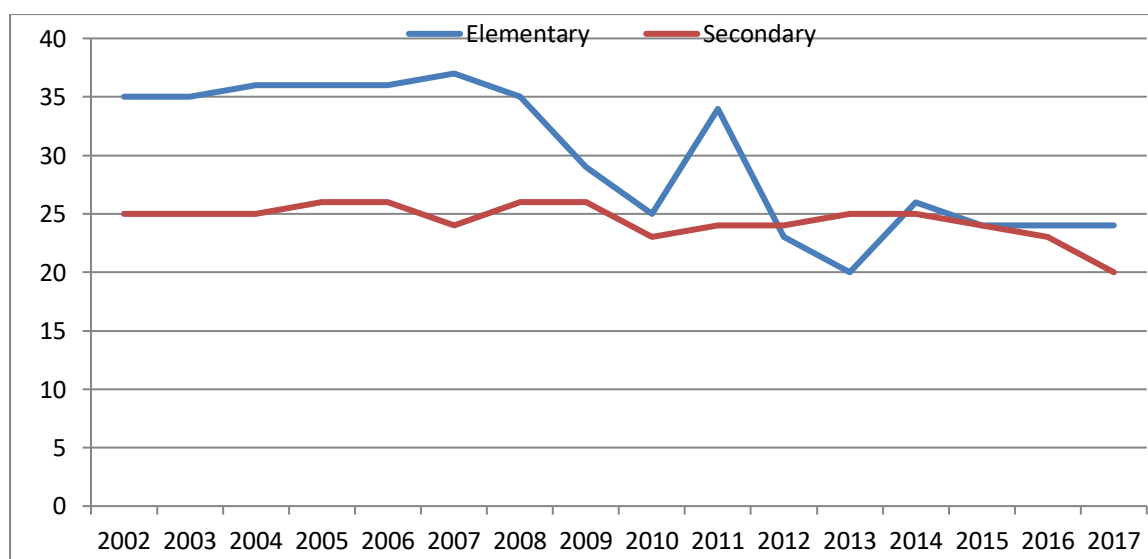
Percentage of female teachers in total teachers at elementary level of school education has remained above 60 percent throughout the study period, as indicated in Figure 6.4. Percentage of female teachers was somewhat lower in case of secondary education but has been rising constantly during the study period. It was around 50 percent in 2002 and increased to approximately 60 percent in 2017. Various policies of the government in the last twenty-five years such as, Operation Blackboard, DPEP (District Primary Education Programme), Sarva Shiksha Abhiyan, and Rashtriya Madhyamik Shiksha Abhiyan (RMSA) had given much importance to the recruitment of female teachers at elementary and secondary levels of school education as a result of which, there is an escalation in the number of female teachers in the overall school education in Punjab. The upsurge in the proportion of female

teachers is expected to give a boost to female school enrolments in Punjab, as suggested by various researches at national and international level (Rajni, 2018; Coleman, 2017; and UNESCO Report, 2006).

6.3.4. Pupil Teacher Ratio

All youngsters need personal attention in early childhood as well as in the years of adolescence. Parents attend to these tender minds at home but in schools, this role has to be played by the teachers. While parents cater to the needs of only their young ones, teachers have to pay attention to the emotional as well as intellectual needs of all the pupils in their class. Thus, the task is even more strenuous for them and this responsibility can be executed more effectively by them if the number of students in a class is less and they get sufficient time to focus on performance and issues of each student. This suggests that Pupil-Teacher Ratio i.e., number of pupils per teacher in a class should be adequate and not very high. Pupil to teacher ratio is computed by dividing the number of pupils at a particular level of study by the number of teachers at that level.

Figure 6.5 depicts the pupil-teacher ratio at elementary and secondary level in schools in Punjab during 2002-2017.



Source: Statistical Abstracts of Punjab various issues

Figure 6.5: Pupil-Teacher Ratio in Schools in Punjab during 2002-2017

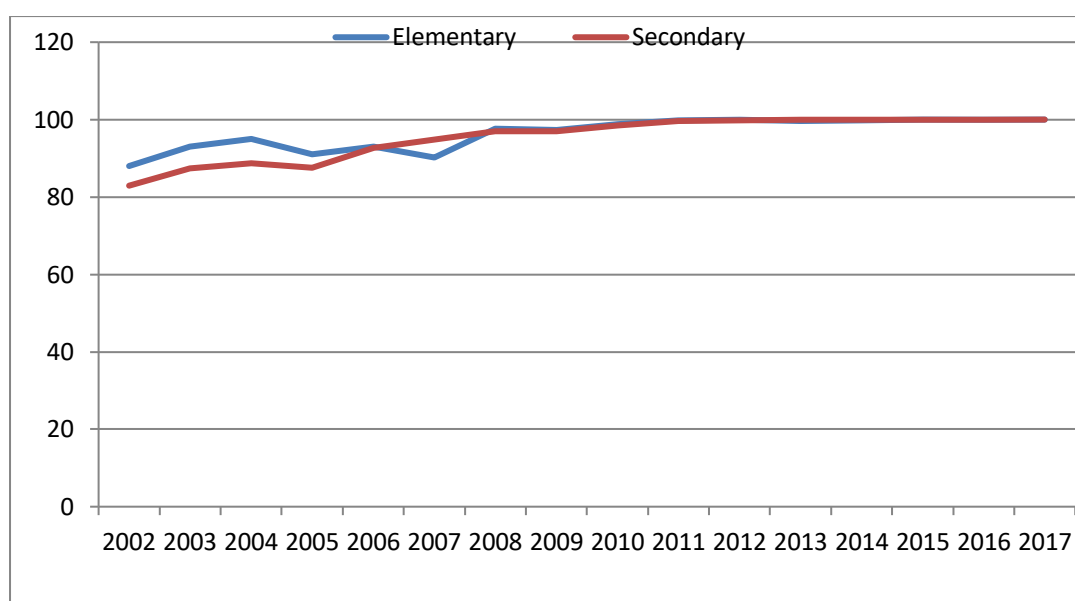
Note: Data for pupil-teacher ratio i.e. PTR in primary, middle, secondary and higher secondary education have been used to calculate PTR in elementary and secondary education. PTR in elementary education has been taken as average of PTR at primary and middle education; and PTR in secondary education has been taken as average of secondary and higher secondary education.

Figure 6.5 indicates that at elementary level, pupil-teacher ratio was 35 in 2002 and increased to 37 in 2007 but it declined after that so as to arrive at 25 in 2010. It again rose to 34 in 2011 only to fall again to 20 in 2013. Pupil-teacher ratio at elementary level has moved around figure of 25 between 2014 and 2017. Pupil-teacher ratio in secondary education has been floating around 25 during the major part of the study period only to fall to 20 in 2017. Thus, pupil-teacher ratio has been falling both in the case of elementary as well as secondary school education during 2002-2017. Fall in pupil to teacher ratio indicates rise in the number of teachers in relation to number of students leading thereby to fall in number of students per teacher. Low pupil-teacher ratio is a healthy sign, as it facilitates proper interaction between teachers and students and most importantly personal attention of the teacher towards each student in the class. Such personal interaction and attention also go a long way in making students, and especially girls, comfortable at school as they feel more cared for and hence more protected. Also, they feel encouraged to share their issues, concerns and woes with the teachers, even those which they are afraid or hesitant to share with their parents. This helps students immensely in keeping away from mental stress and psychological diseases like depression, and in maintaining good mental health. Further, a low pupil-to-teacher ratio enables teacher to devote more time towards improving weak students and bringing them at par with the rest of the class; and also, in bringing those students back on the track of studies who have gone off the track because of one reason or the other. All this leads to reduction in student absenteeism and drop-outs from the school and increases student retention.

6.3.5. Drinking Water Facility

Water is a basic necessity of life and therefore, availability of drinking water facility for students at school campus is utmost required. Absence of drinking water facility

at school campus not only causes inconvenience to students and the staff but may also lead to wastage of precious study time in arranging drinking water from elsewhere. Furthermore, the inconvenience associated with non-availability of drinking water in schools may promote absenteeism among students. Trends in percentage of schools with availability of drinking water at elementary and secondary level during 2002-2017 are shown in Figure 6.6.



Source: State Report Cards, various issues

Figure 6.6: Percentage of Schools in Punjab with Drinking Water Facility (2002-2017)

Figure 6.6 depicts that as many as 88 per cent of schools at elementary level had facility of drinking water available at campus in 2002 whereas only 82.93 percent of secondary schools had drinking water facility. Due to the introduction of *Sarva Shiksha Abhiyan* (SSA) by the Government of India in 2001; with ‘improving school infrastructure by providing additional classrooms, toilets, and drinking water facilities’ as one of its objectives; the proportion of elementary and secondary schools with amenity of drinking water rose to 100 in 2011. Thus, drinking water is available in all the elementary as well as secondary schools of Punjab. This facility is basic for improving health and hygiene and thereby in increasing female school enrolments.

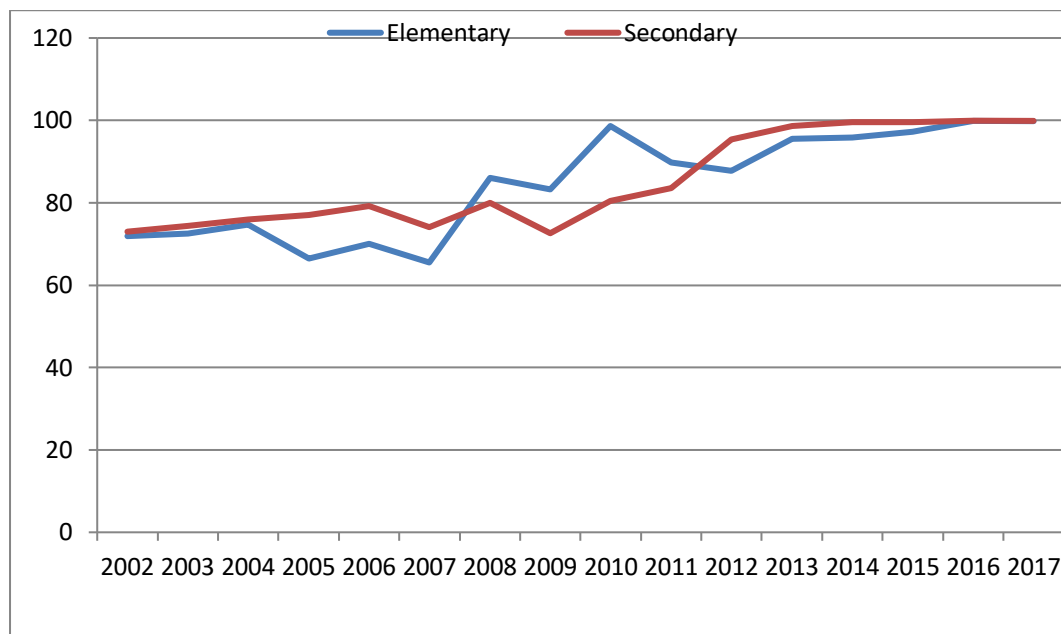
6.3.6. Separate Sanitation for Girls

Cleanliness and personal hygiene should be introduced to a child at an early age and made part of core habits so that these get implanted in to her/his daily routine firmly. Only then can such practices become a way of life for her/him and lead to a healthy individual, household and society. This is all the more important in countries like ours where hygiene and sanitation facilities lack gravely and are still not given as much importance as these should be given. To change this unfavourable situation, attitudes need to be built up right from the beginning. It is well recognised that children do not learn much from what is being preached but from what is being practised. So, to carve the attitudes, encouraging environment and actions are needed, which cannot be done not only in homes and by the parents but schools and teachers have a very important role to play in this regard. This can be achieved by making proper and clean sanitation facilities available in all the schools. Personal hygiene has an extra importance in case of girl students and they also require additional privacy due to natural reasons, which generates the need for separate sanitation facilities for them. Therefore, all schools must have separate girls' toilets in their premises to make them feel more comfortable, especially after the attainment of puberty.

A good percentage of schools had sanitation facility available in the campus for students in 2002 but not all had separate toilets for girls. Figure 6.7 shows the percentage of elementary and secondary schools in Punjab during 2002-17 having separate sanitation facility for girls.

Figure 6.7 indicates that approximately 72 per cent of elementary schools and 73 percent of secondary schools in Punjab had separate girls' toilets in 2002. *Sarva Shiksha Abhiyan 2001 (SSA)* of the government focused on improvement of school infrastructure facilities including separate sanitation facilities for girls. Also, standards and rules for a school laid under the Right of Children to Free and Compulsory Education Act 2009 (RTE Act) recommended distinct lavatory for girls and boys. As a result of such initiatives of the government at regular intervals, the percentage of schools with separate sanitation facility for girls increased to 100 per cent in 2014 for secondary schools and in 2016 for elementary schools. Therefore, almost all the elementary and secondary schools in Punjab have proper toilet facility

for girls. It will lead to maintenance of privacy and hygiene of girl students and hence, help in reducing drop-outs and enhancing their school enrolments.



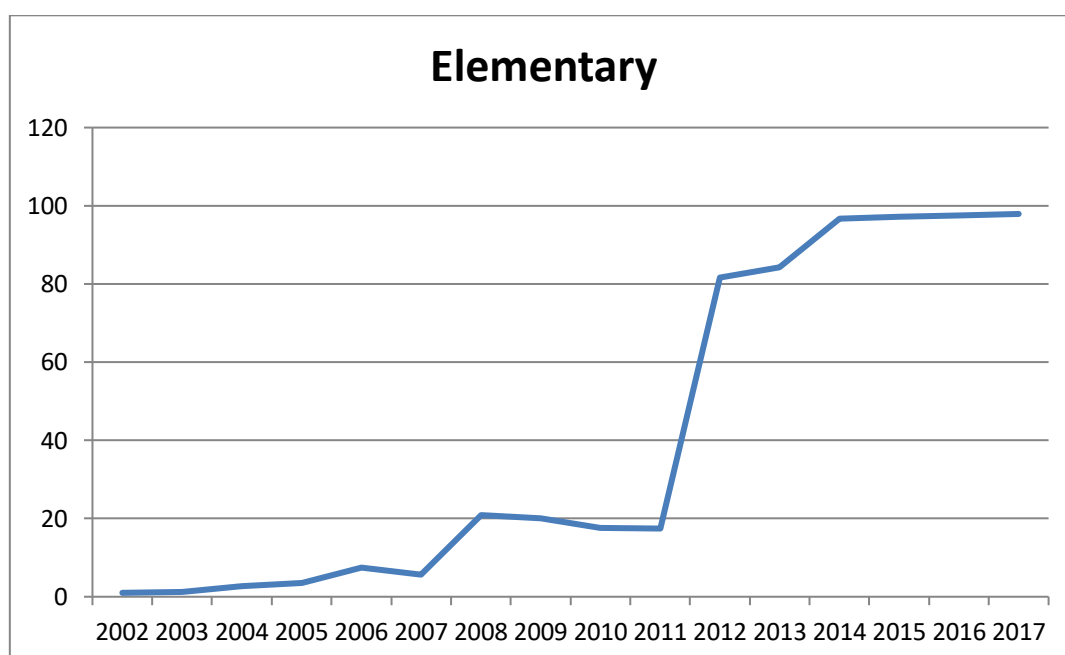
Source: State Report Cards, various issues

Figure 6.7: Percentage of Schools in Punjab with Separate Toilets for Girls (2002-17)

6.3.7. Kitchen Shed for Mid-Day Meal

Many children from poor families still remain out of the ambit of formal school education as they either fail to get enrolled at all or drop out at a very early stage. This is because they themselves or their parents want them to work for monetary benefits rather than go to a school, which ultimately results in their staying out of the school. Also, some of the children in villages go to the farms to help their parents in fieldwork. As school timings clash with that of work, therefore, they are declined school education. Girls, in addition to this, have more obstacles in families with poor economic condition or orthodox mindset as parents want them to stay back for household chores or to look after the younger siblings rather than go to school (Chauhan & Kumar, 2022; Njie *et al.*, 2015; Assad *et al.*, 2010; and Kruger & Berthelon, 2007). In such a situation if raw food items or a cooked meal is served to students at school campus, then this can give a big motivation to parents to send their

young ones to school in lure of having at least one proper meal in a day. National Programme of Nutritional Support to Primary Education (1995) was initiated with this objective in mind and under it mainly foodgrains, and in some schools, cooked meals were being served in schools. Preparation of cooked meal required availability of kitchens, for which construction of kitchen sheds was initiated in schools. Figure 6.8 shows the percentage of elementary schools in Punjab having kitchen shed facility during the period 2002-2017.



Source: State Report Cards, various issues

Figure 6.8: Percentage of Elementary Schools in Punjab having Kitchen Shed Facility (2002-17)

Initially, the scheme was introduced in few states, but as per the instructions of the Supreme Court of India, the scheme was employed in all of the states by the year 2002. Figure 6.8 makes it evident that the percentage of schools having kitchen shed facility was negligible in 2002, but with the order of the Apex Court its coverage was extended beyond government schools to include government aided and local body schools and EGS/ AIE centres. Also, Hon’ble Supreme Court of the country made it mandatory to serve cooked meals to students instead of giving them dry rations and therefore, the percentage of schools with kitchen shed increased to 10 per cent in

2008. From its very onset, the scheme was meant only for students of primary classes i.e., 1st to 5th, but in 2008 the programme was expanded in its scope to include students in upper primary classes i.e., 6th to 8th and the name of the scheme was changed to National Programme of Mid-Day Meals in Schools (commonly recognised as Mid-Day Meal Scheme). This meant that the scheme now covered the entire elementary education, and as a result of this, the percentage of schools with kitchen shed increased further and reached 98 percent in 2017. It can be said that nearly all the elementary schools in Punjab have the kitchen shed facility to prepare and offer mid-day meals to their students. This will attract more and more children to schools and thereby increase female school enrolments.

6.4. EMPIRICAL ESTIMATION

Multiple regression analysis has been carried out to examine the association among availability of school infrastructure facilities and female school education in Punjab. Analysis has been done separately for elementary and secondary education in Punjab using time series data from State Report Cards for the years 2002 to 2017. Regression is the technique of evolving a statistical model that is applied to forecast the value of a predicted variable by minimum one predictor variable. Normally, the purpose of multiple regression is to know more about the association among numerous predictor or independent variables and a criterion or dependent variable. The general multiple regression with n predictor variables is given by:

$$\boxed{Y = a + b_1X_1 + b_2X_2 + \dots + b_nX_n}$$

Eq. (6.1)

Where, Y is dependent variable, X_s are independent variables, a is constant term, b_s are regression coefficients and μ_i is the disturbance term, which satisfies all the usual assumptions of Ordinary Least Squares (OLS) i.e.,

- (i) The error term (μ_i) is a random real number
- (ii) The mean value of μ_i is zero i.e., $E(\mu_i) = 0$
- (iii) The variance of μ_i is constant i.e., $E(\mu_i^2) = \sigma^2$
- (iv) The variable μ_i has a normal distribution i.e., $\mu_i \sim N(0, \sigma^2)$
- (v) There is no autocorrelation between the disturbances i.e., $E(\mu_i, \mu_j) = 0$
- (vi) μ_i is independent of the explanatory variable i.e., $Cov(\mu_i, X_i) = 0$.

6.4.1. Elementary Education

In this part multiple regression results have been discussed for elementary education. Probable multiple-regression model depicting the impact of various independent variables on female elementary school education is:

$$\boxed{\text{LogEFE} = \alpha + \beta_1\text{LogES} + \beta_2\text{PerEGS} + \beta_3\text{PerEFT} + \beta_4\text{EPTR} + \beta_5\text{PerEW}} \\ \boxed{+ \beta_6\text{PerES} + \beta_7\text{PerEM} + \mu_i} \quad \text{Eq. (6.2)}$$

Where LogEFE is log value of female enrolments in elementary education, LogES is log value of number of elementary schools, PerEGS is percentage of girls schools in total number of elementary level, PerEFT is percentage of female teachers in total teachers at elementary schools, EPTR is pupil-teacher ratio at elementary level, PerEW is percentage of elementary schools having facility of drinking water, PerES is percentage of elementary schools with separate sanitation facility for girls, PerEM is percentage of elementary schools with kitchen shed facility (for mid-day meal), α is intercept term, β s are regression coefficients and μ_i is the disturbance term.

As application of regression requires presence of significant correlation between the predictors and the predicted variable, therefore, it is better to check for magnitude of correlation between dependent and independent variables before applying multiple-regression technique. Results of the correlation analysis are given in Table 6.2

Table 6.2: Results of Correlation Analysis (Elementary Education)

Variables	LogES	PerEGS	PerEFT	EPTR	PerEW	PerES	PerEM
LogEFE	.875**	-.808**	.279	-.720**	.705**	.700**	.855**

Source: Author's Calculations

The results of correlation analysis for elementary education indicate female enrolment has significantly positive correlation with number of schools, availability of water facility, separate sanitation facility and mid-day meal. These results are in accordance with the expectations and supported by existing literature (Kazianga *et al.*, 2013; Bhunia *et al.*, 2012; and Njuguna *et al.*, 2008). Female enrolments have significantly negative relation with percentage of girls' schools and pupil-teacher

ratio. Negative correlation between female enrolments and percentage of girls' schools indicates that despite a fall in percentage of schools meant only for girls, female enrolments have increased thereby showing that this is not an important consideration for girls and their parents in the process of school education in Punjab. Further, a negative correlation between female enrolments and pupil-teacher ratio is in perfect alignment with expectations and the literature (Teixeira *et al.*, 2017; and Dreze & Kingdon, 2001). It implies that as pupil-teacher ratio has decreased over the years, it has led to improved quality of classroom interaction and also more attention towards individual student thereby pushing up the female school enrolments. There is significantly high correlation among the predicted and most of the predictor variables except for the variable PerFT, which means that presence or absence of female teachers in schools does not significantly influence the female enrolments at elementary level of school education in Punjab. Though evidence of this variable exerting a positive influence on the female school enrolments is found in literature (Coleman, 2017; and Marcus & Page, 2016), yet this variable has not been made part of the multiple-regression analysis in this study due to insignificant value of correlation coefficient. There exists high correlation among independent variables, which suggests the presence of multi-collinearity in the data. It has also been indicated by high VIF values (greater than 10) for all the independent variables while using multiple regression with "enter" method. As all these variables have been extracted from the literature review, it cannot be said as to which ones are more important than the others. Therefore, the technique of step-wise multiple-regression with 'backward elimination' method has been applied taking LogEFE as dependent variable and LogES, PerEGS, EPTR, PerEW, PerES and PerEM as independent variables. The results are presented in Table 6.3 and Table 6.4:

**Table 6.3: Results of Stepwise Regression (Model Summary & ANOVA)
(Elementary Education)**

R	R Square	Adjusted R Square	Std. Error of the Estimate	F	Sig.
.921	.848	.823	.02572	33.486	.000

Source: Author's Calculations

Table 6.4: Results of Stepwise Regression (Coefficients) (Elementary Education)

	Unstandardized Coefficients			Sig.	Collinearity Statistics	
	B	Std. Error	t		Tolerance	VIF
Constant	3.495	.866	4.036	.002		
LogES	.626	.206	3.045	.010	.413	2.421
PerEM	.001	.000	2.549	.025	.413	2.421

Source: Author's Calculations

Results in Table 6.3 and 6.4 indicate that two variables out of six independent variables are exerting a significant influence on the dependent variable. The model has fitted quite well as the F-value is significant at 1 per cent level of significance and also, value of adjusted R square is sufficiently high. Further, residual of the model is normally distributed and hence, the assumption of normality is verified. Substituting the values of these coefficients in equation (1), we get the following multiple-linear-regression equation:

$$\boxed{\text{LogEFE} = 3.495 + .626 \text{LogES} + .001 \text{PerEM}}$$

$$(4.036)** \quad (3.045)** \quad (2.549)*$$

Eq. (6.3)

** significant at 1 per cent *significant at 5 per cent

The results indicate that one percent increase in LogES will expectedly lead to about 0.626 percent increase in LogEFE subject to the condition that PerEM remains constant. Also, one percentage point increase in number of schools with kitchen shed facility will expectedly cause about 0.1 percent increase in elementary female enrolments subject to the condition that LogES remains constant. Existing literature perfectly supports the positive influence of number of schools on female school enrolments (Giri and Shrestha, 2017; Muralidharan & Prakash, 2017; Mohanty *et al.*, 2016; Burde & Linden, 2013; and Rahji) and also the positive impact of mid-day meal on female school enrolments (Kainth, 2013; and Kazianga *et al.*, 2013). It means that female school enrolments at elementary level can be enhanced by increasing the number of schools. Greater number of schools will reduce the distance

to school thereby making schools easily approachable. Not only travel time of girl students will be reduced, but also the risk factor associated with going to and coming from school will get diminished, thus attracting more and more girls to schools. Also, it is evident that mid-day meal has a significantly positive influence on girls' school enrolments at elementary level, therefore the scheme should be extended to bring more out-of-school children under the ambit of school education. Scheme should be given wide publicity so that more and more people come to know of its existence and send their wards to school to reap the benefits of this scheme.

6.4.2. Secondary Education

In this part multiple regression results for secondary education have been discussed. Probable multiple-regression model depicting the impact of various independent variables on female secondary school education is:

$$\boxed{\text{LogSFE} = \alpha' + \beta_1' \text{LogSSC} + \beta_2' \text{PerSGS} + \beta_3' \text{PerSFT} + \beta_4' \text{SPTR} + \beta_5' \text{PerSW} + \beta_6' \text{PerSS} + \mu_i'} \quad \text{Eq. (6.4)}$$

Where LogSFE is log value of female enrolments in secondary education, LogSSC is log value of number of secondary schools, PerSGS is percentage of girls schools in total number of secondary schools, PerSFT is percentage of female teachers in total teachers at secondary level, SPTR is pupil-teacher ratio at secondary level, PerSW is percentage of secondary schools having facility of drinking water, PerSS is percentage of secondary schools with separate sanitation facility for girls, α' is intercept term, β 's are multiple regression coefficients and μ_i' is the disturbance term.

Before applying multiple-regression analysis, relationship between dependent variable and different independent variables has been assessed through correlation analysis and results of this examination are presented in table 6.5.

Table 6.5: Results of Correlation Analysis (Secondary Education)

Variables	LogSSC	PerSGS	PerSFT	SPTR	PerSW	PerSS
LogSFE	.983**	-.925**	.678**	-.522*	.826**	.943**

Source: Author's Computations

The results of correlation analysis in case of secondary education indicate that there is significantly high correlation among the dependent and all of the independent variables. Female secondary enrolment has positive correlation with number of schools, percentage of female teachers in total teachers, availability of water facility, and separate sanitation facility for girl students. Again, these results are in accordance with the expectations and the existing literature (as specified in previous section). Female enrolments at secondary level are found to be negatively related with percentage of girls' schools and pupil-teacher ratio. These results are similar to that obtained in case of girls' enrolment in elementary education, and therefore, can be explained in the same way. Further, there is high correlation among predictors, indicating the presence of multi-collinearity. It has also been indicated by high VIF values (greater than 10) for all the independent variables while using multiple-regression with "enter" method. As all these variables have been extracted from the literature review, it cannot be said which ones are more important than the others. Therefore, the technique of step-wise multiple-regression with 'backward elimination' method has been applied taking LogSFE as dependent variable and LogSSC, PerSGS, PerSFT, SPTR, PerSW and PerSS as independent variables. The results are specified in Table 6.6 and Table 6.7.

**Table 6.6: Results of Stepwise Regression (Model Summary & ANOVA)
(Secondary Education)**

R	R Square	Adjusted R Square	Std. Error of the Estimate	F	Sig.
.992	.985	.982	.01576	381.814	.000

Source: Author's Calculations

Table 6.7: Results of Stepwise Regression (Coefficients) (Secondary Education)

	Unstandardized Coefficients				Collinearity Statistics	
	B	Std. Error	T	Sig.	Tolerance	VIF
Constant	3.554	.155	23.000	.000		
LogSSC	.498	.058	8.608	.000	.191	5.234
PerSS	.003	.001	3.736	.003	.191	5.234

Source: Author's Calculations

Results in Table 6.6 and 6.7 indicate that two variables out of six independent variables are exerting a significant influence on the dependent variable. The model has fitted quite well as the F-value is significant at 1 per cent level of significance and also, value of adjusted R square is considerably high. Further, residual of the model is normally distributed and hence, the assumption of normality is verified. Substituting the values of these coefficients in equation (2), we get following multiple-linear-regression equation:

$$\boxed{\text{LogSFE} = 3.554 + .498 \text{LogSSC} + .003 \text{PerSS}}$$

(23.000)** (8.608)** (3.736)** Eq. (6.5)

**significant at 1 per cent

The results indicate that a one percent increase in LogSSC will expectedly lead to about 0.498 percent increase in LogSFE subject to the condition that PerSS remains constant and also, one percentage point increase in number of schools with separate sanitation facility for girls will expectedly cause about 0.3 percent increase in secondary female enrolmentssubject to the condition that LogSSC remains constant. Ample evidence of a positive impact of separate sanitation facilities for girl students on the girls' school enrolments exists in literature (UNICEF, 2005; Njuguna *et al.*, 2008; Bhunia *et al.*, 2012; and Kazianga *et al.*, 2013). Therefore, it can be said that female enrolments in secondary school education can be enhanced by increasing the number of schools as it will reduce the distance to school and thus the risk involved in travelling to school. Also, it is apparent that availability of separate sanitation facility for girl students at school campus has a significantly positive bearing on female school enrolments at secondary level, therefore, both quantity and quality of this amenity should be improved.

6.5. CONCLUSION

School education for girl child paves the way for awareness of basic rights, better quality of life, and social and economic freedom for her. Female enrolments at elementary level have been found to be positively influenced by total number of schools and mid-day meal i.e., a greater number of schools are expected to lead to more female enrolment, and also availability of mid-day meal is likely to act as a

stimulant for female enrolments at the elementary level. At secondary level, female school enrolments were positively influenced by total number of schools and availability of separate sanitation facilities for girl students. We can conclude that total number of schools, availability of mid-day meal and availability of separate sanitation facility for girls in schools had a significant positive bearing on the female school enrolments in Punjab during 2002-2017. Therefore, third hypothesis, that there is no interdependence between variables of physical and social infrastructure of schools and the variables of girls' education, is rejected.

Growth in total number of schools reduces the distance and travel time to school, leading thereby to enhanced safety of the girl child and reduced transport cost for the parents. Mid-day meal has been successful in attracting more girls to schools because economically weaker parents send their girl children to school in lure of one free meal for the day. This scheme not only provides nutrition to the child, but also some financial relief to the parents. Adolescent girl students need privacy for natural reasons and separate sanitation facility ensures this, and therefore, this facility has probably succeeded in bringing more girls to schools. School infrastructure facilities in Punjab have immensely improved during the study period, but number of secondary schools is still lesser than elementary schools and should be increased to raise female secondary school enrolments. Also, like in case of elementary education, mid-day meal should be extended secondary level classes as well. Government is already spending huge amount for the provision of mid-day meal among the students of primary and upper primary classes and extension of the scheme to secondary level will cause additional burden on the exchequer; therefore, dry ration can be provided to students of secondary classes in place of cooked meal, which will reduce the financial burden of the government. If more girls succeed in getting secondary education and hence, better employment opportunities; their contribution in to the economic mainstream will generate additional output and economic growth for the country. Also, better human capital will attract more foreign direct investment which will further boost economic growth, as has been stressed upon by many researchers in national as well as cross-country analysis (Borensztein et al., 1998; and Dankyi et al., 2022).

Chapter - 7

ROLE OF GOVERNMENT IN ENHANCING FEMALE SCHOOL EDUCATION IN PUNJAB

7.1. INTRODUCTION

In earlier times, role of the state was restricted to defence and administration; and it did not interfere in the day to day working of the economy. But, in modern times, every state is a welfare state and it has to perform numerous welfare and development oriented functions. On the eve of independence, India adopted the socialistic pattern of the society on the lines of Erstwhile Soviet Union. In that system, state was almost omnipresent, and it continued not so successfully till 1991. In 1991, when the Soviet Union collapsed, people and administrations lost faith in the socialistic economy. Also, Indian economy was struggling with its scarce reserves of foreign exchange, so the gates of the economy were pushed open for foreign capital. India, at that juncture, adopted the policy of “Liberalisation, Privatisation & Globalisation” i.e., LPG and with that, significance of the private sector in the economy increased a lot. In present times, role of the state has reduced much as compared to that at the time of independence but still there are some sectors where government has neither left the ground totally nor it can as ours is a developing economy with limited resources and gigantic needs, and therefore, government support is still required to achieve the goal of high and continued growth.

Human resource development is one such sector that needs constant intervention and supervision by the government. Neither health nor education sector can be left entirely at private hands as it will lead to exploitation of the masses. Government’s neglect in these areas will lead to losing opportunities for the weaker sections of the society, who still can’t afford or avail these services for themselves, like the poor, the backward sections, and the female population. Across the country, the practice of female infanticide and foeticide is remains rampant (Sharma, 2018); and despite numerous laws and schemes enacted by the government, women and girls are

discriminated against in almost every walk of life (Jaiswal, 2020). Global Gender Gap Report (2022) of the World Economic Forum ranks India at 135th position among 146 countries in case of gender parity. The situation of the female poor is even worse as they are at a disadvantage, both for being poor and for being female (Dash *et al.*, 2020). In such a situation it becomes imperative for the state to keep holding the ground and continue being the provider of essential services. Since independence, the government has introduced several laws and schemes to protect the interests of women and to forward the goal of women empowerment in the country. Dowry Prohibition Act (1961), Hindu Succession Act (1956, Amendment in 2005), Protection of Women from Domestic Violence Act (2006), *etc.* are a few of the important and path breaking laws in this direction. Some of the pivotal schemes for empowering women are Janani Suraksha Yojana (2005), Ujjawala Yojana (2016), Mahila Shakti Yojana (2017), *etc.* Also, numerous hostels for working women and crèches have been brought in to existence to give support to working women in managing their domestic and economic pursuits. These measures aim to guard the well-being of the women and also to penetrate patriarchy and uplift women to their deserved status in the society. Laws and schemes have also been instigated to promote education among women such as Prohibition of Child Marriage Act, Right to Education Act, Sarva Shiksha Abhiyan, and Mid-Day Meal Scheme *etc.* Likewise, several schemes have also been commenced by the various state governments to advance the cause of women education.

At the time of independence, population in the country was 36.1 crore in 1951 for which male and female literacy rates were 27.16 per cent and 8.86 per cent respectively and overall literacy rate was 18.33 per cent (Census, 2011). During next six decades i.e., 1951 to 2011, total literacy in the country increased to 74.04 percent, literacy levels of males jumped up to 82.14 percent and for females it rose to 65.46 percent. No doubt the literacy rates have improved immensely in the country, but the progress isn't uniform across the states and Punjab has lagged behind in terms of literacy as is visible from Table 7.1.

Punjab once was a rich agricultural state but fading out of rewards in agricultural sector and an under developed industrial sector led the state to losing its top position

in growth in per capita income. Being a border state, Punjab still fails to attract industrial ventures in to the state and also lesser number of young people in the state is finding agricultural activities to be a lucrative source of livelihood. Therefore, it becomes all the more important for the state to concentrate its efforts towards building a high-quality human force which can take up new ventures and professions to take the society and economy of the state towards the path of high growth once again.

Table 7.1: Ranking of Indian States and Union Territories by Literacy Rates in 2001 and 2011

S.N.	India/ State/ UT	Literacy Rate		Rank	
		2001	2011	2001	2011
	India	64.83	74.04	-	-
1.	Jammu & Kashmir	55.52	68.74	32	30
2.	Himachal Pradesh	76.48	83.78	11	11
3.	Punjab	69.65	76.68	15	21
4.	Chandigarh	81.94	86.43	5	8
5.	Uttarakhand	71.62	79.63	14	17
6.	Haryana	67.91	76.64	19	22
7.	NCT of Delhi	81.67	86.34	6	9
8.	Rajasthan	60.41	67.06	29	33
9.	Uttar Pradesh	56.27	69.72	31	29
10.	Bihar	47.00	63.82	35	35
11.	Sikkim	68.81	82.20	17	13
12.	Arunachal Pradesh	54.34	66.95	33	34
13.	Nagaland	66.59	80.11	20	15
14.	Manipur	69.93	79.85	22	16
15.	Mizoram	88.8	91.58	2	3

S.N.	India/ State/ UT	Literacy Rate		Rank	
		2001	2011	2001	2011
16.	Tripura	73.19	87.75	13	4
17.	Meghalaya	62.56	75.48	27	24
18.	Assam	63.25	73.18	25	26
19.	West Bengal	68.64	77.08	18	20
20.	Jharkhand	53.56	67.63	34	32
21.	Orissa	63.08	73.45	26	25
22.	Chhattisgarh	64.66	71.04	23	27
23.	Madhya Pradesh	63.74	70.63	24	28
24.	Gujarat	69.14	79.31	16	18
25.	Daman & Diu	78.18	87.07	9	6
26.	Dadra & Nagar Haveli	57.63	77.65	30	19
27.	Maharashtra	76.88	82.91	10	12
28.	Andhra Pradesh	66.64	75.60	21	23
29.	Karnataka	60.47	67.66	28	31
30.	Goa	82.01	87.40	4	5
31.	Lakshadweep	86.66	92.28	3	2
32.	Kerala	90.86	93.91	1	1
33.	Tamil Nadu	73.45	80.33	12	14
34.	Puducherry	81.24	86.55	8	7
35.	Andaman & Nicobar Islands	81.3	86.27	7	10

Source: Census.gov.in

Literacy rates, overall, male and female, have increased in the state of Punjab since independence, but female literacy rate still lags behind male literacy rate. Though prevalence of patriarchy is the reality of Indian society, its presence is stronger in Punjab. This is one of the major reasons behind the slower growth of female

education in the state as compared to male education. Also, special attention should be given to develop female work force as female work participation rate of Punjab as per census 2011 is 13.9 per cent, which is significantly low as compare to all India female labour force participation rate of 25.51 per cent (Kaur & Nagaich, 2019). This is leading to loss of huge demographic dividend that can be fetched by bringing more women into the workforce. In order to achieve this, more and more women need to be educated (GOI, 2013).

7.2. POLICIES & SCHEMES INITIATED BY THE CENTRAL GOVERNMENT

Various policies and acts relating to education sector were put forth from time to time to provide a detailed framework for the future course of action. A brief account of these policies has been given in table 7.2.

Table7.2: Various Acts/ Policies of the Government for Enhancing School Education

S.N.	Name of the Policy	Objectives
1.	National Policy on Education, 1986	<ul style="list-style-type: none"> a) Thrust to women education: <ul style="list-style-type: none"> i) Giving priority to inclusion in elementary education. ii) Redesigning text books and curricula iii) Participation in science & technology by removing gender stereotypes iv) Day care centres for promoting girl education b) Improved school facilities at primary level: <ul style="list-style-type: none"> Operation Blackboard, focusing on sufficient learning material, two all-weather classrooms, minimum two teachers with at least one female teacher c) Residential secondary schools to be promoted

S.N.	Name of the Policy	Objectives
2.	National Policy on Education, 1992	a) Operation Blackboard extended to upper primary level and it also meant to ensure three classrooms, three teachers with at least 50 per cent female teachers b) Secondary education given priority with emphasis on enrolment of girls, children from SC/ST c) Stress on vocational education d) Quality to be strengthened at elementary level so that students achieve basic learning levels e) 10+2 included in school system f) Stress on National Literacy Mission, Post-literacy & Continuing education
3.	Right to Education, 2009	Free & compulsory elementary education to 6-14 age-group children i) Minimum standards of quality ii) Reservation for marginalised students in private schools iii) Constitution of School Management Committees (SMCs), ensuring involvement of parents iv) Minimum standards of education: <ul style="list-style-type: none"> a) Pupil-teacher ratio 30:1 b) Minimum teaching days in primary education 200 c) Minimum teaching days in upper primary 220 d) Minimum teacher qualification e) Teacher salary

S.N.	Name of the Policy	Objectives
4.	National Policy on Education, 2020	<ul style="list-style-type: none"> a) Restructuring school syllabi & instruction in a new 5+3+3+4 format to make school learning appropriate to the needs and liking of the students throughout several phases of their growth b) ‘universal foundational literacy and numeracy’ in primary schools by 2025 c) Gender-Inclusion Fund’ to give unbiased and quality education to all girls and transgender pupils d) 100 per cent GER at all levels of school education by 2030 e) Uniform assessment & accreditation of public and private schools f) Investment in education to be increased to 6 percent of GDP

Source: Author’s elaboration from various government reports and website.

It is clear from table 7.2 that these national policies of education aimed at channelizing the efforts of the government in the right direction and also at removing educational disparities and equalising opportunities especially for women and backward sections of the society. While the National Education Policies of 1986 and 1992 aimed to provide infrastructural support and thereby enhance the purview of elementary and secondary education respectively, Right to Education Act, 2009 sought to enhance the quality of education by setting the standards for pupil-teacher ratio, minimum teacher qualification, *etc.* National Education Policy (2020), however, intends to completely revamp the entire education structure, right from the pre-primary level to the level of university education. Also, the cause of promoting female education has been at the core of these statements and has been given due importance through various initiatives like, recruitment of more female teachers, provision of day care centres, gender inclusion fund, *etc.*

In order to accomplish the vision laid down in policy documents with regard to overall school education and especially female education, various schemes and programmes have been instigated by the government at regular intervals in this regard. In middle 90s, District Primary Education Programme (DPEP, 1994) was initiated for universalisation of primary education. Under this scheme free meals were also provided to the students in primary classes of government schools so as to encourage more and more children to attend schools. In 2001, Sarva Shiksha Abhiyaan was commenced, under which school infrastructure was given fresh boost. Its two instruments namely, National Programme for Education of Girls at Elementary Level (NPEGEL) and Kasturba Gandhi Balika Vidyalayas (KGBVs) focused on promoting learning among girl children by constructing residential schools, providing free uniforms and learning materials, gender sensitisation of teachers, *etc.* Later, Mid-Day Meal (2009) gave school enrolments the desired momentum as this scheme extended free day meal to cover entire elementary level school education rather than only primary level, as was being done earlier. Furthermore, Rashtriya Madhyamik Shiksha Abhiyan (2009) was started to give a fillip to secondary education by improving physical as well as academic infrastructure in schools. In addition, it aimed to bring about curriculum reforms to make education job oriented. Also, a range of steps have been under taken to advance girl education, such as, Mahila Samakhya, financial incentives on birth and completion of various education levels, awareness drives, scholarships, construction of girls' hostels, provision of separate toilets for female students, *etc.* A brief account of the main schemes initiated by government at the central level is given below:

Table 7.3 : Various Schemes of the Central Government to Promote Female Education

S.N.	Name of the Scheme	Education	Year of Start	Objectives	Achievements
1.	National Literacy Mission/ Saakshar Bharat	Adult Education	1988/ 2009	Education for all	<ul style="list-style-type: none"> • NLM had made 127.45 million people literate by the end of the 10th Plan period and 60 percent were females. • The overall number of illiterates has reduced from 304.15 million in 2001 to 272.95 million in 2011. • Male-female literacy difference fell from 21.59% in 2001 to 16.68% in 2011. • National Literacy Mission Authority has evaluated and certified 14,438,004 adults during 2009-12 for their skills in reading, writing and numeracy. • 170,000 amenities such as libraries and reading zones have been set up as part of the Continuing Education segment of the programme.
2.	Mahila Samakhya	Adult Education	1988	<p>a) Women empowerment through education.</p> <p>b) Focuses on education of women who have been left out of the education system</p>	<ul style="list-style-type: none"> • It covered 130 districts and 679 blocks in 2014 and there were 102 Mahila Shiksha Kendras with enrolment of 2989 and alumni of 28507. • There were 16,864 alter-native learning centres and 23,026 'kishori sanghas' with membership of 523701.

S.N.	Name of the Scheme	Education	Year of Start	Objectives	Achievements
3.	District Primary Education Programme (DPEP)	Primary	1994	Universal primary education	<ul style="list-style-type: none"> • 24000 school buildings have been constructed. • 8525 resource centres have been constructed. • 80000 classrooms have been added or under construction. • 46000 other works (toilet, drinking water facility, etc.) have been accomplished. • Over 10 lakh teachers have been trained.
4.	Sarva Shiksha Abhiyaan	Elementary	2001	<p>It is the main vehicle to implement RTE & MDM</p> <p>a) To achieve universal elementary education</p> <p>i) Universal access & enrolment</p> <p>ii) universal retention up to age of 14 years</p> <p>iii) improvement in quality of education</p> <p>b) Components:</p> <p>(i) National Programme for Education of Girls at Elementary Level (NPEGEL), 2003</p> <p>c) Kasturba Gandhi Balika Vidyalayas (KGBVs), 2004</p>	<ul style="list-style-type: none"> • In Punjab, Rs. 24594.91 lakh were distributed under the scheme in 2018-19 and 1490077 children were benefitted. • In service training has been imparted to 42812 primary teachers and 29874 upper primary teachers. • Free Uniforms have been provided to 887914 children at primary level.

S.N.	Name of the Scheme	Education	Year of Start	Objectives	Achievements
5.	National Programme for Education of Girls at Elementary Level (NPEGEL) (State Scheme from 2015-16)	Elementary	2003	<p>a) To reach 'hardest to reach' girls not in school</p> <p>b) Advancement of provisions like stationary, uniforms, and workbooks</p> <p>c) Gender sensitisation of teachers & imparting gender sensitive education</p> <p>Development of 'modal schools' in each cluster with strong public participation & supervision of girls' registration</p>	<ul style="list-style-type: none"> • In Punjab, Rs. 3832.11 lakhs were distributed under the scheme in 2018-19 and 6524 children were benefitted.
6.	Kasturba Gandhi Balika Vidyalayas (KGBVs)	Upper Primary	2004	<p>a) To set up residential schools for girls from deprived sections in the country in educationally backward blocks</p> <p>d) To guarantee quality education is viable & reachable to girls of deprived groups</p>	<ul style="list-style-type: none"> • Rs. 251.20 lakhs were distributed under the scheme in Punjab in 2018-19 and 1553 girls were benefitted. • 21 girls' hostel for girl students from far off areas along with a girl's hostel in Muslim minority concentrated area of Malerkotla, where 873 girls were residing, were constructed.

S.N.	Name of the Scheme	Education	Year of Start	Objectives	Achievements
7.	National Scheme of Incentives to Girls for Secondary Education	Secondary	2008	<ul style="list-style-type: none"> a) To encourage secondary education of girls, especially those passing class 8th b) Fixed deposits of Rs 3000, which can be withdrawn at the age of 18 years, after passing class 10th exam c) Girls should be below 16 years of age at the time of enrolment. 	<ul style="list-style-type: none"> • The scheme is enclosed under the Direct Benefit Transfer (DBT) and is boarded on National Scholarship Portal. • The NSIGSE scheme has been discontinued • w.e.f. the year 2018-19. It is being re-framed to increase efficacy in application.
8.	National Means Cum-Merit Scholarship Scheme (NMMSS)	Secondary	2008	<ul style="list-style-type: none"> a) To arrest drop-out of meritorious students of economically deprived segments after elementary education by awarding scholarships to them. 	<ul style="list-style-type: none"> • Every year, selected one lakh students of class IX are awarded with scholarships. • Till the year 2020, approximately 16.93 lakh scholarships have been sanctioned to the students.
9.	Scheme for construction & running of girls' hostel for students of secondary & higher secondary schools	Secondary	2008-09	<ul style="list-style-type: none"> a) 100 bedded girls' hostel to be constructed in each of 3479 educationally backward blocks b) To hold girl child in secondary schools so that they are not deprived of education due to greater distance to school b) To make secondary & higher secondary education accessible to a large number of girls 	<ul style="list-style-type: none"> • 92 hostels were approved by 2015-16.

S.N.	Name of the Scheme	Education	Year of Start	Objectives	Achievements
10.	National Programme of Nutritional Support to Primary Education (Mid-Day Meal)	Elementary	2008	<p>a) To deliver mid-day meals to students studying in primary classes</p> <p>b) To address the issue of inadequate and improper nutrition among children & to eradicate classroom starvation of children</p> <p>c) To surge registration and attendance of children at schools</p> <p>c) To improve interaction between children of all castes and religions</p>	<ul style="list-style-type: none"> • More than 9 crore children availed meals and more than 26 lakh MT foodgrains were allocated every year during the period 2014-2021. • Rs. 20511.6 lakhs were distributed under the scheme and 14,82,000 children were benefitted in Punjab in 2018-19. • Mid-day meal is being served in 13102 Primary and Upper Primary 6569 Schools including Punjab. • In 1995, it was initiated for 2408 blocks whereas in 1997-98, it was extended in all blocks. • In 2002, its coverage extended beyond government & aided schools. • In 2006, it was meant for 1st to 5th classes for 240 days but in 2008-09, it was extended to cover 1st to 8th class. • Under Rastriya Bal Swasthya Karyakaram 22.71 lakh number of students from class 1st to 12th have been covered by the RBSK team for the health check-up till March 2019. • Out of total 19791 schools, kitchen garden has been set up in 2959 schools.

S.N.	Name of the Scheme	Education	Year of Start	Objectives	Achievements
11.	Rashtriya Madhyamik Shiksha Abhiyaan (RMSA)	Secondary	2009	<p>a) To enhance access to secondary education & to improve its quality</p> <p>b) Secondary school should be within the distance of 5 km by 2020</p> <p>1) Physical facilities provided:</p> <ol style="list-style-type: none"> i) extra class rooms ii) laboratories iii) libraries (edustat) iv) toilets v) drinking water vi) hostels for teachers <p>2) Quality interventions:</p> <ol style="list-style-type: none"> i) additional teachers ii) science, mathematics & English education iii) science laboratories iv) ICT v) teaching learning reforms <p>d) curriculum reforms to make education job oriented</p>	<ul style="list-style-type: none"> • In Educationally Backward Blocks of 7 district (Bathinda, Ferozepur, Mansa, Muktsar, Patiala, Sangrur and Tarn Taran) 21 Govt. Model Sr. Sec. Schools were started on Kendriya Vidyalaya pattern in the year 2009-10. • 304 schools were elevated from middle to high during 2009 to 2015. • 2949 secondary schools were reinforced with added infrastructure i.e., 1279 extra classrooms, 1299 science laboratories & science laboratory equipment, 2780 art & craft rooms, 2178 libraries, 2198 separate girls' toilets & drinking water facilities. • 33,330 SMDC members were trained under RMSA. • 1789 Govt. high and senior secondary schools were provided with Edusat libraries. • In 2018-19, 17958 Secondary Teachers were imparted in-service training.

S.N.	Name of the Scheme	Education	Year of Start	Objectives	Achievements
12.	Babu Jagjivan Ram Chhatrawas Yojna	Secondary	Revised in 2008, 2018 & 2020	c) Construction of hostels in schools & colleges for girls belonging to Scheduled Castes	<ul style="list-style-type: none"> • Since the revision of the Scheme in 2007- 2008, 662 hostels (of which 391 are for girls) have been constructed out of 819 sanctioned till 2020-2021. • 11 girls' hostels were sanctioned in Punjab during 2007-08 to 2020-21, out of which 8 girls' hostels have been constructed.
13.	Beti Bachao Beti Padhao	Secondary	2015	a) Prevention of gender biased sex selection b) Ensuring survival & protection of girl child c) Ensuring education & participation of girl child d) To spread awareness against female foeticide & infanticide	Under this scheme, <ul style="list-style-type: none"> • Total funds allocated between 2014-15 and 2018-19 were Rs. 644 crores. • Sex-ratio at birth has gone up from 918 in 2014-15 to 934 in 2019-20. • GER of girls in secondary schools has gone up from 77.45 in 2014-15 to 81.32 in 2018-19. • Percentage of schools with separate, operational toilets for girls increased from 92.1 percent in 2014-15 to 95.1 percent in 2018-19.
14.	Swachh Vidyalaya Campaign (Under Swachh Bharat Mission)	All	2014-15	a) Clean & working sanitation in schools b) Separate toilets for boys and girls	4,17,796 toilets were made operational in 2,61,400 schools between 2014 and 2015.

Source: Author's elaboration from various government reports and websites

Other than schemes mentioned above, the Government of India also launched ‘Samagra Shiksha Abhiyan’ in 2018-19 with the following main features:

- a) Single scheme for school education sector from class 1st to 12th
- b) Focus on girl education, encompassing girl empowerment, upgradation of KGBVs and self-defence training
- c) Subsumes SSA, RMSA and Teacher Training
- d) Focus on equitable opportunities and outcomes
- e) Involves enhancing quality, teacher training, distribution of free text books, uniforms, *etc.*

The central government has also approved the launch of a new scheme for adult education ‘New India Literacy Programme’ for FYs 2022-27 (PIB Delhi, 16 Feb 2022). The scheme will cover non-literate adults (i.e., ages of 15 years and above) in all state/UTs in the country and aims to achieve foundational literacy and numeracy for 5 crore learners at the rate of one crore learners per year. It is evident from table 7.3 that government at the centre is making all efforts to bring all children under the purview of school education under the scheme of Universal Education but despite these efforts, some of the loopholes are still persisting. A 2019 Report of the Comptroller and Auditor General of India on “Construction of Toilets in Schools by CPSEs” highlighted the concerns observed in implementation of the Swachh Vidyalaya Abhiyan. The report said that out of the total toilets reported to have been constructed by Central Public Sector Enterprises (CPSEs), 11 percent either did not exist or were partially constructed; and out of total constructed toilets, 30 percent were found to be not in use because of lack of cleanliness, running water, *etc.* Moreover, out of all the co-educational schools surveyed, 27 percent did not have distinct toilets for boys and girls (GOI, 2019). As per a report on Rashtriya Madhyamik Shiksha Abhiyan (RMSA) by Kapur *et al.* (2018) published by Centre for Policy Research under ‘Accountability Initiative’, total release of funds for RMSA out of approved budget has been low and declining since FY 2013-14, and

therefore expenditures have also been falling. As per this report, Punjab's performance has been unsatisfactory in terms of expenditure per student, which was Rs. 2622 in 2017-18 whereas the national average was Rs. 2817. Among large states, per-student allocation was highest in case of Maharashtra (Rs. 9259) and among all states and Union Territories it was highest in case of Manipur (Rs. 19,780). According to Sharma (2018), record of various activities held under 'Beti Bachao Beti Padhao' Scheme for information, education and child development were missing for the years 2014-15 and 2015-16. In Punjab, even the Utilization Certificates (UCs) and Statements of Expenditure (SOE) could not be produced from the districts, and also no meetings were held as monthly progress reports were not there. All this points to weak implementation and failure of monitoring mechanisms. Moreover, as per Punjab Appraisal Report 2019-20, there were 18 per cent primary schools where three subject teachers were unavailable as per RTE norms while there were as many as 94 per cent secondary schools where four subject teachers were unavailable. Also, 27.04 per cent seats were unoccupied against anticipated girl's enrolment in KGBVs Type I & II while 4.86 per cent were lying vacant in KGBVs Type IV (Punjab Appraisal Report, 2019-20). Thus, only starting of schemes will not suffice and proper implementation and supervision should be ensured so that more and more children are able to reap benefits and these schemes succeed in achieving their targets of bringing more girls to schools. These irregularities demand urgent attention on the part of the authorities so that out-of-school children are brought under the umbrella of formal school education; and physical and human resources are not wasted, rather utilised efficiently.

7.3. SCHEMES INITIATED BY THE STATE GOVERNMENT

State governments are also enterprising in this direction. Punjab government has also started some consequential ventures to promote school education and devoted schemes to endorse the mission of girl education. Some of the momentous initiatives by the state government in this relation are summarized below:

Table 7.4: Various Schemes of the State Government to Promote Female Education

S.N.	Name of the Scheme	Education	Year of Start	Objectives	Achievements
1.	Kanya Jagriti Jyoti Scheme	All	1996-97	To elevate the social status of girls and to decrease the school drop-out rate	<ul style="list-style-type: none"> • At the time of birth of girl child, Rs. 5000/- are deposited with LIC. • Rs.1200/- p.a. scholarship from 6th year to 12th year of age and Rs.2400/- p.a. scholarship from 12th year to 18th year of age or total amount is provided at the age of 18 or 21 years as per decision of the family. • Every year there are about 8000 beneficiaries.
2.	Mai Bhago Vidya Scheme	Secondary	2011	<ul style="list-style-type: none"> a) To improve girl education scenario in the state b) To encourage girl child to complete secondary education c) To improve education among BPL girls 	<ul style="list-style-type: none"> • Free bicycles are provided to the girls in 9th to 12th class. • It was initially started for 11th & 12th class girls. Later, it was extended to 9th & 10th class girls also. • There were 2,00,000 girls' beneficiaries during the year 2018-19.

S.N.	Name of the Scheme	Education	Year of Start	Objectives	Achievements
3.	Bebe Nanki Ladli Beti Kalyan Scheme	All	2011	a) To improve sex ratio by changing mind set of people b) To educate girl child c) Monetary benefit on the birth of girl child	<ul style="list-style-type: none"> Parents of girls born after January, 2011 were to be given Rs 61,000 in a phased manner (i.e., after birth, vaccination, enrolment in primary education, enrolment in secondary education, attainment of age of 18 years, & enrolment in 12th class). The state government will deposit Rs. 20,000/- with L.I.C. per girl/per beneficiary at the time of birth of a girl in BPL family. LIC will disburse total amount of Rs. 61,000/- to the guardian of girl child in small instalments for her education. There were 26,875 beneficiaries during the period 2011-15
4.	Swasth Kanya Yojna	All	2016	To improve health & educational status of girls	<ul style="list-style-type: none"> Stationary filled school bags were to be distributed free of cost among all girl students from classes 1st to 12th studying in government schools. Free 'Kanya Healthcare Kits' were also to be distributed among girls studying in 6th to 12th class in government schools to promote hygiene & reduce absenteeism each month.

S.N.	Name of the Scheme	Education	Year of Start	Objectives	Achievements
5.	Padho Punjab Padhao Punjab Project	All	2017	<p>a) To spread literacy for all, increase in gross enrolment ratio and decrease drop out ratio</p> <p>b) To improve performance of weak students & to create equal opportunities for them</p> <p>c) To enhance creativity of brilliant students</p> <p>d) To make them study without fear & burden through activities</p> <p>e) To add new techniques, supplementary material, activities, planning, reforming curriculum</p>	<ul style="list-style-type: none"> • It has been decided by government to provide free education to all up till class XII. • Pre-primary classes in 12,921 government schools across Punjab. Enrolment of 2.50 lakh children has already been done. • 1844 toilets have been constructed in 523 schools in rural areas. • In 217 Educationally Backward Blocks, 273 smart schools have been set up at a cost Rs 30 crore. • 5500 Primary, Middle and High Schools have been converted into smart schools. • State Education Department has developed e-content for all the subjects for pre-primary to class 10 under Digital Education and is spreading it to all schools. Best schools will be rewarded and teachers will be appreciated. • 3582 new teachers have been recruited and in-service training has been given to 90,664 teachers. Also, 400 Evaluation centres have been established for quick evaluations within 15 days. • Easy processing of verification, name correction & evaluation in Punjab School Education Board. • More than 79 percent students attained the prescribed learning level targets. Improvement of more than 35 percent, 24 percent and 21 percent students in Mathematics, Science and Social Studies subjects in Class 9 & 10.

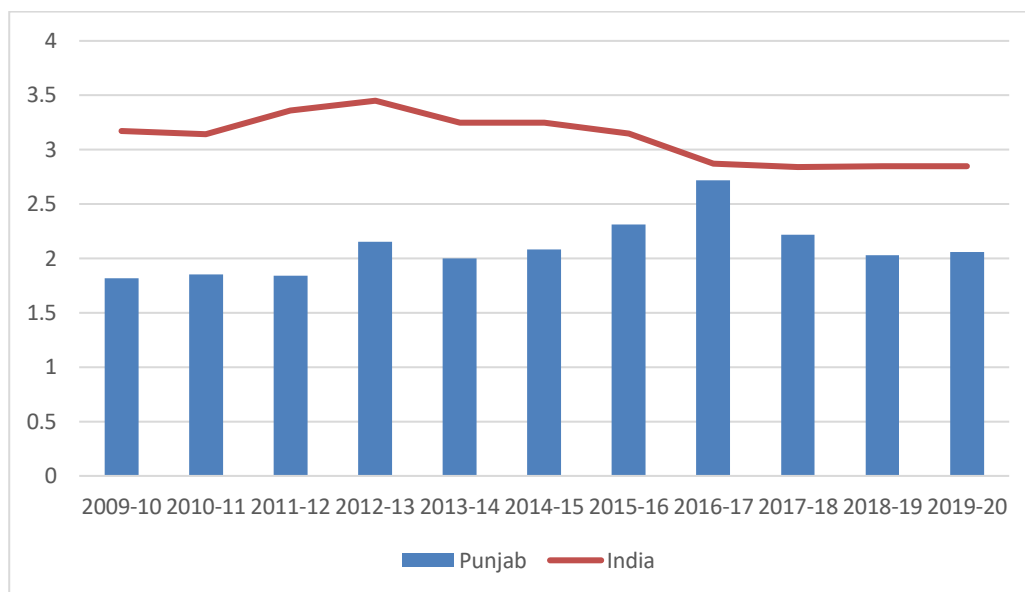
S.N.	Name of the Scheme	Education	Year of Start	Objectives	Achievements
6.	Punjab Mobile Phones to Youth Scheme	Higher Secondary	2020	To provide students with easy digital access to educational content online.	<ul style="list-style-type: none"> • Free Smartphone distribution scheme to all the students of classes 11th & 12th. • With a total outlay of approximately Rs 90 crores, smartphones were distributed among 1,74,015 students.
7.	Girls' Schools	Secondary		<p>a) To strengthen schools in terms of basic infrastructure facilities.</p> <p>b) To open meritorious schools to provide quality education to students from poor families.</p>	<ul style="list-style-type: none"> • 121 Government high/senior secondary schools in 144 blocks were strengthened in terms of basic infrastructure, facilities like, girls' toilet. • 7 residential schools with capacity of 6200 students have been opened in districts of Amritsar, Bathinda, Jalandhar, Ludhiana, Mohali, Patiala and Hoshiarpur. Three more schools in (Ferozepur, Gurdaspur and Sangrur) were going to be functional in 2016-17.
8.	Women's Health and Menstrual Hygiene	All	2020	To improve menstrual health of girl students.	Sanitary napkin vending machines and incinerators are to be installed in 3550 government schools with an estimated outlay of Rs. 2343.00 lacs.

Source: Author's elaboration from various government reports and websites

Apart from the numerous schemes initiated and are being run by the state government (as mentioned in the table 7.4), numerous other initiatives are also being taken by the state government like, developing infrastructure facilities and providing free text books in government schools, and constructing girls' hostel in educationally backward blocks for girls in 9th to 12th class in order to promote secondary education among girls in these areas. Career Guidance Programme for Girls has also been proposed wherein motivational and counselling camps are planned to be organised for girl students under Beti Bachao Beti Padhao Scheme so as to boost their self-confidence and convince them to pursue higher educational goals (GOI, 2020). We are moving in the right direction and these efforts of the government have gone a long way in augmenting female enrolments and literacy rates. Female literacy rate amplified from 50.41 per cent in 1991 to 70.7 per cent in 2011, total female school enrolments swelled by 50 per cent during 1991 and 2021 but we can't yet say that the task is completed as we are not only short of the physical target of cent percent female enrolment and literacy, but also have a challenge of maintaining the progress achieved already. According to Punjab Appraisal Report 2019-20, there was a decline of 17 percent and 16 percent in enrolment at primary and upper primary level respectively in 2017-18. Also, annual average dropout has augmented in 2017-18 from preceding year at all levels of school education and therefore, the transition rates have fallen. These are not good indicators because it suggests that we have lost the success that we attained previously. Further, Reports on Analysis of Budgeted Expenditure on Education for various years reveal that budgeted expenditure as percentage of gross state domestic product in Punjab is seventh lowest among all the states and UTs in the country.

Figure 7.1 makes it clear that budgeted expenditure as percentage of gross state domestic product has remained very low in Punjab as compared to all India average during the period 2009-2020. Though it showed an increase between 2009 to 2017, but has been declining since after. Thus, it is clear that expenses on education as a proportion of state GDP is far from sufficient in Punjab. Further, Punjab Appraisal Report 2019-20 also mentions that the percentage of total expenditure against anticipated amount for Samagra Shiksha was merely 52.72 per cent. This means that just a little over half of the allocated amount for the scheme is being used and the rest

has not been claimed for expenditure yet, which undoubtedly indicates a slow and faulty implementation.



Source: Analysis of Budgeted Expenditure on Education for Various Years

Figure 7.1: Percentage of Budgeted Expenditure on Education to Gross State Domestic Product (India & Punjab) during 2009 to 2020

Moreover, according to Kainth (2013), elementary schools in rural Punjab suffer from lack of infrastructure, teaching aids, lack of funds availability and the lack of dedication among the teaching staff and its shortage. Besides, shortage of non-teaching staff compelled teachers to undertake non-academic work and therefore, they could not fully concentrate on teaching work. Also, according to Kainth (2013), in spite of the efforts of Punjab government, the educational standing of Punjab is not advancing as desired and standards of education are deteriorating fast. Few possible reasons are (a) insufficient inputs, together with teachers, (b) flawed curriculum, (c) absence of regulation and direction, (d) lack of definite education policy, (e) concentration of authority with the ministry, putting aside the education officers, (f) irregular dispersal of funds, and (g) a corresponding arrangement of entirely autonomous public schools. Apart from these, unfortunate financial state and ignorance of the parents also act as hindrances in the path of child education (Kainth, 2016).

7.4. CONCLUSION

It is evident that government at the state and central level has initiated ample schemes for the spread of education among the masses. These schemes have led to improvement in access and quality of education and also, physical and social infrastructure in schools have improved. All this has given a push to school education in general and female school education in particular and therefore, fourth hypothesis, that various schemes of government have led to no improvement in parameters of girls' education, is rejected. At the same time, it is to be kept in mind that steady vigil and evaluation are desperately called for to retain the success achieved and to save us from falling back to previous levels. Basic support like, increase in expenditure on education, smooth flow of funds; provision of required infrastructure; adequate, trained and dedicated teachers; sufficient non-teaching staff; and making education skill oriented and job based will definitely give an impetus to school education in general and particularly secondary education among girl children. Besides, innovative steps are required to not only bring more and more girls in to schools but also to keep them there till the completion. Renewed and dedicated efforts, both on the physical as well academic front, are desirable. Like to give a spur to female secondary education, transport facility can play a significant role. So, apart from distributing cycles among girl students, free bus facility can be provided by the government to reduce the travel time and ensure safety while going to and coming from school. Further, education for its own sake indeed has an intrinsic value, but education and training that prove valuable in the workplace are also indispensable. Therefore, changes in academic environment, particularly the curriculum, are immensely necessary and skill based vocational education should be made part of the syllabi which will motivate students and parents alike, as envisioned in New Education Policy 2020. The Child Labour (Prohibition and Regulation) Act, 1986 should be implemented in letter and spirit and severe punishments be conferred upon those who employ children under the age of 14 years. In order to remove the barriers of poverty and illiteracy of parents, poor parents can be motivated by offering them additional freebies in lieu of the income forgone by them while sending their daughters to school. Also, inspirational lectures should be organised for the parents to make them ascertain the significance of learning in their daughters' lives.

Chapter - 8

CONSTRAINTS IN ATTAINMENT OF SCHOOL EDUCATION IN PUNJAB

8.1. INTRODUCTION

Importance of education, and particularly female education, has already been established in previous chapters. Also, literature supporting the role of female education in promoting improvement in standard of living of masses; health and hygiene of family; and above all, social and economic growth has also been witnessed. At the same time, it has also been understood that the issue of female education, though showing progress, still needs continued attention because it is facing various challenges. Women education was not considered important in ancient times and discrimination against women in various aspects of life, including education, is practised even today. The world has no doubt turned its attention towards education for girls and gender equality in education, but the goal is not yet achieved and much work remains to be done yet. Despite the efforts of the governments, NGOs, activists and society at large, there are many challenges in the way of female education. Many girls face resistance from the parents, relatives or society due to one reason or the other. If a family having both male and female children face any financial constraints, they opt to send only boys to school. Moreover, girls are also denied school education so as to take care of younger siblings, work at home or at fields. If they manage to go to school, they have to face safety and bullying issues apart from lack of proper infrastructure such as separate toilets for girls, *etc.* These difficulties still exist around the globe, though in varying intensity.

In India, many efforts have been put by the government since independence for promotion of women empowerment and education. National Education Policies (1986, 92 and 2020) along with various acts (Prohibition of Child Labour; Prohibition of Child Marriage Act; Right to Free & Compulsory Education, 2009; etc) and schemes (Sarva Shiksha Abhiyan, Mid-Day Meal, *etc.*) have been initiated

for the expansion of education among women in the nation. Various schemes at the state level are also being pursued by different state governments to promote this cause. In Punjab state also a variety of schemes like, Mahila Samkhya, Mai Bhago Vidya Scheme, *etc.* are being run to spread female education. But, various studies at the state as well at the central level show that there still exist many challenges deterring female education in the country. Substantial research at the country level has been conducted to understand the problems that the girls face while pursuing their academic journey however, not much work is done in this area in Punjab. Limited research that had been undertaken in the state was restricted in its scope. Hence, there is a need to bridge the gap in order to generate policy suggestions for the administrators. In this chapter, a qualitative study has been attempted with the aid of primary data from school going girls to understand the challenges that they face while pursuing school education in Punjab.

8.1.1. Qualitative Research

Research is broadly classified in to two types: quantitative and qualitative where quantitative research is associated with numbers and qualitative research is associated with attributes. Qualitative research is helpful in studying those situations where people's behaviour and their interpretation about something are to be given weightage that is often missed in quantitative researches. It studies people and objects in their usual surroundings and endeavours to understand outcomes in terms of the meanings that people attach to them. As it is more related to psychological or behavioural aspects, therefore, this approach of research is flexible and can be adapted as per requirement and also, structure and direction of the research can be modified in light of new information. This type of research is generally based on small sample due to which sensitive and important issues can be examined in detail by collecting elaborated data from small sample and performing in depth analysis (Sandelowski, 1995). No doubt qualitative research is frequently criticised on the ground that its findings cannot be generalised for a larger population as these are generated from a small sample, yet it is also true that the findings of qualitative enquiry, though generated from a small sample and therefore difficult to be generalised, are transferable to another setting. Accusations are also made that

qualitative research is highly dependent on the skills and knowledge of the researcher and its findings are more likely to be influenced by researcher's own prejudices and opinions. Owing to these allegations, findings of qualitative research are not very well understood and accepted in the scientific community as that of quantitative research. However, contrary to the popular belief, policy decisions in many fields including those in education are increasingly updated by findings from quantitative as well as qualitative research. Qualitative research is particularly useful to policymakers because it often describes the settings in which policies will be implemented (Anderson, 2010). Moreover, according to Maxwell (2012), qualitative studies are capable of providing valued and dependable information of educational environments, their activities, settings where these have been placed, and understandings that stakeholders, especially students, attach to them.

Qualitative investigation includes the deliberate usage and gathering of diverse empirical information i.e., case studies, individual experiences, interviews, observations, *etc.* that explain normal and challenging moments and meanings these have in people's lives (Denzin and Lincoln, 2005). There are many ways to carry out qualitative research and which one, or a combination of them, to use depends on the objective and the scope of the study along with the nature of the participants. In this study, data have been collected from girl students in government schools through interview method. Kozleski (2017) states that qualitative study, which is done carefully and mainly by sustained personal observation and interviews, contributes gainfully to educational research. Interview method is most appropriate method for studying intricate and delicate issues such as the one in current study and also when the respondents belong to a sensitive group such as young girls belonging to school going age-group. In this approach, the interviewer gets the opportunity to prepare the respondent before asking penetrating questions and to explain difficult one (Conroy, 2010).

8.1.2. Validation Measure

Qualitative research also incorporates validation strategy to add academic rigour and credibility to its results. One such validation strategy is triangulation, in which data is

collected from more than one source (Maxwell, 2012). Many qualitative studies make use of the technique of triangulation, which is a diagnostic procedure applied while doing fieldwork and also afterwards, while formal examination, to validate an outcome with evidence from two or more diverse sources (Yin, 2011). Collection of data from different stakeholders with different views helps in comparing their perceptions and perspectives. In present study, collection of data from different stakeholders i.e., girl students, their parents and teachers provided for triangulation and thereby contributed in increasing legitimacy of the evidence and giving strength to the conclusions.

8.1.3. Method for Data Analysis

There are two ways to carry out a qualitative study: inductive and deductive approach. In inductive approach, first of all data is gathered and then from this data, various concepts, themes and theories are generated. However, deductive approach starts with an explicit structure and then involves using that predetermined framework to analyse the collected data (Burnard *et al.*, 2008). Generally, qualitative enquiries are based on inductive reasoning and therefore, their results remain untested. Introduction of deductive method into qualitative study is an important step towards developing faith in findings of qualitative research (Hyde, 2000). Hence, deductive approach to qualitative research has been adopted in this study so as to check whether prevalent notions about female school education, as depicted in existing literature, are true in case of Punjab or it is facing some other challenges in this regard. To carry out the process, first of all a theoretical framework, depicting widespread issues in the attainment of female school education, has been developed through review of the existing literature. Afterwards, a conceptual framework has been constructed in which these issues have been clubbed in to broad categories or themes and also, propositions based on these themes and sub-themes are then framed to be checked for being true or false based on presence or absence of the themes or sub-themes in the collected data.

8.2. THEORETICAL FRAMEWORK

Several researches have been conducted around the world to find out hurdles that women face in their academic journey, and found that problems included: safety

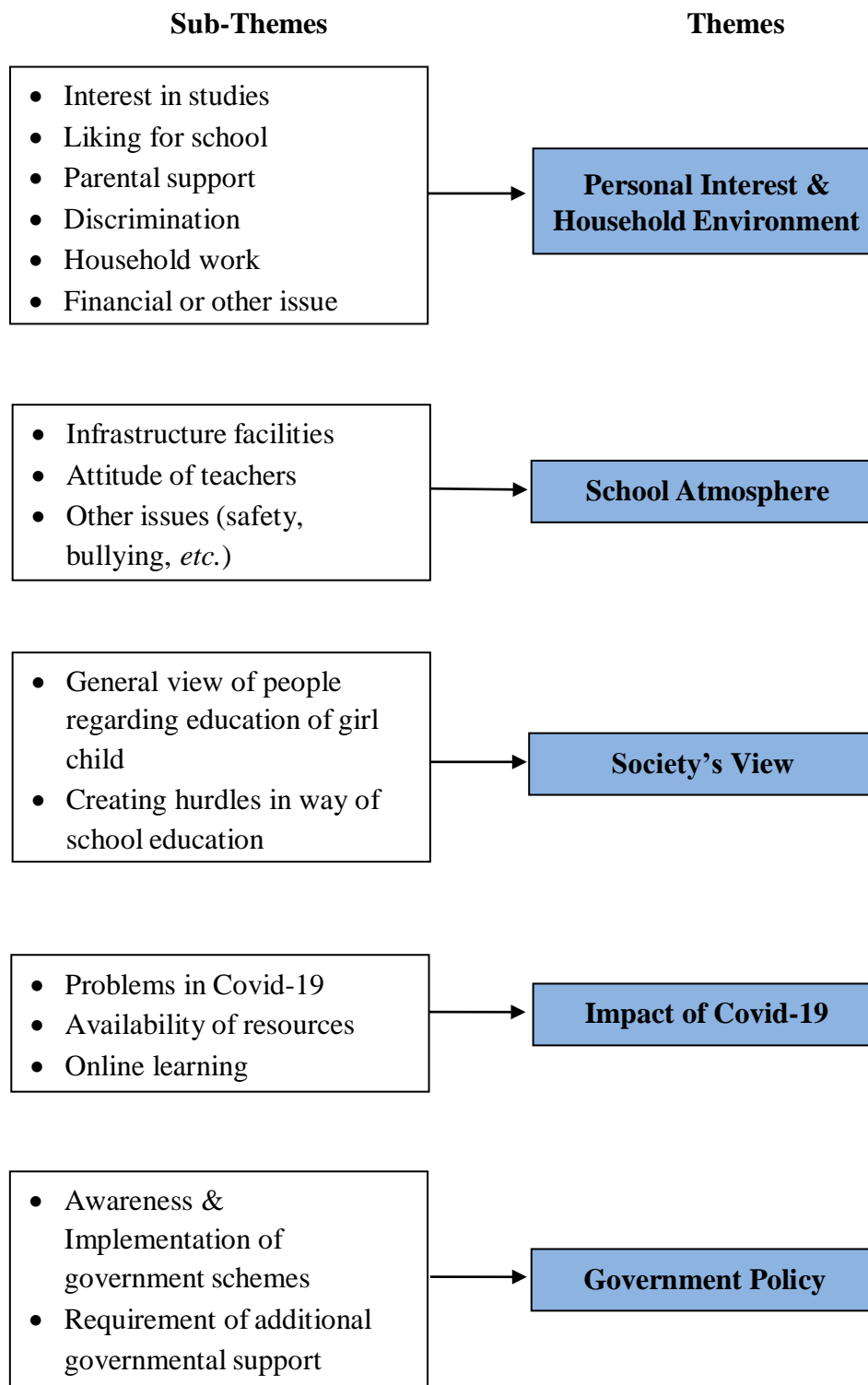
concerns, financial issues, household chores, school and hygiene related issues, *etc.* (Singh, 2016; Meera & Jumana, 2015; UNICEF Report, 2005; UNICEF Report (n.d.); and Rena, 2004). Financial status of the family was observed to be the deciding factor in case of school related issues in India (Misra *et al.*, 2017; Sharma & Ng, 2014; Malik, 2013; and Basumatary, 2012). Apart from these, familial issues such as illiteracy among parents, separation of parents, orthodox mentality, *etc.* were considered to be prime causes of drop-out from school education (Marwaha, 2018; and Yadav *et al.*, 2011). However, Chauhan and Kumar (2022) asserted that besides financial troubles, early marriage and gender discrimination also hindered education among females. Many researchers found evidence in support of household chores coming in way of female school education (Njie *et al.*, 2015; Assad *et al.*, 2010; and Kruger & Berthelon, 2007). To overcome this problem, it is imperative to change the mentality of parents and members of the society. On the other hand, Sharmila and Dhas (2010) argued that rural poverty, rather than restraining, in fact promoted female education.

Likewise, several researches at national level observed numerous school-linked obstacles in way of female education like, violence and safety concerns at school, distance from school, *etc.* (Jain *et al.*, 2016; Bhattacharjee, 2015; King & Winthrop, 2015; Yadav *et al.*, 2011; and Rena, 2004). On the other hand, issues concerning academic atmosphere of the school like, behaviour of instructors, pedagogy, *etc.* are also found to be influencing female school education and leading to high school drop-out among them (Sampath, 2016; Singh, 2016; and Sharma & Ng, 2014). Additionally, lack of female teachers, inefficient teaching or supervision, gender biased syllabi, and insufficient teaching-learning resources also hinder female school education in India (Meera and Jumana, 2015). Besides these, unwillingness to attain modern education and misunderstanding the ethos of formal education by the girls, lack of resources, orthodox and restricting culture that pressurises for performing prescribed gender roles, apart from inadequate policy support from the government has inhibited the growth of female school education in the country (Ahamad & Narayana, 2015). Challenges in way of women education are not uniform across different levels of school education (Nair, 2010). Primary education is influenced

more by the personal or household related issues like, psychology of the student and social atmosphere whereas secondary level education is more influenced by financial and school related issues like, remunerative occupation and safety concerns. Women are discouraged from registering into and completing higher education because little or no importance is given to the economic relevance of their knowledge. No doubt the advancement in terms of school enrolments is noteworthy, yet there is still much to be done to retain girls in schools as there are high drop-outs among them, especially at secondary level (Malik, 2013). Pandemic-related interruptions in education systems have worsened the access and intensified learning disparities even more for vulnerable groups of girls and young women (UN Report, 2022). Covid-19 has exacerbated issues in education such as that of access, safety, privacy, *etc.* (Madhav & Tyagi, 2022; and Nair & Tyagi, 2021) and it has even worsened the gender disparity in the field of education (UNICEF Report, 2020). In addition, GIRL Centre (2022), in a study concerning India, observed that closure of schools during the pandemic resulted in different impact on boys and girls in terms of access and use of digital resources for online classes. It was also found in the study that as the girls stayed at home during this time, they faced increased burden of household chores. Thus, literature suggests prevalence of numerous challenges in way of female school education and a detailed study is therefore warranted so as to better understand these challenges and be able to remove them.

8.3. CONCEPTUAL FRAMEWORK

This conceptual framework lays out themes and sub-themes depicting various issues/obstacles that exist in the attainment of female school education.



Source: Developed by Author from Review of Literature

Figure 8.1: Conceptual Framework laying out Themes & Sub-Themes

Based on the above conceptual framework, following propositions have been framed for testing from the data:

Table 8.1: Propositions

<p><i>P1: Student herself doesn't like to study or going to school.</i></p> <p><i>P2: Student's parents are not interested in educating her.</i></p> <p><i>P3: Student's family doesn't extend support to her in studies.</i></p> <p><i>P4: Student is being subjected to discrimination on the basis of gender.</i></p> <p><i>P5: Student has to spend time in household chores or taking care of younger siblings.</i></p> <p><i>P6: Existence of financial or any other family problem.</i></p> <p><i>P7: Society is not in favour of female school education.</i></p> <p><i>P8: Distance from home to school is long.</i></p> <p><i>P9: School infrastructure is unwelcoming.</i></p> <p><i>P10: Student is facing bullying or safety issues at school.</i></p> <p><i>P11: Behaviour of teachers or other school staff is unsupportive.</i></p> <p><i>P12: Covid-19 had introduced/aggravated problems in student's school education.</i></p> <p><i>P13: Government schemes not being implemented properly.</i></p> <p><i>P14: Lack of awareness regarding government schemes.</i></p> <p><i>P15: Additional governmental support is required.</i></p>
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Source: Author's Elaboration

On the basis of these propositions, semi-structured interview schedules were designed and interviews were conducted.

8.4. EXECUTION OF THE SURVEY

A survey has been conducted through the aid of semi structured interview schedules in which data have been gathered from 5 teachers, 18 parents (i.e., mothers) and 50

girl students from government schools of Punjab. Interview schedules prepared in advance helped in maintaining focus and flow of the interview. However, as the interviews were semi-structured, sequence of the questions could be modified and probing questions could be asked as and when required. Such interviews provided more flexibility to the interviewer and also allowed respondents to give elaborated replies to the questions (Conroy, 2010). Every respondent was presented with a similar set of questions relating to their views and experiences of female school education. Majority of the questions were open-ended with a small number of closed questions relating to information such as age, class, school, *etc.* The sampling method adopted is a combination of purposive and convenience sampling. First of all, two districts having high female literacy (i.e., Hoshiarpur and Jalandhar) and two having low female literacy (i.e., Muktsar and Bathinda) were selected so as to make the sample representative of the population. In next step, one government school from each of the four districts was selected on grounds of convenience, where investigator's contact could be established through one of the acquaintances. Those girls from classes 7th to 12th, who were willing for the interview, were interviewed.

8.5. DEMOGRAPHIC PROFILE OF THE RESPONDENTS

In this section, demographic profile of the participants has been given.

8.5.1. Teachers

One teacher each from the selected schools was interviewed with whom the contact was developed through third party. Another acquaintance of the researcher, who is also a government school teacher in village Jamsher Khas of Jalandhar district, was also interviewed for this study. All the teachers belonged to 30-40 years age group and four of the five teachers were females.

8.5.2. Students

Here, number and percentage share of the student respondents with respect to school/district, class and age have been given.

Table 8.2: School & District wise Number & Percentage of Student Respondents

Districts	Hoshiarpur	Jalandhar	Bathinda	Muktsar
Name of School	Government Sr. Sec. School	Government Girls' Sr. Sec. School, Nehru Garden	Government Sr. Sec. Smart School	Government Sr. Sec. Smart School
Name of Village/ City	Sekhri	Jalandhar	Bhodipura	Faqarsar Theri
Area	Rural	Urban	Rural	Rural
Number & Percentage of Students	13 (26%)	14 (28%)	12 (24%)	11 (22%)

Source: Author's Elaborations from Survey Data

Table 8.2 makes it clear that there is almost equal representation of students from all the four schools in the sample however, proportion of respondents from rural area is higher than those belonging to urban area.

Table 8.3: Class-wise Number & Percentage of Student Respondents

Classes→	Class 7	Class 8	Class 9	Class 10	Class 11	Class 12
Number & Percentage of Students	3 (6%)	12 (24%)	6 (12%)	7 (14%)	11 (22%)	11 (22%)

Source: Author's Calculations from Primary Data

Table 8.3 shows that students from class 8th got the greatest representation in the sample (i.e., 24 percent) and students of classes 11th and 12th got the second most at 22 per cent each. Students of classes 10th and 9th formed 14 percent and 12 per cent of the sample respectively whereas students from class 7th formed the least proportion i.e., only 6 per cent. Therefore, students from elementary level of school education (i.e., classes 1st to 8th) formed 30 per cent of the sample whereas students from secondary level (i.e., classes 9th to 12th) formed 70 per cent. This was mainly due to the fact that girls studying in higher grades were more aware and hence, more vocal. Moreover, they were more confident and willing to participate in the survey whereas younger girls were hesitant and less willing.

Table 8.4: Age-wise Number & Percentage of Student Respondents

Age→	12 years	13 years	14 years	15 years	16 years	17 years	18 years
Number & Percentage of Students	4 (8%)	5 (10%)	11 (22%)	7 (14%)	11 (22%)	8 (16%)	4 (8%)

Source: Author's Calculations from Primary Data

Data in table 8.4 show the age composition of the sample and it is evident that girls of different ages were part of the sample however, proportion of respondents is higher for higher ages.

In a study investigating theoretical saturation in data, the researchers found that data saturation started to become obvious at 6 in-depth interviews and certainly evident at 12 in-depth interviews amongst a sample of women in two countries (Guest, Bunce & Johnson 2006). In present study also, the researcher had a similar experience and therefore, selection of sample size has been based on the judgement of the researcher in relation to reaching the point of satiety in additional evidence pursued and this finds support in arguments of Sandelowski (1995) that “An adequate sample size in qualitative research is one that permits-by virtue of not being too large-the deep, case-oriented analysis that is a hallmark of all qualitative inquiry, and that results in-by virtue of not being too small-a new and richly textured understanding of experience”. Consequently, the answer to the question as to what creates a suitable sample size in qualitative research exists within the framework and reason of the research being done (Boddy, 2016). After conducting interviews of students of a particular school, parents (i.e., mothers) of those girls were interviewed who gave their consent for the same.

8.5.3. PARENTS

Here, number and percentage share of the parent respondents with respect to level of education and type of occupation have been given.

Table 8.5 : Education Level of Parent Respondents

Education Level	Not Literate	Elementary	Secondary	Graduate
Number & Percentage of Parents	6 (33%)	3 (17%)	9 (50%)	-

Source: Author's Elaborations from Survey Data

Table 8.5 shows that 67 percent of the parents, who participated in the survey, were educated whereas 33 percent did not receive any education and hence were not literate.

Table 8.6 : Occupation of Parent Respondents

Occupation	Housewife	Own Work	Farming	Employee
Number & Percentage of Parents	14 (78%)	1 (5%)	-	3 (17%)

Source: Author's Elaborations from Survey Data

As per table 8.6, 78 percent of the parent respondents were housewives whereas 17 percent were employees working as either daily wage worker or domestic help and five percent (only one of them) worked on their own as tailor.

8.6. ANALYSIS & DISCUSSION

As this study adopts the deductive methodology of qualitative research, therefore in this section, responses of the participants have been interpreted in light of the broad themes that were generated from review of literature and were highlighted in section 8.3 of this chapter. Then in the last part of this section, these interpretations have been summed up to either accept or refute the propositions developed from the aforementioned themes and presented in section 8.3.

8.6.1. Personal Interest & Household Environment

All the 50 girls who were interviewed for the study showed liking for school. When asked whether they liked going to school, most responses were – “yes a lot, very much, why would I not, yes as it allows me to meet my friends...” Girl students also

exhibited a keen interest in their studies. When asked whether they liked to study, their responses were in affirmative. One of the girls went on to say that

“Of course, I like to study. Mathematics is my favourite subject. Moreover, madam, we shall become something in our lives only if we study.”

(Translated from Punjabi)

Except for occasional incidents of irregularity among them due to health reasons, almost all were regular in going to school and attending classes. Positive attitude of girl students towards school and studies was also confirmed by the parents and the teachers. One of the teachers remarked,

“Girls are generally sincere in their studies. There are very rare cases where the girl student goes astray, loses interest in her studies and is therefore, pulled out of the school by the parents.”

Emotional and financial support from parents is quintessential for the girls to move ahead in the direction of education. The survey revealed that school girls were getting support of their parents in receiving education. All of the 18 parents who were interviewed said that they attended Parent-Teacher Meet (PTM) in their daughter’s school. When they were asked what kind of support they provided in their daughters’ studies, they replied – “everything, we give full support, there is no pressure of household work...” Most of the school teachers supported this statement and affirmed that most of the parents followed up on their daughter’s education. Also, it was confirmed by the girl students that they were getting the required parental support in their studies. When it was asked to them whether someone at home supervised their homework, responses were – “I do it myself, no one, my elder brother, elder sister...” i.e., almost half of the girls said that they studied on their own while the other half were availing help of their elder siblings. However, when further probed whether their parents asked about their studies then all of them asserted that their parents kept a vigil on their work and progress. Their responses were – “yes, frequently; yes, my mother asks me to study; father asks sometimes, mostly my mother does...” When asked what additional support in studies they got from the

family, they responded – “my father drops me to school, my parents bought me a cycle to go to school, they buy me books, stationery, uniform, etc...” However, when teachers were asked whether the parents took any advice for their daughter’s future/career, then their responses were not very positive and included phrases like – “not really, they themselves are not much educated, they don’t have so much of awareness...”. One of the teachers replied,

“Most of the parents in villages are sending their daughters to schools because education in government schools is either free or very nominal. They are not able to afford college education for them and just want their daughters to complete school education and get married.”

Teachers as well as girl students both agreed with the statement of parents that no partiality was being done towards education of their daughters and sons. Moreover, on asking as to what was their opinion regarding relative importance of girls’ and boys’ education, a mother answered,

“I think it is more important to educate girls today so that they become independent, unlike us, who are less educated and therefore have to look towards others for provision of resources. If girls are educated, they can take care of themselves.”

(Translated from Punjabi)

On one more instance, a mother having three children, a boy and two girls, stated her preference among education and saving for marriage of the girl child in the following manner,

“We are not thinking about their marriage as of now, education is our priority... if they are well educated then they shall become independent in life and can marry themselves.”

(Translated from Punjabi)

When teachers were asked whether there were instances of girl students and their brothers attending different schools, they were unaware of it. However, around 16 per cent of the girls reported that during Covid-19, due to weak financial position of their parents, they were shifted from a private school to the current government school and around 8 percent out of these 16 percent reported that their brothers were not shifted. This points to the fact that when parents faced financial difficulty, daughter's education took the back seat rather than son's education.

Another aspect which was explored was the extent to which girl students were involved in household chores. It is true that generally parents were not in support of early marriage of their girls but, at the same time, they involved them in house related tasks and expected them to learn these apart from their studies. At the same time, almost all the parents said that neither household duties nor field work were deterring their daughters' education as no pressure was being exerted on them. Girl students' responses in this regard were – “yes, I help my mother in housework, I do household work regularly, there is no compulsion on me to perform household duties, my mother doesn't ask me to do housework during exams...”. It was observed during the survey that in high literacy districts i.e., Hoshiarpur and Jalandhar, girls were not put under any compulsion or pressure to perform household tasks daily. Moreover, during exams, they were given the freedom to focus completely on their studies. However, in low literacy districts of Muktsar and Bathinda, girls did feel a compulsion to help their mothers with household chores on daily basis. Also, when girls were further probed as to whether their brothers also helped in house hold chores, then some of them laughed while others replied in negative. This shows that traditional mindset with regard to gender roles still exists in households in Punjab. Undeniably, around the world, the obligation of house related tasks falls more on women however, such mind-set is deeply enrooted in culture and social atmosphere of our country and even higher in the state of Punjab, and becomes obvious in some cases. One such heart-rending episode happened in village Jamsher Khas (district Jalandhar), as narrated by a teacher in Government Primary School there. Jaspreet, a 10 years old girl, who studied in 4th class, could not go to school subsequent to her mother's death because she was entrusted with the mammoth task of managing the entire household by her father. The teacher further said that,

“In incidents involving separation of parents or mother leaving the house, daughters’ and their learning take the worst hit as they are burdened with the responsibility of the household chores and taking care of the siblings.”

The same teacher also informed that education of children also suffers in Punjab due to the problem of drug abuse among one or both of the parents, but this generally affects the education of daughters and sons alike.

Another teacher apprised that there were also incidents of girls dropping out of schools in low literacy districts for the purpose of earning livelihood. The main reason for this was the weak financial health of their parents due to which these girls could not proceed to secondary or higher education. These girls were made to learn some skill like, stitching, embroidery, cosmetology and make-up art, *etc.* so as to be able to start earning early. This was also confirmed by a couple of girls who did not hesitate to uprise of the actual situation. One of these two girls from government school in Muktsar told that,

“Here, some parents withdraw their daughters from school education to make them learn stitching, tailoring or beautician work so that they can start earning immediately.”

(Translated from Punjabi)

The second girl remarked,

“I go to school but my elder sister, who passed twelfth class last year, has not been admitted to the college and remains at home. She has been asked to, and is therefore, learning stitching to earn extra income. I don’t know whether I shall be allowed to go to the college or not.”

(Translated from Punjabi)

It needs to be mentioned here that it was not a general phenomenon and most parents let their daughters complete their elementary education however, few of them pulled

their daughters out of secondary education due to reasons which included: financial difficulty, making daughters earn livelihood, and early marriage or preparing them for marriage by making them learn household chores.

8.6.2. School Atmosphere

Approachability to school and its infrastructure contribute substantially in enhancing female school education (Giri & Shrestha, 2017). As the school becomes more distant, the risk involved in journey to school works as a big hindrance in the path of girls' school education. Frequent instances of abduction and harassment lead to this anxiety. When it was asked as to how they went to school, nearly 45 per cent of them replied that they went to school on foot, around 30 percent went on bicycles, about 10 per cent went by auto while the remaining 15 per cent of girls were taken to school by father or brother. The girls who went to school independently were further probed whether they went alone or in group, replies of all of them were like – “I go with the group of my friends, me and my sister go together, I go along with my brother, I go to school with a friend...” i.e., none of them went alone so as to ensure that the journey was safe. It was also asked to them whether they felt safe while going to and coming from school, then their answers were in affirmative and comprised – “yes I do, we go to school in group so there is no fear, yes roads are busy during the day time, I go with my brother/sister so I feel safe...” In this context, remark of one girl is highlighted:

“Me and my sister go to school together. Actually, we take that route to school which has our father’s shop on the way and so, we feel quite safe.”

(Translated from Punjabi)

No doubt none of the girls said that she did not feel safe, but observing these responses carefully gives an idea that there is an inherent fear of going alone in the minds of girls which, though not specific to school education only yet, needs to be considered while making policies to promote school education among girls. However, need for bus service by the school to ensure safety of girls was felt and

expressed by a couple of mothers who resided in a village and participated in the survey. One of them (from Bhodipura, Bathinda) stated,

“Distance to school is approximately 2-2.5 Kms as this is the only senior secondary school catering to three villages therefore, there should be the facility of school bus service so that safety of the girls is safeguarded.”

(Translated from Punjabi)

The survey also revealed that students of the government school in Jalandhar district came to attend the school from distant places and felt an immense need for the bus service by the school for convenience as well as safety. The teacher of the same school said in her interview,

“We got requests from numerous parents to start the transportation services and the same were communicated to the authorities. They have started the procedure and have asked us to collect data regarding the same.”

(Some part of interview was in English and some in Hindi, which has been translated in to English)

The aspect of quality of teaching in the school and attitude of teachers towards girl students was also explored in the survey and it was observed in all the districts that both girl students as well as their parents were unanimous in their opinion regarding teachers and teaching in the schools. They valued the hard work put in by the teachers while teaching pupils and showed their appreciation towards them in the following words – “teachers of the school are very nice and co-operative, teachers work very hard for the benefit of students, teaching is very good, teachers listen to us and help us...” Consequently, it can be concluded that the generally teachers performed their responsibility sincerely, working hard to enhance conceptual understanding among students, were listening to their concerns and solving their problems. Additionally, teachers did not discriminate amongst boy and girl students and showed parity in their attitude towards them. During one such interaction regarding instructors in the schools, a student commented,

“I like to study and I like going to school and I think it is mainly because our teachers are very good. They teach very well and are always ready to listen to our problems.”

(Translated from Hindi)

In interviews a couple of parents said that teachers needed to be more soft-spoken with the students. They said teachers should be sensitive towards needs of weak students and should give them extra time.

On the other hand, when teachers were asked about their opinion on this statement, they said they tried their best to bring all the students at par by giving attention to weak students but large number of students in the class did not allow them to give much time to any particular student. One of the teachers said that the pupil-teacher ratio in classes was generally as high as 50:1 whereas another remarked that it was as high as 90:1 mainly in 11th and 12th classes. Besides, they were so much burdened with additional work other than teaching that they could not spare time even in their free lectures. One of the teachers also said that teachers in government schools were transferred to different schools after some time due to which they couldn't focus on the development of their students and school. The same teacher went on to say that there was also lack of some subject teachers in schools and new teachers were not being recruited due to which extra burden fell on available teachers and ultimately, studies of the students suffered. This was also confirmed by a student of 9th class studying in government school, village Bhodipura (Bathinda):

“Our school has no science teacher and therefore, a provisional teacher is hired to teach us for which students are being charged.”

(Translated from Punjabi)

Thus, school authorities should not only ensure availability of all the subject teachers, but also note that teachers need to be freed of the additional duties and also, transfer of teachers should be done only when it is very essential so that they can focus primarily on the development of their students.

Infrastructure facilities at school such as separate toilets for girls, separate common room, medical room, presence of female teachers, favourable pupil-to-teacher ratio, *etc.* are extremely required for the smooth flow of good quality school education. Study of Kainth (2016) highlighted the poor condition of schools in Punjab such as dilapidated buildings and premises, unavailability of required learning and physical infrastructure, insufficient teachers, *etc.* However, in the survey, schoolchildren and their parents were found to be assured of the quality and adequacy of school infrastructure. Students were further probed regarding the quality of mid-day meal and the utensils in which these were served in the school to which they replied that quality of the food as well as cleanliness of the utensils was up to the mark. It was also enquired of them whether mid-day meal was cooked in the open or in shade to which they all said that food was duly cooked in kitchen sheds available in the school. This was true both for high as well as low literacy districts. But further questioning revealed that most of the girls in elementary education who participated in survey did not regularly avail the mid-day meal from school. Mostly they took their food along from home. However, when probed further regarding reason for avoiding the food at school, they did not say anything.

It can't be denied that government has taken serious steps to completely overhaul these schools and make them more attractive for the students. The building, classrooms, benches, *etc.* were adequate in all the schools and there was no dearth in the supply of study material such as blackboard, chalk, *etc.* All schools had proper boundary walls to ensure safety of students. Clean drinking water was accessible round the clock. Availability and regular use of playground, laboratories, library, *etc.* were also ensured. However, construction and renovation of playground and other infrastructure was going on in Government Senior Secondary School, Faqarsar Theri (Muktsar) at the time of the survey. Moreover, out of all the four schools, building of Government Senior Secondary School, Faqarsar Theri (Muktsar) was found to be least impressive. That may be because this is comparatively backward area and therefore witnessed slower development of public infrastructure. Furthermore, good level of general cleanliness, maintenance and decoration in premises were maintained in the schools in Jalandhar and Bathinda and also, gardens were well kept. In contrast

to this, in schools of Hoshiarpur and Muktsar, these things were not up to the mark. One important thing that was found missing in all schools except the one in Jalandhar was the medical room, to cater to the emergent medical needs of the students. One girl from government school in village Sekhri (Hoshiarpur) told in her interview that when any child gets hurt while playing or otherwise, he/she is sent home after giving first aid.

Separate toilets were provided for girl students keeping in mind their requirement for privacy. However, it was found in the survey that cleanliness of the toilets was not up to the mark. According to few girls, lack of cleanliness discouraged them from using toilets in the school. Separate common room for girls was also found to be lacking however, girls did not attach much importance to it.



Government Sr. Sec. Smart School
Faqarsar Theri (Muktsar)



Government Sr. Sec. School
Sekhri (Hoshiarpur)



Government Girls' Sr. Sec. School
School Nehru Garden (Jalandhar)



Government Sr. Sec. Smart
Bhodipura (Bathinda)

It was also observed during the survey that most of the schools did not have Napkin Dispensers. A napkin-dispensing machine was to be installed in every school as per a scheme of the state government benefitting teenage school girls however, the schools were found to be lacking in it. Some of the schools, however, manually distributed napkins at intervals. Apart from these girls' specific issues, some girls pursuing higher secondary school education raised concern about the non-availability of subject streams other than arts i.e., commerce, medical and non-medical in their schools. The schools which offered these subject streams were quite far away and it was not feasible for them to enrol in those schools, due to which they were forced to study subjects in which they were not interested which also led to their dropping out from education after 10th or 12th.

8.6.3. Society's View

Society's perception about something affects each and every aspect of our lives quite strongly. When girl students were asked as to what kind of influence on their school education was exerted by members of the society then most of the girls were unanimous in their reply that no one outside of their family approached them with any advice or negative opinion about their education except one girl whose father had recently expired. The girl from government school in Jalandhar said,

“Since my father expired, my relatives, especially those in old age, are pressurising my mother to discontinue my education and marry me.”

(Translated from Hindi)

Additionally, survey endeavoured to understand the bearing of society and social atmosphere on parents' decisions concerning schooling of their daughters. However surprisingly, during interaction with parents in Hoshiarpur and Jalandhar districts, parents informed that members of society did not wield any positive or negative bearing on them rather they opined that it was their family matter and therefore, they did not seek or accept anyone's interference and were exclusively accountable for their actions and choices. In this context, one of the parents remarked,

“No one approaches me with any suggestion to marry my daughter off rather than give her education. People here are literate and understand the importance of girl education.”

(Translated from Punjabi)

However, the same cannot be said for the low literacy districts of Muktsar and Bathinda. Parents belonging to this area said that relatives did give suggestions with regards to the girls and their education. When they were asked about it, most of the replies included – “they do give various suggestions but we don’t listen to them, they tell us to marry the daughter, yes our relatives sometimes ask us not to educate them much and rather teach them household tasks...” It has also been discussed earlier in section 8.5.1. that parents in low literacy districts made their daughters learn household chores and other skills such as stitching, tailoring, *etc.* while studying to prepare them for marriage or work. Some parents even withdrew their daughters from education for these reasons however, it was not true for all the parents. It was also viewed during the survey that some parents, keeping in mind their financial difficulties, believed that education will help their children, girls and boys alike, to do well in life and attain financial strength. One of the mothers opined,

“Yes, relatives do say such things sometimes, but we don’t listen to them because we know what financial difficulties we have faced and we don’t want our daughter to face them.” (Translated from Punjabi)

It was thought as necessary to take view of the teachers on this matter and therefore, school teachers were also asked about their view on society’s attitude towards education of girl child. All of them opined that in modern times society did not interfere in the matter of female education.

To sum up, we can say that society’s view on girls’ education has become rational, especially in high literacy areas of Jalandhar and Hoshiarpur but people in low literacy areas are still in the grip of orthodox mentality which is pulling back girls from attaining complete school education or proceed for higher education.

8.6.4. Impact of Covid

Almost all the domains of human life, including family, health, society, work, education, *etc.* got hit by the occurrence of Covid-19 pandemic. Digital platforms such as Google Meet, Zoom, Web Ex, *etc.* came to the rescue of education system as schools and colleges were forced to shut down. Students, especially in rural areas, were in difficult position as they did not possess smart phone or laptop, which were essential for using these applications. In households where more than one learner needed to attend online classes, this problem became even more grave. Attending classes by rotation and thus, missing classes in the process, was the only way left for such children. Some of them attended classes by borrowing phones from relatives, and so, regular availability of the phone during school time wasn't ensured. When students were asked what kind of difficulties they faced in pursuing school education during lockdown in Covid-19, their responses were – “I don't have a smart phone to attend online classes so I use my mother's phone, my father doesn't have much income but we had to buy a smart phone to attend classes, it was difficult to attend online classes as we are two/three brother/sister(s), there were network issues...” In an interview, a girl student narrated regarding her problems in studying through online platform in following manner:

“I have a younger brother and a sister studying in same school and we all have classes on same time but we have just one phone to attend them. So, we attend our classes by rotation. One day I attend my classes, second day my sister and next day my brother attends... we have to miss our classes, but what else can we do as we have only one phone.”

(Translated from Punjabi)

It was also observed during the survey that some girls were subjected to discrimination against boys in provision of mobile phones to attend classes. When girls were asked as to how they shared phone with their brother to attend online classes then most of the replies were – “Me and my brother attended classes by rotation, brother has his own phone while I (or me and my sister) attended classes on

mother/ father's mobile phone, brother's classes were more important so I had to miss some of my classes..." When they were further queried as to why their brother's classes were more important then, one of the girls replied,

"My brother is elder to me and he is in higher class so his classes are more important"

(Translated from Punjabi)

While another one said,

"My brother is younger than me so he should attend classes properly otherwise he won't understand"

(Translated from Punjabi)

Still another girl remarked,

"My mother says that brother is mischievous and careless and if he is not given phone to attend classes then he will not bother to study and later on he will make excuses while exams"

(Translated from Punjabi)

Thus, on one pretext or the other, some of the girls were discriminated against their brothers during the times of Covid-19. GIRL Centre (2022), in a study concerning India, observed that closure of schools during the pandemic resulted in different impact on boys and girls in terms of access and use of digital resources for online classes. It was also found in the study that as the girls stayed at home during this time, they faced increased burden of household chores.

Further, a girl, whose father was relieved of his job of bus driver in a school due to its closure during Covid-19, informed about increase in economic difficulties of the family during pandemic. A girl student, when questioned regarding online classes, responded,

"No doubt online classes have helped in continuing our education and there is no difficulty in understanding as such, but I miss my school,

my teachers and my friends. I desperately want to go back to my school.”

(Translated from Hindi)

On the other hand, the survey also highlighted the fact that digital education platforms saved learning from coming to a halt during the pandemic. Further, no girl student reported to have faced any problem in comprehending the concepts in online classes, however, they asserted their preference for offline classes on the grounds that they frequently had to bear network problems. They further stated that they needed to have personal interaction with the instructor. Additionally, they wanted to be in school and participate in other school activities apart from enjoying the proximity of their friends.

On interviewing the school teachers, it was found that they also faced difficulties relating to internet connection while teaching in online classes. They further said that many students did not attend the classes sincerely and they had to make very hard efforts to make students listen to them attentively. At the same time, they also agreed to the fact that it was only because of the online classes that education of the students went on incessantly and their precious time was saved from being wasted.

8.6.5. Government Policy

To further the cause of female education and to assist people in educating their daughters, many schemes and policies have been started by the government. Schemes such as sarva shiksha abhiyan, mid-day meal and right to free and compulsory education have worked wonders in promoting school education. Students in the survey were enquired regarding the working of the currently operational schemes such as mid-day meal, swachh vidyalaya, *etc.* in the school, to which they replied that these were being satisfactorily implemented by the school barring a few of them. It was noted in further discussion with them that the scheme of installing “napkin dispensers” at school campus along with cleanliness and hygiene in toilets were not being implemented properly, as mentioned earlier also. Napkins were distributed to girls in classrooms and that too were irregular. Further, some girl students pointed

out that they did not get the cycle under “Mai Bhago Vidya Scheme” of the Punjab government which was initiated in the state to give free cycles to girls in 11th and 12th classes and later on was extended to also cover girls studying in 9th and 10th classes, though they were eligible for it. Out of the total 50 girls who were interviewed 35 were studying in classes 9th to 12th out of whom only 2 girls from village Sekhri (Hoshiarpur) said that they got the cycle under “Mai Bhago” scheme.

It came to the light during the survey that there was lack of awareness among parents as well as students regarding many government schemes. Though they were aware of the government schemes which were being implemented through schools such as free and compulsory education till 8th class, mid-day meal, mai bhago vidya scheme, *etc.* but not of the schemes in which they were required to approach some government agency like, bank or post office, *etc.* i.e., the incentive-based schemes of national and Punjab government for the promotion of the birth and education of girl children under the umbrella of “Beti Bachao Beti Padhao”, “Nanhi Chhaan”, *etc.* They did not know about schemes like National Scheme of Incentives to Girls for Secondary Education (2008), National Means Cum-Merit Scholarship Scheme (NMMSS) (2008) and hence, they could not take advantage of these schemes. It points towards the need to spread awareness among the masses regarding the ongoing government schemes to promote female school education.

Parents of the girl students were also asked to give proposals concerning additional measures which, according to them, could be of help in furthering the cause of female school education. Replies of parents mostly focused financial benefit and included – “education should be made free till 12th class; books and uniform *etc.* should be provided by the school for all classes; government should start bus service at least for girls; education should be work oriented so that girls can start earning after 12th class and help the family financially...”

In interaction with the girl students, they were also asked what other measures they would want government to take towards their school education then responses of the girl students mainly revolved around studies, such as – “there should be more

streams in 11th and 12th class apart from arts, more science related books are needed in school library, we should be given cycles to go to school, students should be given mobile phones to attend online classes during times of emergency like Covid-19...” The girls who expressed their disappointment over non-availability of commerce and science streams in their schools said that due to the absence of other streams, they were compelled to opt for humanities only. Further, a couple of girls opined that more government colleges should be opened so that they are not denied higher education due to long distance to college.

The question was also asked to the teachers and they also extended similar suggestions apart from increasing the teaching staff in schools and thereby reducing the pupil-to-teacher ratio. One of the teachers, however, also mentioned that grant that is given by the government per student for their uniform is not sufficient and therefore, needs to be increased. In addition to this, teachers were further requested to mention the programs or schemes by the government that in their opinion have succeeded in bringing more girls to schools and their replies were like – “scholarships and low fees have brought many girls to schools; quality education and good infrastructure along with sports and extra-curricular activities attract children towards school; introduction of skill-based courses like health care, nursing, beauty and wellness have gone a long way in bringing girls to schools; awareness campaigns regarding importance of girl education have also helped a lot...” However, one teacher expressed her opinion that more awareness campaigns for parents should be organised by the government so that they not only send their daughters to school but also take more interest in their studies.

Thus, it can be said that government is putting sincere efforts to promote the cause of girl education but, there is scope for more. A need is felt that more and more awareness drives should be arranged by the government, not only for the parents but also for the society at large so that general mindset of people towards female education undergoes a positive change and they perceive it not only as a freebie but as something very essential for the development of the society as well as the economy.

8.7. FINDINGS IN LIGHT OF PROPOSITIONS

It is important to discuss the findings in light of the propositions framed out of existing literature to check whether the survey data under present study confirms or contests the previously existing theories and concepts. So here, a discussion has been made as to which of the propositions are accepted and which ones are rejected as per the collected data. As per literature review, absence of curiosity or comprehension in classroom study can deter girls from school education however, such kind of matter was not informed by any of the girl students who participated in the survey. Also, it was established that girls' families took interest in their studies and provided them the support that they required in it. Therefore, the propositions *P1*, *P2* & *P3* stand rejected. Parents were not found to be outrightly discriminating between their daughters and sons as they gave equal importance to their studies. However, most of the girls surveyed confirmed that they had to perform household chores along with their mothers while their brothers did not do so. Also, some girls reported that during Covid times they had to make adjustments so that their brother could attend online classes. All this points towards inherent gender discrimination in our system and so, *P4* & *P5* are accepted. Data also presented evidence of girls dropping out of school education on account of financial or other troubles like, drug abuse, mother's death, *etc.* and hence, *P6* is also accepted. Survey findings clearly point to the fact that society's mindset towards girl education has undergone a lot of change as members of the society support it but this is not true everywhere. There still exist areas where people are not in favour of female education and therefore, *P7* is accepted as well. There are instances where respondents complained of long distance between their home and school, especially in urban areas and so, *P8* is accepted. Schools have been reported to have almost all of the basic infrastructure, but many girls suggested lack of cleanliness, especially in toilets, which compelled them to not to use them. Also, some infrastructure like, medical room and napkin dispensers, was found to be lacking and moreover some schools were also found lacking in adequate teaching staff so, *P9* is accepted. There were no cases of bullying or lack of safety as such in school premises however, safety concerns were observed to be there among students and parents alike while going to and coming from school and so, *P10* is accepted. On

the other hand, teachers were having good rapport with the girl students, therefore *P11* is rejected. Covid-19 pandemic has definitely increased hurdles in way of female school education and thus, *P12* is accepted. Data suggested poor implementation of government schemes in terms of distribution of cycles and installation of napkin dispenser. Survey results highlighted the lack of awareness among people pertaining to various schemes of the government which were related to financial aid and were not given through schools. Also, respondents expected increased financial support from the government and therefore, *P13*, *P14* & *P15* are accepted.

8.8. CONCLUSION

Thus, it can be concluded that though familial and social atmosphere are becoming favourable for the female school education, yet many challenges in its way as pointed out in existing literature are still found to be present in the state of Punjab. Prominent among those are related to household i.e., weak financial health and sometimes drug abuse or loss of mother. Gender discrimination though not apparent but is still prevalent in a hidden way and comes in the path of girls' school education. Also, people at large, especially in low female literacy areas of the state, are yet to comprehend the seriousness of the need to educate a girl child. School infrastructure needs to be upgraded mainly in terms of medical facilities, properly functioning girls' toilets as well adequate teaching staff. Cleanliness is another aspect which needs consideration of the school authorities. Cleanliness in general as well as particularly in girl's toilets needs to be improved. Covid-19 has also had a deep impact on process of education attainment of the girl child not only because of scarcity of resources required for attending online classes but also because the fact that it increased the financial woes of their parents. Lack of knowledge regarding various schemes of the state government to boost female birth and education also prevent people from availing their benefits in educating their daughters. Additionally, faulty execution of existing schemes of the government is also putting hurdles in the path of female schooling. Lastly, free of cost provision of complete school education as well as bus facility for girl students are desired by the parents. These findings suggest valuable policy inferences and can assist immensely in eliminating the challenges in the way of female school education.

Chapter - 9

SUMMARY AND CONCLUSION

Education is the basic right of each person and is among the central components of development (Sen, 1999). As per the World Bank data, adult literacy rate (15 years and above) for upper middle-income nations was 96 percent, for middle-income nations was 86 percent, for lower middle-income nations was 76 percent and for low-income nations was 61 per cent in 2019. This evident relationship between literacy rate and state of development of a country reinforces the argument that education is essential for the advancement of a nation. Numerous researchers linked female education to economic growth using a variety of growth regressions (Salatin & Shaaeri, 2015; Self & Grabowski, 2004; & Benavot, 1989), and also to women empowerment (Sundaram *et al.*, 2014; Yadav *et al.*, 2011; & Al Riyami *et al.*, 2004) as well as higher welfare of the family. Insufficient education to women not only deteriorates the quality of present human resource, but it also badly affects health and education of their children. Sadly, around the world, women do not get as many opportunities to attain education as men.

According to Census of India (2011), male literacy level stood at 82.14 percent while literacy rate for females was just 65.46 per cent (Census of India, 2011) thereby indicating a gender gap of 16.68 per cent. India stood at 114th position amongst 156 countries in Gender Gap Index for Educational Attainment in 2021 (Global Gender Gap Report, 2021). There is a lot of variation among states in India regarding female literacy and gender discrimination in education. There are states with very high female literacy and low gender discrimination and on the other hand, some have low female literacy and high gender discrimination. In Punjab, female literacy is 70.7 percent and gender difference in literacy is 10.3 percent. Gender discrimination is a prominent feature of Punjab because the state has deep-rooted philosophy of patriarchy and culture of preference for son, which is reflected in the adverse adult sex-ratio of 895 and child sex-ratio of 846 (GOI, 2012). The study aimed at highlighting the trends in female education as well as gender gap in education in Punjab. It also sought to check the effect of school infrastructure facilities on female

school enrolments and at the same time undertake a review of government efforts in the form of various government schemes and policies at the state and at central level to promote the cause of female education. Secondary data regarding literacy, school enrolments, school infrastructure, *etc.* has been taken from three Census Reports i.e., 1991, 2001 and 2011, Statistical Abstracts of Punjab for various years, UDISE & UDISE+ Reports, Economic and Statistics Organisation of Punjab (ESOPB), State Report Cards for various years, *etc.* Secondary data for government schemes has been gathered from various newspapers, journals, periodicals and online websites. Finally, the study aimed to identify the obstacles faced by girls while pursuing school education in government schools of Punjab. For this purpose, interviews of school going girls, teachers and parents were conducted with the aid of interview schedule.

Objectives

1. To study the trends and patterns in female school education in Punjab.
2. To analyse the gender differentials in school education in Punjab.
3. To examine the relationship between availability of school infrastructure facilities and female school education in Punjab.
4. To assess the role of government in enhancing female school education in Punjab.
5. To identify constraints in the attainment of education by females in Punjab & to recommend possible solutions.

Results of Hypotheses

- **H01:** There has been continuous progress since 1991 in female education in the state of Punjab, both on grounds of female literacy as well as female school enrolments. Therefore, the first hypothesis, that over a span of time female school education has remained time invariant, is rejected.
- **H02:** The analysis reveals that gender parity in literacy has increased in Punjab during the period 1991 to 2011. Therefore, second hypothesis, that over a period of time gender gap in school education has not undergone any significant change, stands rejected.

- **H03:** Total number of schools, availability of mid-day meal and availability of separate sanitation facility for girls in schools had a significant positive bearing on the female school enrolments in Punjab during 2002-2017. Therefore, third hypothesis, that there is no interdependence between variables of physical and social infrastructure of schools and the variables of girls' education, is rejected.
- **H04:** Government schemes have led to improvement in access and quality of education and also, physical and social infrastructure in schools have improved. All this has given a push to school education in general and female school education in particular and therefore, fourth hypothesis, that various schemes of government have led to no improvement in parameters of girls' education, is rejected.

9.1. FINDINGS & RECOMMENDATIONS

Objective-wise results of the study are briefly mentioned below.

Objective 1: To study the trends and patterns in female school education in Punjab

Findings:

- Female literacy rates in Punjab have improved during 1991 and 2011. Only half of the female population was literate in 1991 (50.41 per cent) whereas more than two-thirds was literate in 2011 (70.7 per cent) thereby showing an improvement of about 20 percent in two decades. Also, female literacy rate in Punjab has been greater than that in India during the study period, however the gap between the two has been declining consistently. It was 11.12 per cent in 1991 which declined to 9.73 percent in 2001 and then to 6.1 percent in 2011. This means that literacy among female population has been spreading at a faster rate in other states in India than in Punjab.
- Female literacy rates have improved during 1991 to 2011 for all the districts in the state. But, the decadal rate of growth has fallen from 16.72 per cent in 1991

to 7.3 per cent in 2011, meaning thereby that the pace of progress has slowed down considerably. The reason for this is prevailing amount of out-of-school-age uneducated female populace. There had been impressive rates of increase in female literacy across the different districts of the state during the decade 1991-2001. Rates of increase for all the districts were greater than one percentage per year but growth rate for Mansa was the highest at 1.67 per cent, which was due to the low base effect. But, the rates of increase have reduced much for the decade 2001-2011.

- Another finding is that there is a lot of variation in literacy rates among different districts of the state. Hoshiarpur is at the top with female literacy at 80.3 percent, and Mansa is at the bottom with female literacy at 55.7 percent in 2011. Exactly half of the districts have female literacy rate lower than the state's average and the other half of these have female literacy rates higher than the state's average for all the three years i.e., 1991, 2001 and 2011. Same districts which had female literacy levels lower than the state's average in the year 1991 continue to do so in years 2001 and 2011.
- In the analysis to predict the number of years the state and each district will take to reach the maximum level of female literacy i.e., 100 per cent, it was found that it will take nearly 30 more years from 2011 to eliminate female illiteracy from the state of Punjab, if all the conditions remain unchanged in future. This means that Punjab will achieve total female literacy sometime around 2041. But it is only an average figure and the state will not be free from the evil of female illiteracy till the last of its district succeeds in making all of its female population literate. The lowest number of years to achieve full female literacy i.e., nearly 22 years has been projected for the district of Ferozepur and the district of SBS Nagar will be the last to attain absolute female literacy i.e., 48 years approximately. Eleven districts are projected to take less than state's average (30 years) to achieve cent percent female literacy whereas nine districts are estimated to take more than that. Predictions could not be made for newly created districts of Pathankot and Fazilka.

- Spatial study of female literacy rates suggests that no doubt there is development in female literacy across the districts in the state, yet districts in Maajha and Doaba region have an edge over districts belonging to *Malwa* region of the state. In 2011, Hoshiarpur district, with female literacy in the highest range of 80-89.99, is the *leader* whereas Mansa and Muktsar districts, with female literacy in the lowest range of 50-59.99 are *laggards*.
- Female education, measured via female school enrolments, has an increasing trend in Punjab at all stages of school education during 1991 to 2021. Enrolments in primary education have been much higher than in other stages of school education due to drop-outs at different stages of school education.
- Rise in enrolments in secondary and higher secondary levels has been faster than that in primary and middle stages. This is due to the fact that gross enrolment rates have been near to 100 for primary and upper primary levels. Another main reason for fall in elementary enrolments can be due to enrolments in unrecognised elementary schools. The main reasons for preference of unrecognised schools over recognised schools by parents was that these were better in terms of facilities and infrastructure and mostly offered instructions in English medium. This will create an education divide in the society which is certainly not good for its health.
- Share of secondary and higher secondary enrolments has increased in total female school enrolments during 1991-2021 as against enrolments in primary and upper primary stages. This is also because growth rate of female school enrolments is more at secondary and higher secondary stages than at primary and upper primary stages across all the districts in the state. This is further due to due to near 100 GER at primary and upper primary levels.
- Moreover, female school enrolment as proportion of female population in 6-17 years age-group is also not uniform across the different districts and regions of the state. *Doaba* region has a higher percentage of female population enrolled in schools as compared to other two regions, and also performance of *Majha* is better than *Malwa* region in this regard thereby making *Malwa* region again the

worst performer. Reasons for this are that both Majha and Doaba regions have a school for less than every 1.5 square kilometres of area whereas Malwa region has a school for approximately every 2 square kilometres of area.

Recommendations:

- There is a huge stock of out-of-school age (i.e., above 18 years age) illiterate female population in Punjab, and special efforts are required to make this section of female population literate. Generally, they can't attend schools at fixed times during the day as is the case with normal schools. So, they should be given the facility to attend schools as per their convenience and for this, evening schools and night schools should be opened. Further, government schemes such as National Literacy Mission (focusing on adult education in 15-35 years age group) and Mahila Samakhya (focusing on women education and empowerment) should be given impetus in the state.
- More emphasis on spreading literacy among adult females should be laid specifically in the Malwa region, which is male-dominated and feudal. Awareness camps regarding the significance of female education should be organized. Moreover, in this region, more and more job opportunities (requiring 10+2 as basic eligibility) should be created so that girl students and their parents are encouraged to complete school education.
- To increase the share of secondary and higher secondary enrolments in total female enrolments, specific schemes boosting female enrolments in secondary school education should be initiated like *Mai Bhago Vidya* Scheme, under which free bicycles were distributed among girl students of secondary school education and it succeeded in bringing more girls into the ambit of secondary school education. Also, counselling of students and parents regarding importance of school education, additional freebies to poor parents, and introduction of outcome-based education and skill-based courses (encouraging self-employment after schooling) can promote secondary education.
- Concentration of schools is quite low in *Malwa* region as compared to *Doaba* and *Majha* regions. Therefore, there is a need to raise the number of schools in

Malwa region to improve access to schools and thereby advance the status of female education in the region and also reduce the regional divide in education in the state.

Objective 2: To analyse the gender differentials in school education in Punjab

Findings:

- Male literacy levels have visibly higher than female literacy levels both in Punjab and in India during the study period.
- Gender disparity in literacy is existent in Punjab even in present times but, the difference in literacy has been reducing between 1991 and 2011. Gender difference in literacy was 15.25 per cent in 1991 that reduced to 11.8 per cent in 2001 and again to 9.7 per cent in 2011. However, there had been increase in gender difference in literacy during the period of 1981-1991 as showed by negative value of decadal fall (i.e., -13.21 percent). Later, there had been an incessant drop in the gender gap, however the drop is smaller in 2001-11 (2.1 per cent) than in 1991-2001 (3.45 per cent), indicating that improvement in female literacy rate vis a vis male literacy rate has slowed down. This is due to the fact that gender gap has been falling steadily in case of child (6-14 years) and youth (15-24 years) literacy but this is not the case with older adults; meaning thereby that there is a higher stock of illiterate adult female population than illiterate male population.
- Vast disparity exists in gender gap in literacy amongst districts in the state. In 2011, mostly gender gaps in the districts existed in the band of 7.6-12.6 per cent with an exception of Fazilka, where gender gap in literacy stood at enormous 15.69 per cent. The minimum gender gap in literacy was in Jalandhar i.e., 7.6 percent.
- The lowest reduction in gender disparity in literacy was witnessed in Ludhiana district (0.3 per cent) whereas the greatest reduction was witnessed by Ferozepur (5.24 per cent) due to carving out of lesser developed district of Fazilka from it.

- Spatial study of the gender gap in literacy was undertaken in which categories were made on basis of magnitude of gender gap in literacy and decadal fall in gender gap in literacy. In this analysis districts of SAS Nagar, Hoshiarpur, Baranala and Gurdaspur were the best performers and therefore, termed as Leaders, whereas districts of SBS Nagar, Mansa, and Sangrur were the worst performers and therefore termed as Laggards.
- *Malwa* area has greater gender disparity in literacy in comparison with *Majha* and *Doaba* areas. Districts Gurdaspur, Amritsar, Pathankot, SAS Nagar, Moga, Ludhiana, Barnala, Fatehgarh Sahib, Kapurthala, Jalandhar, Hoshiarpur having gender disparity in the bottom range (5-9.99), are the *leaders* but district Fazilka having gender disparity in the top range (15-19.99) along with districts Tran Taran, Ropar, Ferozepur, Faridkot, Muktsar, Bathinda, Mansa, Sangrur, Patiala and SBS Nagar that fall in range (10-14.99) are *laggards*.
- Based on gender parity in literacy in 2011 and annual rate of increase in gender parity in literacy during 2001-2011, future projections regarding number of years required to attain 100 per cent gender equality in literacy have been made. It will take nearly 30 more years from 2011 to attain maximum gender equality in literacy in the state of Punjab, if all the conditions remain unchanged in future. This means that Punjab will achieve cent per cent gender parity in literacy sometime around 2041 but, it is only an average figure based on the average rate of growth of gender parity in literacy across various districts in the state. The state will not be free from the evil of gender discrimination in literacy till the last of its district succeeds in removing gender gap in literacy. Ferozepur has been projected to take the least number of years i.e., 15 years to achieve full gender parity in literacy whereas SBS Nagar has been estimated to take the greatest number of years i.e., 48 years.
- Districts of SAS Nagar, Ropar, Ferozepur and Hoshiarpur are the best performers. These will be the fastest to achieve gender parity in literacy and therefore, termed as *leaders*. On the other hand, Muktsar, Sangrur, Patiala,

Bathinda, Fatehgarh Sahib and SBS Nagar districts will be the last ones to achieve complete gender parity in literacy and therefore, are termed as *laggards*. Most of these lagging districts belong to *Malwa* region of the state.

- Regional inequality has fallen for both male as well as female literacy. Regional inequality was higher for male literacy than female literacy in 1991 but, regional inequality was higher for female literacy than male literacy in 2001 & 2011. This means that there is greater variation in female literacy than male literacy across the districts. This is because discrimination against women is higher in some areas in the state as compared to others, as mentioned before.
- Both, boys' and girls' enrolments have been increasing at all the levels of school education in Punjab. Also, boys' enrolment is higher than girls' enrolment at all the levels of school education. Girls' enrolment as percentage of boys' enrolment has fallen in case of primary education from 86.35 percent to 83.89 percent; it has remained almost stagnant at upper primary level. However, it has increased in case of secondary and higher secondary stages. The reason for this is low girls' as well as boys' enrolment at higher levels of school education and also more girls in comparison to boys tend to complete secondary education, if they get the opportunity. It is to be noted however that in terms of overall school education, girls' enrolment actually fell in comparison to boys' enrolment. This is primarily due to low child sex-ratio in the state i.e., 846 females per 1000 males in 0-6 years age group.
- Share of secondary and higher secondary enrolments in total school enrolments has been increasing both for boys as well as girls. This means enrolments at secondary and higher secondary level are increasing at a faster rate than at elementary level due to near 100 GER at this stage of school education.
- No district has complete gender parity in school education however, there is a lot of variation across districts in terms of gender parity in school enrolments. Gender parity in enrolments is highest in districts of *Doaba* region. *Majha* region has the lowest level of gender parity at every stage of school education.

The reason for this outcome is that the child-sex ratio is worst in case of Majha region i.e., 822 as compared to 874 in Doaba and 847 in Malwa region.

- Convergence analysis was undertaken to estimate the number of years it will take for female school enrolments at different stages of school education to converge with male school enrolments in the state of Punjab. At current rates of growth of male and female enrolments, it will take nearly 33 years, 20 years and 6 years respectively for male-female school enrolments to converge at upper primary, secondary and higher secondary stages. This early convergence at higher secondary level is due to lower enrolments of both male as well as female students at this level as compared to those at other levels. Thus, it becomes clear that due to low growth rate of female enrolments, their convergence with male enrolments will take many years except at higher secondary level.
- Convergence analysis at district level revealed that convergence is predicted for majority of the cases however, there is a lot of variation in number of years projected for convergence. Further, convergence of male and female school enrolments is likely to happen earlier in Malwa region of the state than in other two regions because growth rate of female school enrolments was significantly higher than growth rate of male school enrolments.

Recommendations:

- Malwa region lags behind in terms of gender parity in literacy and therefore, special impetus needs to be given to education for female adults in this region. Efforts should be made to raise their aspirations by making available to them various employment avenues by boosting industrialization in the region. Free training for industrial jobs or subsidized loans for self-employment can be made available to women who acquire literacy.
- Gender parity in school enrolments at elementary level has been falling due to lesser number of girl children as compared to boy children i.e., due to adverse child sex-ratio in the state. Thus, child sex-ratio needs to be improved. Doctors

need to be sensitized regarding the declining child sex-ratio in the state so that they themselves do not indulge in illegal act of pre-natal sex detection and heinous crime of female foeticide.

- However, *Majha* region performs miserably in context of gender parity in school education among all the regions in the state due to lowest child-sex ratio in this area, which calls for specially designed measures to promote birth of a girl child in the region, which can be achieved by employing stringent measures to implement current rules and laws, running awareness campaigns for the adult population and initiating new schemes to encourage birth and education of girl child.
- Only initiating schemes and framing policies will not suffice but, regular monitoring and evaluation of these schemes is also imperative to check the progress and the shortcomings.

Objective 3: To examine the relationship between availability of school infrastructure facilities and female school education in Punjab

Ample studies relate availability of school and distance to school to increased enrolments and literacy levels. Girls are particularly more likely not to attend or to discontinue school if the facilities are inappropriate. In India, though infrastructure facilities have improved greatly, yet many schools in the country are lacking in basic school infrastructure facilities. There is wide difference in school infrastructure in rural-urban areas and in government-private schools. Similarly, educational infrastructure in the state of Punjab has also developed immensely but certain lacunas still exist. Deficiency in school infrastructure proves to be an obstacle in the learning process of a child and therefore, needs to be addressed.

Multiple regression analysis has been carried out to examine the association among availability of school infrastructure facilities and female school education in Punjab. Analysis has been done separately for elementary and secondary education in Punjab using time series data from State Report Cards for the years 2002 to 2017.

Findings

- The results of correlation analysis in case of elementary education indicate female enrolment has positive correlation with number of schools, availability of water facility, separate sanitation facility and mid-day meal.
- Out of these four variables, number of elementary schools and availability of mid-day meal are likely to play a significantly positive role in boosting female elementary school enrolments in Punjab. These results are supported by the existing literature.
- Female elementary enrolments are found to be negatively related with percentage of girls' schools and pupil-teacher ratio. Negative correlation between female enrolments and percentage of girls' schools indicates that despite a fall in percentage of schools meant only for girls, female enrolments have increased thereby showing that this is not an important consideration for girls and their parents in the process of school education in Punjab. Further, a negative correlation between female enrolments and pupil-teacher finds support in existing literature and implies that as pupil-teacher ratio (PTR) has decreased over the years, it has led to improved quality of classroom interaction and also more attention towards individual student thereby pushing up the female school enrolments. However, none of these two variables are found to be significant.
- Female secondary enrolment has positive correlation with number of schools, percentage of female teachers in total teachers, availability of water facility, and separate sanitation facility for girl students. These results are in accordance with the expectations.
- Out of these four variables, number of secondary schools and availability of separate sanitation facilities for girl students are likely to play a significantly positive role in increasing female secondary school enrolments in Punjab. These results are supported by the existing literature.
- Female enrolments at secondary level are also found to be negatively related with percentage of girls' schools and pupil-teacher ratio but none of these two variables are found to be significant in the regression analysis.

Recommendations

- Number of schools should be increased as higher number of schools has found to be exerting positive impact on female school enrolments, both at the elementary as well as at the secondary level. Greater number of schools will reduce the distance to school thereby making schools easily approachable. Not only travel time of girl students will be reduced, but also the risk factor associated with going to and coming from school will get diminished.
- Mid-day meal has succeeded to a great extent in bringing girls from fields in to the schools in lure of one cooked meal per day. This scheme has also succeeded in bringing to schools those girls who were barred from attending schools in order to perform house related tasks or looking after younger siblings at home, as parents think that in this way, they have to feed at least one less stomach for one time a day. Therefore, Mid-Day Meal Scheme should be extended to secondary level also to bring out-of-school girls under the ambit of school education.
- Separate sanitation facility for girls has been found to be positively impacting the female school enrolments both at elementary as well as at secondary levels, however its impact was significant only at the secondary level. This is quite understandable as adolescent girls need more privacy than the younger ones. Hence, both quantity and quality of separate sanitation amenity for girl students should be improved.
- Lower pupil-to-teacher ratio (PTR) has found to be positively related with female school enrolments at the elementary level but the effect is not significant. A lower PTR leads to improved quality of classroom interaction and also more attention towards individual student thereby pushing up the female school enrolments. PTR can be lowered by recruiting more teachers, shifting teachers from overstaffed schools to understaffed schools, deploying additional teachers in selected subjects and enhancing teacher density by adopting measures like co-teaching.

- Lastly, percentage of female teachers in total number of teachers is found to be positively associated with female secondary school enrolments, however not having a significant influence. So, the number of female teachers should be enhanced at the secondary stage to make school environment more comfortable for girl students and thereby enhancing their enrolment and retention. Moreover, appointment of more and more females at higher posts in teaching as well as administration in educational institutions will encourage more girls to go to school.

Objective 4: To assess the role of government in enhancing female school education in Punjab

Presence of the government in the education sector is very essential, more so in the case of female education. Our economy is backward and at the same time our society is orthodox too, where women and girls are discriminated against in almost every walk of life. The situation of the female poor is even worse as they are at a disadvantage, both for being poor and for being female. In such a situation it becomes imperative for the state to keep holding the ground and continue being the provider of essential services. A detailed study of government measures in this regard reveals following points.

Findings

- Various acts and policies relating to education sector were put forth from time to time to provide a detailed framework for the future course of action such as National Policies on Education (1986, 92 & 2020), Right to Education (2009), *etc.* These national policies of education aimed at channelizing the efforts of the government in the right direction and also at removing educational disparities and equalising opportunities especially for women and backward sections of the society. A detailed study of these policies reveals that the cause of promoting female education has been at the core of these statements and has been given due importance through various initiatives like, recruitment of more female teachers, provision of day care centres, gender inclusion fund, *etc.*

- There are many loopholes in the implementation of the policies, like total release of funds out of approved budget has been low and declining since FY 2013-14, and therefore expenditures have also been falling.
- As per 2019 Report of the Comptroller and Auditor General of India on “Construction of Toilets in Schools by CPSEs”, out of the total toilets reported to have been constructed by Central Public Sector Enterprises (CPSEs), 11 percent either did not exist or were partially constructed; and out of total constructed toilets, 30 percent were found to be not in use because of lack of cleanliness, running water, *etc.* Moreover, out of all the co-educational schools surveyed, 27 percent did not have separate toilets for boys and girls.
- As per Centre for Policy Research, Punjab’s performance has been unsatisfactory in terms of expenditure per student under Rashtriya Madhyamik Shiksha Abhiyan (RMSA). It was Rs. 2622 in 2017-18 whereas the national average was Rs. 2817.
- As per Analysis of Budgeted Expenditure on Education Reports of Ministry of Education, percentage of budgeted expenditure on education to gross state domestic product is one of the lowest in Punjab at 2.06 per cent in 2019-20 as against all India level of 2.85 percent and has remained lower than all India level throughout the period ranging from 2009 to 2020.
- As per Punjab Appraisal Report 2019-20, there were 18 per cent primary schools where three subject teachers were unavailable as per RTE rules whereas there were as many as 94 per cent secondary schools where four subject teachers were unavailable.
- Also, 27.04 per cent seats were unoccupied against targeted girl’s enrolment in KGBVs Type I & II while 4.86 per cent were lying vacant in KGBVs Type IV.
- Annual average dropout has increased in 2017-18 from previous year at all levels of school education and therefore, the transition rates have fallen.
- Percentage of total expenditure against anticipated amount for Samagra Shiksha was merely 52.72 per cent. This means that just a little over half of the

allocated amount for the scheme is being used and the rest has not been claimed for expenditure yet, which undoubtedly indicates a slow and faulty implementation.

- According to Kainth (2013), elementary schools in rural Punjab suffer from lack of infrastructure, teaching aids, lack of funds availability and the lack of dedication among the teaching staffs and its shortage. Apart from these, poor economic condition and illiteracy of the parents also act as obstacles in the way of child education.
- Further, many girl students in the state kept on waiting for bicycles under Mai Bhago Vidya Scheme till the end of the academic session but they did not receive any (PIB, 2016).

Recommendations

- There should be adequate and prompt release of funds for education so that execution of schemes is not halted and desired growth is achieved. At the same time, it should be ensured by the authorities that funds, where allocated, should be claimed and utilised for the implementation of various schemes by the concerned departments within the stipulated time and that these do not remain unclaimed, as is observed in the case of Samagra Shiksha Abhiyan.
- Also, expenditure per student at secondary level should be increased to match that the national average and thereby enhance the quality of education so that more and more out-of-school children are attracted towards school education
- The level of expenditure on education in terms of percentage of GSDP in the state of Punjab is quite low at present, and there is a strong need to increase it in order to increase the flow of funds for various schemes.
- Focus needs to be laid on construction of separate toilets for boys and girls that are clean and fully functional having all the basic amenities like hand wash facility, soap, *etc.*
- There should be presence of adequate number of teachers for each subject so that teaching staff is not over-burdened, there is proper classroom interaction

and teaching quality is not compromised. All this will make school environment welcoming for the students and thus, help in increasing student enrolment and retention.

- Government schools in Punjab, especially in rural areas still lack proper infrastructure facilities. So, adequate infrastructure, teaching aids, learning resources, *etc.* be provided in these schools to make school education worthwhile for the students and thereby prevent them from dropping-out.
- More and more efforts should be made to fill the vacant seats of girl students in KGBVs type I, II and IV and achieve the targeted enrolment so that scarce and precious educational resources are not wasted.

Objective 5: To identify constraints in the attainment of education by females in Punjab & to recommend possible solutions

Despite the efforts of the governments, NGOs, activists and society at large, there are many challenges in the way of female education. Many girls face resistance from the parents, relatives or society due to one reason or the other. If a family having both male and female children face any financial constraints, they opt to send only boys to school. Moreover, girls are also denied school education so as to take care of younger siblings, work at home or at fields. If they manage to go to school, they have to face safety and bullying issues apart from lack of proper infrastructure such as separate toilets for girls, *etc.* These difficulties still exist around the globe, though in varying intensity. A survey was undertaken through interviews of girl students of government schools, their parents and teachers to understand the challenges they face in pursuing school education. Findings of the survey are mentioned below:

Findings:

- The survey through interview schedule highlights that students behaved quite responsibly with regard to their education and attended school regularly because they were aware of the importance of education. Likewise, necessary moral and monetary support was being extended by the parents to the girl

students and they also exhibited interest in their daughters' education, and attended PTMs regularly.

- There were found some instances of gender discrimination by the parents with regard to studies especially when they were facing financial difficulties during Covid times. Some girls were shifted from private schools to government schools while their brothers were not whereas some girls had to make adjustments in attending online classes so that their brothers could attend their classes properly.
- However, one of the main obstacles in way of girl education turned out to be the weak financial health of their parents due to which many girls could not proceed to secondary or higher education and few of them had to drop out of the school education. Some were made to work after dropping out of school while some were made to learn some skill like, stitching, embroidery, cosmetology and make-up art, *etc.* so as to be able to start earning early. Reasons for pulling out girls from schools, mainly after elementary education, also included early marriage or preparing them for marriage by making them learn household chores.
- Parents of girl children involved them in household tasks as they wanted them to be adept in such activities alongside their studies however, they were not adamant on marrying off their girls hastily. Moreover, in high literacy districts i.e., Hoshiarpur and Jalandhar, girls did not face any obligation or burden to perform these tasks daily. During assessments or exam time, girls were free to dedicate their time completely towards their studies. However, in low literacy districts of Muktsar and Bathinda, girls did feel the compulsion to help their mothers with household chores on daily basis. Moreover, it was also found that brother(s) of girl students were not asked to extend help in household work.
- In incidents involving separation of parents, death of the mother or mother leaving the house, daughters' and their learning took the worst hit as they were burdened with the responsibility of the household chores and taking care of the siblings. Education of children also suffers in Punjab due to the problem of

drug abuse among one or both of the parents, but this generally affects the education of daughters and sons alike.

- According to a teacher, some girls were themselves responsible for discontinuation of their school education. A few of the girls showed improper behaviour in school like, non-serious attitude towards studies, more inclination towards male students, *etc.*
- Girl students as well as their parents were satisfied with the teachers as well as teaching in the schools and appreciated their hard work. A few parents, however, felt the need for teachers to be more soft-spoken and attentive towards the needs of the students.
- Teachers, on the other hand, were found to be over burdened due to high pupil-to-teacher ratio, lack of some subject teachers as well as due to extra work other than teaching. Teachers were also unable to work properly due to their frequent transfers to other schools.
- Both schoolchildren as well as their parents consider school building, premises and infrastructure to be decent and adequate. Out of all the four schools, building of Government Senior Secondary School, Faqarsar Theri (Muktsar) was found to be least impressive. That may be because this is comparatively backward area and therefore witnessed slower development of public infrastructure. Some amenities such as medical room, napkin dispensers and girls' common room were found lacking in schools while some things required betterment like, girls' toilets and cleanliness in the campus.
- Society was also found to be in support of school education of the girl child in high literacy districts of Jalandhar and Hoshiarpur but in low literacy areas of Muktsar and Bathinda people had traditional mindset which was pulling back girls from attaining complete school education or proceed for higher education.
- Enhanced financial difficulties and digital learning led to rise in the troubles concerning girls' school education in times of Covid-19 pandemic. It was found that enrolment of girls in government schools saw a jump during the Covid-19

times as they were shifted from private schools for want of funds. Also, due to non-availability of required number of smart phones at home, some of the girl students had to miss their classes for the sake of their brother's uninterrupted education. Some girls pursuing higher secondary school education complained that their school offered education only in arts stream and not in other streams i.e., commerce, medical and non-medical. Also, schools which offered these subject streams were quite far away and it was not feasible for them to enrol in those schools, due to which either they were forced to study subjects in which they were not interested or they dropped out of school education.

- Free bus service by the school was deemed necessary by some students and parents due to safety concerns and long distance to school. Additionally, parents expect government to make whole school education of the girl child free, provide free uniform and books for girls at each level of school education and also to provide free bus service for the girl students.
- Barring a few schemes like, installation of sanitary napkin dispensers and distribution of free cycles to girls of 9th to 12th classes, all the schemes of the government were being implemented properly in the schools. People were aware of those government schemes which were being implemented by the government through schools whereas they lacked awareness of those schemes which were implemented through other government agencies like, banks, post office, *etc.*
- Scholarships and low fees along with quality education, good infrastructure, facilities for sports and extra-curricular activities have succeeded in bringing more and more girls to schools. Apart from this, introduction of skill-based courses like health care, nursing, beauty and wellness have also gone a long way in retaining girls in the school education. Further, awareness campaigns regarding importance of girl education have also helped a lot in changing the mindset of parents towards girl education.

Recommendations:

- In order to remove the barriers of poverty and illiteracy of parents, poor parents can be motivated by offering them additional freebies in lieu of the income forgone by them while sending their daughters to school.
- Parents should also be encouraged to shed their orthodox mind-set concerning stereotyping of gender roles, especially in household chores. For this, inspirational lectures should be organised for the parents to make them ascertain the significance of learning in their daughters' lives. Also, child marriages should be stopped completely by stringent implementation of the law.
- Various schemes initiated by the government to promote girl school education should be given wide publicity so that more and more girls and their parents come to know of them and are able to reap benefits, thereby enhancing female school enrolments.
- School infrastructure, especially facilities relating to girl students like clean and hygienic toilets, napkin dispensers, *etc.* should be ensured in each school so to enhance their retention in schools.
- To give a spur to female secondary education, transport facility can play a significant role. So, apart from distributing cycles among girl students, free bus facility can be provided by the government to reduce the travel time and ensure safety while going to and coming from school. In addition to this, strict measures should be put in place to stop violence against women and girls.
- Also, government schools should be upgraded to offer all study streams. There is a dire need to provide girls with the opportunity to opt for science, technology, engineering and mathematics (STEM) subjects at higher secondary level so that they don't drop-out of school education for lack of availability of these options.

- Lastly, there should be adequate teaching staff in the school so as to ensure ideal pupil-to-teacher ratio and proper teaching by the subject teacher leading to no academic loss. Also, frequent transfers of teachers should be checked so that they can focus on the development of students.

9.2. LIMITATIONS OF THE STUDY & SCOPE FOR FUTURE RESEARCH

Secondary data relating literacy belongs to three Census periods i.e., 1991, 2001 and 2011 and Census survey could not be conducted in 2021 due to prevalence of Covid-19 pandemic and therefore the latest data on literacy is not available, which is the major drawback in this study as many changes in status of male-female literacy levels must have taken place since the last census period of 2011. Also, primary data for finding obstacles in way of girl school education was collected only from limited sample of 50 students, 18 parents and 5 teachers belonging to four districts of Punjab i.e., Hoshiarpur, Jalandhar, Bathinda and Muktsar. Number of districts and sample size of respondents can be increased to have more detailed and comprehensive results. Further, detailed region-wise and district-wise analysis can be also be attempted.

The above analysis makes it clear that state of female education has improved a lot during the period 1991 to 2011 however, gender differentials in literacy and enrolments are high across the state. Further, regional inequality in female education has also reduced during the study period, however some regions are still lagging behind the others. Education is a basic right and everyone should get equal opportunity to get educated. It is very well known that girls do not get equal opportunity and have to face discrimination almost everywhere in the world but, the extent of discrimination differs from place to place. The degree of gender discrimination is high in Punjab, which becomes evident from the adverse sex-ratio and child sex-ratio in the state. Continued government efforts are required to encourage the birth as well as education of the girl child in the state. Education makes one knowledgeable and if more and more women are educated, they shall be able to better understand their rights and work towards their own wellbeing and

advancement. Also, they shall be better able to take care of their families and work for national development. Though government is taking steps in this direction, yet there is still scope for additional measures. Moreover, improvement in the implementation of already existing ones is also called for to get desired results at desired pace. Testing is already banned and is a punishable offence but, there should be strict enforcement of the law so that testing is not practiced in illegal manner. Further, to bring about gender parity, societal support and efforts are as much required as government policies. Therefore, awareness drives should be organised from time to time for all the sections of the society so that mindset of people is changed and they don't think girl child to be a burden.

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Appendix I

Interview Schedule for Parents

Part-I: Respondent's Profile

1. Name of the respondent

2. Village/Town/City

3. District

4. Monthly Family Income

5. Education Level of Father of the Child:

Not literate

Elementary or less

Secondary

Graduation or more

6. Education Level of Mother of the Child:

Not literate

Elementary or less

Secondary

Graduation or more

7. Father's Occupation:

Unemployed

Own Work

Farming

Employee

8. Mother's Occupation:

Housewife

Own Work

Farming

Employee

Part-II: Perception Regarding Daughter’s School Education

1. Does your daughter go to school regularly? If not, why?

2. Does she like going to school? Why/ why not?

3. Does your daughter like to study? If not, why?

4. Is educating a girl equally important as educating a boy? Give your opinion.

5. Do you attend Parent-Teacher-Meeting organised by the school? Which of the parent attends it on regular basis?

6. How do you extend your support in her studies? (Provision of extra coaching, conveyance, freedom from house/outside work and taking care of siblings, etc.)

7. Do you face any societal criticism or societal ignorance for educating your daughter?

8. Does the school have desired infrastructure for your daughter's education?

9. What challenges you face while getting your daughter educated? (social, financial, household related, teacher related, bullying, safety, etc.)

10. What steps can be taken by the government or school authorities to solve these problems?

11. Was there any impact of Covid-19 pandemic on school education of your daughter?

Appendix II

Interview Schedule for Students

Part-I: Respondent's Profile

1. Name of the student

2. Name of the School

3. Type of School: Girls' Co-educational

4. Class _____

5. Age _____

6. Area Rural Urban

7. Category General SC/ST OBC

8. Means of Transport

Part-II: Perception Regarding School Education

1. Do you attend the school regularly? If not, why?

2. Do you like going to school? Why/ why not?

3. Do you like to study? If not, why?

4. Does your family give more importance to your brothers' education than yours?

5. Who helps you in your homework?

6. How does your family support you in studies? (Provision of books, school bag, uniform, stationery, sports equipment, extra coaching, conveyance, freedom from house/outside work and taking care of siblings, etc.)

7. Do you find your parents' relatives or neighbours speak negatively about your attainment of school education?

8. Do you find infrastructure facilities at your school sufficient for your education? (Separate toilets, girl's common room, medical room, etc.)

9. Do you face any problem while pursuing school education? (social, financial, household related, teacher related, bullying, safety, etc.)

10. What facilities by the government, if provided, will help you in your school education?

11. Did occurrence of COVID-19 pandemic affect your education in any way? Did you face any obstacle in your studies due to it?

12. Did you have the required resources to attend online classes?

13. Has IT proved beneficial or detrimental in your education?

Appendix III

Interview Schedule for Teachers

Part-I: Respondent's Profile

1. Name of the respondent

2. Age _____

3. Gender _____

4. Designation

5. Name of School

Part-II: Perception Regarding Female School Education

1. Are girl students regular in coming to the school? If not, why?

2. Do girl students participate in what is being taught in the class or they feel shy?

3. What is the ratio of girl students to boy students in the school?

4. If there are any siblings of your student, do they study in your school or some other?

5. Do the parents of girl students get counselling for their daughter's future?

6. Do parents take follow up of their daughter's performance?

7. Do you think female education still has social stigma attached to it? Give your opinion.

8. Has there been any report of any girl not attending the school for long or dropping out of school due to some problem? (violence, bullying, etc.) If yes, what measures did school take to resolve the issue?

9. What initiatives have been taken by school authorities to promote education of girl child?

10. Which particular facility provided by the school or government initiative for female education has played a significant role in giving a boost to female school enrolments?

11. Apart from ongoing schemes, what government initiatives will you suggest for the promotion of female school education?

12. Did you face any problems in teaching in online classes during Covid-19 pandemic?

List of Publications

- 1) Published a paper entitled, “Regional Inequality in Education in Punjab” in European Journal of Molecular & Clinical Medicine, Volume 7, Issue 7, 2020 (ISSN: 2515-8260). (Scopus Indexed)
- 2) Published a chapter entitled, “Trends & Patterns in Female Education: A Study of Punjab” in edited book “Technology for Education and Employment”, published by National Press Associates (New Delhi, India) and having ISBN: 978-93-90863-45-7
- 3) Published a paper entitled, “Gender Disparity in School Education: A Case of Punjab” in Journal of Positive School Psychology, Volume 6, Issue 4, 2022 (ISSN: 2717-7564). (Scopus Indexed)
- 4) Published a chapter entitled, “Obstacles in Female School Education: The Importance of Online Learning During the COVID-19 Pandemic” in an edited book “Handbook of Research on Technical, Privacy, and Security Challenges in a Modern World” (ISBN13: 9781668452509) in June 2022.
- 5) Registered copyright entitled, “Survey Tool Facilitating Detection of Problems Detering Attainment of School Education by Girls” with Copyright Office, Government of India. Registration Id: L-130051/2023.
- 6) Published a paper entitled, “Predictive Analysis of Female Literacy and Gender Parity in Literacy: A Study of Punjab” in Madhya Pradesh Journal of Social Sciences, Volume 28, Issue 2, July 2023 (ISSN: 0973-855X). (UGC Care List Group – I)
- 7) Published a paper entitled, “An Evaluative Study of Government Initiatives to Promote Female Education in India” in journal Juni Khyat, Volume 13, Issue 6, No. 8, November 2023 (ISSN: 2278-4632). (UGC Care List Group – I)

List of Presentations

1. Presented a paper titled, “Female Education in Punjab: Trends and Patterns” in a Two- Day National Seminar on “Rethinking Education: Developing a Culture of Inclusive and Equitable Quality Education”, organized by School of Education, GNDU, Amritsar (Under PMMMMNMTT, MHRD, Govt. of India) on August 12-13, 2019.
2. Presented a paper entitled, “Regional Inequality in Education in Punjab” in National E-Conference on “Education and Development: Post COVID-19” organised on 26th September, 2020 by School of Education, Lovely Professional University, Punjab.
3. Presented a paper entitled, “Gender Inequality in Education in Punjab: A Cause for Concern” in International Conference on “Rethinking Business: Designing Strategies in the Age of Disruptions” held on 19th December, 2020 organised by Mittal School of Business, Lovely Professional University, Punjab.
4. Presented a paper entitled, “Gender Inequality in Education: A Study of Punjab” in National e-Conference on “Research Trends in Management & Social Sciences” held on 5th-6th March, 2021 organised by the Department of Management Studies and the Department of HSS, National Institute of Technology, Hamirpur (H.P.).
5. Presented a paper entitled, “An Evaluative Study of Government Initiatives to Promote Female Education” in International Conference on ‘Recent Advances in the Field of Economics, Commerce and Finance’ organised by Amity School of Economics, AUJ & Amity College of Commerce and Finance AUJ on 7th and 8th September, 2021.
6. Presented a paper entitled, “Does Adequate Availability of Infrastructure Promote Female Enrolments in Schools of Punjab?” in International

Conference on “Equality, Diversity and Inclusivity: Issues and Concerns” organised by Lovely Professional University on 25th September, 2021.

7. Presented a paper entitled, “Obstacles in Female School Education: Has Online Learning during Covid-19 Deteriorated the Situation?” in International Conference on ‘Industry 5.0: Human Touch, Innovation and Efficiency’ organised by Mittal School of Business, Lovely Professional University on 28th January, 2022.

List of Workshops

1. Participated in Faculty Development Programme on “Building Writing Skills” organised by Kanya Maha Vidyalaya, Jalandhar during 19-23 December, 2022.
2. Participated in Seven Day International Online Faculty Development Programme on “Post Covid-19 Regime- Issues, Challenges & Resonsibilities” organised by IQAC, KRM DAV College, Nakodar during 20-26 July, 2020.
3. Participated in National Level Online Faculty Development Programme on “Inclusive Research methods” organised by School of Management, Kristu Jayanti College (Autonomous), Bangaluru during 17-24 June, 2020.
4. Participated in Two Days National Level Workshop on the topic “Data Analytics and Business Modelling Using MS Access”, organised by IQAC and Department of Mathematics, Statistics and Computers held on 5th and 6th June, 2020.
5. Participated in Online National FDP on “Statistical Analysis of Quantitative Data using Advance Excel for Research Scholars” organized by Department of Mathematics, Rizvi College of Arts, Science & Commerce, Mumbai on 3-4 June, 2020.
6. Participated in Workshop on Econometrics – Time Series Analysis Using EViews, 9-10 March, 2018, Human Resource Development Centre, Lovely Professional University, Phagwara.