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RESEARCH RELEVANT TO  
POPULATION EDUCATION :  
SURVEY FROM INDIA

by

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Title of the report **RESEARCH RELEVANT TO POPULATION EDUCATION : SURVEY FROM INDIA**

Name of the Author **UDAI PAREEK AND T. VENKATESWARA RAO**

Under which area do you like to be classified? **POPULATION EDUCATION.**

ABSTRACT (within 250 words)

After discussing a general modular paradigm of population education consisting of curriculum building, system building and diffusion process, the relevant researches from behavioural sciences are reviewed. These researches relate to social socio-economic status and religion, family structure variables, community and culture. Researches in the field of cognitive development, student attitudes and motivation, family life and family planning are also discussed. Studies on teacher attitude and their family planning behaviour, teaching methods, tribal education and diffusion process are included. Reviewing of these researches, the current status of population education and its future needs are suggested.

Please indicate restrictions if any that the author wishes to place upon this note

Date **April 18, 1975**

*Udai Pareek*  
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\*RESEARCH RELEVANT TO POPULATION EDUCATION : SURVEY FROM INDIA

Introduction :

The review of social science research, relevant to population education, is likely to be meaningful if a context or strategy for the introduction of population education is developed. Unless systematic and well-planned strategies of introducing curricular changes are followed, population education programmes would face difficulties. One classical case is the introducing of programmed instruction. Although a powerful national organization like the National Council of Educational Research & Training (NCERT) took up the task of introducing programmed instruction in Indian schools about a decade ago, the innovation has not diffused in spite of initial enthusiasm of the teachers and students and repeated demonstration by researchers of its relative superiority over the other methods (as reviewed in a later part of this paper). While the innovation did not diffuse at the national level, a relatively small organization like the Centre for Advanced Study in Education at Baroda was able to create a powerful impact in the state of Gujarat, where the diffusion of this new technique has been very high. Several lessons can be learnt from such a comparative study. Introduction of this innovation at the national level was attempted without a strategy. Diffusion of an innovation in a vast country like India needs carefully planned strategy. Such a strategy has to be planned, taking into consideration the existing system. It is useful to develop a framework for curricular innovations.

A framework for curricular innovations is suggested here, and has been used to select, discuss and integrate the review of social science researches relevant to population education, presented later.

Weyland (1972) has discussed the necessity for each country to work out its own strategies of introducing population education. After outlining eight specific actions that have relevance to the introduction of population education (viz., background research, survey of existing curricula, identification of general curricular reform experts, pilot projects, building public and professional support, training of professional support, training of professional leadership, development of basic reference books and collaboration with public and private organizations)

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\* Prepared for UNESCO

he outlines three strategies in introducing population education. In the incremental pattern the programme is introduced in a few selected areas and then is gradually extended to more areas. The system wide approach involves simultaneous introduction of population education throughout the education system after the necessary preliminary work has been done. In the sequential approach the focus of attention is initially at one level in the education system, and over a period of time the programme is introduced in sequence, up or down the ladder.

In an interesting article on the definition of population education Viderman (1974) has presented a matrix for analysing and planning the content for population education programmes. This matrix has divided the content of population education into four major areas viz., population situation, population and quality of life, action programmes, and human reproduction. Population situation includes the units of the size, growth, distribution, migration, and composition of the population. The units in the population and quality of life include food, health, education, employment, urbanization, environment, socioeconomic development, political system and family life. Action programme includes public policies and programmes and individual and family choices. Human reproduction includes units of physiology, and family planning including contraception and infertility. Under each system he has outlined the various levels of education; primary, secondary, university, etc. While these models of Wayland (1972) and Viderman (1974) present generalized frameworks, these have to be adopted to suit the education systems of a specific country. A framework for a clearer perspective and better planning of population education in India is proposed in this section.

The goals of population education as defined by Jayasuriya (1974) are quite relevant for India. According to him the main goals of population education are : (1) to acquire an understanding of the inter-relationships between population change and selected aspects of quality of life in their bearing upon the individual and upon society, and (2) to acquire the capacity to assess the quality of life implications now and in the future, for himself, and for society, of alternative policies and actions bearing on population.

Framework for the Review

Although the purpose of this paper is to review the Indian social science researches and discuss their relevance to population education, a discussion can be useful if the process of development of population education programme is understood. A modular framework is proposed here for this purpose. Figure 1 summarises the framework. According to the paradigm, four modules contribute to the development of the population education programme. Concurrent development of the modules of curriculum building, system building, and diffusion planning contribute to the stabilization of the innovation (viz., population education), and when the innovation is stabilized in the system, it results in a well developed population education programme. Each module has to be taken separately for discussion.

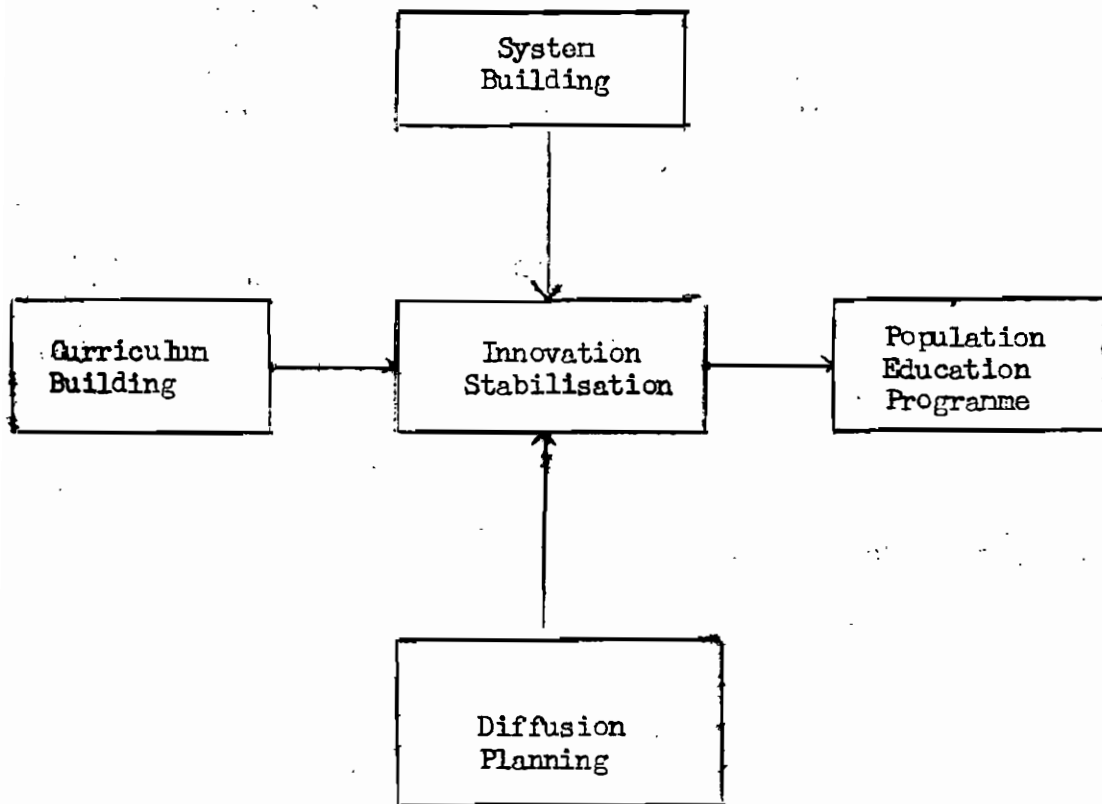


Figure 1

Modular Framework of Population Education

### Curriculum Building

Figure 2 gives the first module viz., curriculum building. It will be apparent from the figure that curriculum building is a complex process. In fact it is questionable whether it should be called curriculum or programme. The word 'curriculum' gives a sense of fixed pattern of instruction. However, the word is used here in the sense of an educational programme which is meant to give meaningful messages to the students about population education. In order to build an effective curriculum, appropriate curriculum content and its relevance to the child have to be assured. The latter would depend on the understanding of the level of the learner. For the former, four main factors contribute. These are: conceptual learning, values, attitudes and beliefs, and knowledge about the diffusion of innovation.

Two important concepts are necessary for the students to understand. One is the concept of population growth and its ecological and socio-economic consequences. The student should understand what price the society has to pay for increasingly larger population. The second important concept is that of population planning which would include sex education with special reference to reproduction, and control of birth through contraception. For an effective curriculum learning of these concepts have to be integrated with other concepts a child is acquiring.

Values are also important. The student should develop positive value for having a small family. He should value dignity and development of the individual and should develop a positive attitude towards ecological purity and aesthetic living. Unless a child has positive attitude towards these factors, his emotional involvement in population problem will be low. These values contribute to the process of humanisation being so much stressed these days. The traditional values which are important and promotional for small family should be retained, as well as developed. For example, the traditional values of aesthetic living in the tribal areas should be preserved. In addition to the above values, the child should understand attitudes and beliefs prevalent in the society. He should be able to understand the dynamics of the beliefs existing in the community in relation to health and sex, and he should have an understanding of the dynamics of social customs and beliefs. These should lead to the development of scientific and technological attitudes in the child.



Several attempts have been made in the past, both in India and abroad and specially by UNESCO to work out the nature of the curriculum and curriculum content for population education programmes. For example, Mehta, Saxena and Chandra (1971) at the National Council of Educational Research and Training have worked out a detailed syllabus for classes 1 to 11 on population education. Enough research results are available on testing new ideas and developing relevant concepts to be taught at various levels. The Population Education Centre at the Faculty of Education and Psychology, M.S. University, Borda, has drafted a syllabus for B.Ed. students. The Regional College of Education at Bhopal has been doing some significant work in the preparation of secondary teachers in the area of population education. Sri Venkateswara University at Tirupati has started some work on this. An examination of these curricula reveals that they have made a comprehensive coverage of some of the content areas suggested by Videman (1974). However, a broader view of curriculum development is required than merely providing information.

The curriculum should cover various concepts related to population, like those outlined by Videman. In fact the few existing curricula take care of this part to a large extent. However, the curricula developed so far do not give adequate information about the country programme, availability of contraceptives, etc.

#### System Building

Figure 3 gives the module on a system building. As may be clear from the figure, population education programme is the result of the linkages being built amongst three sub-systems (curriculum testing, resource development and programme development), as well as between the education system and other systems e.g., health and population, agriculture, etc. It is necessary to test the curriculum after it has been prepared. Similarly, it is necessary to develop the resources which will contribute to the development of the programme. Sequential organization of the population education programme is also necessary.

System building for population education programmes will require relevant administrative actions. These will relate to the introduction of the subject, developing curriculum content and teaching material, curriculum testing, preparation of teachers and use of other resources.

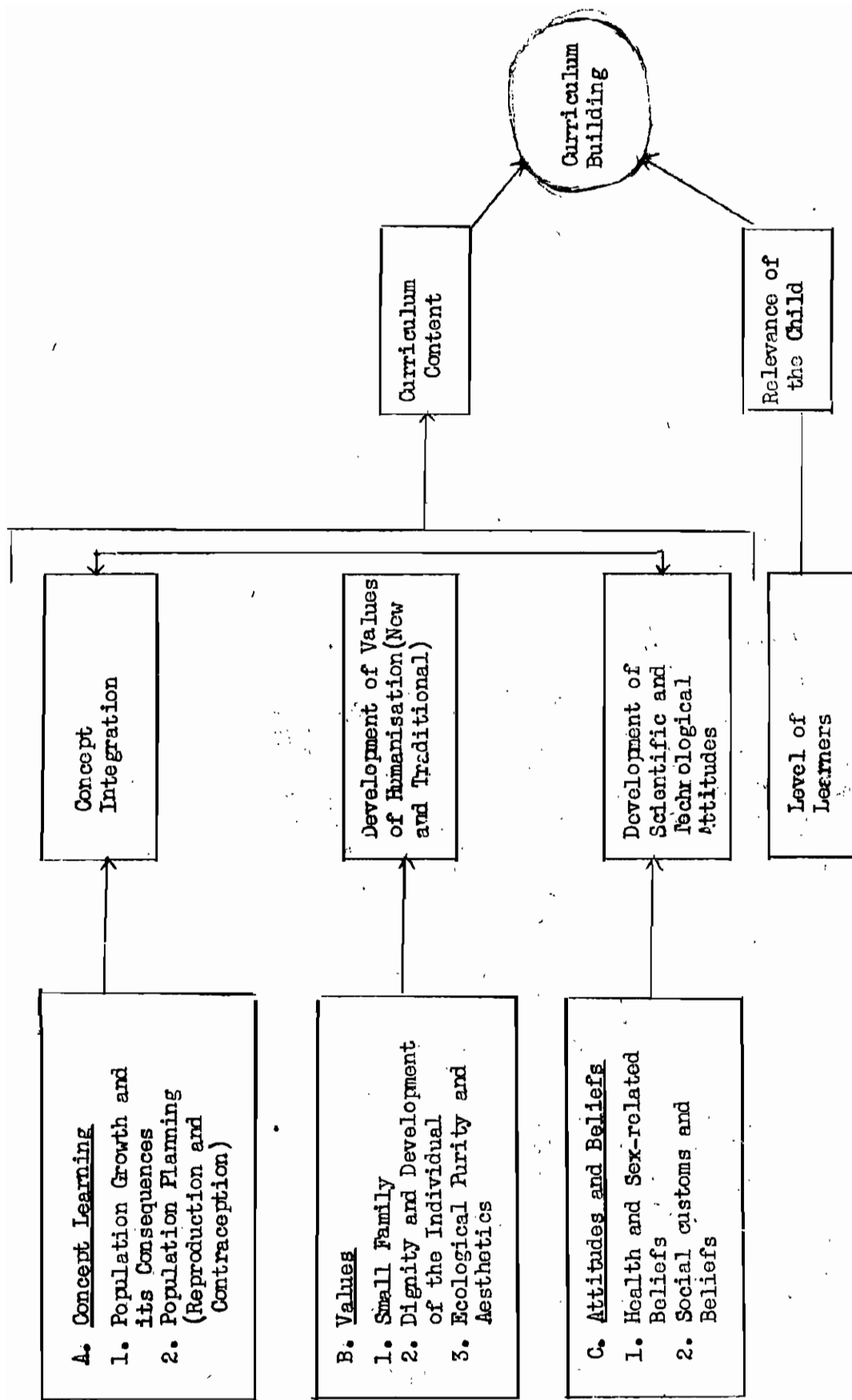


Figure 2

Module 1: Curriculum Building

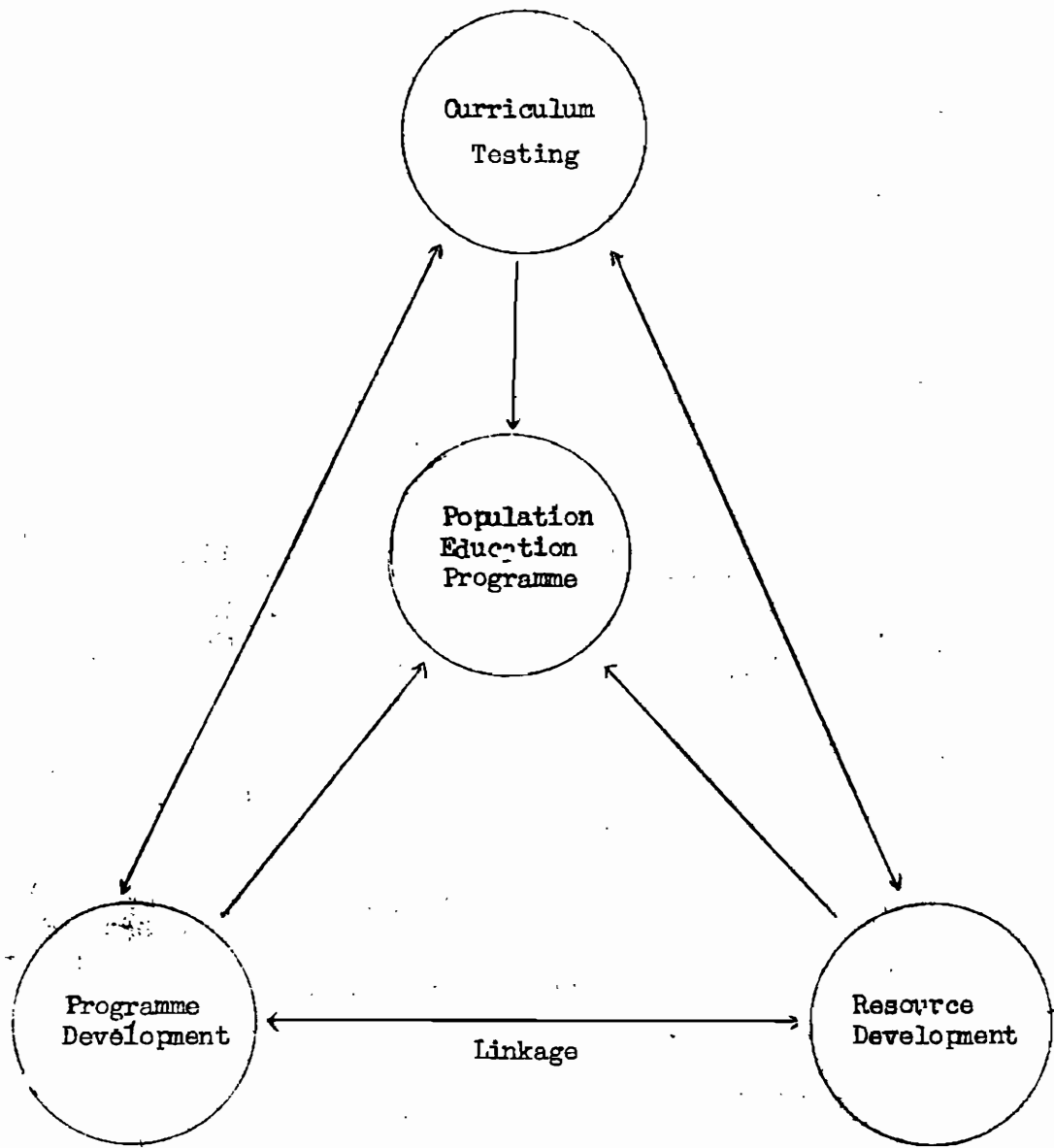


Figure 3  
Module 2 : System Building

Some special agencies can share the responsibility of developing curriculum content for population education all over the country. Curriculum units can be developed on the basis of the researches reviewed in this paper, as well as utilising experience of other countries. The role of such central agencies may be to provide a broad curriculum which should be adapted by the local educational system for its use.

Once a national organization like NCERT develops a core curriculum for population education it has to be tested and adapted to suit the background of students. Groups of schools having common cultural background may join together to adapt the curriculum to suit their learners.

Once the curriculum is ready teachers have to be trained. Specially skilful teachers are needed in a sensitive area like sex and population education. The teacher should have more knowledge than what he actually transmits to the learners. Their training should also help them modify their own orientations, and prepare them for the change agent role. Innovative strategies may be needed for the preparation of teachers. Summer Institutes, in-service training programmes, and other existing training mechanisms can be used for this purpose. Teachers colleges may consider including population education content in the preparation of teachers. The various activities suggested above involve human and material resources. While material resources may not be so much of a problem, development of human and organizational resources required careful planning in order to avoid problems similar to those faced by the government in the national family planning programme. The following resource agencies are available at present to participate in the activities suggested above: Central Government (Education and Health Departments), State Governments (Education and Health Departments), NCERT, Health and Family Planning Organizations like the CHEB, NFPI, AIIMS etc., University Grants Commission, State Institutes of Education, Teacher Training Colleges, Universities, Colleges, Schools (respective teaching institutions), Voluntary agencies, Medical colleges.

#### Diffusion Process

It is necessary to understand the process of diffusion of an innovation in order to ensure the success of population education programme in a country. After the programme has been prepared it has to be accepted by a large number of agencies. Several diffusion models are available. One useful model of the diffusion process (Fareek, 1974). This model is

reproduced in figure 4. According to this model, in the process of diffusion of an innovation from one agency to the receiving organizations, the important elements are: the characteristics of the innovating and the diffusing agency, personal characteristics of those who are responsible for these two agencies, characteristics of the innovation itself and how it is perceived by those for whom it is meant, the way it is communicated, and steps being taken by the innovating agency to influence receiving agencies and the latter's own system of getting the most benefit out of the programme. An understanding of the dynamics of this process may be necessary to make the programme effective.

For the diffusion of population education in the country traditional approach of using formal education for students and adults may not be sufficient. A large number of persons at the village level have to be reached. Students, teachers, leaders and a few educated adults in the villages can play a very significant role in diffusing the messages of family planning and population problems. In other words, we need change agents in the country who would extend the education from school to the community. Population education programmes, therefore, should include preparation of change agents who can participate in the process of diffusion of ideas, messages, concerns and values relevant to population education. The researches on leaders, teachers and such other groups, as discussed later in this paper, show their acceptance of small family size norms.

#### Behavioural Science Researches on Family Planning

Since the introduction of family planning programmes in India, about 2000 researches have been published only on the behavioural science aspects. Recently the Family Planning Foundation of India had commissioned status studies of population researches in India in three areas: behavioural science, demography, and biomedical sciences. The authors of this paper prepared the status report of the behavioural science researches on population (Pareek and Rao, 1974), based on the critical review of a little over 1500 studies. The results of these researches have significant implications for organizing and designing population education curricula. As quoting individual research studies is beyond the scope of this paper, inferences drawn from these studies are presented below, mainly for their implications for population education. Similar implications of these studies for the organization of education through TV programmes in India have been discussed by Rao (1974). Only a few sample researches will be quoted in this paper.

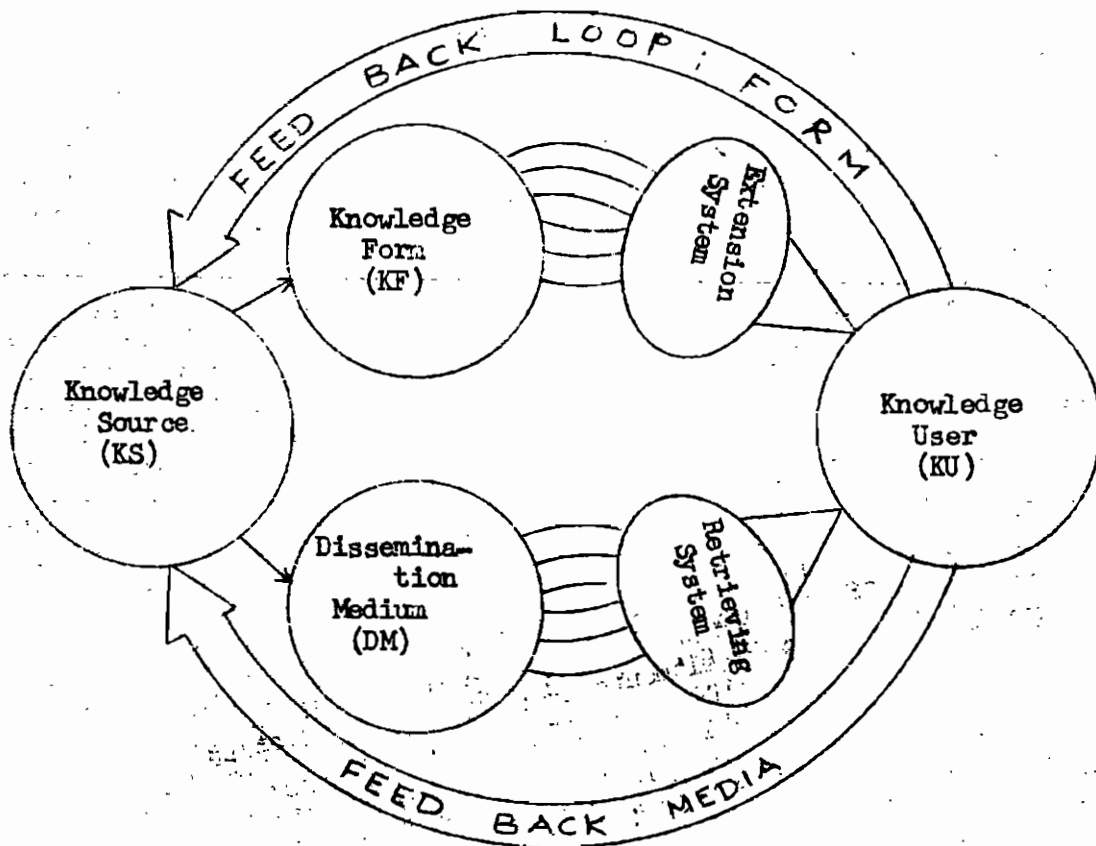


Figure 4

Circular Model of Knowledge Utilisation

### Attitudes and Beliefs

Researches have pointed out the role of modernisation in development of attitudes and small family preferences. Pareek and Kothandapani(1969) analysed the data collected by A.K. Singh from 150 tribal and 400 non-tribal cultivators, 300 tribal factory workers, 125 non-industrial tribal workers, 125 industrial nontribal workers, comprising a total sample of 1300. Family size preference and attitudes towards family planning obtained through interviews were analysed for relationship with three social psychological variables. The results revealed that lack of fatalism, education, overall personal modernization, overall political modernisation, and total overall modernisation accounted for about 10% of the variation in preferences for a small family. Education differentiated the factory workers in their concept of ideal family size and not in their attitude to family planning, and nonfactory groups in their attitude towards family planning. The influence of socialisation seems to underlie the uniformly favourable attitude towards family planning. Both formal education and membership in a work organisation are important in influencing family size norms and attitudes towards birth control. Caste among Hindus, education among cultivators, and factory workers, urbanization, and factory employment seemed to account for overall modernisation. Gupta (1970) has analysed the motivational barriers to family planning in the context of rural communities, with the needs, beliefs, fears, and hopes regarding the family and sex life. Security provided by the sons in land and property ownership, caste and family feuds, and economic security leads to preference for large families. Spiritualism, lack of health consciousness, high child mortality, lack of effective contraceptives for men and mentioned as other barriers to family planning. Victor (1972), in a study of the psychosocial factors influencing family planning, interviewed 94 couples in Kerala and found that intentions to limit the family were determined for each parent by the number of children of the opposite sex. He saw a low possibility of practice of family planning among the couples with children of one sex as compared to couples with children of both sexes.

Population education curricula should take into account these variables. Programmes reinforcing modernisation attitudes in people are likely to help in an indirect way the propagation of fertility control. Programmes dealing with acceptance of improved methods in all aspects of life may increase the motivational patterns of rural communities. Such gradual awareness may contribute at a later stage to increased acceptance of the programmes. Similarly population education programmes should use the results of researches like that of Gupta (1970) relating to land,

property ownership, economic security etc. Among factors influencing preference for large families those found by Gupta are important. There are factors that favour and others that disfavour larger families. Attempt should be made to make people aware of the negative aspects of larger families, and the positive aspects of small families. For example, division and fragmentation of land as against security for land owners may be a good theme for stories for children's books.

Creation of health-consciousness is important, and programmes on health, hygiene and nutrition may emphasise, amongst other things, the ill effects of having more children on the health of the mother and children. There is not much published literature on people's perception, effects of increased number of children on mother's health and children's growth patterns. A recent survey by Verma, Rao and Jumaní (1975) on industrial workers indicates that even urban industrial workers are not well aware of those phenomena. Some research is in progress at the Gandhigram Rural Institute for Health and Family Planning.

#### Socioeconomic Status and Religion

Researches in general have pointed to a high level of acceptance of family planning in the higher socioeconomic groups. People from low income groups were found to have less information and intentions to act. About 59 such researches have been summarised by Pareek and Rao (1974). The low socioeconomic status groups may be apathetic to family planning because of their preoccupation with the problems of survival, low aspirations and sense of achievement, and their perceptions of children as assets and work force for which practically no investment is necessary. Population education programmes should result in raising of aspirations, perception of opportunities people have for educating their children who can aspire to occupy important roles in life and have better standards of living. Such programmes of boosting achievement and aspirations have been tried out in India successfully with students, teachers and entrepreneurs with other specific purposes. Based on McClelland's achievement motivation models Mehta (1969) was able to demonstrate that aspiration and achievement boosting programmes have a great value for students and teachers in increasing student achievements, and has reported the technology of organising such programmes (Mehta, 1975). Experiments in Gujarat have shown that such programmes can boost entrepreneurship (Shah *et al.*, 1974). Such programmes are being tried out successfully with rural people to help them rise their income through increased personal efforts. For example, Fr. Heredero at St. Xaviers College, Ahmedabad has been running such programmes for about three years. Another with agricultural



labour is being planned at the Indian Institute of Management, Ahmedabad by T.K. Moulik. With adequate changes in the traditional achievement motivation laboratories, agencies working with college students and adult groups can use these programmes.

Researches on the relationships between religion and acceptance of family planning practices have reported conflicting results. Sixteen such studies have been reviewed by the authors (1974). Such conflicting results do indicate the fact that religion need not be a barrier at all places and at all times. In places where religion influences the acceptance of family planning practices, it appears that religion per se is not as much a barrier as its political exploitation. Leaders of a community may propogate that members of the other community or communities do not practice family planning, and they may soon be outnumbered. Such rumours can be countered by the curriculum by giving enough information about the rate of acceptance of small family norms by different communities. This may also be included in adult education programmes. Twentyseven studies reviewed by the authors (1974) on religion and acceptance of Family Planning revealed a trend that religion has practically no bearing on the acceptance of family planning.

#### Family Structure Variables

Several researches are available on the effects of joint and nuclear family systems on the family planning behaviour. Although many of these researches tend to indicate that nuclear family promotes favourable approach towards family planning, the results reported are not consistent. Nag (1965) concluded on the basis of a review of several studies on the subject that there is no difference.

Researches on family variables cover areas like family structure (joint and nuclear families), mother-in-law's attitude to family planning, family size, communication with spouse, and age at marriage. Researches on family size, husband-wife communications and age at marriage have implication for population education. A few studies on Indian families have also been reported (e.g., Shah, 1964, 1968, 1974). These may be relevant. Wray (1971) has examined about 80 studies conducted in different parts of the world on the relationships between family size and the welfare of the individual, and the effects of birth spacing on welfare of the individual. This survey revealed that the effects of large family size on individual welfare, primarily that of children, varied according to the family, but there was definite evidence that large families resulted in incidence of increased illness, including malnutri-

tion, sufficiently severe in younger children to lead to mortality, less satisfactory physical and intellectual growth, increased illness of the parents, and conspicuous economic and emotional stresses. Although family size may not be solely responsible for these effects, it was found to be an important element in the increasing network of causal factors. The evidence regarding the effects of birth interval is less extensive than that relating to family size but no less disconcerting. Broadly the effects appear similar: increased mortality, increased morbidity, less satisfactory growth, and less adequate intellectual development.

The findings of Wray have far reaching implications for population education. Wyon and Gordon (1971) in a study of 1479 children born in a village in Punjab from 1955-58 found that mortality increased with increase in family size. Among the second and later born children the trend was most apparent. However, the studies have reported that people from large families were more inclined to limit their families and more willing to learn about family planning (Vasanthi, 1957 and Panny, 1962). These results have a strategic implication that population education should help develop values for small family, and maintain the small size.

Spouse communication has been found to be an intermediate factor influencing the acceptance of family planning. In India culture interspouse communication on matters of family planning is rather low especially in rural areas. For example, Poffenberger's study (1968) of a village in Gujarat revealed that in the traditional joint family setting, effective communication seldom took place between the husband and wife, preventing effective progress of family planning. This may suggest a different strategy of adult education; population education programmes at adult level should, as far as possible, be organised simultaneously for both husband and wife, and may be both being in the same programme. Such experimentation has shown good results in the past (e.g., Indian Statistical Institute 1967).

Shyness is another important factor that prevents people from seeking information on sensitive matters like sex and contraception. Adults and youth groups (above certain age level) may have to be desensitised to some degree by encouraging such free discussions.

Early age of marriage is one factor which contribute to the population growth to a large extent. About 80% of the Indian population is in rural areas and marriage customs are rather complex. Studies show a general tendency towards early marriages in rural areas. Even in urban areas the situation does not seem to be any better. Mathen (1954) in a study of 4031 males in Calcutta city, found that 61% were against early marriage

and that 83% of those favouring early marriage did so on moral grounds. Another study revealed that people with higher education married later compared to people with less education, or illiterates (DRC, Trivandrum 1961). Of all groups studied, age at marriage was highest for Christians and lowest for Muslims.

Mukherjee (1961), in a study of 920 families in Calcutta, found that early marriage was rather common at the time (1954-58). The teens especially 14 to 16 were the most popular years for marriage of girls. Bhatnagar and Khanna (1962) in a study of 500 cases at Lodi Colony, New Delhi, found that the average age of girls at marriage was 16 years with 25% reaching maternity between 18 and 21 years, 1% below 15 years and the mean age at maternity being 20 years. Ayalvi and Johan (1965) studied 5196 couples adopting family planning and 280 not adopting from rural areas of Punjab. The females studied had been married in their teens with about 32% married before the age of 14 years. In another study by Menon (1967) unmarried people were found to be more favourable to family planning than married people and those with children. Several researches on patterns of marriage have been reported (e.g., Centerwall et al., 1969).

Poffenberger (1971) assessed the attitudes towards family planning of 264 Indian and 237 Taiwanese college students. The expected age of marriage varied between both samples. Indian students on an average expected to marry at about 25 years, whereas Taiwanese at 28 years. Indian girls wanted to marry between 22 and 23 years, while Taiwanese between 24 and 25 years. Indian males desired an average of 2.6 children as compared to 2.9 of Taiwanese. Indian females desired an average of 2.2 as compared to 2.3 of Taiwanese. A high degree of awareness was found in both the samples. Indian males and Taiwanese females preferred to be well informed of the family planning methods.

Thus, studies dealing with marriage have described the dimensions of age at marriage as related to the attitudes towards family planning, of students towards age of marriage, and different attitudes of married and unmarried people towards family planning. Although studies are scanty, the results appear consistent. Early marriages are found to be very common in India. No good studies are available to show to what extent the attitudes are changing today. Family planning in monogamous and polygamous cultures has also not been studied. Modernization in marriage may also be a significant factor affecting the acceptance of

family planning. Civil marriages might foster more modernised attitudes and acceptance of family planning than the traditional marriages.

Population education programmes should make use of these findings. Studies have also indicated that it is almost a universal trend in India to continue having children till atleast one male child is born. This is because parents often think of the female child as a burden and male child as an asset and source of security in old age. Education relating to the status of women is necessary. Fortunately Indian history is full of examples of female leaders and these should be utilised in the curricula.

#### Community and Culture

As stated in the framework, beliefs system is an important factor. Researches show that beliefs cannot be changed by counter arguments. Development of rational thinking, opportunity to discuss the beliefs and exposure to other points of view is helpful. Some of the beliefs that are associated with the acceptance of family planning are the following:

- (a) Family planning through contraceptives is a sin (11 out of 17 studies reviewed by Pareek and Rao, 1974 mention this).
- (b) Using contraceptives is against religion.
- (c) Will of God determines the size of the family.
- (d) Use of contraceptives leads to loss of sexual potentiality (Nag, 1965)
- (e) Use of contraceptives leads to loss of mental equilibrium (Nag, 1965)
- (f) Contraceptives are irreversible (Nag, 1965; Akhtar et al., 1972)
- (g) Contraceptives adversely affect health (Nag, 1965)
- (h) IUCD goes to heart when inserted (Rao and Kapoor, 1968)
- (i) IUCD incertion causes the death of a spouse or both (Rao and Kapoor, 1968)

- (j) Male organ striking against the loop creates complications (Rao and Kapoor, 1968)
- (k) Sterilization means castration and results in impotency (PRAI, Lucknow, 1966; Patel, 1966).
- (l) Sterilisation leads to loss of the partner (PRAI, Lucknow, 1966, Patel, 1966).

These and several other beliefs coming in the way of family planning may be changed if scientific knowledge of sex, reproduction and related matters is provided to the students from the earlier stages. Adults can be helped by giving them scientific information, using authentic sources like the doctor and by showing them successful cases of sterilization, etc. Television programmes can play an important role in this.

#### Cognitive Development

There have been several researches in India on the child development. Researches in developmental psychology have been reviewed by Parameswaran (Mitra, 1974). Abstracts of various researches in developmental and educational psychology in India for four decades have been published in 1975 as a special volume of the Indian Psychological Abstracts. However, all researches in developmental psychology are not relevant for population education. Only those studies dealing with concept formation and learning that may have a bearing on population education are mentioned below. Researches in this area are rather few and those existing have only some marginal relevance. Currently a developmental norms project at the national level has been undertaken by NCERT. The results of this project are when published are likely to be of value for developing population education programme.

Vidhya (1969) found that the concept of conservation develops by 7 or 8 years with little or no progress later. Fifth grade children do not follow concepts of space and time. The observation is based on a study of 503 children (Asron, 1969).

Merchant's (1961) analysis of language development in a group of Bohra girls studying in standards IV and V revealed that even their teachers were not aware of the language development in these children.

Phatak (1970) has collected normative data regarding the development of East-Indian babies and analysed information in terms of the influence of socioeconomic class, urban-rural environmental differences, sex differences and comparison with children from other countries. Phatak studied infants from different socioeconomic groups in and around Baroda.

Syamala (1961) studied 83 Hindi speaking and 80 Telegu speaking girls of 5 to 14 years. This study established that the environment has a great influence on the concept formation. For example, the concepts of God, cleaverness and death were more developed in Hindi speaking children than in the Telugu speaking children; and the concepts of thoughts and birth were better developed in Telugu children. The girls understood the concept of beauty by colour and proportional features. The concept of birth was more developed in the Telegu speaking girls of lower age groups and among the Hindi speaking girls of higher age groups. The concept of life was found to develop by 12 and thought processes were found to be similar to those in Piaget's study with regard to the family relationships. The concept of sister was better understood at an early age but only by 11th year all other relationships were found to be understood. This study has two implications. Content related to family relations should be taught only around 11th year; and teaching any concepts should be based on the preparedness provided by the local environment.

Joshi (1963) studied 730 children of age range 6+ to 11+ years from 6 schools. Eight concepts were studied: self, social, aesthetic, comic, weight, time, space and number. Different methodologies were used. At 6+ the highest developed concept was space in boys and space and economic concepts in girls; and the lowest developed concept was the social concept. At 7+ the highest developed concept was number in boys and the comic concept in girls; the lowest developed was self in boys and of wiehgt in girls. At 10+ and 11+ social concepts were formed to be well developed. This study points to the importance of sex differences among children in concept formation. This also brings out the importance of time in concept formation. At certain ages development of certain concepts seem to be faster.

Misra (1968) brings out the importance of cultural factors in learning. Arunjatai and Srinivasachari (1968) made an intensive study of 700 children of 30 to 60 months. The functional vocabulary of Tamil-Nady children was found to be between 1500 to 2000 words. Knowledge about vocabulary may be useful in preparing population education programmes.

### Student Attitudes and Motivation

Research on student motivation and their attitudes towards life have some relevance to programme planners. Students are quite aware of various social problems like unemployment, standards of living, etc. Student attitudes and aspirations also provide clues as to ways of linkages between population problems and social problems so that students can appreciate the need to consider their family size and other aspects in relation to their goals.

#### General

Patel (1952) found that school boys had very favourable attitude toward films. Film could be a very useful medium of population education. Panda and Karungo (1962) found that boys compared to girls in general had more favourable attitudes towards motion pictures. Wesinger (1963) studied about 300 adolescent girls from rural and urban areas of Bombay and MP. On an average they are found to get less than an hour leisure time which they spent in reading, radio listening, stitching etc. Fortynine per cent favoured joint family, 64.3% did not have any boy friends and 67% of them preferred arranged marriage; 43% favoured widow remarriage. This study indicates that even city girls need education to influence their attitudes.

Agarwal (1959) found that students were normally permissive towards sex and had congenial outlook towards the outer world. The commonly liked ways of life were those having emphasis on self restraint, moderation and integration of action, employment and consumption.

Govil (1967) in a study of 300 students from two universities found that students preferred 25/26 years age at marriage for boys and 20/21 for girls; women wanted to enjoy social and economic freedom; boys did not like to live in joint families; women showed keenness to participate in politics, wanted to study till they get married. Women were considered suitable for teaching medicine, nursing, clerical and administrative posts.

Ahmad's (1968) study indicates that population education has an enormous scope specially for women students as it fits into their career aspirations. In this study of 186 undergraduate women students of Delhi University, Ahmad found that most of the girls had aspirations to prepare themselves for future life roles, especially the role of mother. Their choice of the college courses reflected their non-seriousness for a professional career.

Hooda (1968) in his study of 400 Bombay students found that they lacked self confidence, were worried about their future, were sociable only to their community members, were timid and conforming, and did not have political awareness and did not mix with opposite sex.

Chitra (1969) in a study of women students in Mysore city observed a wide gap between parental and student attitudes. The student cliques were based on class than on caste. The cliques influenced the attitudes as well as the behaviour of students. The westernized cliques influenced the members of conservative cliques to become more fashionable in their dress, to develop a taste for western music and dance and to approve of freer mixing of sexes.

Aaron (1969) found that there were only marginal differences in the value orientations of rural and urban students. Similarly, there were no differences between the teachers on their values, attitudes towards modernisation and motivation. Rural teachers were more concerned about their students. This might partly help those who express overconcern about rural-urban differences in modernisation.

In a study of 23,440 respondents (students, teachers, and parents) Gore et al., (1970) found that not more than 25% of high school students had illiterate fathers. Most of the students wished to continue their education further and they sought occupations like scientific vocation, law, medicine, engineering and teaching. About 80 to 90% expressed preference for the purpose accomplishing type of persons rather than for the person who sought to enjoy life as it comes. Tiwari (1970) studied dropouts and non-dropouts in primary schools of Agra. He found that dropouts were from small families, were economically better off, had less educated parents and with less trusting relationships, got more punishment, rejection and help from parents. Shah et al., (1971) studied the educational aspirations of 5,201 SSC students from 52 schools of Ahmedabad. He found that about 9% students aspired for some college education. Most of them wanted to join college as a temporary activity to escape unemployment. Social class was found to influence educational aspirations.

Malviya et al., (1969) found in a study of 169 girl and 347 boy students from 6 primary schools in a rural health centre area that about 78% children had malnutrition as compared to 58% in 1951. This revealed a deterioration in nutritional status of children. Muralidharan (1970) found that children from high stimulation homes had higher activity level and higher social, language and intellectual development as compared to



those from low stimulation homes. Muralidharan (1969) found that size of the family, order of birth, history of illness, age difference between the child and elder sibling are some factors related to the feeding problems of children. Warner and Muralidharan (1970) in a longitudinal study of 40 children found that nourishment had significant impact on intellectual capabilities of children. Ahlulvalia and Sidhu (1969) in a study of 260 adolescent girls found that they had maximum number of problems in relation to their health. All of them wanted to be healthy and beautiful. Such problems affected their academic performance. Bhojak and Mehta (1968) similarly found in a study of 50 adolescent boys and 50 girls that health and opposite sex relationships were two of the areas of their concern.

These studies reviewed so far indicate to the following: (a) there is a great scope for introducing population education, (b) students are likely to be very receptive to it and (c) understanding their value systems, future aspirations and life attitudes can help in making population education programme effective.

#### Family Size and Family Planning

Apprehensions have been expressed in the past about the student attitude towards learning family planning and population problems. Research literature available hitherto indicates that the youth are interested in learning about population dynamics and family planning. In one of the earlier studies, Siddiqui (1965) found that favourable attitudes to family planning increased from adolescence to middle age but declined after middle age. This study was conducted in slum areas of Calcutta where expectation of favourable attitudes towards population education amongst the younger age group is rather low.

In a study of 2000 married and unmarried people in Mysore, Menon (1967) found that young people favoured family planning more than old people. In another study by Pohlman and Rao (1969) on 1167 children studying upto XI class, older students were found to consistently favour small families than the younger ones.

In another study of 207 graduate teachers in Patna Akhtar, Sinha and Islam (1972) found that 80% male and 86% female respondents had positive attitude towards family planning. Arora (1971) has argued for the need to conduct experimental studies on the effect of sex education on the attitudes of children towards sex in general and married life in particular.

Fuster (1971) found that attitude of college girl students towards teacher as an instructor of sex education increased from 1958 to 1970. Confidence in teacher was 5% in 1958 as against 13% in 1970. However, the percentage is still low. Mother was certainly preferred in 1958 and 1970. However significantly great number of them learnt about sex from their teachers in 1970. Fuster's (1971) study of 340 male college students from Bombay indicated that 13% of them learned sex from parents. Of those who did not learn from parents 44% learned from friends, 19% from books, 19% from teachers and 9% from priests. Regarding conception 32% learned from friends 17% from books, 15% from teachers and 12% from priests. Catholic boys preferred priests. Parsi parents were found to be ahead of others. College students want to know more about the pros and cons of marriage, premarital and extra marital sexual relations, masturbation, venereal diseases, etc., (Cormack, 1961). A survey of problems of college students conducted by the All India Educational and Vocational Guidance Association (1965) revealed that about 54% of men and 42% of women students did not have adequate knowledge regarding sex matters. Over 3000 students, both men and women, from 17 universities in different parts of India had responded to a 40-item checklist. This survey revealed a need for extensive and effective sex education and guidance.

Although most family life educators agree that the primary responsibility for sex education of the youth rests with parents; Indian parents do not seem to play this role at all. For example, Fuster (1962) in a survey of 376 boys and 319 girls in a college found that 88% boys and 58% girls said that they received no sex education from the parents. Companions, street experiences, books, magazines and youth counsellors were most often the sources of information. In a study of parents in a village Verma (1970) has reported most parents stating that the level of sex knowledge in children has increased as compared to the past due to movies, songs, and changing values in the society. Researches done by Pohlman and Rao (1968-69) are of great significance to curriculum builders in population education. They have raised several issues on the contents of teaching in population education in the context of their findings on teachers, parents and students. A questionnaire study of 672 teachers (Pohlman and Rao, 1968) interviews with another 160 teachers (Pohlman and Rao, 1969) with children (Pohlman and Rao, 1968, 1969a, 1969b) are of great value to curriculum builders. In their samples about 90% teachers wanted the topics on overpopulation and need for small family planning methods to be taught at the school level. Although Pohlman and Rao (1972) were not sure of the extent to which the teachers' responses were given to please the researchers/administrators, the

figures do indicate that there is not much resistance amongst teachers. Perhaps some of those who were not so in favour of population education lacked knowledge about these matters. Once teachers are educated on population problems and family planning leading to a social desire, the percentages of teachers favouring population education is likely to increase. Kapil's (1968) study also indicates that teachers are even willing to act as motivators.

#### Teachers Attitudes and Family Planning Behaviour

A few studies have been conducted in India on the family planning behaviour of teachers. The results of these studies are positive in favour of teachers having favourable attitudes. In an earlier study on 30 primary school teachers, Prasad and Sinha (1962) found that about 70% favoured birth planning, Saxena and Chitra (1965) in a study of 1000 vasectomised cases found that 13% of them were teachers. Taking into consideration that the proportion of teachers in the population is very low (less than 1%) this figure in 1965 speaks of the high acceptance by teachers. Agarwal (1968) studied 31 teachers in Lucknow University and found that all of them preferred a small family.

Malman and Rao's (1963) study on 672 teachers in villages and towns around Delhi and Rohtak indicates that teachers in general favour family planning. Zaheer, Sinha and Khan (1971) in a study of Class IV employees in Aligarh Muslim University found that most of them had knowledge, although only a few practised it. Educational organizations can play an important role in population education by educating their own employees, besides preparing programmes for students.

Prasad et al., (1962) in a study of 30 women teachers of Bhagalpur city found that about 70% of women teachers were in favour of practising birth control. More than 50% of them expressed their desire not to have more than four living children. All agreed that the main hurdle in the popularity of family planning was the conservative nature of people, and that they would propagate the idea. However, they were not themselves practising birth control.

Indiscriminate use of teachers to teach population education may lead to ineffectiveness at times. One point of view may be to use older teachers for teaching technical material of family planning, sex education, etc., as the Indian culture favours teaching of tabooed material by experienced people. However, there is a danger that the old teachers may not be having positive attitudes towards family planning, and their

teaching might reflect this. In fact, a study by Tiwari, Marwah and Murthy( ) on 197 teachers, 318 ministerial staff and 353 class IV staff in Banaras Hindu University found that smaller families were favoured by younger people. A few other studies on non-teacher group also indicated that younger people are more likely to have positive attitudes (Kurtakoti, 1967; Das, 1972). A review of 62 studies on age and family planning behaviour indicated that at least in the past decade younger generations had been having comparatively more positive attitudes (Pareek and Rao, 1974).

Work needs to be done on teacher preparation before launching population education programme in schools. Unless teachers are strengthened any amount of effort may be fruitless. Before they teach they should themselves have been motivated. Teachers reflect their own attitudes in their teaching. A bad teacher is likely to create resistance in students. Hence teachers should not only have more knowledge than what they are expected to communicate, they should have a positive attitudes towards what they are communicating. They should be helped to increase their appreciation for the role they are playing in influencing students for solving the population problems. In essence, as change agents they should be committed to the change. Teacher training colleges may provide in-service training programmes, seminars etc., for teachers. An illustrative experience on the usefulness of programmes in training change agents in family planning in organized sector was found useful (Verma, Rao and Jumani, 1975). Welfare officers from mills were trained to play the role of change agents in the mills. The training programme was a collaborative one; sessions on population problems by population experts, self-motivational sessions by behavioural scientists, technical sessions on fertility regulation methods by medical experts, and action plans by project specialists. Such a programme aimed at developing teachers with positive attitudes may be of great help. Teacher training colleges could associate medical personnel and others in orientation training programmes for teachers.

#### Tribal Education

According to the 1961 Census of India the population of scheduled tribes is about 1/15th of the total population of India. There are about 450 communities constituting the tribal population of India. Santhals with a population of 3 million happen to be the largest individual tribe. Researches available on education and other aspects of life in these groups may have implications for population education programme.

Scope for improving their life situation through education and change has been pointed out repeatedly by anthropologists. For example, Dube (1968) reviewing the approaches to the problems concluded that anthropologists can help to identify the problems which tribals experiences, and suggested ways in which change can be introduced with least disruption of their cultural traditions. Tribal Research Institutes and Anthropological Survey of India can play a significant role in helping in the development of special curricula for population education for these groups.

Das (1968) and Mathur (1968) have pointed the developmental possibilities of these groups through increased public health, education, nutrition, and industrial facilities. Population education falls well within the scope of such developmental activities, and curriculum demonstrating the relationships between population control and community development may be helpful. Research results on tribal education also hold good for population education. The following are some of the researches which may have implications for population education in these areas.

Basu (1958, 1961, 1963) discussed several issues in tribal education. He drew attention to the importance of the mother tongue as medium of instruction and emphasized the need for scientific collection of vocabularies in tribal children. In his view that tribal education should be properly planned and supervised by a board of scholars who have done actual field work. It may be worthwhile to identify vocabulary through which population dynamics and family life education can be effectively imparted. Different tribes may need different types of curricula, and text book writers and programme planners need to associate applied anthropologists and others from those areas.

Research investigators in the area of tribal education have suggested several experimental projects and ideas. For example, Chottophadyay (1953, 1960) analysed the characteristics of education system among tribes and suggested a new syllabus which tried to link agriculture with school teaching. Das (1962) studied a sample of tribal students on their educational standards, occupational levels, marital status, mother tongue, extent of polylinguism, leisure time activities and association with clubs and other activities. Das Gupta (1964) studied Santal education including the philosophy of the Santhal life, their religion and social life and suggested contents of education for this tribe. Das (1945) has discussed the problem of tribal language. Haimendorf (1944) has also dealt with the problems of script and teachers, and has given a scheme for educating Gonds Tribe. Koppikar (1956) has described some educational experiments conducted with Adivasis. Naik (1969) studied the factorshampering education in tribal areas and the

changes in tribals with education. Srivastava's (1967, 1969) studies on problems of modernization in tribals and their employment positions are quite relevant.

Based on a review of several applied anthropological studies in India on tribal education, Nai (1972) makes the following recommendations.

1. Text books for teaching children in primary classes should be prepared in their languages.
2. A good deal of research may have to be done to answer such problems related to content, level, dialect based teaching at difference levels (with withdrawal at some level), etc.
3. In order to make tribal welfare and other workers communicate easily with the tribals it is necessary to instruct them in tribal dialects. It may be desirable to prepare conversational guides for major tribal dialects to facilitate such communication.
4. Orientation courses should be devised for tribal welfare and other departmental officers.
5. In all these anthropology will be an important aid.

One recent study which raises hopes for the success of population education is by Gokulanathan (1972) who found high achievement motivation amongst tribals compared with non-tribals. A desire to excel and solve problems may favour population education. Studies by Ambasht (1966) Srivastava (1970a, 1970b) and Srivastava et al., (1970, 1971) on tribal education indicate the great scope for education and other developmental activities and the role voluntary agencies can play in these areas. Results of these studies have implications for population education.

#### Teaching Methods

Effectiveness of programmed-learning has been demonstrated in several studies for different subjects. Experimental studies have consistently shown programmed instruction to be more effective than traditional teaching methods in terms of student achievement in several

subjects; eg., Gujarati (Desai, 1966), English (Mehta, 1973), correspondence courses (Mallick, 1964), mathematics (shah, 1964 and 1969) and mathematics and geography (Sharma, 1966 and 1966a). Studies by Sharma (1966), Kulkarni (1969) and SIE (1970a) also revealed the effectiveness of programmed instruction in terms of the retention of the material learned by students. Shah (1964 and 1969) found that time taken by students in learning through programmed instruction was also less. Studies have also been conducted on the effectiveness of different styles of programming (shah, 1971; Krishnamoorthy, 1972; Kulkarni and Yadav, 1966). These results suggest the usefulness of programmed material for population education. As studies have indicated that students welcome this method (Desai, 1966) the innovation itself may be motivating. Since programmed material helps a learner learn by himself, their use for sensitive subjects of sex and family planning may be very effective. Students may feel embarrassed to ask the teachers questions, the answers to which they may search in the programmed book.

Dewan (1966) found that programmed instruction through television yielded much superior results as compared to traditional televised teaching. With the coming up of experimental satellite programme in India television can be used as an effective medium for population education. Already a few programmes developed abroad on some topics of population education are available. Such programmes can be adapted to suit Indian students. Such adaptations would help in quick development of teaching material for high school students. Available research indicates the possibility of such an effective use of adapted material (Gupta, 1965). A few attempts have been made in the past in India to develop materials for population education. For example, Krishnamurthy (1967) brought out a programmed guide to a happy family life. These resources have not been exploited afterwards.

Correspondence education has been adopted in several universities in India. Population education could also be taught through these courses. Mallick's (1969) study indicates the effectiveness of using programmed instruction in correspondence courses. Several researches are in progress at the Centre of Advanced Studies in Education, M.S. University Baroda on the new dimensions of this techniques. One action research experiment, and probably the only one directly with population education in India is by Faneuff (1972) comparing different teaching methodologies. A population dynamics information unit covering five areas of concern (viz., (1) birth rate, mortality rate, and population; (2) health and population, (3) food production and population, (4) family size and population, and (5) standards of living and population) was taught by formal and informal methods. About 1400 ninth grade students from 12



urban and rural schools of Mysore were studied (age range 12½ years to 13½ years). The formal method of teaching was through a lesson-plan approach involving the sequential steps of preparation, presentation, generalization, application and evaluation. Teaching in informal setting included: creating the situation, initiating discussions on the topic, presentation of aids and stimulating reactions, dramatizing situations and incidents, formation of pupil committees to discuss problems and make suggestions, field trips, topic symposiums etc. The purpose was to provide direct experience with the local environment through involvement of the pupil in the problem. Teaching aids were used in both methods. Achievement tests were used. The results revealed that both the formal and informal treatments were effective in producing a significant information gain. The study besides validating these methods indicated that within specified limits children in Mysore state can learn an appreciable amount concerning their life situation and global population problems.

#### Adoption and Diffusion

Enough research has been published on adoption and diffusion of innovation in India. Most of the research has been done in agriculture; there are some studies in education also. Good summaries and comments on adoption and diffusion research in agriculture is contained in the volume by Singh, Rao and Sahai (1970); another book (Singh, Pareek and Arora, 1974) gives a complete list of 1335 masters and doctoral dissertations in agricultural extension, and in the appendix a classified list of those on adoption and diffusion and their various sub-categories are given.

Contributions have been made to the methodology of measurement of adoption (Pareek and Chattopadhyay, 1968). A conceptual framework of sequential adoption has been proposed (Singh and Pareek, 1968) which has been used in several studies. Y.P. Singh (1970) has summarised various findings on diffusion of agricultural innovations and has summarised the trends to show the importance of various change agents at various levels of adoption. The various stages and the significant sources of influence found out by various studies are as follows: need (village level change agent), awareness (change agent and other farmers), interest (change agent and other farmers), deliberation (informal personal sources including family members), trial (no particular source is important), evaluation (fellow farmers). Y.P. Singh (1970) has also summarised findings related to audience characteristics, source credibility, interpersonal relations, personal characteristics of key communicators, and patterns of interpersonal communication on different stages of adoption. Researches have been done on the psychological characteristics of high adoptors and low adoptors (e.g., Chattopadhyay and Pareek, 1967).



Researches conducted so far in the field of agriculture show that different strategies have to be used for diffusion of an innovation like population education for the different parts of the country. Studies of the organization of both the agents, agencies which plan for diffusion, and those for whom innovations are meant would be necessary.

The process and problems of the diffusion of educational innovations has recently drawn attention of educational researchers. Researches conducted on educational innovations have a great relevance to the strategies of introducing population education. The Centre of Advanced Study in Education at Baroda is doing pioneering research in this area. Subbarao (1967) studied the factors promoting and inhibiting the diffusion of innovations. Better facilities, more audiovisual aids, special rooms, books and magazines for students and teachers, progressive and enlightened management, academic and professionally oriented and cosmopolite heads were conducive to diffusion of innovations. Rigid governmental rules about syllabus and text books, inadequate grants, less equipped staff etc., were found to inhibit adoption. Schools possessing the facilitating factors may be selected to begin with to have success experiences.

Other studies on educational innovations include, Bhogle's (1969) study on the psychological and organizational correlates of acceptance of innovations in schools; Buch's (1972) study on conditions promoting adoption of innovations in schools; Rai's (1972) study on the correlates of diffusion of innovations; and Joshi's (1972) survey of innovations by teacher training institutions. Several other issues related to change in education have been discussed by Thirtha and Mukhopadhyay (1974). A useful source (Griffin and Pareek, 1970) cites several cases from educational change in India, and discusses generalisations based on such experiences.

#### Current Status and the Future Needs

This survey reveals that very little research is available which has direct implications for planning the content of population education curricula at different levels. While the available researches have implications for curriculum development for students and adults, they do not provide enough help to curriculum planners for building graduated curricula for different levels.

Research on teachers indicates that they are favourable and there may not be much resistance. Researches on students indicates that they are enthusiastic and they feel the need for learning more in this area. Research on students also indicates their readiness to learn population related material through various media. Researches on adults indicate that they have several misconceptions about population and family planning. Teaching programmes should be focussed on providing scientific information about sex, fertility and contraception.

Studies on teaching methods indicate the potentiality of techniques like programmed instruction and informal education for population education. Social anthropological researches have implications for tribal educational programmes.

Researches on cognitive development do not have much to offer at this stage. However, available researches indicate the desirability of using mother tongue as medium of instruction in the early stages of education. They also suggest that children can understand certain concepts of population in the upper primary stages. However, more researches are required in these dimensions. Researches on aspirations, life goals and life patterns of adults suggest that these dimensions can form a good basis for motivating adults in the adult education programmes for a small size family.

Researches having direct bearing on the population education have recently been started in India. However, many researches are merely repetitive. For example, several researches are concentrating on teachers' and students' attitude to population education, even though enough evidence is already available of favourable attitudes. Researches on various dimensions are needed. It is a happy trend that colleges of education and other social science departments in India are becoming aware of such a need. Dissertation work at the Master's and Doctoral level on some topics of direct implication for population education (e.g., Maheswari, 1972; Srivastava, 1973; Gupta, 1974) is increasing. Some researches are in progress in places like Sri Venkateswara University and Regional College of Education at Bhopal.

Gopal Rao (1972) identified various areas in which research efforts are needed for population education, mainly to:

1. Identify contents of population education, and help develop curriculum models for adoption in schools.

2. Find out the effective means of integrating population concepts in the existing school curricula.
3. Identify solutions to problems related to the implementation of population education programmes in schools, colleges and teacher training institutions, and for young adults and out-of-school youth.
4. Evaluate periodically the effectiveness of introducing population education at the school level.

To achieve these aims, Gopal Rao has identified four areas where research efforts are required: exploratory general studies, studies pertaining to curriculum development, studies pertaining to instruction, and studies pertaining to evaluation and follow-up. The following sets of studies have been identified by Gopal Rao (1972) under each of areas:

a) Exploratory Studies

1. A study of the attitude of parents and teachers (including teacher educators and educational administrators) towards the introduction of population education in schools.
2. A study of the teachers' and pupils' knowledge about population problems.
3. Studies to identify sociocultural constraints operating against teaching of population and sex education in schools.
4. The factors influencing parents' and teachers' attitude towards population education programme.
5. The extent of instruction on population and allied subjects, now existing in schools and colleges.
6. The attitude of parents and teachers towards the introduction of sex education in schools.
7. The extent of sex education being taught at elementary

8. The factors inhibiting the teaching of sex education in schools.

b) Studies Pertaining to Curriculum Development

1. Studies to identify the population concepts to be incorporated into the school curricula
2. A study of the content analysis of the syllabi to find out the status of population information being already provided in different school subjects.
3. Development of different curriculum models based upon the themes or concepts and testing them in experimental and controlled situations.
4. A study of the interest patterns of pupils of different age groups towards demographic and population problems.

c) Studies Pertaining to Instruction

1. The relative effectiveness of teaching population concepts as a separate course and those taught by integrating the concepts through existing school curricula.
2. Action research studies to find out the difficulties involved in the integrated approach to the teaching of population education when one teacher teaches different school subjects to the same class as in elementary school or where different subject teachers teach a particular subject to classes as in secondary schools.
3. The effectiveness of case study approach and problem solving approach to the teaching of population concepts.
4. The relative effectiveness of teaching population concepts through co-curricular activities and by extension lecture method.
5. The relative effectiveness of instructional methods and media for the different target groups.

d) Studies Pertaining to Evaluation and Follow-up

1. Studies to find out how certain personal variables such as teachers' age, experience and professional training affect pupils learning in population education.
2. Studies to find out how certain psychological variables such as the teachers' attitude and values towards the adoption of a small size family affect pupils' knowledge, attitude and behaviour.
3. Development of tools and techniques for evaluating student achievement in population education.
4. Cost-benefit analysis to evaluate the impact of population education in terms of the expected outcomes of instruction.

The studies reviewed here fall into the first act of studies outlined by Rao. A few of them also deal with issues in other areas. However, more research is needed on the problems listed under the last three areas.

Some significant researches have recently been started at Delhi University with support from the Family Planning Foundation of India, and at S.V. University, Tirupati with support from the Family Planning Association of India. Gangrade (1974)\* at Delhi University is experimenting with population education programme for university youth. The objectives of this experiment are the following :

1. To develop appropriate methodology for introducing population education, at the University level through population education centres.
2. To build suitable literature.
3. To make university youth aware of the population problem and its implications.

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\* Communication with author

4. To ascertain the knowledge, attitudes and perception of (a) principals of the colleges, (b) teachers, (c) students in regard to the population problems and its implications.
5. To prepare a model syllabus on population education for university youth.

Gangrade's study covers principals, teachers, student leaders and various other groups. The results of this experiment are likely to be extremely useful for future planning.

The Population Studies Centre at S.V. University has started a post-graduate diploma course in Demography and Family Health. It is involved in giving extension lectures in various aspects of population education at different colleges in the S.V. University area. It has also started training courses covering 22 PHCs, 18 samithies, 10 degree colleges, junior colleges and high schools and teachers' centres in 5 district headquarters of the university area. These programmes include orientation courses, seminar-cum-exhibition programmes, etc. for staff and students. The Centre has also taken up research programmes to feed the population education courses. A newsletter is also being published from here. Experiences of this Centre, involving a university directly, will be of great value.

The India Population Project started with the assistance of the World Bank is also experimenting with population education. A research study is in progress at the Population Centre, Lucknow to study attitudes of teachers to population education. Another experiment is proposed by the Indian Institute of Management, Ahmedabad team assisting this project to experiment with educational organization in population education and adult education. Results of these studies are expected soon and are likely to provide useful guidelines for future work.

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