SUMMARY, FINDINGS AND CONCLUSION.

SUMMARY:

It has been elaborately discussed in Chapter-I about technical education in India, and technical education in Assam in particular. Different Commissions and Committees constituted from time to time during post independent period gave importance to the development and improvement of technical education in India. The University Education Commission Report (1948-49) and the Report of the Secondary Education Commission (1952-53) made some recommendations for the promotion and improvement of technical education in our country. Kothari Commission (1964-66) recommended that technical education should be production-oriented. The technical students should get workshop experiences. Technical institutions should increasingly adopt sandwich type of courses in co-operation with industries. Courses of special interests to girls should be offered in the technical institutions and girls should be encouraged to take them up. The Report of the National Policy on Education (1986) emphasised the need for developing and promoting technical education in our country. Appropriate formal and non-formal programmes of technical education will be devised for the benefit of women. The Modified NPE, 1992 provides for opportunities for technical education for women at all levels. Women's access to technical education will be improved qualitatively and quantitatively. Additional Women Polytechnics will be established by State Governments and Residential Polytechnics for women of a larger size will be set up under the central sector. The choice of trades/disciplines offered to women at certificate/diploma/degree levels in all types of technical education institutions will be made keeping in view the objective of bringing about women's equality. For increasing opportunities for entry, incentives such as hostel facilities, free ships, stipends, scholarships, etc, will be provided particularly for courses in emerging technologies and programmes in which women's participation in the past has not been inadequate. Therefore, with a view to studying the girl students of the technical institutions of Assam, an attempt has been made to understand the technical education in the country.

Technical education before Independence was in its infancy in Assam. After Independence technical education in Assam has developed and progressed remarkably.
It has received a new shape and is being reorganised more scientifically. At present there are three Engineering Colleges and nine Polytechnics in Assam. One I I T. has also been established at North Guwahati (Kamrup). World Bank has come forward to assist in the development and quality improvement of technical education in Assam under which the curriculum of the technical institutions are being revised to make them more relevant to our needs. A Curriculum Development Cell has started functioning under the Directorate of Technical Education assisted by the World Bank with the formation of State Project Implementation Unit (SPIU) for Assam State. The percentage of women students in the Polytechnics has increased from 10% to 14% during the project period and 21.6% of faculty are women. Five new Community Polytechnics, one Continuing Education Centre, one Industry - Institute Interaction Centre and cells, seven Computer Centers, Curriculum Development Centre, 8 LURCs, and 8 Maintenance Cells have been established as proposed. One Residential Girls' Polytechnic at Golaghat in addition to the one existing in Guwahati with courses in electronics and textile chemistry and design has been set up. Girls' hostel has been provided in six Polytechnics and three girls' hostels in the remaining three Polytechnics are under construction. Adhoc arrangements has been made to provide hostel accommodation to girl students of two Polytechnics having no regular girls' hostel. Admission in all co-educational Polytechnics are open to girl candidates. Separate amenities such as lavatories, common-rooms are provided in all Polytechnics. Number of merit-scholarships in girls' Polytechnics is more than these at co-educational Polytechnics, So much has been done, yet, the enrolment of women in the technical institutions of Assam is very low. The focus of the study is to study the problems faced by the girl students of the technical institutions of Assam and also to find out the reasons for the low participation of women in technical education in the State.

**STATEMENT OF THE PROBLEM**

The title of the present study reads; "A Study Of The Girl Students In The Technical Institutions Of Assam With Special Reference To Their Problems."

**OBJECTIVES OF THE STUDY**

Following are the objectives of the study:
1) To study the development of technical education in Assam since Independence with special reference to girls' participation.

2) To identify factors which help or hinder participation of girls in technical education in the State of Assam.

3) To investigate the problems faced by the girl students in the technical institutions of Assam.

4) To suggest remedial measures for solving the problems of girl students in the technical institutions of Assam.

5) To study the attitude of girls studying in the technical institutions of Assam towards technical education.

**DELIMITATIONS OF THE STUDY:**

1) The study is confined only to the technical institutions of Assam.

2) The study is confined only to the girl students of the technical institutions of Assam.

3) The study takes into account the teachers and administrators of the concerned institutions only.

**DESIGN AND PROCEDURE:**

The study adopts the descriptive survey method of research. The procedure of the study has been discussed under the following captions:

1) Sample.
2) Tools.
3) Data Collection.
4) Data Analysis.
Sample: The population for the present study comprised of a random selection of 270 girl students and 60 teachers from the two Engineering Colleges, one Regional Engineering College (Silchar), seven co-educational Polytechnics and two Girls' Polytechnics of Assam. Principals of the twelve technical institutions of Assam were also interviewed personally by the investigator.

Tools: In order to achieve the different objectives of the study the following tools were used.

1) Two Questionnaires were developed and administered by the investigator to the girl students and teachers separately to meet the demands of the second, third and fourth objectives.

2) An Attitude Scale was also developed and administered by the investigator to the girl students. The Attitude Scale was constructed for the fifth objective of the study.

3) An Interview Schedule was also developed and administered on the Principals of the technical institutions of Assam.

A copy of each of these tools are included in the Appendices.

Data Collection: The investigator went personally to each of the technical institutions of Assam for the collection of data. Data were collected between the months of January to May, 1997.

Data Analysis: Keeping in view, the objectives of the study, the data collected were classified and tabulated. Measures were taken to present the data through qualitative and quantitative analysis. Attempts were also made to use simple appropriate statistics like percentages and calculating \( X^2 \).

As per the need of the present study and according to the demand of the objectives of the study, the following major findings are sorted out after proper analysis and interpretation of all the four tools (Appendix - I, Appendix - II and Appendix - III and Appendix - IV) of the study.
5.1. MAJOR FINDINGS OF THE STUDY:

5.1.1. GIRL STUDENTS.

1) Proper guidance and counselling is needed to encourage the girls to join for technical education. Majority of the girl students (96%) replied that less number of girls join technical courses due to improper guidance and counselling. Only a negligible few (4%) replied that this was not the case.

2) 86% of the respondents replied that boys and girls have equal efficiency in technical education. This is because boys and girls have the same mental capacities needed for technical education. Only 14% of the respondents felt that boys and girls do not have equal efficiency in technical education because boys are physically stronger than girls which enables them to work more efficiently in the workshops than girls.

3) The participation of women in policy formulations and decision making process is very low. Increased employment opportunities is essential to ensure their visibility and legitimate role in technical education. It will also lead to their enhanced status and empowerment. All the respondents replied that greater involvement of women in policy formulations and decision making in the technical field is needed. This will encourage more girls to come for technical education.

4) Parents prefer sending sons to schools, more so to post-secondary institutions than daughters, due mainly to economic and social reasons. They consider male education as a better investment and female education as a luxury. The costs of female education to the parents are high and the returns do not necessarily flow to the parents, as girls get married and move out to another family. Costs to parents on female education is higher because of the need for greater security, costly dress, transportation, boarding and lodging costs etc. Parents are also doubtful of daughter's ability to get good jobs or income as women face discrimination in the labour market. Majority of the respondents replied that financial constraints act as a factor in discouraging girls from joining technical courses. Also the parental income of students of rural schools is about half of the income of urban schools. This leads to less rural school students joining technical courses.
5) The costs and benefits of technical education, especially to women should be publicised through community-based seminars, publicity campaigns and mass media. Feeder schools should be deeply associated in the conduct of such campaigns. It was found that all the respondents wanted that there should be more publicity of technical education provisions for women through mass media.

6) Majority of the respondents (90%) felt that the present curriculum of technical education lacked productivity. Hence curriculum upgradation and modernisation should be carried out at regular intervals with suitable test framed for evaluation of relevance and implementability.

7) Industry is the culmination of engineering activity and engineering educational process must bring industrial reality to the class-room through active involvement and interaction with industry. In the planning of technical programmes for women and in determining technologies, forms and modes of training, follow-up activities for setting up productive industries, procurement of raw materials, marketing of products, the community should be involved. Significantly enough, all the respondents replied that technical institutions should have links with industry and community which will improve employment potential in the field of technical education.

8) There is a lack of awareness that acquisition of technical skills can bring in returns to the family and thereby contribute to the improvement of the quality of life of the family. In the context of poverty levels, the returns of today are considered much more valuable than the possible higher returns of tomorrow and so parents decide against investing in female education. It has been found that 83% of the respondents felt that indifference of guardians towards technical education for girls leads to less girls joining technical courses. 17% of the respondents replied in the negative.

9) That education of women, has, socially a greater pay-off than that of men is neither well understood nor adequately appreciated. In the long run women's education helps in reducing poverty, increasing productivity and easing population pressures. All the respondents replied that society should encourage technical education for girls. Only then the participation of women in the technical field will increase.

10) Unemployment is an acute problem in the State. The students pass out from the institutions only to find unemployment staring at their face. The number of unemployed
graduate engineer and diploma holders are increasing day by day. 39% of the respondents replied that there is more unemployment among the passed-out students from the technical institutions than the other institutions. 61% of the respondents replied in the negative.

11) Lack of proper hostel facilities for girls is one reason for poor enrolment of girls in technical institutions. There is no hostel for girls in the Assam Engineering Institute (Guwahati), Bongaigaon Polytechnic (Bongaigaon), and Assam Textile Institute (Guwahati). However, construction of hostel for girls is under progress with State funding. Even in those technical institutions which has separate hostels for girls, the facilities are not proper and adequate. Much needs to be done in the sphere of repairing, adequate supply of water and electricity, medical facilities, etc. In the hostels of the two Polytechnics meant for girls, security is almost nil as most of the boundary wall has fallen down. Almost all the respondents (80%) replied that lack of proper hostel facilities leads to poor enrolment of girls in the technical institutions.

12) The mother-tongue has been accepted as the medium of instruction in the country upto the secondary stage. After passing this stage, when the students take admission in some technical institution, he or she is given the training through English because good books are not available on the subject in his or her mother tongue. This creates a great difficulty for the trainee. He or she has to devote much time to the study of English at the neglect of the technical subjects. 44% of the respondents replied that they had to face problems due to the medium of instruction being English. But 56% of the respondents, however, faced no problems due to the medium of instruction.

13) 68% of the girl students felt that girls have to face more problems in the technical institutions than boys. 32% of the girl students replied in the negative.

14) The suggestions given by the respondents for the improvement of technical education for girls in Assam are the following:

a) The guardians should have the courage to come out of the long practised social customs and allow their wards to join the technical institutions.

b) Society should have a favourable attitude towards technical education for girls. The persistence of old ideas in the society that girls should take up
those non-technical courses only that are based on stereo-typed traditional roles to be performed by women should be removed.

c) There must be more publicity of technical education provisions for women especially in rural and backward areas.

d) More guidance and counselling centres needs to be set up in order to encourage girls to come for technical education.

e) Facilities such as mechanical equipments, hostel accommodation, recreational facilities, common rooms, etc must be made available to girls.

f) Good staff, especially women teachers needs to be recruited to improve the enrolment of girls in technical education in the State.

g) Diversified curriculum and courses in new and emerging technologies suited to the needs of girls must be introduced.

h) Technical institutions must be linked with industry and community to increase job opportunities for women. Seat reservations for women in the public sector and Government jobs is needed.

5.1.2. TEACHERS.

1) Majority of the teachers (75%) feel that boys and girls have equal efficiency in technical education. This is because boys and girls have the same mental capacities needed for technical education. Only 25% of the teachers feel that boys and girls do not have equal efficiency in technical education as girls are physically weaker than boys which affects their efficiency while doing workshop practice and field works.

2) Guidance and counselling is important for any type of education. In technical institutions guidance must be given to the girl students regarding their course of study. More guidance and counselling centres need to be set up. The teachers have expressed their view that proper guidance and counselling must be given to the girl students by competent persons.
3) About 34% of the teachers agreed that financial constraints discourage girls from joining technical courses, and the rest 63% of the teachers disagreed with this. For improving the enrolment of girls in technical education, financial help must be provided to the girls. Education of girls must be made less costly than that of boys through fee waivers, scholarships and other incentives.

4) It has been found that lack of hostel facilities leads to poor enrolment of girls in the technical institutions. 57% of the teachers feel that lack of proper hostel facilities for girls is one reason for poor enrolment of girls in the technical institutions. Facilities such as water supply, electricity, medical care, etc., must be adequately made available in the girls hostels.

5) Interestingly, 68% of the teacher feel that girls do not face any difficulty while doing field works. About 32% of the teachers feel that girls face some difficulty while doing field works as sometimes excess physical labour is involved in field works which becomes strenous for girls.

6) It is found that majority of the teachers (72%) were happy with the job provisions of girls in technical education. They felt that there was more scope for employment in the technical field. 28% of the teachers were not happy with the job provisions of girls in technical education. They felt that there was more acute unemployment among the passed-out students from the technical institutions than other institutions.

According to 75% of the teachers girls did not face discrimination at the time of employment in the technical field. 25% of the teachers feel that girls face discrimination at the time of employment due to a number of reasons as fear of security, unwillingness of girls to do night-shifts, off-shore duties, etc.

7) According to the teachers, the reasons for less girls opting for technical education are guardians' apathy, lack of publicity, indifference of the girls, financial constraints and shyness of the girls respectively.

8) Most of the teachers (83%) replied that girls participate in extra-curricular activities equally with boys. Girls actively participate in extra-curricular activities like
games and sports, debates, music and dance etc. in the technical institutions which is no doubt a healthy sign. Only 17% of the teachers replied in the negative.

9) Some measures were suggested by the teachers for better technical education of girls in the State. The measures were like encouragement of parents and teachers, proper publicity campaigns of technical education provisions for women, proper facilities as hostel accommodation, recreation, proper guidance and counselling, etc. Diversified courses and courses in emerging technologies needs to be introduced to attract more and more girls to join the technical courses. More job opportunities are needed. Some posts should be reserved for women in Government and public sectors. Continuing education programmes should be offered for the benefit of women already in the workforce.

5.1.3. **ATTITUDE OF THE GIRL STUDENTS** :

1) The attitude of the girl students towards technical education was favourable. Majority of the girl students (80%) were in favour of technical education.

2) The attitude of 80% of the girl students of the co-educational technical institutions of Assam were favourable and 20% of the girl students were not in favour of technical education. 79% of the students of the girls' technical institutions were in favour of technical education and 21% were not in favour of technical education.

3) There was no significant difference of attitude of the girl students of the co-educational technical institutions and the girls' technical institutions of Assam towards technical education.

5.1.4. **PRINCIPALS** :

1) According to the Principals of the technical institutions of Assam, the girl students faced some problems such as shortage of staff, financial constraints, lack of hostel accommodation, lack of water supply, inadequate transport and communication facilities, lack of medical facilities, and lack of proper security in the campus.

2) Out of 12, 9 Principals replied that financial constraints leads to less girls joining technical courses.
3) All the Principals agreed that lack of proper hostel facilities leads to poor enrolment of girls in the technical field.

4) The Principals suggested some measures to improve technical education for girls in the State. These measures are encouragement from parents and teachers, proper hostel facilities, guidance and counselling, more publicity of technical education provisions for women, trained teachers, establishing women’s wings in existing Polytechnics, starting new disciplines especially for girl students and proper job opportunities to girls.

5.2. CONCLUSION:

The last five decades are perhaps unique in comparison to many centuries of evolution that the human race has gone through. There has been a mass deployment of resources, towards unravelling the mysteries of nature and in this process the human being has dramatically utilized the natural resources towards making human life different. Over the centuries, human society expected the woman to play a role of creator, which was based on a natural biological function. During the last half a century, the technological impact and the resultant changes in the social fibre brought about quite a substantial difference in the role expectations of women. Today a woman plays a role of a preserver apart from playing a role of creator, in the micro unit of family to a macro unit of this global village. This change is due to the technological development and this exponential change due to the impact of technology on our life is likely to grow.

National development is linked with education. Education which imparts knowledge, imagination, creativity and builds character. And Character building is done by women to a great extent. Women can demand social justice only if they are educated. Thus female literacy seems to be a better parameter to measure the aspect of human development in a state. Female literacy also indicates the degree of social freedom the society gives to its citizens.

In India due to structural economic reforms, a transition is taking place - from an inward oriented and highly regulated policy regime, to an export oriented and internationally competitive economy. In this transition, the real success of development is to make the whole process of adjustment more human and minimise the socio-
economic pains. Real political independence is dependent on economic independence which in turn can be achieved only by ensuring technological independence among other things. Government and industries cannot claim economic growth and poverty reduction as their objective while ignoring roughly half their population, namely women. Women are the key to economic growth. No country can eradicate poverty if it ignores women. Nothing contributes to economic growth than investing in women. Educated women have healthier and fewer children, they also have impact in the community and make it easier for future generation of girls to get educated. The impact of education in terms of returns on investments may take 15 to 20 years but the effect is real and tangible. This visages the adoption of sustainable Technology Development strategies. Hence technical education management for women has a special significance when India is marching towards an open economy with new technologies pouring into the country.

As transpired from the investigation, certain special problems faced by the girl students in the technical institutions of Assam has come into view. These special problems of the girl students are enumerated below :-

1) Lack of guardians' courage to come out of the long practised social customs and allow their wards to join the technical institutes.

2) Lack of hostel facilities for girls.

3) Guardians' reluctance to send their wards to far away places for fear of security and allied reasons.

4) Non-availability of facilities for girls such as common -rooms, recreation facilities, etc.

5) Shyness of the girl students, particularly from rural and back-ward areas to join for co-education.

6) The persistence of old ideas in the society that the girls should take up those non-technical courses only that are based on stereo-typed traditional roles to be performed by women.
7) Lack of publicity of the technical education provisions for women.

8) Inadequate guidance and counselling services in the technical institutions.

9) Lack of skill-oriented and production-oriented training programmes for women.

10) Low participation of women in policy formulations and decision making process in the technical field.

These problems faced by the girl students in the technical institutions of Assam can be solved by taking proper remedial measures. Efforts must be made to solve the problems faced by these girl students which will also improve their enrolment in technical education in the State. The investigator has advanced the following suggestions for solving the problems faced by the girl students in the technical institutions of Assam.

1) The parents and guardians should have the courage to come out of the long practised social customs and allow their wards to join the technical institutions. Guardians are reluctant to send their wards to far away places for fear of security and allied reasons. So girls' security must be ensured. Free transport from home to the institution, separate common rooms, other amenities, separate lodging and boarding facilities at concessional rates, etc. might encourage the guardians to send their wards to the technical institutions. Therefore measures should be taken so that the guardians encourage their girls to come for technical education.

2) Efforts must be made to bring in social transformation in respect of values related to female education. Such value changes should be accompanied by provision of opportunities for technical education of females. In the planning of technical programmes for women and in determining technologies, forms and modes of training, follow-up activities for setting up productive industries, procurement of raw materials, marketing of products, the community must be involved. The commitment of the community to gradually increasing participation of women in technical education and training programmes should be ensured through participatory approaches in planning, implementation, monitoring and review of programmes.
3) There should be intensification of technical education provisions of women through mass media. Conducting awareness campaigns is necessary. The costs and benefits of technical training, especially to women should be published through community based seminars, publicity campaigns and mass media. Feeder schools should be deeply associated in the conduct of such campaigns. Technology should be transferred to rural women. An awareness programme should be launched at the State level, through workshops and mass media involvement. Visits to the girls' schools at 10 + 2 level should also be planned for awareness of diploma programmes available at Polytechnics.

4) The technical institutions must have skill-oriented and product-oriented training programmes for women. Sandwich courses and "earn while you learn" programmes for women must be introduced. Women-friendly courses in co-educational technical institutions will encourage more girls to join the technical institutions. Programme flexibility must be increased by bringing the technical institutions closer to homes through flexible credit based programmes, providing for home-based learning for girls to the extent possible. And courses concerning application of new and improved technology in the performance of household chores, improved sanitation, and innovations in traditional technologies must also be made available.

5) Vocational career guidance and counselling services must be provided to pre-polytechnic institutions, Multi-purpose High Schools and pre-vocational centres attached to Higher Secondary Schools. Guidance and counselling services should be provided to the girls in the technical institutions so that they emerge out as responsible citizens and actively contribute to the economic growth of the country. Proper guidance and counselling is necessary to develop professionalism among female students. She has to be motivated to be a creator, an innovator and a person of imagination. The potential target group of women technicians must be tapped leading them to self-employment. Promotion of entrepreneurship and self-employment must be ensured through proper guidance and counselling.

6) There must be greater involvement of women in policy formulations and decision making in the field of technical education. Women will be more sensitive to the problems of girls. Therefore, more women must be involved in policy formulations and decision making. This will encourage more girls to come for technical education.
7) There must be enhancement in the number of women in teaching and non-teaching positions in technical institutions. There should be concerted efforts to recruit female teachers for both co-ed and women technical institutions. Instead of recruiting female teachers for the teaching of a few technologies, attempts should be made to have at least some female teachers in each technology. The vacancies in the technical institutions should be filled up. There must be at least one lady officer/teacher in whom the girl students can 'confide' in. Increasing women faculty members will provide better guidance to girl students. The allotment of house must be preferred to the women faculty members. Women must be trained in various training programmes at TITI's.

8) Industry is the culmination of engineering activity and engineering educational process must bring industrial reality to the classes through active involvement and interaction with industry. Technical institutions must have proper linkage with industry, especially for training and employment of women students. Special facilities such as transport, creches, etc., must be provided to the women employees by industry if necessary by law. There must be equal salaries/ remuneration for equal work.

9) There must be frequent updating of the technical education curriculum. The technical institutions should have a permanent mechanism for identifying needs of the curriculum based on relevance to national needs and international trends. Only then will the nation have an engineering work force whose quality of education and training is equal to or better than its international competitors. It should be able to successfully tackle the challenge of technological advancement at home and competition in goods and services abroad. Curriculum upgradation and modernisation should be carried out at regular intervals with suitable test framed for evaluation of relevance and implementability.

10) The technical institutions are generally situated at quite a distance from towns. Also lack of proper transport and communication facilities hinders many girls from coming to the technical institutions. In such a situation, provision of hostels for girls is imperative. Proper hostel facilities must be provided to the girl students in the technical institutions. Facilities such as adequate water supply, power supply, medical care, etc., must be provided in the girls' hostels. Proper security of the girls must be ensured.
11) The regional language should be accepted as the medium of instruction. The teachers for technical institutions should be so trained that they may be able to impart the training through the medium of the regional language and attempts should be made to provide adequate literature in technical subjects in the regional language. However, English should continue as a compulsory language in the curricular of both technical schools and universities.

12) The Government must provide financial help to the girl students studying in the technical institutions. The parental costs of educating girls must be less than that of boys. The parental burden must be reduced through fee waivers, scholarships and other incentives. There must be reservation of seats for girls in admission to technical institutions.

13) More job opportunities needs to be provided to women in the technical field. Some posts should be reserved for women in Government and public sectors. Job security should be provided. The technical institutions should offer continuing education programmes for the benefit of women already in the work force. Programmes in multiple modes should be offered to enable women to gradually acquire higher levels of knowledge and skills enabling them to engage in more productive and income generating occupations.

14) The technical institutions must promote action research in the field of technical education. The vicious cycle which discourage females from joining the mainstream of technical education must be broken. Success stories should be documented and disseminated. Potential in rural areas around institutions should be consciously studied and tapped. Research must encompass educational, socio-cultural and economic problems and issues.

15) Teachers must also encourage the girls to come for technical education. In the technical institutions, the teachers should help the girls students both in academic and non-academic matters. Personal contact between teachers and students is essential for the success of technical education.

From the result of the study, all the Hypotheses put forward by the investigator has proved to be true. It was found that the development of technical education in Assam since Independence has been satisfactory. Certain factors help or hinder participation of girls in technical education. The girl students studying in the
technical institutions of Assam has a favourable attitude towards technical education. The girl students also face some problems in the technical institutions. But these problems are not without any remedy. The investigator has suggested some remedial measures to solve these problems of the girl students. The investigator feels that this will help to increase the enrolment of girl students in the technical institutions of Assam.