

Chapter - 2

Organisation of Curriculum at Elementary and Secondary Stages

Context

The main thrust areas of Indian school education, as mentioned in the *National Curriculum for Elementary and Secondary Education : A Framework*, 1988, demand a fresh look. Some of these merit reformulation in the light of the country's experience in the field of school education and the others have to be re-affirmed. Some new thrust areas may also need to be added in the light of the changes all around. School education in the present scenario has to have the main thrust on the following :

Inculcation and sustenance of personal, social, national and spiritual values like cleanliness and punctuality, good conduct, tolerance and justice; a sense of national identity and respect for law and order and truthfulness.

Elimination of poverty, ignorance, ill-health, casteism, dowry, untouchability, and violence, and ensuring equity, health, peace and prosperity.

Thinking, experiences and innovations which are rooted in the Indian tradition and ethos and relating these with global thinking.

Establishing uniformity of structures of school education, ie., 10+2+3 throughout the country.

Broad based general education to all learners up to the end of the secondary stage to help them become life long learners and acquire basic life skills and high standards of Intelligence Quotient (IQ) , Emotional Quotient (EQ), and Spiritual Quotient (SQ)

A common scheme of studies for the elementary and secondary stages with emphasis on the skill of "learning how to learn" with flexibility of content and mode of learning to suit all learners including those with special needs.

Inclusion of Fundamental Duties and the core curricular areas at all the stages of school education.

Human Rights including the rights of the child, especially those of the girl child.

Ensuring the minimum essential level of the acquisition of knowledge, understanding and skill at all stages, commensurate with the learners' abilities and the societal context.

Freedom, flexibility, relevance and transparency in the selection of content, transaction and procedures at different stages of school education.

Nurturance and sustenance of multiple talents and creativity among all learners in various domains of knowledge.

Shift of emphasis from information-based and teacher centred education to process centred and learner friendly education.

Development of a responsive and supportive system of evaluation.

2.1 Value Education

Since India is the most ennobling experiment in spiritual co-existence, education about social, moral and spiritual values and religions cannot be left entirely to home and the community. School education in the country seems to have developed some kind of neutrality toward the basic values and the community in general has little time or inclination to know about religions in

the right spirit. This makes it imperative for the Indian school curriculum to include inculcation of the basic values and an awareness of all the major religions of the country as one of the central components.

Value education and education about religions would not form a separate subject of study or examination at any stage. These would be so judiciously integrated with all the subjects of study in the scholastic areas and all the activities and programmes in the co-scholastic areas that the objectives thereof would be directly and indirectly achieved in the classrooms, at the school assembly places, play-grounds, cultural centres and such other places.

A comprehensive programme of value inculcation must start at the very earliest stage of school education as a regular part of school's daily routine. The entire educational process has to be such that the boys and girls of this country are able to know 'good', love 'good' and do 'good' and grow into mutually tolerant citizens. The comparative study of the 'philosophies' of religions can be taken up at the secondary and higher secondary stages.

2.2 Common Core Components

The need for strengthening national identity is being felt now much more than ever before. As such there is a strong plea for promoting national integration, and social cohesion by cultivating values as enshrined in the Constitution of India through school curriculum. With this in view, the ten core components identified in the *National Policy on Education, 1986* need to be reaffirmed. They are as follows: The history of India's freedom movement; The Constitutional obligations; the content essential to nurture national identity; India's common cultural heritage; egalitarianism, democracy and secularism; equality of sexes; protection of the environment; removal of social barriers; observance of the small family norm; and inculcation of scientific temper.

The Fundamental Duties as laid down in Article 51A of Part IVA of the Indian Constitution, also have to be included in the core components. These are to: (a) abide by the Constitution and respect its ideals and institutions, the National Flag and the National Anthem; (b) cherish and follow the noble ideals which inspired our national struggle for freedom; (c) uphold and protect the sovereignty, unity and integrity of India; (d) defend the country and render national service when called upon to do so; (e) promote harmony and the spirit of common brotherhood among all the people of India transcending religious, linguistic and regional or sectional diversities; to renounce practices derogatory to the dignity of woman; (f) value and preserve the rich heritage of our composite culture; (g) protect and improve the natural environment including forests, lakes, rivers, wild life and to have compassion for the living creatures; (h) develop the scientific temper, humanism and the spirit of enquiry and reform; (i) safeguard public property and abjure violence, and (j) strive towards excellence in all spheres of individual and collective activity so that the nation constantly rises to higher levels of endeavour and achievement.

These core components need to be integrated in school curriculum in a suitable manner. It is envisaged that they would help in instilling a nationally shared perception and values and creating an ethos and value system in which a common Indian identity could be strengthened.

2.3 Toward an indigenous Curriculum

In order to make education a meaningful experience, it has to be related to the Indian context. Now, more than ever before, there is a realisation of the fact that by intellectual standards, India cannot flourish merely by importing or borrowing what is happening abroad, or by showing proficiency in solving problems that have been faced abroad.

In concrete terms, this shift in thinking calls for evolving an approach to curriculum preparation based on thinking, experiences and innovations rooted in its indigenous tradition. While doing so

adequate attention shall have to be paid to the country's cultural plurality and the enormous amount of wisdom and experience that can be drawn from the various regions and sections of the Indian society. It may also mean making judicious use of and drawing from traditional knowledge systems and solutions to issues of health, water management, population explosion etc. At a time when there is worldwide recognition and patenting of items like *neem* and turmeric, this kind of information must become an integral component of learners' knowledge. It is also desirable that learners are introduced to the advances made by the country in the past in various areas of knowledge. Besides, the knowledge and appreciation of folk cultures, songs, traditional dance forms, costumes, and musical instruments must become part of the school curriculum.

2.4 The Minimum Levels of Learning

In order to ensure access to the education of a comparable standard to all learners irrespective of caste, creed, location or sex, the concept of the *Minimum Levels of Learning* (MLLs) has emerged as one of the basic concerns. An effort to combine quality with equity, keeping in view the developmental needs of learners from all the sections of society including the disadvantaged and deprived ones, the dropouts and the working children and girls, has generated a need for identifying certain essential levels of learning for each stage of school education. These have been called the Minimum Levels of Learning. The MLLs are expected to be achieved by one and all. Since the MLLs provide a sense of direction and a certain amount of accountability, these are considered to be an effective tool for programme formulation for school improvement. The quality of a school or educational system, in real sense, has to be defined in terms of the performance capabilities of its students. The Minimum Levels of Learning can be stated in a variety of ways to specify the learning outcomes. One of the important ways of doing so is to state MLLs in terms of competencies. Whichever approach is followed, the specification of the MLLs should meet the purpose of enhancing the learning attainments and serve as performance goals for the teacher and output indicators for the system. Accordingly, the MLLs must have, apart from relevance and functionality, the attributes of achievability, understandability and evaluability. Learning has to be seen as a 'continuum' in which units are sequenced in a functional manner. The approach must help the learners progress systematically through this continuum by mastering the specified sets of competencies in each unit before moving on to the next one. Learning each subsequent unit will then be enjoyable and meaningful.

The concept of the MLLs is holistic rather than fragmentary in nature. MLLs should be envisaged as learning outcomes to be achieved at the end of a particular stage. Specifying further details and their gradewise sequencing need not be considered as a rigid prescription. The concept provides enough room for flexibility. The marshalling or sequencing of skills representing learning outcomes is to be done in such a way that it involves in a balanced manner the analytico-synthetic processes. Moreover, 'learning' is to be understood in the broader sense of 'skill', 'quality', 'attitude', and 'value' too. That way, the term would embrace all the cognitive, psychomotor and affective area learning outcomes of education. The emphasis on defining the MLLs highlights the importance of the integrative nature of learning and evaluation to ensure effective diagnostic interventions and assessment procedures. Thus, the MLLs do not merely serve as the indicators of a learner's progress or guide evaluation alone, these also help in identifying the appropriate sequencing of learning, suitable transactional processes and desirable assessment techniques which would enable a teacher to provide remedial teaching on the one hand and enrichment programmes on the other as per the needs of individual learners. Teachers can get very specific clues for organising peer learning, goal directed learning and encouraging self-learning in a conscious and concerted manner.

The MLLs approach is based on the elements of mastery level learning, child-centred and activity-based teaching, continuous and comprehensive evaluation, diagnostic and remedial teaching, differential treatment to optimise achievement levels of all and action research. All these elements need to be practised to achieve the goal of quality elementary education for all.

Emphasis has been laid on the introduction of the MLLs and the adoption of a common scheme of studies at the different stages. Simultaneously, flexibility is envisaged in the selection of strategy for curriculum transaction. This will make learning relevant to the needs and environmental contexts of the learners and allow scope for initiative and experimentation on the part of the teacher, the school and the local educational authorities. However, the scope for flexibility in the methodology and approach to curriculum transaction is not expected to be used for introducing differential courses or similar measures which would create disparities in the standards of education in different parts of the country.

2.5 General Objectives of Education

Education liberates human beings from the shackles of ignorance, privation and misery. It must also lead to a non-violent and non-exploitative social system. School curriculum, therefore, has to aim at enabling learners to acquire knowledge, develop understanding and inculcate skills, positive attitudes, values and habits conducive to the all-round development of their personality. Young girls and boys, are to be empowered through education to increase their capability. Paradigm shifts are therefore necessary to support a curriculum that values the interaction of the process and the content. Besides, the development of intrinsic values and the emotional intelligence of learners is also crucial.

School curriculum has therefore, to help to generate and promote among the learners:

language abilities of listening, speaking, reading, writing and thinking and communication skills – verbal and visual-needed for social living and effective participation in the day to day activities;

mathematical abilities to develop a logical mind that would help learners perform mathematical operations and apply them in every day life;

scientific temper characterised by the spirit of enquiry, problem- solving, courage to question and objectivity leading to elimination of obscurantism, superstition and fatalism, while at the same time, sustaining and emphasising the indigenous knowledge ingrained in the Indian tradition;

understanding of the environment in its totality both natural and social, and their interactive processes, the environmental problems and the ways and means to preserve the environment;

appreciation of the sacrifices and contributions made by the freedom fighters and social workers from rural, tribal and weaker sections from all the regions of the Indian society, particularly from the North-East and the Andaman and Nicobar Islands, in India's freedom struggle and social regeneration, and readiness to follow their ideals;

appreciation for the need of a balanced synthesis between the change oriented technologies and the continuity of the country's traditions and heritage;

knowledge of and respect for the national symbols and the desire and determination to uphold the ideals of national identity and unity;

deep sense of patriotism and nationalism tempered with the spirit of *Vasudhaiva Kutumbakam*;

understanding of the positive and the negative impact of the processes of globalisation, liberalisation and localisation in the context of the country;

qualities clustered around the personal, social, moral, national and spiritual values that make a person humane and socially effective, giving meaning and direction to life;

knowledge, attitude and habits necessary for keeping physically and mentally fit and strong in perfect harmony with the earth, water, air, fire and the sky;

qualities and characteristics necessary for self-learning, self-directed learning and life-long learning leading to the creation of a learning society;

capacity not only to process information but also to understand, reflect and internalise and develop insight;

willingness to work hard, entrepreneurship and dignity of manual work necessary for increasing productivity, obtaining job-satisfaction and creating wealth generating systems;

acquisition of pre-vocational/vocational skills;

appreciation of the various consequences of large families and over population and need for checking population growth; and

cultivating proper understanding of and attitude toward healthy sex related issues and respectful attitude toward members of the opposite sex.

The emphasis on the 'learner-centred approach' necessitates careful determination of the objectives of education to be achieved at a particular stage/class in keeping with the norms of physical, mental, social, and emotional development of the learners of the relevant age-group. However, the level of achievement with regard to a particular objective will be rising from one class to another in a spiral fashion.

2.6 The Learners' Profile

Learners are not passive objects. They are active and inquisitive persons. It is not that only the environment shapes them, rather they too shape the environment to a great extent. The learners do not come to school with a blank mind but with pre-conceived ideas. Their classroom experiences are interpreted in the context of these pre-conceived notions. Thus, the prior experiences, beliefs and emotions affect the individual's perception and interpretation of events. This knowledge acquisition is a constructive or generative process and each student's knowledge is personal and unique.

For long, the child or the learner was viewed as a natural or given category. This undermined the importance of the fact that the development of the learner is intimately linked to changes in the socio-cultural and historical conditions in a given society. Thus, differences across groups and changes within a group may affect the nature of the learning. As such, a monolithic view of the learner and learning is untenable. On the other hand, an integrated approach for understanding the characteristics of learners seems appropriate and helpful.

During the pre-primary stage, enormous changes take place in the children's physical growth and mental development. From a state of dependence and helplessness the children gradually attain independence and become curious learners. As their bodies grow and respond to the social and cultural cues, their nervous systems mature and their cognitive experiences are enhanced. They quickly adapt to the world and slowly begin to imagine and discover methods for storing away the memories of the past and present events. Play fosters the overall development of the learners who may engage in functional play, i.e., simple and repetitive movements with or without an object, and constructive activity— physically manipulating objects in order to construct or create

something . This period is marked by the development of language, the use of symbols and egocentric thinking, i.e., failure to distinguish between one's own point of view and that of another individual. Children at this stage also engage in fantasy play.

When children enter the primary stage their physical development seems to slow down and becomes less eventful. They become slimmer, more muscular and master new skills which enable them to compete effectively against their peers. Depending upon the children's eco-cultural system and developmental niche, which emphasises different motor skills, children now become better coordinated. Their thinking is governed by the fundamental rules of logic. Here, the concept of the *zone of proximal development* (ZPD) acquires significance. The ZPD refers to the distance between a child's actual development level and the higher-level potential. It is the difference between what children can achieve independently and what their potential level of development might be if given help or guidance. The cognitive capacities of the learners are enhanced when instruction is focused on individual potential rather than on the level of their actual development. This concept strengthened the view that social influences contribute significantly to the development of children's cognitive abilities and mentoring or guidance facilitates their development. From egocentric speech (which serves to control one's own behaviour, and is usually verbalised), the children move on to inner speech which consists of self-talk. During this phase children rehearse what they are going to say before actually saying it. Their social development is regulated by the peer group. In the company of their peers, children learn to cope with everyday conflicts, anxiety and fears through fantasy play. Interaction with peers also gives them social values of cooperation and sharing.

At the upper primary stage, several physical changes take place in children as it is a period of biological transition from childhood to adolescence. At the cognitive level, the children are gradually able to think logically in terms of all the hypothetical situations related to a particular problem. They also endeavour to establish an identity of their own. The process of identity formation requires taking into account one's own view as well as the views of others and of the society. Thus, the importance of the peer group increases considerably. The children now experience frequent mood swings and conflicting thoughts.

At the secondary level, the characteristic developments that have taken place during the upper primary stage get strengthened. Thinking with abstract concepts, establishing social identity, and giving importance to the peer groups increase all this considerably. Therefore, at this crucial stage it is also necessary to promote social interactions among children. For effective learning and for intellectual development, learners have to cooperate with their friends, share their experiences, discuss their discoveries and argue out their differences of opinion.

Characteristics other than the intellectual ones also provide important guidelines for designing curriculum which could be geared to the all-round development of the learners as individuals, and their development also in the context of the national goals and the socio-cultural priorities. Learners' physical, social and emotional characteristics, attitudes and interests that emerge in them during childhood, early adolescence and mid-adolescence, should be carefully taken into consideration while determining the objectives, content and strategies of curriculum and its transaction at the pre-primary, primary, upper primary and secondary stages.

For the development of beliefs, habits and attitudes associated with physical well-being, emotional maturity and proper social orientation, the years of pre-primary and primary education are the most impressionable and formative period of the child's life. This fact has to be realised in all seriousness by the curriculum designers and practitioners so as to provide appropriate and adequate learning experiences to the learners.

By the time children enter school, they have in the normal course, already developed a readiness for participation in group life with their peers. However, a discerning outlook toward social conventions and social events, and appreciation for lofty social ideals are yet to emerge in them.

Similarly, though they begin at this stage to distinguish between the right and the wrong, they have not as yet developed the higher moral ideals involved in the process. The children demonstrate in their behaviour a desire not to depend on others, but the crystallisation of this desire takes place gradually through the years of secondary education. In the normal course, learners, during the secondary stage of education, are expected to develop a philosophy of life that would provide them appropriate motives and directives of behaviour as future adults. Toward the end of the upper primary stage, the learners start critically evaluating the contradictions they observe in the words and deeds of individuals and the society. The awareness that one needs to stand on one's own and choose an appropriate career is normally reflected in the learner's behaviour.

These developmental features indicate the need for gradual introduction of learning experiences related to ideas, attitudes and skills associated with moral values, national ideals and priorities, socio-cultural cohesion and global fraternity. Systematic provision of information and guidance that would help the youth in making right choices of career and vocation for themselves must be ensured toward the end of the upper primary stage and particularly during the secondary stage of education. For a large number of students, some kind of orientation to work education may be required as a part of their curriculum during the secondary stage.

During the period of secondary education, emergence of desire and inclinations of sexual nature is a normal feature of students' psycho-physical development. This dimension deserves careful attention of the curriculum organisers. The idea that the Indian society does not approve of promiscuity and that self-control or '*Samyam*' is one of the highly valued qualities ought to be underlined. This will generate among the youth healthy attitudes toward sex and respect for members of the opposite sex.

Curriculum designers could hardly afford to overlook the emotional dimensions of the child's life during the school period and the importance of emotional maturity in the life of a person. It is only gradually, through growth, that the child achieves emotional stability and emotional independence. There are occasions, particularly toward the end of upper primary and during the secondary education, when the learner has to face intense stress and strain which may result in emotional crisis. Curriculum should provide for appropriate activities and experiences, of scholastic and co-scholastic nature, and counselling and guidance in this regard.

2.7 Scheme of Studies

The general objectives of education will be realised through the content and learning experiences related to different subject areas. However, the emphasis would shift from factual knowledge to the process of understanding, thinking and internalising. Toward all-round development of personality, value education, health and physical education, art education and work education, have to be given appropriate importance in the school curriculum. The inter-connections among various subject areas have to be clearly established. A common scheme of studies, therefore, is advocated for Classes I to X.

The core component areas and values shall form an integral part of the curriculum at all the stages and may suitably be integrated in different subject areas. Flexibility in the selection of content and organising learning experiences must be inbuilt in the system.

2.7.1 Early Childhood Education (ECE)—Preparation for Primary Education—(2 years)

This stage of education helps in preparing children for school and constitutes an important element of Early Childhood Care and Education (ECCE). It is available as a pre-school education component under Integrated Child Development Scheme (ICDS) through a net working of '*Anganwadis*'. It is also available in various other forms such as preparatory schools, nursery and kindergarten classes etc. both in private and government sectors in varying degrees. It is to be

realised that the experiences to be provided at the very beginning of education play a very crucial role in the development of child's personality and have strong bearing upon later education of children. Learning at this stage may be characterised by group activities, play-way techniques, language games, number games and the activities directed to promote socialisation and environmental awareness among children. Accordingly, pleasure, perception and participation need to be duly emphasised. It will ensure readiness to learn among children and reduce unhealthy and harmful load on children whose neuro-muscular capacities are not yet adequately developed. Formal teaching of subjects and reading and writing must be clearly prohibited. ECE needs to be made uniformly available to all children of the country to ensure equity.

During this period there should be more and more opportunities to use the language orally and listen to it in the natural interactive mode. Children should be provided with ample opportunities for developing essential skills of identification, comparison, matching, naming, seriation, drawing and counting without subjecting them to formal ways of learning numbers etc. With a view to instilling social awareness among children, child to child interaction and child nature interaction be promoted besides organising activities helpful in developing positive attitudes, and habits for healthy social participation. They should be encouraged to play with pets, knowing common birds, animals, plants and means of transport and some celestial bodies such as sun, moon and stars.

2.7.2 Elementary Education (8 Years)

Primary Stage (5 years)

Primary stage of education has been visualised in two segments with inherent internal continuity. The first segment comprises Classes I and II, where children are just introduced to formal teaching and are at a stage of development which requires a smooth transition from informal and non-formal environment to a formal one. The second segment consists of Classes III-V wherein the children get prepared to understand the environment and learn in a systematic way. The scheme of studies for these two segments is given below:

A. Classes I and II

- (a) One Language — the mother tongue/the regional language
- (b) Mathematics
- (c) Art of Healthy and Productive Living

Experiences to be provided in areas (a) and (b) will constitute an integrated whole taking into its fold, the natural and the man-made environment. Teaching and learning of language and mathematics would be woven around the environment of the learners and integrate environmental concerns as well.

Experiences to be provided for art of healthy and productive living will further contribute toward all-round development of the personality of the child. These will be organised keeping child in central focus involving students in activities commensurate with their developmental stage. Activities related to health will get a prominent place so that children acquire necessary skills, attitudes and habits to keep themselves healthy and participate in games and sports suitable for their age. Children will be initiated into preliminary yogic exercises and will be exposed to various soothing experiences in the field of music, drama, drawing and painting and clay modelling. In organising these activities local factors may be given due importance. They will be encouraged to participate in creative activities such as free hand drawing and painting. Besides this, children will be involved in the activities related to work education so as to enable them to be free from inhibitions and like to work. For value

inculcation stories and anecdotes would play an effective role. These will also generate and strengthen the element of curiosity, imagination and a sense of wonder. All the experiences will need to be presented in an integrated manner for which themes will be identified and teachers will make use of locally available resources and harness community support wherever necessary.

B. Classes III to V

- (a) One language — the mother tongue/the regional language
- (b) Mathematics
- (c) Environmental Studies
- (d) Art of Healthy and Productive Living

Children will be provided with experiences to help their socio-emotional and cultural development with a realistic awareness and perception of the phenomena occurring in the environment. This may be accomplished by emphasising, observation, classification, comparison and drawing of inferences through activities conducted within and outside the classroom. The integrated approach would be most suitable to achieve the desired objectives.

The experiences gained earlier will be further strengthened by ensuring participation of all children in the activities related to music, dance, drama, drawing and painting, puppetry, health and physical education, games and sports, yoga and productive work. Integrated approach will be used. Autonomy and flexibility incorporating the locally developed curriculum and materials will be encouraged. Concerted efforts will be made to ensure proper value orientation among children.

Upper Primary Stage (3 years)

- (a) Three Languages — the mother tongue/the regional language, modern Indian language and English
- (b) Mathematics
- (c) Science and Technology
- (d) Social Sciences
- (e) Work Education
- (f) Art Education (fine arts: Visual and Performing)
- (g) Health and Physical Education (including games and sports, yoga, NCC and scouting and guiding)

Secondary Stage (2 years)

- (a) Three Languages — the mother tongue/the regional language, modern Indian language and English

- (b) Mathematics
- (c) Science and Technology
- (d) Social Sciences
- (e) Work Education
- (f) Art Education (fine arts: Visual and Performing)
- (g) Health and Physical Education (including games and sports, yoga, NCC and scouting and guiding)

2.8 Curricular Areas at Different Stages

Imaginative and discreet planning of appropriate learning experiences makes it possible for the curriculum objectives to be realised. Well planned activities and teaching-learning strategies facilitate these experiences which ought to make an integrated whole. However, for the sake of convenience, these have to be classified under various subject areas. The nature of various stages of education and the learners' profile have their bearing on the planning of objectives, learning activities and strategies under each curricular area. The curricular areas and their stagewise treatment for this purpose are proposed as follows:

2.8.1 Language

Language learning at the primary stage is crucial to not only meaningful learning in all the subject areas but also to the learner's emotional, cognitive and social development. New entrants with poor language background remain poor learners and poorer performers in all areas unless specially helped in language skills. Failure to teach language skills properly and adequately in the early years will lead to difficulties in learning subsequently through the upper primary, the secondary and the higher secondary stages. Language education has the greater potential as a means to develop, progressively through various stages, attitudes and values related to all the core components by incorporating appropriate themes and adopting suitable teaching learning strategies.

Language education must aim at encouraging independent thinking, free and effective expression of opinions and logical interpretation of the present and the past events. It must motivate learners to say things their way, nurture their natural creativity and imagination and thus make them realise the basic difference between their verbal language and the language of Mathematics. These are the reasons why learning of language ought to find a central place in the total educational process.

In this context the following focal points merit serious consideration:

Despite general acceptance of the central importance of language education in principle, practical effort for improving it has yet to be made at all levels in the country.

The oral aspect of language has to be duly emphasised in language education and oral examination in language must be made an integral part of the evaluation process.

Emphasis will have to shift from the teaching of textbooks to extensive general reading and it would need continuous guidance and monitoring.

Due stress is to be laid, in all language education programmes, on the ability to use the language in speech and in writing for academic purposes, at work place and in community in general.

2.8.2 The Three Language Formula

Even about four decades after the formulation of 'Three Language Formula', it is yet to be effectively implemented in true spirit. Despite all the changes in the socio-economic scenario, market pressures and the behaviour pattern of the Indian youth, the three language formula still remains relevant.

Under this Formula:

The First language to be studied must be the mother tongue or the regional language

The second language —

- (i) in Hindi speaking states will be some other modern Indian language or English, and
- (ii) in non-Hindi speaking states will be Hindi or English.

The Third language —

- (i) in Hindi speaking states will be English or a modern Indian language not studied as the second language, and
- (ii) in non-Hindi speaking states will be English or a modern Indian language not studied as the second language.

Since the basic objective behind the Three Language Formula was, and continues to be, national unity and facile intra-state, inter-state and international communication. adherence to it must be ensured by the Central as well as State/Union Territory governments. Minor modifications in the formula and its implementation in complex linguistic situations, as in some north-eastern states for example, could, however, be allowed as per the needs and discretion of these states and within the overall spirit of the formula.

Every child's mother tongue or regional language has to be taught right from the first standard. In the cases where the children's home language is different from the school language or the regional language, gradual and smooth transition to the regional language is to be effected within a reasonable time at the primary stage itself. In states where because of plurality of regional languages the official or the associate official language of India has been accepted as the state language or first language, it will have to be taught from the first standard. Provision for the teaching of mother tongue would be made for children from linguistic minorities wherever they are in adequate numbers.

As per the earlier Curriculum Framework (1988), "if resources are available for teaching the second language in primary schools, the study of the second language may be introduced in a suitable grade/class at the primary stage." This suggestion may be held valid even now. On the other hand, in States/UTs or organisations where only the first language is studied at the primary stage, the study of the second language must be introduced in the first year of the upper primary stage. However, in this context, the recommendation made by the Kothari Commission still remains the best piece of counsel: "The stage at which Hindi or English should be introduced on a compulsory basis as a second language and the period for which it should be taught will depend on local motivation and need, and should be left to the discretion of each State." (8.33(5)).

During the first two years of the primary level, children have to be specially helped to acquire the basic skills of listening, speaking, reading, and writing and thinking. Special attention must be

paid to the process of standardisation of pronunciation according to the norms. Similarly, the skill of good handwriting, correct spelling and right habit of silent reading with comprehension are also to be developed besides nurturing in the students the ability for creative self-expression.

At the upper primary stage, students' competence in both the languages has to be strengthened further to enable them to acquire real life skills to be used in their future day-to-day life. In their first language, they have to be introduced to various forms of literature. They ought to be able to react in speech and in writing to whatever they read and listen to. Balanced stress on both the applied side and the metaphorical aspect of the language will have to be laid. Creative expression and the ability to think on one's own must be encouraged and nurtured through language teaching with the oral form of language finding important place in language curriculum. Applied or practical grammar also has to be given at this stage so that it may develop the students' insight into the nature, structure and functions of the languages.

The study of the third language would also begin at the upper primary stage. However, the choice of a particular class/grade of its introduction may be left to the States/UTs or organisations themselves. The study of all the three languages, then, has to continue up to the end of the secondary stage, i.e., Class X.

At the secondary stage (Classes IX and X) in the first language full mastery over the applied form of language and good acquaintance with literary language would be aimed at. Learners have to achieve maturity in oral and written expression in response to what they read or listen to. Understanding and appreciating the depth and diversities of human mind through the literary texts in prose and poetry must be ensured among the students. Teaching of grammar is to be systematically strengthened to facilitate the understanding and use of the subtle usages of language. Desirable attitudes and values must be inculcated through carefully selected language materials. Thus, high order communication skill in the first language, with grammatical accuracy and appropriateness of style must be adequately underlined as the main objectives of first language learning at this stage .

In English, Hindi and other modern Indian languages studied as second language at this stage, the capacity to use the language in speech and writing whenever needed in life, and read it with reasonable speed for information and pleasure would be the most important objective. Grammar is not to be taught as a theoretical subject per se, but it would be taught as practical or functional grammar in context with the minimum of theory.

Thus, more and more aural and oral skills of language are to be emphasised at the primary stage, all the skills, i.e., listening, speaking, reading, and writing and thinking are to be aimed at in a balanced manner by the end of the upper primary stage, and slightly more attention is to be paid to the skills of reading and writing at the secondary stage. The most crucial and ultimate task of language education at all these levels remains to prepare the learners to use the languages effectively in either mode (spoken/written) whenever and wherever required in their day-to-day life situations of all sorts.

2.8.3 Samskrit

Samskrit has a special claim on the national system of education because it:

Has consistently been need in India for thousands of years and is still inextricably linked with the life, rituals, ceremonies and festivals of vast Indian masses;

contains great store of knowledge and wisdom that needs to be revived, reformulated and enriched with whatever is the best in modern disciplines of knowledge;

has the universal appeal all over the country;

has very close structural, lexical and semantic relationship with Hindi and most other regional languages of India which makes the learning of these languages easier and better; and

has been internationally accepted as the most scientifically structured language and is being increasingly acknowledged as the best suited language for computer use.

Therefore, it is extremely important to provide for and encourage the study of Samskrit. It may be introduced as part of a composite course of Hindi and the regional languages as mother tongue at a suitable point of the primary or the upper primary stage. The course has to be so planned that the study of Samskrit may not be ignored. At the secondary stage Samskrit may be made available as an additional option and at the higher secondary stage, suitable elective courses in Samskrit may be made available to all the students who wish to study it. Open school courses for Samskrit may also be designed for learners at all levels.

A major shift in designing Samskrit courses and transacting curriculum in the subject is that the language is to be treated as a living phenomenon which is still relevant to the general life needs of the people of India, and which has caught international attention because of the global interest in subjects like yoga, vedic mathematics, astronomy and ayurveda.

2.8.4 Hindi

All the languages of India are equally important and all the citizens of this country must love and respect all of them. Hindi is different in the sense that the Indian Constitution has given it the place of the Official language of the Indian union. As originally envisaged, it is fast becoming lingua franca of country. As such, it is necessary that courses in Hindi are suitable for opening of channels of integral communication in all parts of India and ensuring acquisition of a high level proficiency in it. In order to achieve these targets, more and more functional courses in Hindi, besides those of literature, are to be made available in the regular school systems as well as in the form of Open School course

2.8.5 Foreign Languages

In view of the fast increasing international interaction and cooperation in socio-political, educational, cultural and economic fields, a growing need for learning more and more foreign languages like Chinese, Japanese, Russian, French, German, Arabic, Persian and Spanish has recently been felt.

These languages cannot be accommodated within the Three Language Formula. However, depending on the demand for the study of any number of these and the infrastructural resources available with the schools, these languages may be offered as additional options at the secondary stage.

2.8.6 Mathematics

One of the basic aims of teaching mathematics in schools is to inculcate the skill of quantification of experiences around the learners. Toward this, carrying out experiments with numbers and forms of geometry, framing hypotheses and verifying these with further observations form inherent part of mathematics learning. It would also include generalising these findings with proof and developing competence to solve problems. Mathematics helps in the process of decision-making through its application to real life situations in familiar as well as non-familiar situations. It contributes in the development of precision, rational and analytical thinking, reasoning, positive

attitudes and aesthetic sense. Apart from being a distinct area of learning, it helps enormously in the development of other disciplines which involve analysis, reasoning and quantification of ideas. Study of mathematics also provides ample opportunities for making conjectures, testing and building arguments about their validity and also in asking new questions. Understanding of the basic structure of mathematics leads to a much better appreciation of the scope and power of mathematics. The mathematics curricula must develop an appreciation and understanding of the contribution of Indian mathematicians along with that of others. This would develop a sense of self-esteem and self-confidence amongst the learners.

While determining the curriculum in mathematics for the secondary stage it must be kept in mind that majority of learners would leave school at the end of the stage. They would need to apply mathematical skills and competencies in their work situations. A smaller number of students, of course, would go for higher education. The curriculum therefore needs to strike a balance between the learning requirements of both the groups.

In the first two years of the primary stage, i.e., in Classes I and II children need to form some basic pre-number concepts related to size, length, mass etc. They need to sharpen their skills of classification, grouping and sequential thinking. These provide them a sound foundation for learning numbers and developing competency of addition and subtraction. Content of mathematics will be built around the immediate environment of the child. In classes III to V, the child should be introduced to numbers and fraction as a concept. The four fundamental operations — addition, subtraction, multiplication, division, and computational skills related to them need to be mastered on numbers and fractions. The concepts of length, mass, capacity, money, time, area and volume be developed along with the units of measuring these. The child should gain familiarity with geometrical forms and figures and be able to appreciate patterns and symmetry in the environment. Simple applications of arithmetical processes should find an important place.

The upper primary stage should be confined mostly to the study of essentials of mathematics for day-to-day life. The students should acquire knowledge and understanding of facts, concepts, principles of mathematics needed for daily use, practical geometry, simple mensuration, descriptive preliminary aspects of statistics and fundamentals of algebra. The geometrical concepts should be introduced and verified experimentally using variety of models and instruments. The students may be encouraged to gain proficiency in oral/mental maths useful in day-to-day life activities as well as solving problems with accuracy and speed. Further the students should be able to read and interpret data from statistical graphs/charts/diagrams, and develop skills of drawing, model making and measuring.

The quality of teaching/learning process of mathematics at the elementary stage should enable students to attain the mastery level. Remediation and proper evaluation should constitute an integral component of teaching-learning of mathematics at this stage.

At the Secondary Stage, the teaching-learning of mathematics has to serve two complementary purposes. Firstly, the aim should be to further enhance the capacity of the students to employ mathematics in solving problems that they face in their day-to-day life. Secondly, a systematic study of mathematics as a discipline has to be started here and continued further. The curriculum may include the study of relevant arithmetical concepts, number system, algebra, geometry, trigonometry, coordinate geometry, mensuration, graphs, statistics etc. The idea of proofs should be developed with thrust on deductive reasoning. Emphasis is to be laid on wider applications of mathematics by way of making data based problems pertaining to actual data on population, agriculture, environment, industry, physical and biological sciences, engineering, defence, etc. Also the students should attain proficiency in presenting information available in their environment in the form of graphs and charts, and be able to do calculations with speed and accuracy. Further the students should acquire the ability to solve problems using algebraic methods and apply the knowledge of simple trigonometry to solve problems of heights and distances etc. The history of

mathematics with special reference to India and the nature of mathematical thinking should find an important place. The students may be encouraged to enhance their computational skill by the use of *Vedic Mathematics*.

Mathematics learning should be imparted through activities from the very beginning of school education, i.e., from the primary stage itself. These activities may involve the use of concrete materials, models, patterns, charts, pictures, posters, games, puzzles and experiments. The importance of using learning aids needs to be stressed.

To help exploration of mathematical facts through experimentation, a mathematics corner could be set up in the existing science laboratories. For this existing science laboratories need to be converted into science-cum-mathematics laboratories. This may be done by involving students and teachers by mobilizing community resources to this end. This should be treated as an exploratory centre for science and mathematics. Indigenous experiences and innovations in mathematics, based on real life situations be given an important place. In terms of scheme of evaluation of such mathematical learning, this has to be given weightage equal to that in science.

While developing the instructional materials, the content and language of problems included in the textbooks should highlight core components like gender equality, protection of environment, removal of social barriers, observance of small family norm etc.

At the secondary level, evaluation should lay stress on testing the understanding and application of concepts rather than testing the rote memory of the concepts.

2.8.7 Science and Technology

Science is the creative response to the curiosity and capacity to wonder present amongst every human being. Learning of science in schools augments the spirit of enquiry, creativity and objectivity along with aesthetic sensibility. It aims to develop well-defined abilities of knowing, doing and being. It also nurtures the ability to explore and seek solution of the problems related to environment and daily life situations and to question the existing beliefs, prejudices and practices in society. Science concerns itself with the fundamental knowledge of universe, world and its environment. Technology deals with numerous ways and means of pressing science into the service of mankind, thus enhancing and improving the quality of human life. Learning of science in general education up to secondary stage, therefore, needs to be replaced by learning of science and technology in view of the strong organic linkages between the two. Scientific pursuits have primarily attempted to comprehend the physical world, the technological initiatives that have tended to manipulate and control the same. Science is universal and its principles and laws could be verified anywhere. The technology takes appropriate shapes depending upon various factors including economic, geographical, social and political conditions. The twenty-first century citizens will have to acquire the basics of scientific and technological literacy. The learners have to understand how basic scientific principles are applied in finding solutions to problems in the field of agriculture, weather, energy, health and nutrition, industry, defence, information processing and other areas of human concern. It would help them discover the relationship between science and technology in these areas besides acquiring problem-solving and decision-making skills.

Science operates through its processes. Consequently, teaching and learning of science needs to be characterised by focused emphasis on processes, i.e., experimentation, taking observations, collection of data, classification, analysis, making hypothesis, drawing inferences, and arriving at conclusions for the objective truth. The process skills so acquired would help in developing attitudes and values that constitute the spirit of scientific temper. Science has to be learned more in familiar environment and not in alien and contrived situations.

An important purpose of science and technology teaching in general education up to secondary stage is to familiarise the learner with various dimensions of scientific and technological literacy. These would include — understanding the nature of science; ability to properly apply appropriate science concepts and their technological applications; capacity to understand values that underlie science and technology, willingness to understand and appreciate the joint enterprise of science, technology and society, ability to develop rich and satisfying views of the universe and to continue science and technology education throughout life, and development of certain manipulative skills which are required in day-to-day life situations. In addition to the support available to develop these skills within and outside the laboratories it would be imperative to make use of tools of information technology such as computers and multimedia packages.

Science and technology education should have something of value to offer to all students. Particularly, rural and tribal oriented technology will have to be made an important part of the educational package and its connectivity will have to be ensured. Science must cut across traditional subject boundaries and open itself to issues such as gender, culture, language, poverty, impairment, future occupation and environment and observance of small family norm. It is also necessary to familiarise children with Indian traditions of scientific and technological learning and contributions of Indian scientists both in the past and the present. The achievement of India in various fields through scientific and technological enterprises would develop and nurture self-confidence and self-assurance amongst the learners. All these issues should become integral aspects of science curriculum.

Primary Stage

Science forms an integral part of learning at the primary stage. Essentially it has to be learnt mainly through concrete situations related to immediate environment during the first two years. The focus would be on sharpening senses of the learners and encouraging them to discover, observe and explore their environment and surroundings. This will lead to enrichment of the experiences, mostly on their own and supplemented occasionally by the teacher. The experiences and activities can be gradually structured during the remaining three years of primary education where environmental studies is to be introduced. The focus would, however, remain on objects, events, natural phenomena and learner's environment. Children would continue to learn to observe, explore and identify occurrences in their environment. This would also lead to stimulation of curiosity which would further lead to formulation of several questions in the mind of the learners. Teacher could utilise this as a major input in the learning process by further encouraging children to collect information and wherever possible attempt to classify. The process of searching for answers independently and in groups can begin at this stage. Skills of estimation and measurement can also be developed.

Upper Primary Stage

Children at this stage begin to recognise, the relationship of science, technology and human enterprise. The process has to be strengthened and concretised. The learner is better equipped to understand the processes that underlie simple scientific activities and to visualise their use in solving problems and taking decisions. They also begin to appreciate the cause-effect and structure-function relationship. The environment should continue to be a major source of the learning and the students should try to understand the changes taking place all around. They would also gain an understanding of living world, balance of nature and the role of air, water and energy. Due emphasis should be given to conservation of natural resources. Elementary understanding of some basic principles of science relating to matter, materials and energy can be introduced at this stage. Familiarity with life processes, health, nutrition and diseases, soils and agricultural practices and adaptation would also be included.

Instead of loading the students with scientific informations, efforts should be made to help them to learn *key concepts* which cut across all the disciplines of science. This would generate curiosity

and would enhance awareness and understanding. The learner can be encouraged to improvise simple equipment and design experiments using local resources to understand scientific concepts and seek explanation of some of the natural phenomena. They can also be made aware of some of the local and global concerns and need to be constantly aware of these particularly in areas like drinking water, environment, health, nutrition and family welfare and others.

Secondary Stage

This is the stage after which majority of the learners will enter the world of work. Scientific attitudes and skills developed at this stage would become foundation for further growth. They need to be exposed to the nature and the structure of science and the support it provides to the technological developments. At this stage, learning of science would continue to be built around natural and social elements of environment. Focus would continue to be on understanding of concepts and applications in the areas of matter and its properties, energy, relationship of various physical processes and the technological applications of principles of science. The biological sciences will deal with living organism, their organisation and life processes. An integrated approach to science and technology leading to their application in areas like health and nutrition, industry, agriculture and animal husbandry and allied areas would establish linkages of science to societal aspirations. Science, technology, society and environment would coalesce in teaching and learning of science at this stage.

Practical activities to be chosen should have relevance for future life through acquisition of skills and values. The learners need to be encouraged to work both individually as well as in the groups. Critical, creative and generative thinking has to be developed. Improvisation should be encouraged but designing would also be provided for as a component in exploration. Flexibility in experimentation needs to be widely promoted. Teachers could help the learners devise appropriate experimentation and activities within the school and also outside school involving immediate environment such as farming, factories, industries and community.

2.8.8 Social Sciences

The component of social sciences is integral to the total quantum of general education upto secondary stage. It helps the learners in understanding the human environment in its totality and developing a broader perspective and an empirical, reasonable, and humane outlook. It also helps them grow into well-informed and responsible citizens with necessary attributes/skills so that they could participate and contribute effectively in the process of development and nation-building.

The social sciences curriculum in schools will draw its content mainly from geography, history, civics and economics. It may also include some elements of sociology. Together they provide different dimension of studying the human society — over space and time and in relation to each other. It helps the learners in understanding the contemporary society better. Social sciences education aims at providing students essential knowledge, skills and attitude necessary for self-development and also for becoming an effective and contributing member of the society.

In order to make the social sciences education meaningful, relevant and effective, the concerns and issues of the contemporary world need to be kept in the forefront. To this end, the quantum of history may have to be substantially reduced. Past developments could be studied as a backdrop for understanding the present. As such, the needs and challenges of today must be responded suitably. Globalisation and liberalisation on the one hand and localisation on the other, are going to have tremendous impact on the future society. These have also brought in their wake many economic and social challenges and opportunities which need to be addressed effectively for building a strong cohesive Indian Society. It also calls for developing emotionally intelligent learners, who are prepared to face new challenges and adjust to unfamiliar situations.

In a democratic set-up with decentralisation of power, local governance such as 'Panchayati Raj' has gained importance. It aims at raising the levels of participation and involvement of people. In order to make optimum utilisation of resources for development, the local governance has to be more responsive and efficient. The learners, therefore, are to be equipped well to understand the process of development, its need and implications as well as the system of governance — at all levels — local, state and national, and their own place in it. This would necessitate considerable increase in the coverage of courses in civics. Academic as well as social skills such as critical thinking, reading and interpreting tables, diagrams and maps, cooperating with others, responding to other's problems and providing leadership need to be developed in a systematic manner. A well-designed social sciences curriculum would help learners 'think globally and act locally'.

In a world of ever-increasing knowledge, selection and organisation of the content areas assume great importance. The social sciences curriculum has to be comprehensive and not yet heavily loaded with information. Interrelatedness of ideas and their comprehensibility must be kept in view. It would also be desirable to emphasise the process of learning and thinking rather than mere acquisition of facts. Learners need to be given meaningful learning experiences through well-planned activities. This will help them acquire basic competencies and skills. Keeping these in view, the themes/issues could provide a sound basis for the selection and organisation of the content areas. While number of topics/areas may be few, the depth of treatment should be more to optimise the learners' experiences. These themes may be drawn from geography, history, civics, economics and sociology in a balanced manner and suitably graded — simple to complex and immediate to remote. Some of these issues and themes may be as follows:

Study of Indian civilisation and its rich cultural heritage along with other world civilisations and their interconnections may be the major area of study drawn from history. It ought to include the different cultural movements and revolutions in the life of the country and also the spread of its culture in other lands. Food security, population growth, poverty, water scarcity, climatic changes and cultural preservation are some of the major issues of the twenty-first century, which have relevance for the social sciences curriculum. As such 'Environment, resources and sustainable development' and 'man-environment interaction' would be drawing their content mainly from geography, economics, sociology and other related areas. Social, economic and political institutions and their functioning and administrative system especially with reference to India would draw content from civics and economics. Emphasis has to be laid more on the economic, political and social aspects of human environment especially the contemporary world that too with focus on India. The Europe-centred view of the world must change. This would render topics like the discovery of India or America by Europeans irrelevant for Indian students.

Social sciences are the most suited areas of study for integrating almost all the core components indicated earlier. For example, the history of India's freedom movement, the constitutional obligation, content essential to nurture national identity, equality of sexes, removal of social barriers, fundamental duties and human rights including right of the child may be integrated appropriately. Suitable content and approach to ensure infusion of these vital areas may have to be followed at different stages. Similarly, many values may be inculcated through the teaching of social science.

Teaching of social sciences ought to promote a humane and national perspective, and inculcate a sense of pride in the country and in being an Indian. It needs to strengthen the national identity and develop an appreciation for cultural heritage. It should promote communal harmony and social cohesion. Its teaching must be objective and free from all kinds of stereotyped images, biases and prejudices.

Fieldwork, project work and group activities should form the basis of teaching-learning in social sciences. Projects having direct link with the local community may be encouraged. Economic and politico-legal literacy, grievance redressal system and consumer education should be promoted.

Primary Stage

In Classes I and II, children are introduced to the environment in its totality. No clear cut distinction between natural and social environment has to be made. Its content will be drawn from the immediate environment of the child. There will not be any separate area of study for it. Its content has to be integrated with language, mathematics and other activities such as games, health activities and drawing. The skills of observation, description and self-expression could be promoted.

In Classes III to V, the natural and social elements of environment may be introduced under a separate area of study called *Environmental Studies*. Starting from the surroundings of the children — home, school and neighbourhood, they may be familiarised with their state and country in a gradual manner. Stories and narratives concerning their everyday life — food, clothes, houses, fairs and festivals, and the changes taking place in their surroundings will make the curriculum relevant and enjoyable for the young learners. At this stage, an attempt may be made to develop a sense of pride in and respect for the traditional dress patterns, costumes, folk music, folk dance, fairs and festivals celebrated in the local community and area. This may be done with a view to developing an understanding of various factors that contribute to social cohesion. Children may also be familiarised with the ways people lived in the past and how they live in different parts of the country now. Some well-known personalities of the community and the country, who acted as major influences in shaping lives of people, may also be included in the curriculum.

Schools will be given full autonomy at this stage to use locally developed curriculum and locally available resources for teaching of environmental studies.

Upper Primary Stage

After having some idea of the country in the early years, the learners may be gradually initiated into the study of India and the world in some greater detail. The components of environment and their interaction will be studied in terms of processes and patterns. The learners may be encouraged to investigate and undertake studies on their own. For example, students may be motivated to raise questions pertaining to various physical and man-made features, phenomena and events. They may be able to recognise simple patterns such as rainfall distribution in the country and patterns of agricultural and urban land uses. Study of India's past may be introduced through selected events/episodes and developments —social cultural and scientific. The learners need to be helped to understand and appreciate India's cultural heritage, some of the other ancient civilisations of the world and their interconnections, contribution of India to the world civilisation along with contributions made by other cultures, and some major historical developments of the world. The contemporary society including the social, political and economic institutions of India and their functioning, the administrative system, urbanisation and economic and social development may be some other areas to be included. In addition to academic skills, social skills and civic competencies may be developed to help them grow and participate effectively in day-to-day life

Secondary Stage

Contemporary India may be the focal theme. It may include the processes and patterns of man-environment interaction and the issues related to environment, its resources, and development. Major developments in the recent past including India's struggle for freedom and the contributions of various sections/regions/groups especially the role of women and weaker sections in the movement having bearing on the social, economic and political developments and challenges in the post-independent India will also be covered. Issues and challenges of India such as poverty, illiteracy, corruption and anti-social practices, fundamental rights, fundamental duties and

economic development will be covered appropriately. In addition, India's role in the world especially world peace, international cooperation and decolonisation may be included. Contributions and achievements of Indians in other countries may be given due place. At the end of the secondary stage, the students may develop the ability to use their knowledge, understanding and skills by undertaking wide range of studies at various scales-local, regional, national. By now they may develop the ability to describe interaction within natural and human processes and recognise patterns. They may also be able to look for sources of information and analyse problems/issues rationally and scientifically. It would be useful if students take up a few case studies/project work as it would help them investigate and consider the issues that arise from people's interaction with their environment.

2.8.9 Art of Healthy and Productive Living — Primary Stage

The need for introducing an interdisciplinary area of learning integrating the major concerns of Health and Physical Education, Art Education and Work Education has assumed greater significance. Despite clear allocation for time for these components in the earlier curriculum documents, little attention in reality has been paid to these. There have been logistic, conceptual and other difficulties experienced by the teachers and implementing agencies which contribute enormously towards the all-round development of the personality of children. The system seems to have experienced difficulties to be responsive to the developmental needs of children. Another major factor leading to the half-hearted implementation of these areas could be lack of availability of proper motivation and evaluation procedures among teachers. Yet another bottleneck seems to be their presentation in a fragmented manner. As such, the proposed subject under the title *Art of Healthy and Productive Living* is being recommended initially for primary classes which can be subsequently extended to upper primary classes.

The main objective of art of healthy and productive living is to develop aesthetic sensibilities and skills of healthful living besides providing a nurturing ground for love for labour, positive social attitudes and moral values so as to enable the child to be receptive to ideas of others with humility and sincerity in thought, word and deed. This will provide children with opportunities for their development into social human beings and dedicated and contributing citizens for the society and the nation. Love for mankind and helping the needy would germinate at this stage and its culmination would be in terms of attainment of selfless service—*Seva*.

Classes I and II

Experiences such as scribbling, enjoying movements of the parts of body, deriving pleasure through seeing colour, figures and toys gained earlier would be strengthened. Children's natural urge to play ought to be satisfied. The activities could be organised which help children make subjective choices about music and also drawing and painting in some shapes, developing clay models during play, and participating in group activities involving light exercises, group songs, theatrical arts and dances and imitative actions.

Teachers will have to develop activities keeping in mind local environment, cultural background of children and available resources. Teachers have to provide opportunities for free play and free expression to children with a focus on the objectives of each purposeful activity organised for them. It should be ensured that each child participates and learns certain good habits in practical sense. This stage is apt for value inculcation through story telling and dramatisation suiting to the level of maturity and understanding of learners. All such activities need to be presented in an integrated manner.

At this stage children may also develop a habit of keen observation and accurate description of things around them. They may pick up the skills of both, cleaning the teeth and dressing up. Now

the children have also to learn behaviour and speech in formal settings. They are to be taught how to sit and stand properly and how to talk in a formal manner.

Classes III - V

At this stage, children develop better muscular coordination and acquire sensory discrimination. They develop a feeling of self and acquire the capability of knowing about themselves and the immediate environment surrounding them. The play at this stage may include light physical exercise and drill which can be combined with music. This is the stage when children can be taught to develop elementary knowledge relating to health, strength and beauty of the body. They may also develop the art of relaxation. Children should be initiated into the art of using and controlling senses related to hunger and thirst and regulating calls of nature. Their speech, behaviour, movement and action can be properly controlled. They may appreciate beauty in the objects around them and undertake exercises, and develop sense of preference for things and music. At this stage, attitude formation with regard to proper and healthy living in terms of cleanliness of body, surroundings, dress and place of sitting and eating, may be encouraged. Children at will also start liking activities pertaining to games and sports and would be introduced to the basic physical postures leading to yogic exercises. Mimicry and using various musical instruments will become part of their experience. Feeling of affection, friendship and social cohesion will be nurtured. Activities pertaining to drawing and painting, collage, clay modeling, printing, using masks, puppets and toys, folk dance, *rangoli*, *alpana* and the like may constitute the syllabi at this stage.

It will be desirable to orient teachers in undertaking activities pertaining to the art of healthy and productive living in an integrated manner. Suitable instructional materials both in print and non-print form including wall posters addressed to the teachers may prove to be of great help in initiating children to the art of healthy and productive living.

2.9 Work Education, Art Education, Health and Physical Education – Upper Primary and Secondary

Stages

Work Education

Work Education is viewed as purposive and meaningful manual work, organised as integral part of the learning process and resulting into goods or services useful to the community besides the pleasure of self-fulfillment. It should be an essential component at all stages of education and be provided, through well-structured and graded programmes. The competencies to be developed in this field should include knowledge, understanding, practical skills and values through need based life activities. Major categories of work which need to be specifically stressed include: (a) work pertaining to needs of the individual such as health, hygiene, clothing, cleanliness, etc; (b) work in home to be performed as a growing member of the family; (c) work in the classroom, school and in the out of school activities integrated with school life as well as learning of other subjects such as physical education, art education, social studies, science and others specifically designed to foster certain learning objectives of work education; (d) work in the community focused on self-less service or *seva*; and (e) work relating to vocational development, production, social usefulness and exploration of the world of work.

The activities pertaining to work education should be so organised as to realise the objectives of work education such as inculcation among learners of respect for manual work, values for self-reliance, cooperativeness, perseverance, helpfulness, tolerance and work ethics besides developing attitudes and values-related to productive work and concern for the community. The theory and practice have to be such that it enables learners to understand the facts, terms concepts and scientific principles involved in various forms of work situations, know the sources of raw-materials, understand the use of tools and equipments in production and service processes, acquire skills needed for technologically advancing society and conceptualise their

role in productive situations. The programme should develop among learners the skills for identifying, selecting, arranging and developing innovative methods and observing, manipulating and participating in work practices and thereby enhancing productive efficiency.

At the upper primary stage, the learners are sufficiently mature to carry out strenuous work involving higher skills and requiring closer neuro-muscular-coordination. The learners would have got proper orientation toward work and respect for manual work through the activities undertaken at primary stage under the art of healthy and productive living. These can be further strengthened by encouraging them to participate more intensively in production processes by understanding and executing well-designed projects. The methodology has to be based on observation, manipulation and work practice. At this stage, the learning and mastery of skills becomes more important than at the primary stage. With a view to integrating science and technology with the life of community, emphasis should be laid on agricultural and technological processes which may enable the learners to feel confident for their entry into the work force. The activities have to lead to enhancement in nutrition, personal and community health, sanitation, productivity and economic status of the community. Thus, activities may have three dimensions, observation of work situation and identification of task, participation in work situation, and preparing articles in large numbers. All activities need to be simple and enjoyable.

At the secondary stage, the complexity of the activities needs to be increased keeping the nature of essential activities, by and large, the same. Pre-vocational courses will get a prominent place at this stage which will facilitate choice of the vocational courses at the higher secondary stage and help them acquire the knowledge and skills required for entry into the world of work.

While many teachers may function as work education teachers, a large number of activities may require specialist personnel. Teachers undertaking work education need to be properly oriented and trained in the specific area of work. It would be desirable to utilise community resources for effective implementation of the programme both in terms of man and material. Services of experts available in the community need to be utilised by seeking their involvement in the programme.

Art Education

Art education constitutes an important area of curricular activity for development of the personality of the learners. The aim of art education may be perceived as development of aesthetic sensibility among learners so as to enable them to respond to the beauty in line, colour, form, movement and sound. The study of arts and understanding of cultural heritage may go side by side and reinforce appreciation and understanding for one another. The experiences gained by learners at primary stage in the area of fine arts under the *Art of Healthy and Productive Living* would have developed enough motivation and interest among learners toward the subject. The curriculum at upper primary and secondary stages need to aim at developing awareness and interest in a wide variety of arts both at the classical and folk level so that the learner is both the performer and the recipient of pleasure. Art education can provide the most satisfying medium of creative expression which has to be given due importance in the best interest of the society.

Even among fine arts, music has a special claim in the overall scheme of education at all levels. It begins charming a child through lullabies in the cradle and permeates the entire life subsequently. Music teaches children not only the rhythm of life but also finer emotions, values and standard and pleasant pronunciation.

At upper primary stage, art education programme should comprise, handling of the materials for drawing, painting, collage, clay modeling and construction of puppets; creating artistic things by free expression method and specific topics method; handling and playing of simple musical instruments and sound-producing bodies; movement, mime and simple dance forms; community singing; simple concepts of visual and performing arts; theatrical arts; stories of great

personalities in the field of arts; and stories connected with other countries. Theater arts and dramatisation may be suitably introduced. Emphasis should be laid on the use of learner's own imagination and development of his/her own concepts and expression through exploration. He/she should be enabled to develop a sense of organisation and design, i.e., aesthetic arrangements permeating all life, and to feel a deep and lasting joy of art.

The secondary stage is apt for refining aesthetic sensibilities and social values through projects on conservation of natural and cultural heritage by providing opportunities for study of Indian culture working with artists/artistes in the community, organising festivals and celebrations of the community at large, display of physical environment and surrounding landscape and the like. Art education at this stage should comprise, study of visual and aural resources and their exploration; projects leading to creative expression and exhibition of the works in visual and aural forms; inter-group inter-school art activities; study trips and interaction with artists in the community; and exploration of traditional art forms including theatrical arts available in the community and neighbourhood.

Art education programme should concentrate on exposing the learner to folk arts, local specific arts and other cultural components leading to an awareness and appreciation of national heritage. Activities and programmes and themes should also be chosen and designed so as to promote values related to other core components like India's common cultural heritage, history of freedom movement and protection of environment. Learning by doing and a wide exposure to art forms is a must for self-expression and widening of the learner's own experience. Art education should not be fragmented. It should adopt an integrative approach at all stages up to Class X.

Health and Physical Education

Health and physical education has to be concerned with total health of the learner and the community. It will include mental and emotional health besides physical health of the learners. The main aim of health and physical education programme should be to develop desirable understanding, attitude and practices with regard to nutrition, health and sanitation so as to improve health status of the self, family and the community. Learners need to be helped to develop an awareness about the health and sanitation at the community level and their role in that context. Physical education has to concentrate on developing health, strength and fitness of the body.

Games and sports have to find a prominent place in the total scheme of things. Emphasis should be on acquisition of adequate neuro-muscular coordination commensurate with their developmental stage. Yoga and meditation can be very well-organised under the regular school schedule to help children acquire concentration and relaxation. Other important activities concerning the area of health and physical education include Scouting and Guiding, NCC, and Red-Cross which can help in cultivation of such basic qualities as endurance, courage, decision-making, resourcefulness, respect for others, truthfulness, faithfulness, loyalty to duty, and concern for the common good. Students' involvement in these activities would constructively channelise their energies and also promote and integrate learning in different curricular areas directly or indirectly. This would promote the latent curriculum of an institution.

With a view to promoting healthful living and solving major health problems of the country, the general education of first ten years must help develop a system which promotes an integral development of body, mind and spirit. Medical inspection and check-up should be compulsory at all the stages with adequate follow up in cases in which deficiencies are noticed. Health and physical education including games and sports should be considered an integral part of the learning process and be included in the evaluation of performance.

At upper primary stage keeping in view the characteristic physical growth, neuro-muscular coordination and social development, the learners may be exposed to vigorous developmental and rhythmic exercises, gymnastics, athletics, aquatics, judo, yoga, drill and marching, scouting and guiding camping and various team games and competitions. These options may be made available subject to the facilities available and the learners preferences. In health education, provision should be made for creation among learners an awareness related to common health problems, safety measures, nutritional problems, adulteration, first-aid, sanitation and pollution. Exercises of breath and yoga should receive special attention.

With regard to physical, mental and emotional health of learners, the secondary stage of education is particularly crucial. Rapid acceleration of growth and changes in appearance and functions of the body associated with the onset of puberty indicate the need of provision of appropriate guidance and counselling that would facilitate the adjustment and growth of children. Interests during this period narrow down to fewer games. The learner is likely to be more adventurous comparatively. Physical education should include more vigorous activities of various sorts including athletics, major games including indigenous games, gymnastics, yogic exercises, meditation, combatives, judo and swimming. The NCC, scouting and guiding and social service should be encouraged in addition to the compulsory programmes of physical education. In Classes IX and X, health education should enable the students to learn, in comparatively great detail, about personal health, impact of environmental pollution on health, food and nutrition, control and prevention of diseases, first aid, home nursing, and safety measures.

The knowledge of and activities related to personal and community health assume great importance. An awareness of HIV and AIDS may be given. Students may also be acquainted with evils associated with promiscuity and child and drug abuse. Adolescence education and sex-education may also be provided in a suitable manner. It would be desirable to generate suitable self-instructional material in this regard for different age groups of learners addressing to their needs and requirements and matching to their level of growth and maturity. It should be provided to all learners. Provision for separate teacher and classes may need not be encouraged. The whole approach should be such that each learner participates and learns ways of healthful living.

2.10 Instructional Strategy

For effective transaction of the curriculum and achievement of curricular objectives, appropriate strategies should be used in organising activities for students and in providing learning activities. Instructional strategies may assume a variety of modes and may involve activities such as observation, collection of materials and information, demonstration and experimentation, project assignment, fieldwork and educational excursion and visits to museums, fairs and industrial units and places of historical importance. Playing games, participating in community singing, role playing, dramatisation, discussion, debate, problem solving, discovery learning, creative writing, and supplementary reading may also form an important part of the total instructional strategies.

A number of factors need to be considered while making use of a particular strategy: learners' capabilities, availability of resources, entry behaviour, school environment, objectives to be achieved, the nature of content and the teachers' own preparation and mastery.

The immediate environment of the learner, both natural and human, should be used for making learning concrete and meaningful. Effective learning takes place when teachers are able to involve the students in the process of learning, by taking them beyond the process of listening to that of thinking, reasoning and doing. In order to promote self-study skills use of library and resource centres needs to be encouraged.

Receiving regular feedback for teaching and learning should be an in-built component of teaching-learning strategy. Continuous and comprehensive evaluation plays an important role in providing regular feedback. It should be used for remediation.

Different kinds of strategies are needed for slow, average and fast learners. Diagnostic and remedial instruction should be used for the slow learner. Enrichment materials and goal-directed teaching-learning strategies would help fast learners. Co-scholastic areas of learning should be handled adopting appropriate strategies and they be given due importance for developing the child's personality. Several school activities such as morning assembly, cultural and recreational activities, school beautification, activities in community living, celebrations of days of national importance, special days and weeks, and creative activities, may be organised/conducted with proper planning and well-directed goals.

2.11 Medium of Instruction

The mother tongue is the most vital factor for the children's intellectual, emotional and spiritual growth. The mother tongue is the 'mother tongue' not because it is the mother's tongue but because, like the mother, it is central factor behind the nurturance of the children's mental and emotional make up. Their perceptions, comprehension, responses, creative expressions thinking and analysis — all are maximally developed, therefore, through the medium of the mother tongue. The medium of instruction ideally, therefore, ought to be the mother tongue at all the stages of school education.

In the case of learners whose mother tongue is also the regional language or state language, it must continue as the medium of instruction ideally at all the levels of schooling or at least up to the end of the elementary stage. However, in the case of those students whose mother tongue is different from the state language or regional language, the regional language may be adopted as a medium only from the third standard onward. In the earlier years the students' mother tongue ought to be used in such a manner that a smooth transition from the students' operations in the mother tongue to those in the regional language naturally takes place at the earliest.

2.12 Instructional Time

All possible efforts should be made to ensure that the stipulated number of working days are actually available to schools for instructional activities. Loss of instructional time due to unspecified reasons should be prevented or minimised through better educational management. After taking into account the number of days required for organising evaluation activities/tests/examinations, school functions, etc. a minimum of 180 days in a year should be available for effective instruction.

An early childhood centre/pre-school centre should function for three hours a day. A primary school should function for five hours a day out of which four hours may be set aside for instruction. For the upper primary and secondary schools, the duration of a school day should be six hours out of which five hours should be kept for instruction and the rest for the other routine activities. The duration of a class period may be around 40 minutes.

It should be impressed upon schools that every subject and activity should be given the number of hours/periods and adequate time. Time once allocated for one subject area/activity should not be encroached upon as per the individual or institutional perception of the relative 'importance' of different subjects.

2.13 Open Learning System

The Open Learning System, at the school and the university levels, is now established fully both at the centre (National Open School) and in states (States Open Schools). The mission statement of the open learning system is to take education to the doorsteps of the learner, enhance social equality and create flexibility for lifelong learning. This system at the school level utilises to a great extent information and communication technologies through the use of computers and radio

and television broadcasts. Along with the use of satellite-based communication technologies, it provides many structural flexibilities which seem to have an edge over the conventional formal system. These flexibilities relate to the place of learning, time of learning, eligibility criteria, students' choice in selecting combinations of subjects, and the scheme of examination. Alternative Schooling through open learning system seems to be a viable strategy for reaching the unreached and may contribute toward universalisation of elementary education. Open schooling, through its bridge courses and foundation courses, and undifferentiated curriculum, can contribute in a big way to achieve the goals of general education especially in equipping the learners with necessary life skills for becoming self-confident individuals and contributing citizens of the nation