CHAPTER - I

INTRODUCTION

The number of people in a city, a nation, or in the world has been a persistent theme of social science, whose topicality shows no sign of diminishing in the last two decades of twentieth century. Philosophers, counsellors and legislators have elaborated population doctrines and promoted policies based on them.

Greek thoughts on population developed in city states with constitutional rule by the minority who were the citizens. According to Plato, a population must be sufficient to defend itself against its neighbours. Christian thought developed in the declining empire, but encouraging population growth to meet the secular needs of the empire. The numerical study of population starting in the seventh century marked the beginning of demography (Nathan, 1982).

There was a time when the number of human beings on the earth was not a thing of much concern. In the early stages, natural forces maintained ecological balance. The world has moved several light years since
the birth of human civilization to reach one billion. The large population and rapid rate of growth of population as are found in most of the developing world are recent phenomena. In fact it took all of human history up to the middle of the 19th century to have one billion people living in this world and slightly more than a century to add the second billion. On July 11, 1987, the world population reached five billion mark. According to the latest estimates of the United Nations, the population of the world is 5.4 billion in 1992 and the annual growth rate is about 1.7 percent. The world population will be over 6 billion by the year 2000 with almost 90 percent of the growth taking place in developing countries (Sadik, 1992).

The world faces a wide variety of critical threats like degradation of soil, water and marine resources essential to increase production; widespread health threatening pollution; and global climate change. Enormous human problems in the form of widespread persistent poverty and human misery affect the quality of life. If human societies in decades to come are to inhabit the world that is environmentally secure, economically prosperous and characterized by growing peace, freedom and human welfare, the growth in popula-
tion and economic activities needed to be regulated (UNEP, UNDP, 1992). Development experts and National Leaders recognised the need of sustainable development - a development in providing the quality of human life, while living within the carrying capacity of supporting ecosystem (UNDP, 1991). Such human development is now recognised as critical to economic development and to early stabilisation of population (UNEP, UNDP, 1992). Recent experiences suggested that the population explosion in Africa, Latin America and South Asia could also be contained with successful programmes of economic development and population control (Hollingsworth, 1988).

Indian Demographic Profile

With a population of 838.58 million as on the sunrise of March 1, 1991, India still occupies second position, next to China. With 435.21 million males and 403.36 million females (Union Primary Census Abstract, 1991), it has a sex ratio of 927. India's share in the world population has increased from 15.2 percent in 1981 to 16 percent in 1991, with only about 2.4 percent of the world's land area. With this, every sixth person on the world is Indian (Census, 1991). The Population Card indicates that about 33.5 children are added to the Indian population every minute, whereas
Indonesia adds only 5 people and Japan only one. Even the People's Republic of China is adding only 30 (The Population Card, an educational instrument, UNFPA).

The increase in population during 1980 was equivalent to the total population of Western Europe comprising Austria, Belgium, France, West Germany, Luxemburg, Netherlands and Switzerland. In terms of annual increase, India adds almost the total population of Australia or of Sri Lanka. In other words, in terms of annual increase in population, a state like Haryana is being added. The annual average increase in population from 1981 - 1991 is 15477 thousand (Union Primary Census Abstract, 1991).

With the current rate of growth, it is expected to reach one billion mark by the turn of this century. This rapid growth of population not only affects the size of population but also the structure and composition of population. In India the sex ratio is 927 females to 1000 males, which is seven point less than the sex ratio of 1981. This is a matter of serious concern for the country. The population below 15 years of age still comprises of 39.6 percent of the total population (MHFW, 1991).
Though life expectancy has improved from 32 in 1951 to about 60 years, it is still lower than the developed world and even less than what it is in some of the developing countries such as Sri Lanka. Infant mortality rate declined from 100 to 85 in ten years time. The literacy rate as per 1991 census is 52, the male literacy being 64 percent and female 39 percent, though the rise in absolute number of illiterates has increased during this decade also.

Some demographers believe that India seems to have entered the third stage of demographic transition since 1971 as the birth rate during that year also started declining. In the 1980's, the decline in birth rate was marginally greater than that in death rate, as such the growth rate during this period slightly declined from 2.22 to 2.11. The demographic transition in the 25 states and seven union territories of India varies. The variation is more noticeable between northern and southern states, as borne out by the 1991 Census of India. For instance, the demographic transition has been faster in Kerala and Tamil Nadu, whereas in Madhya Pradesh and Uttar Pradesh, it has been slow. Eight states which are categorised by Bose as demographically vulnerable states accounts 56.1 per cent of India's population. Haryana is also among them (Bose, 1991).
Demographic Profile of Haryana

Haryana has made tremendous progress in agriculture and industry and has the second position in per capita income. But economic progress has not affected the demographic science. With a total population of 1,64,63,648 as per 1991 census and with a land area of 44,212 sq.km. Haryana constitutes 1.93 percent of the total country's population. In 1971 after five years of its formation its population was 1,00,36,808. In two decades the population of Haryana has increased about 1.5 times. As per 1991 Census, Haryana ranked 16th in total population among states and UTs. Haryana occupies a middle position amongst the states with respect to death rates and expectation of life at birth for women. Its's position with respect to female-male sex ratio is adverse being the lowest among all the major states. The sex ratio in Haryana is 874 as per 1991 Census. The difference between birth rate and death rate has resulted in a higher growth rate (i.e. 26.28 decade1 growth rate) than the national average of 23.50. Thus, Haryana occupies a middle position amongst the states with respect to death rate, expectation of life, particularly of women. With respect to female literacy, mean age of girls at marriage, female infant mortality rate Haryana's
performance is average to low (Premi, 1991). Being a demographically vulnerable state, need programmes of educating the people regarding population.

Need for Population Education

The adverse impact of population growth on the development process was realized even before independence. Soon after independence India adopted an official population policy to attain demographic goals. India's national family planning programme, originating in 1951, is the oldest in third world. Since then family planning programme has been adopted including effective approaches from time to time, i.e. from a 'clinical approach' to a 'community extension' approach and then to an 'integrated development' approach coupled with incentives and disincentives. Success on population front is considered crucial for securing national development goals (Seshadri and Pandey, 1991). India has set up certain demographic goals for reaching the stage of population stabilisation. A document of the Union Ministry of Health and Family Welfare states:

A long-term goal is to reach zero population growth rate by 2050 A.D. with an estimated population around 1300 million. The medium-term goal is to reach Net Reproduction Rate of Unity (NRR, 1) by 2000 A.D. with a
birth rate of 21, death of 9 and infant mortality below 60 (MHFW, 1986).

India realised the potential of education in reinforcing the national efforts directed towards achieving the demographic goals. It was in 1969 that an awareness seminar, focussed on the need for conceptualisation of population education. The concept of population education was considered in a broader perspective to cover various dimensions of implications of population growth and development instead of population control alone (Yadav, 1988). In the context of the younger generation which constitutes a sizable proportion of India's population, it was realized that they should be educated about various population related issues. Population education was accepted as an intervention strategy and was introduced into the general education system.

The National Policy 1986 for the first time reflects the magnitude of demographic situation by mentioning that 'the growth of our population needs to be brought down significantly over the coming decades'. It has taken into consideration, the real need of small family norm as a means of improving the quality of life. The policy document has stressed that the
national system of education will promote the observance of small family norm (MHRD, 1986). Programme of Action 1992 stated "Special attention will be paid to strengthening the programmes of population education and make it more effective" (MHRD, 1992).

Population Education Defined

The idea of population education had its origin in 1941, when Alva Myrdal in her book, "Nation and Family" attempted to convince the United States of America that population policy was nothing less than social policy at large. Population education was reborn with the publication of an article entitled, "the Population explosion" by Warren S. Thompson in the March 1962 issue of Teacher's College Record (Thompson, 1962) and another article entitled, "Population gap in the Curriculum' by Philip M. Hausar (Hausar, 1962). Sloan Wayland gave concrete shape to population programme in the field of education (Wayland, 1969), and the term "Population Education" appears to have been coined by him (NCERT, 1969).

There is no single definition of population education. It varies in accordance with conditions and preferences of the countries. According to UNESCO: "Population education is an educational programme which
provides for a study of the population situation in the family, country, nation and world with the purpose of development in the students of rational and responsible attitude and behaviour towards that situation" (UNESCO, 1971).

In India, the National Seminar on Population Education (1969) tried to develop a functional definition of population education. The National Seminar indicated that population education should include knowledge about both the quantity and quality of population and the need to control them for happy existence. The Draft Syllabus reflected the ideas of National Seminar. Over the years the concept of population education has gradually evolved by adapting itself to the changing needs and requirements. Though observance of small family norm has been the basic concern of population education, its objective has been to present to students the multifaceted aspects of the population situation with clear cut emphasis on cause and effect relationship (NCERT, 1970).

Population education is, thus, designed to develop an awareness and understanding of the nature, causes and personal as well as social implications of population phenomena (Sikes, 1982). It is an
educational programme to make learners understand the inter-relationship among population change, development and aspects of quality of human life. It helps learners to identify problem and search for solutions. It aims at facilitating an understanding of population phenomena both at macro and micro (individual and family) level and bring about attitudinal change in respect of population issues.

Population education has six major content areas: (i) Population dynamics, (ii) Population and economic development, (iii) Population and social development; (iv) Population, environment and resources, (v) Population and family life; (vi) Population, health and nutrition. There are six major themes; These are: (i) Family size and family welfare, (ii) Delayed marriage, (iii) Responsible parenthood; (iv) Population change and resource development, (v) Population related beliefs and values, and (vi) Status of women (NCERT, 1988).

Emerging concerns such as adolescent education, Sexually Transmitted Diseases like AIDS, urbanization and aging are also covered. The conceptual framework of population education revolves around these areas and themes.
National Population Education Project

Population education has been accepted as an integral part of education at all levels. Three projects are being implemented in India at present. These are:

(a) Population Education for Formal and Non-formal Education being implemented by National Council of Educational Research and Training (NCERT) at the national level.

(b) Population Education in Adult Education Programme being implemented by the Directorate of Adult Education (DAE), and

(c) Population Education in Higher Education assigned to UGC.

Other agencies like Family Planning Association of India, the Central Health Education Bureau, Path Finder Funds Population Education Project, Population Studies Centre of Sri Venkateswara University are also involved in the project.

National Population Education Project in school and Non-formal Sector was launched in April 1980. At present it is implemented in 29 states and union territories with a view to institutionalising popula-
tion education into education system. A strategy of integration has been adopted. Various activities in the area of material development, incorporation of population education content into syllabi and textbooks, teacher training, research and evaluation, co-curricular activities and dissemination are carried out. This project has already completed two cycles. It is very soon entering the third cycle (NCERT, 1992a).

Besides the school education project, two separate projects are also being implemented. The project in the adult education sector is being implemented by Directorate of Adult Education, Government of India. Under this project population education material for use by the learner (15-35 age group) participating in basic literacy, post-literacy, training material for instructors, project officers are developed. Besides adult learners, population education materials are developed for workers. The material developed on population education is integrated in literacy material. The project is also conducting activities related to training, research and evaluation and promotional activities (DACC, UNESCO, 1991).

The project being implemented in the university sector is sponsored by the University Grants...
Commission, with the objectives of developing material, training college teachers and research and evaluation and promotional activities. UGC has set up Population Education Resource Centres (PERCs) in the Departments of Adult and Continuing Education and Extension in twelve universities. These PERCs have been assigned the work of implementing population education programme in universities, colleges and adopted communities (UNFPA, 1989).

Implementation of Population Education Activities in Haryana

The adverse impact of growing population was realised by the state of Haryana. Various population education activities were started even before 1970. State Council of Educational Research and Training, Gurgaon, included population education related activities in the various inservice teacher training programmes. Some lessons on population education were introduced in a few textbooks taught in schools. However, implementation of activities in a planned way started in 1980’s (SCERT, 1983) when a national population education project was launched and Haryana was among states to join that project in its first phase. State Council of Educational Research and Training, Haryana, Gurgaon was given the responsibility
of carrying out the programme. For this purpose a Population Education Cell was created in the Council. The project has covered two cycles (1980-85 and 1986-90). Under the project various activities in the area of curriculum and material development, integration of population education in school and teacher education, teacher training, cocurricular activities, evaluation and research have been conducted (NCERT, 1992a).

Efforts have been made to integrate population education concept and ideas into elementary and secondary preservice and inservice programmes. Integrated training modality in the form of school complex based training has been adopted to orient elementary and secondary teachers.

In a society like our where sociocultural norms, traditional beliefs and values promote pronatalty among the people, there is need to direct efforts towards changing these beliefs and values. Teachers in this regard play an important role. They are considered as an agent of social change. However they also need training.

Importance of Training

By definition, training refers to the process of equipping persons in the organisation with the
necessary competencies to perform their present or future jobs effectively. An organisation renews itself and enables itself to respond to the emerging needs and demands through training. Training is, thus, an intervention that is intended to change people’s way of doing things. In the nature of introducing a new technology or an innovation, training can be viewed as a process of social change. It entails discarding outdated facts and information, outmoded ways of doing things and incongruent values and old norms (Tamayo, 1977).

Kurt Lewin’s (1947) model for social change shows three stages of the change process which are (1) unfreezing, (2) moving and (3) refreezing. According to him when a participant comes for the training programme, he brings with him a background of ingrained habits, of thought, feeling, values and norms and ways of doing things that he learned from his family, locality and organisation. These pre-existing predispositions or inclinations can hinder the acquisition of new knowledge, new skills and new attitudes needed for behavioural change. The unfreezing stage helps in removing the barriers to behavioural change. It also helps in the formation of an effective
training or learning group. The moving stage is the action programme of the training process. Through a series of learning activities, the trainees acquire new knowledge, new skills and new attitudes required in performing his job.

The refreezing stage is the final stage in which every trainee gains a new identity and personal continuity which he again freeze. Lippit (1958) also presented a similar model. Like other programme, training is considered very crucial in population education as it is also considered an innovatory stimulation.

Training for Whom

Who should be trained in population education is an important question. Population education being value laden and, as such, teaching population education requires methods that are geared towards the development of not only the cognitive and affective domains, but also in decision making skills (MECS, 1986).

Two broad categories of persons need training for population education programme implementation (UNESCO, 1978a). These are:

(i) Professional personnel responsible for designing curricula and instructional materials, developing
appropriate methodologies, providing training for teachers, undertaking research and evaluation and programme leaders and educational policy makers.

(ii) Teachers: In the first category, persons usually require intensive preparation in short courses or seminars. The planning and implementation of this training is normally undertaken by a small team from inside and or outside the country. This team of organisers consists of people with previous experience on population education and specialists in substantive fields - such as demography, sociology, health, etc. which contribute to the knowledge base for interdisciplinary population education (UNESCO, 1978b). The nature and duration of training programmes for teachers differ from country to country. The scope and character of the population education programmes and its place in the curriculum influences the teacher training process.

Need for Teacher Preparation on Population Education

Teacher training plays an important role in the development of a population education programme. The teacher is crucial to the success of the programme because he constitutes basic information channel in the educational process. He is the primary disseminator of population education ideas in the classroom. But for
transmission of knowledge related to population issues to students, the teacher must first acquire sufficient knowledge, favourable attitudes and the necessary competence to teach population education effectively. It's training becomes more crucial when population education is not a separate subject, but has been made an integral component of the education system.

The success of the institutionalization of population education into the education system largely depends on a thorough preparation of teachers at various levels. They need to be oriented to the content and the method of using the instructional material in the classrooms so that they are able to provide suitable learning experiences to the students (NCERT, 1980). The teacher in rural areas is approached by illiterate people for solving their problems even today. Therefore, all teachers who are already in schools and the future teachers, need to be oriented in population education.

The status study conducted by the NCERT shows that there is a sizable number of teachers who are yet to be covered under inservice training in population education (NCERT, 1992a). According to the Fifth All India Education Survey there are 36,44,681 teachers.
There are only 2,24,912 teachers (i.e. 6.17%) who have undergone inservice training programme in the country. Out of the total trained teachers, the figure for primary level is 5.57 percent, for upper primary 7.29 percent, for secondary 6.61 percent and for higher secondary is 4.91 percent (NCERT, 1992b).

In the state of Haryana 15,916 teachers in primary schools, 10,903 in upper primary schools, 38,882 in secondary and 6,151 in senior secondary schools were in position as on 30 September, 1986. The total number of teachers in Haryana showed an increase of about 74 thousand from 1986 to 1993.

In view of the huge number of teachers and other personnel, time limitations and available human, physical facilities and financial resources, a country/state need to think: (i) Which level of teachers to be considered crucial? (ii) Which methodology of training be adopted for training them?

Teacher Preparation at the Secondary Level

Though primary teachers play a very important role in a country like India where 46.97 percent of the students drop out of class I and before reaching class V (MHRD, 1992). Therefore, the orientation of primary
school teachers might be considered necessary for transmitting the idea of population education to a large number of students. However, the real orientation of the child begins when the child is above eleven plus till the age of sixteen plus. This preadolescence and adolescent stages are considered the most crucial stage for physical and mental development of the students. It is during these years that population relevant attitudes, habits and thinking are formed. Majority of the adolescents usually enter life after ten or eleven years of schooling. Soon after they enter the stage of reproduction. By this time they must understand and appreciate the significance of small family norm. In order to educate them about various population issues, and enable them to take rational decision on various aspects of life, the secondary school teachers play very important role in general and, in implementing population education programme, in particular. The training of secondary school teachers, therefore, becomes important.

How to Train Teachers

As a well thought planning is crucial element in the programme, well trained teachers will be an asset for effective implementation of the programme. The overall objectives of teacher preparation are (NCERT,
1980): (1) to develop in teachers an understanding of population phenomenon; (ii) to develop in them proper attitude towards this problem so that they are able to take rational decisions themselves and also guide others for taking rational decisions, (iii) to help them to acquire necessary skills to integrate population education concepts in different school subjects which they are teaching, (iv) to acquaint them with techniques and methods of handling population education content at the school stage, (v) to develop skills in organising population education activities both school based and community based. A modality or a combination of modalities that helps in achieving these goals is considered more suitable for training the teachers.

During the past decade, countries implementing population education programme have used different training modalities. Every country wants to cover maximum number of teachers in a minimum span of time and with much less financial inputs. It is, therefore, desirable to explore different modalities and employ every possible method and technique including large scale use of mass media and distance learning methods for reaching literally thousand and thousands of
teachers scattered in every nook and corner or the country.

A range of modalities are given below for training the teachers in population education and it is upto the country or a state to select a modality or a combination of modalities for effective training.

1. Face-to-Face Training: Under this mode, training is given face-to-face either independently or in an integrated way. Under independent category, the training programmes are organised for varied duration exclusively for population education, whereas under the integrated category, the training programmes are dovetailed to the existing teacher training programmes. Under this modality, training is organised for different levels of education in the decending order of hierarchy and, therefore, is also called hierarchical Face-to-Face training. Different strategies such as one tier or more than one tier are used for training the teachers and teacher educators. In India, this modality is used more commonly for training the teachers in population education. Under integrated face-to-face, training on population education is made an integral part of the ongoing teacher training programme.
2. Peer Group: In this modality, the principal or subject heads or coordinators in each secondary schools are trained through face-to-face modality and they, in turn, are given the responsibility for training teachers in their own schools. Peer training also involves a pattern wherein the trainer and trainees are both teachers at the same level. Each school is provided training material and it sets up its own schedule of training the teachers. Under this modality supervisory team also visits the school and provides on-the-spot assistance, guidance as well as evaluation of the programme.

3. Mobile Training: In this modality, a mobile team consisting of trained, competent and experienced trainees conduct teacher training programme in schools. These teams are equipped with a variety of instructional materials, aids, and equipment. The team member can be rotated during the course of the training, thus, minimising the absence of members from respective posts for a long period.

4. Module or Self-Learning Model: In this training modality, the training material/modules are prepared at a central place and are provided to teachers for independent and direct training. Being self contained
learning package, modular learning requires minimum supervision, easy to administer and require the trainee to manage his or her own learning. The crucial need in using the modular approach is to ensure teacher’s motivation. It can be supplemented with peer group training modality.

5. Training via Correspondence: Under this modality lessons and other learning materials are sent to the trainees through postal service. A correspondence phase is supplemented with some kind of face-to-face training sessions at the local level either by the peer teacher or by the head of the institution.

6. Training through Radio and Television: In this model specific educational/instructional programmes are developed for radio/television transmission. These programmes are transmitted regularly at predetermined schedules, indicating time and date. The schools are provided with radio and TV and teachers are expected to listen/view the programme. This model can be supplemented with a peer training model and modular training model.

There are also other modalities like field based preparation, team work inviting, teachers in workshops
and seminars. During such activities teachers are also exposed to population education.

It is evident that the modalities of training teachers vary in terms of approach, tasks and subtasks, supportive services, teaching learning instruments, managerial efforts, cost, coverage of target group and expected intensity of learning. A survey of literature reveals that countries are using one or a combination of more than one modalities for training teachers in population education. In some cases under one modality, different strategies are adopted. For example, under face-to-face training modality in India, strategies like independent training, integrated training, massive orientation, tier system, etc. are used.

There had been hardly any systematic study in terms of cost effectiveness of these training modalities in population education. Keeping the need in view, the present study was designed (Buch, 1974, 1979, 1987, 1991).

Statement of the Problem

The problem can be stated as under:

A STUDY OF COST EFFECTIVENESS OF TRAINING MODALITIES IN POPULATION EDUCATION.

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Cost effectiveness analysis refers to the comparison of the cost with regard to their outcome or a comparison between input measured in monetary terms and output measured in nonmonetary terms with a view to evaluating alternatives for achieving the same outcomes or set of outcomes. Cost effectiveness analysis is applied to assess efficiency within a sector, where the overall objective once established, the primary concern is the comparison of alternative means of achieving these objectives. The ultimate objective of cost effectiveness analysis is to select the alternative which will yield maximum output for a given cost or alternatively the minimum cost for a given output (Sirangeldin, 1983) whereas cost effectiveness is the ratio of cost or the expense, in carrying out a project to its outcome or effectiveness. The ratio is obtained by dividing the cost per trainee by the measure of effectiveness. In this study cost effectiveness analysis refers to the comparison of training modalities with respect to both their costs and their effects.

Often in population education programmes, decision must be made on the choices of alternative approaches to meet a particular objective, e.g., updating the knowledge of teachers in population education. Many a
time, cost consideration also affects the decision. For example to train all teachers at the national level is very costly. Hence, alternative modalities are to be found out. Cost effectiveness analysis can be carried out only (i) when programmes have the same objectives, and (ii) a common measure of effectiveness is used (Levin, 1983).

In principle, both cost effectiveness (CEA) and cost benefit analysis (CBA) are fundamentally the same techniques. But in actual practice, they are not. Cost benefit analysis attempts to measure all costs and benefits in monetary terms whereas in cost effectiveness analysis compares costs in monetary term with output measured in non-monetary term. Cost effectiveness is not necessarily the same as cheapness. Some strategies may be cheap but ineffective. Sometimes it is worth investing more money on a project choosing a higher cost strategy that also has higher cost effectiveness. Any judgement on costeffectiveness requires both the best possible assessment of cost as well as the learning results.

In the present study of cost effectiveness envisages two sets of variables. The first set of variables comprise cost (measured in monetary term) and
the second set of variables indicate the extent of effectiveness of training modalities (measured in non-monetary term). The outcomes are identified in terms of the objectives of population education programme. In the context of the present study the outcome variables in terms of achievement in training gains are awareness improvement and attitude change.

The cost of the training modalities can be operationalised under the following three heads:

(a) personal (including staff development cost)
(b) Material
(c) Contingencies (including teachers travel cost, per diem, postage, transport, etc.

The study compared the cost effectiveness of the following three modalities:

i) Face-to-Face Interaction Mode
ii) Self Learning Individual Mode
iii) Self Learning Paired Mode

1) Face-to-Face Interaction Mode

The modality under study is face-to-face independent training organised exclusively in population education for in-service teachers. Under this modality project personnel working in population education are
trained at the national level who, in turn, train the key and resource person in the state. With the help of the key and resource persons, teachers are trained. The trainees are called at a central place for training.

ii) Self Learning Individual Mode
Under this modality, teachers selected are provided with the material in the form of self learning modules. The material is sent to the learners at their work place. They study the material, carry out activities suggested, takes test and gets self-feedback. If performance is satisfactory according to the criteria, the learner proceeds or review the learning module to achieve a reasonable mastery.

iii) Self Learning Paired Mode
Under this modality, two teachers from schools are selected. The same material which is sent to teachers under self learning individual mode is also sent to this team teachers selected under the modality. In this modality an interaction sheet is also provided. The teachers learn individually and interact with his/her peer according to guidelines provided in the worksheet. They also have the option of carrying out activities together.
Objectives

The study purported to achieve the following objectives.

i) To study the training gains in terms of awareness of population related issues in teachers trained through the three modalities.

ii) To study the training gains in terms of attitude change towards themes and messages of population education among teachers trained through the three modalities.

iii) To study the cost of training teachers in population education using three modalities.

iv) To study cost effectiveness of the three training modalities used for teacher training.

Hypotheses

The following hypotheses were formulated for the study:

H1: There is no significant difference in the mean gain scores of groups of teachers with regard to awareness of population related issues under the three modalities.

H2: There is no significant difference in mean gain attitude scores of teachers on population related ideas and themes under the three training modalities.
H3: There is no difference in the per unit cost of teacher's trained through the three modalities.

H4: There is no difference in the cost effectiveness of teachers trained through the three modalities with regard to awareness of population related issues.

H5: There is no difference in cost effectiveness of the three modalities with regard to attitude change in teachers.

H6: There is no difference in the cost effectiveness of the three training modalities both in respect to awareness and attitude.

H7: The gain in awareness of teachers is related to the sex of the teachers.

H8: The gain in awareness of teachers is related to the age of teachers.

H9: The gain in awareness of teachers is related to the academic qualifications of the teachers.

H10: The gain in awareness is related to the professional qualification of the teachers.

H11: The gain in awareness is related to the teaching experience of the teachers.

H12: The gain in attitude change is related to the sex of the teachers.
H13: The gain in attitude change is related to the age of teachers.

H14: The gain in attitude change is related to academic qualification of the teachers.

H15: The gain in attitude change is related to the professional qualification of the teachers.

H16: The gain in attitude change is related to the teaching experience of the teachers.

**Delimitation**

Due to the constraint of resources, the study was delimited in several ways. It was limited to the schools in one district of a state. Being experimental study, the tests had to be personally administered. So, the subjects were to be kept within a reasonable geographical range. It could have been teachers across educational stages, but it was confined only to secondary school teachers.