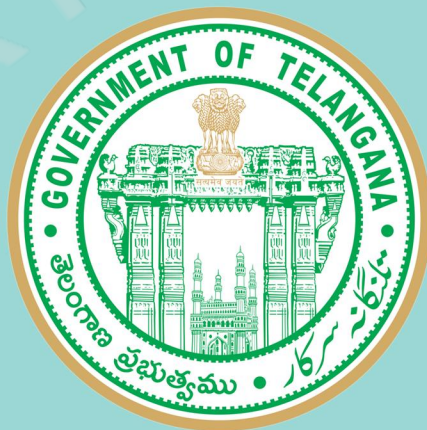


State Curriculum Framework-2011

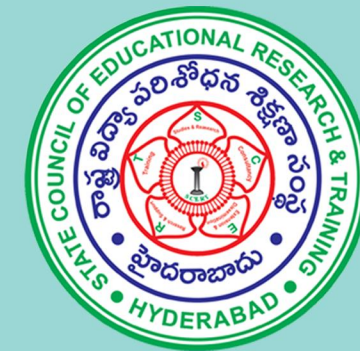
Position Paper

on

Curriculum & Textbooks



**School Education Department
Telangana, Hyderabad.**



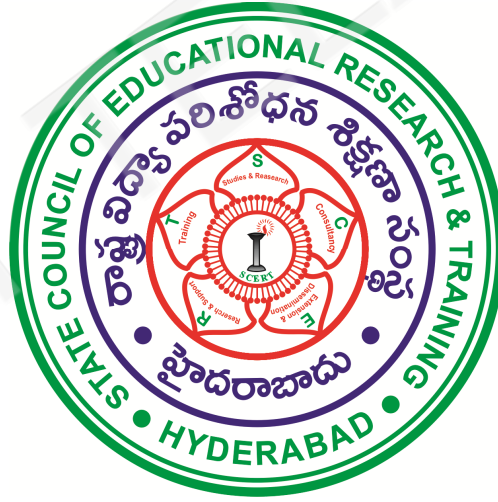
**State Council of Educational Research & Training
Telangana, Hyderabad.**

State Curriculum Framework-2011

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**State Council of Educational Research & Training,
Telangana, Hyderabad.**

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State Council of Educational Research & Training,
Telangana, Hyderabad.

Vision of the State

The vision of the State is that ALL children should receive high quality education and become responsible citizens with an acute sense of the other. They should be aware of their environment and think about it critically. They should listen carefully and speak fearlessly. They should be able to understand what they hear and read; but they should also be able to question it. Teachers should promote these skills, provide meaningful teaching learning processes in natural and friendly environment that enable children to express themselves freely and ask questions. Teachers are collaborative learners and reflective practitioners. Parents and community should have a sense of ownership and participate in the life of the school. In a world which is becoming increasingly instrumental, materialistic and competitive, school should become a space for reflection, cooperation and promotion of human and ethical values.

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Executive Summary

This position paper attempts to clarify the meaning of words like 'curriculum', 'curriculum framework' and 'syllabus'. It then puts forth the conceptualisation of the Andhra Pradesh Curricular Framework.

“Curriculum is, perhaps, best thought of as that set of planned activities which are designed to implement a particular educational aim – set of such aims – in terms of the content of what is to be taught and the knowledge, skills and attitudes which are to be deliberately fostered” (Winch)

'Syllabus' is that part of the curriculum which includes the content of what is to be taught and the knowledge, skills, and attitudes that are to be fostered in schools.

The justifications/principles for deciding aims, setting stage-wise objectives, content selection, criteria for good methods, material and evaluation are based on a number of assumptions, which we will refer to as 'foundational assumptions'. You may find that the bulk of the foundational assumptions can be put in slightly overlapping groups:

- Assumptions concerning human being and society
- Assumptions about knowledge
- Assumptions about learning
- Assumptions about understanding of the child and his/her context

Curriculum Framework is *'that set of planned activities which are designed to implement a particular educational aim – set of such aims – in terms of the content of what is to be taught and the knowledge, skills and attitudes which are to be deliberately fostered'* (Winch) together with statements of criteria for selection of content, and choices in methods, materials and evaluation. (Stenhouse)

In the present context the need for Need for Andhra Pradesh Curriculum Framework is felt because of the deteriorating quality of schooling, increasing privatisation of education, the social context of schooling and the need for curriculum development is felt in the context of NCF,2005 and RTE,2009.

The Andhra Pradesh Focus Group on Curriculum, Syllabus and Textbooks recommends a curriculum that-

- Builds an equal and just society
- Emphasises learning with understanding for children

- Emphasises space for expression and thinking for children
- Emphasises the holistic development of children i.e. development of their cognitive, social, affective and psycho-motor competencies.
- Facilitates schools and teachers to make decisions about choice of content, pedagogy, teaching-learning material, evaluation etc. at the school level; in other words, a national curriculum framework for increased autonomy of the school.

Keeping in mind the above critique and in view of then recommendations of the Andhra Pradesh Curriculum Framework, National Curriculum Framework- 2005 and RTE 2009 it is necessary to rethink the existing textbooks of Andhra Pradesh. Some questions that need to be asked in this process are-

- To what extent is the textbook promoting constitutional values of equity, justice, respect for the other etc.
- To what extent is the textbook supporting children coming from diversified backgrounds.
- How far is the textbook children and teachers to search for additional sources of learning beyond textbooks i.e. environment, peers, additional learning materials like resource books etc.
- Whether our textbooks providing information or facilitating for construction of knowledge.
- What idea do the textbooks convey about knowledge. Whether knowledge is treated as information or an understanding gained through or observation, exploration, research, experimentations and thinking.
- Whether textbooks look at children as receivers of information or develop children to think and question.
- To what extent is the content matter in the textbook according to the maturity levels of the children.

1. What is a Curriculum?

The term 'curriculum' is one of the most ambiguous terms in educational discourse. On one hand, it has been used to denote a mere subject-wise list of topics to be taught in a particular class and on the other it's meaning encompasses "the total experience provided to the children in as well as *out of school*". There can be umpteen views of 'curriculum' between these two ends of the spectrum.

In much of recent literature in India, there is a tendency to take a wide definition of curriculum. All publications under DPEP, many innovative NGOs, and recent discussions in curriculum seem to say too often that everything that happens in the school is part of the curriculum. On the other hand, at the school level, the syllabus, construed as a list of objectives and topics in a particular subject, is often referred to as curriculum.

What is a Curriculum?

According to Winch 'curriculum is the plan for the implementation of educational aims.' In the same vein, the four fundamental questions that form the basis of Ralf Tyler's classic book *Basic principles of curriculum and instruction* still provide a good guide to move in this direction:

1. *What educational purposes should the schools seek to attain?*
2. *What educational experiences can be provided that are likely to attain these purposes?*
3. *How can these educational experiences be effectively organised?*
4. *How can we determine whether these purposes are being attained? (Tyler, 1949, 1)*

The notions of curriculum and syllabus as existing in the three National Curricular Frameworks (NCFs) are close to each other. NCF,75 actually defines the terms 'curriculum' and 'syllabus'. However, this notion of curriculum and syllabus does not include aims of education; it rather sees the aims as guiding the curriculum from outside. The other two documents also follow a similar trend. All these three NCFs emphasise various concerns and issues surrounding school education but do not make a very clear connection between the concerns, aims and content. The pedagogy and the view on knowledge also remain hazily defined.

In 1975, the Curriculum Committee that wrote. 'The curriculum for ten-year school: A framework' defined what it meant by the term 'curriculum': "A curriculum may be

regarded as the sum total of all the deliberately planned set of educational experiences provided to the child by the school. As such it is concerned with-

- The general objectives of education at a particular stage or class
- Subject-wise instructional objectives and content
- Courses of studies and time allocation
- Teaching–learning experiences
- Instructional aides and materials
- Evaluation of learning outcomes and feedback to pupils, teachers and parents

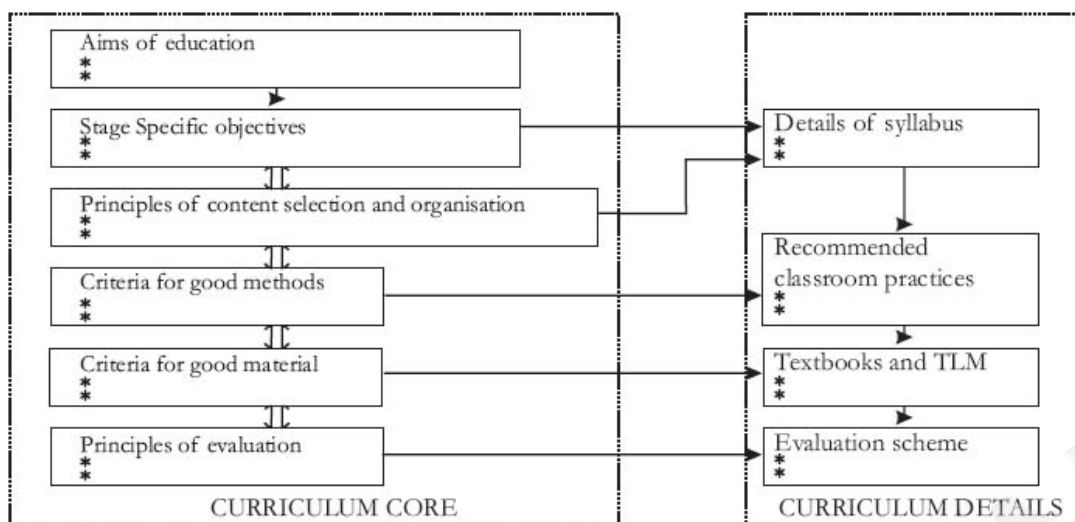
This definition seems to engage with the four fundamental questions asked by Tyler, barring the fact that it is reluctant to address the first one of them squarely. The definition, though talks of “the general objectives of education at a particular stage or class”, leaves the general aims of education to guide the curricular efforts from outside. It would be difficult to imagine any curriculum in the absence of general educational aims; therefore, one might speculate, perhaps the committee considered the issue of aims more as a matter of policy than as a matter of curriculum. Therefore, it sees curriculum as more or less synonymous with syllabus (if one can use the singular term ‘syllabus’ for a ‘set of all syllabi of school subjects’).

There seems to be an ambiguity as to whether, as per the definition, curriculum is ‘concerned’ with ‘the underlying principles to decide’ or with ‘detailed descriptions’ of what is listed in points (ii) to (vi). If it is the detailed description that is intended, then the definition is clearly that of syllabus. And if propagated as ‘curriculum’, it would limit choices that should be made by the schools and teachers keeping in view the profile of their students. A curriculum, seen from a wider perspective, is different from a course of study; it provides a basis for a course of study rather than being itself a course of study.

Thus, a useful definition of curriculum would be-

“Curriculum is, perhaps, best thought of as that set of planned activities which are designed to implement a particular educational aim – set of such aims – in terms of the content of what is to be taught and the knowledge, skills and attitudes which are to be deliberately fostered” (Winch)

This understanding of a curriculum has been expressed graphically below-



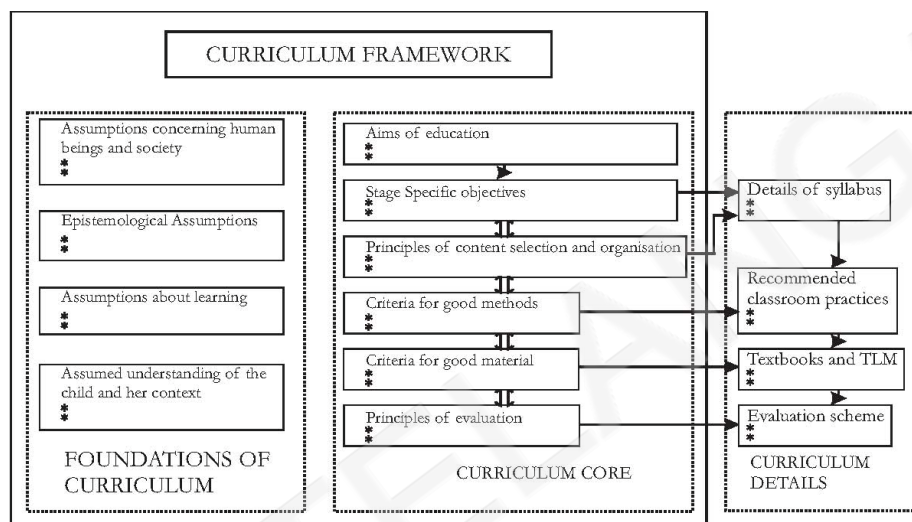
The six boxes shown here represent six broad and slightly overlapping areas of choices, their usual names are indicated but their 'content' has not been suggested. The bullets (*) shown in the boxes mean that something has to be written there, these boxes are just a convenient way to indicate groups of questions. If one takes development of 'autonomy based on reason' as an example of a general aim of education, it can be written next to one of the bullets in the area demarcated for aims. Similarly, when all the questions are appropriately answered, keeping in mind the linkages and consistency between different answers, this structure would be an example of a curriculum. Such a plan, of course, is almost always set in a document or a set of documents and implemented through organised experiences for children under teachers' guidance. It would be important to clarify over here that the word 'Syllabus' is used for that part of the curriculum which includes the content of what is to be taught and the knowledge, skills, and attitudes that are to be fostered in schools.

What is a Curriculum Framework?

Another question that arises in connection to the meaning of the word 'curriculum' is that of justification. What are the justifications for accepting stated curricular objectives, content to be taught, methods to be adopted, and so on? Justifications or basis for curricular choices are very important. It seems reasonable to draw a conclusion that the justifications/principles of deciding aims, setting stage-wise objectives, content selection, criteria for good methods, material and evaluation that are formulated for the curriculum are based on a large number of assumptions, which we will refer to as 'foundational assumptions'.

Curriculum Framework is thus *'that set of planned activities which are designed to implement a particular educational aim – set of such aims – in terms of the content of what is to be taught and the knowledge, skills and attitudes which are to be deliberately fostered'* (Winch) together with statements of criteria for selection of content, and choices in methods, materials and evaluation. (Stenhouse)

The Curricular Framework lays down the foundational assumptions for accepting stated aims of education, curricular objectives, content to be taught, methods to be adopted, material to be used and methods of evaluation to be adopted. A graphical representation of this is given below-



The Graphical Representation of Curriculum Framework

It can be claimed that the more aware that teachers, paper setters for examinations, textbook writers are of these underlying assumptions, the better equipped they would be to keep the system consistent through suitable curriculum, syllabus, material, classroom processes and evaluation. At the same time, we have to agree that almost all curricular choices admit an alternative point of view; in fact, the very notion of a choice implies picking up one alternative from several available ones. A random picking up can hardly be called a choice. It merits calling a choice only if there are sharable grounds for the selection made. Thus, curricular choices need to be justified on commonly acceptable foundational assumptions. Besides being acceptable to all stakeholders these assumptions need to be clearly articulated and be internally consistent. But the problem is that success in a complete and consistent articulation of all these assumptions always remains limited. One way of doing a reasonably good job in the area is to carefully examine the nature and connections of these foundational assumptions. You may find that the bulk of the foundational assumptions can be put in slightly overlapping groups:

- Assumptions concerning human being and society
- Assumptions about knowledge
- Assumptions about learning
- Assumptions about understanding of the child and his/her context

In education of a country, very few things apart from the broad principles like justice, equity, democracy, etc. can be finally decided. Therefore, a terrain map of curriculum framework, curriculum, and syllabus can only highlight the significance of various issues, establish connections between different components, highlight the significance of questions raised, and provide hints at different kinds of answers. In short, a conceptual framework for a curriculum framework can provide a theoretical tool for investigation and coherent debate only.

The 'foundations of curriculum' are by nature a perpetually contested terrain. What is a human being? What kind of society do we want? How shall we determine how much progress have we made in the desired direction? What helps or hinders in moving in the desired direction? All these and similar questions admit no final answers. Similarly, there are contesting theories in epistemology and psychology of learning, and various interpretations of contextual differences and understanding of children. Therefore, the foundational assumptions have to be articulated with great care and sufficient generality to provide space for all legitimate variations. This area is a matter of constant debate, study, and discourse. Stating the assumptions here provides a general direction to the debate and can keep the national discourse coherent and intelligible.

One can afford to be slightly more specific in the middle area, curriculum core, where the general notions of human values, stated assumptions in foundational area (in spite of being contested), Indian Constitution, Human Rights declarations, etc. provide a firmer ground for statement of aims and general concerns. The choice of epistemology and psychology we happen to make allow enunciation of general principles of content selection and methods, etc. Therefore, it becomes possible to articulate certain general principles in this area at the central and state levels, with room for interpretations and additions at the district level. The third component, curricular details, needs to be worked out in concrete terms and in detail as the name suggests. In this block, the syllabus perhaps can be worked out at the state/district level, with provisions for district and school level reorganisation. The methods, materials and evaluation, in the given parameters, should be the choices made at the school level.

2. The Elements of the Curriculum

The Andhra Pradesh Focus Group on Curriculum, Syllabus and Textbooks recommends a curriculum that-

- Builds an equal and just society
- Emphasises learning with understanding for children
- Emphasises space for expression and thinking for children
- Emphasises the holistic development of children i.e. development of their cognitive, social, affective and psycho-motor competencies.
- Facilitates schools and teachers to make decisions about choice of content, pedagogy, teaching-learning material, evaluation etc. at the school level; in other words, a national curriculum framework for increased autonomy of the school.

This chapter will discuss its position on each of the elements of the curriculum namely, aims of education, stage specific objectives, content selection and organisation, teaching-learning methods and classroom practices, teaching-learning material and textbooks and evaluation. It will also elucidate how the foundational assumptions concerning human being and society, knowledge, learning and understanding of the child and his/her context affect each one of the following.

1. Aims of Education

The relevance of an aim in education is both from a social-political and pedagogical standpoint: From a socio-political point the aims reflect collective aspirations of all sections of the society and helps develop capability to define the kind of social life that is seen as desirable, which should hold good for all in a democracy, and pursue it. That implies certain values. The Constitution is an embodiment of those values as they are understood today. Education has a dual job - understanding and respecting those values and Constitution, and also going beyond and developing a critical appreciation of them.

From a pedagogical standpoint an educational aim helps the teacher connect his present activity to cherished future outcome without making it instrumental at present, and therefore, give direction without divorcing from the present. Dewey puts it very succinctly : "The aim as a foreseen and gives direction to the activity; it is not an idle view of a mere spectator, but influences the steps taken to reach the end. The foresight functions in three ways. In the first place, it involves careful observation of the given conditions to see what are the means available for reaching the end, and to discover the hindrances in the way." In case of a school this means a careful study of what children at

age, say, of 6 years are capable of and what socio-cultural conditions prevail. "In the second place", Dewey goes on, "it suggests the proper order or sequence in the use of means. It facilitates an economical selection and arrangement." For schools, that means making decisions on what to teach and in which sequence. "In the third place, it makes choice of alternatives possible. If we can predict the outcome of acting this way or that, we can then compare the value of the two courses of action; we can pass judgment upon their relative desirability." That would give us the criteria for choice. In this regards Dewey declares, "(T)he net conclusion is that acting with an aim is all one with acting intelligently." (John Dewey, Democracy and Education, Chapter 8, Section 1, "The nature of an aim")

This document is only to serve as position paper, here the aims are stated only as principles and no elaborate justification and or explanations are provided.

To part Articulation

A : Values and ideals - Education should promote in society, as well as help the learner develop a rational commitment to. They are :

Equality - of status and opportunity.

Freedom- thought, expression, belief, faith and worship, and as a value in life.

Autonomy of mind- as independence of thinking, based on reason

Autonomy of action- freedom to chose, ability and freedom to decide, and ability and freedom to act.

Care and respect for others- going beyond respecting their own freedom and autonomy, concern about well being and sensitivity to all members of the society.

Justice - Social economic and political.

Education should help learners to not only cherish these values for themselves but also to respect equality, freedom, autonomy etc. of others.

B.: Capabilities of individual human beings that are likely to help in development of values and ideals articulated in Section A.

Knowledge base: There should be a sufficiently broad knowledge base encompassing all crucial areas of socio-political life, and all basic ways of investigation and validation of knowledge.

Sensitivity to others : Sensitivity to other's wellbeing and feeling, coupled with knowledge, should form the basis of rational commitment to values. 'Others' should include all life forms.

Rational/critical attitude: Critical rationality is the only way to autonomy of thought and action.

Learning to learn: The future needs of development of knowledge, reason, sensitivity, and skills cannot be determined in advance. Therefore ability to learn as new needs arise in new situations is necessary to function autonomously in a democratic society.

Work and ability to participate in economic process: Choice in life and ability to participate in the democratic process depend on ability to contribute to the society in its various functions.

Aesthetic appreciation/ creation: Appreciation of beauty and art forms are an integral part of human life.

2. Stage wise General Objectives of Education

The stage wise objectives need to be arrived at by keeping in mind the general aims of education, the developmental stages of children, nature of knowledge in general and curricular subject areas in particular and the child's socio-political context. They cannot be only in the form of subject-specific knowledge. Objectives here would be more of stage specific interpretation of the general aims of education and, therefore, have to be articulated in terms of capabilities, values, attitudes, and knowledge base in general. The objectives also have to be specific enough to be used as guidelines for content selection and organization.

Articulation of curricular objectives should also take cue from the statement of aims and could be written in two parts of each stage. The stages should be defined as :

1. *Primary-I* : 2 years of schooling, roughly 5-7 years of age.
2. *Primary-II* : 3-5 years of schooling, roughly 8-11 years of age.
3. *Upper Primary* : 6-8 years of schooling, 12-14 years of age.
4. *Secondary* : 9-10 years schooling, 15-16 years of age.
5. *Higher Secondary* : 11-12 years of schooling, 17-18 years of age.

Part one at each state should interpret the corresponding part of the general aims, say, democratic values, and what form they would take at the end of primary, upper primary, and so on. Part two should state the levels of learning expected to be reached at that

stage. These levels should be attainments expected of the part one of the concerned stage.

Curricular objectives for all but the last stage, i.e., senior higher secondary, can be formulated at the state and district level and each school can re-organise them as per needs of their children and teachers.

3. Content selection and organisation

- Should a new subject be added?
- Should a new topic be added to subject?
- Is the curricular load too much for children to handle?
- Will children be deprived of learning if certain topics are left out?
- Should knowledge be compartmentalized in water tight categories or subjects?

These are some of the questions that one has to answer when content is being selected and organized for children.

It is suggested here that the problem of selection and organisation of curricular knowledge should be considered from at least three different perspectives: those of aims of education, epistemological, child's context and mental development.

3.1 Aims of education

This issue of what students should know is a direct corollary of what education is expected to achieve for them. In other words 'what is worth teaching' is a derivative of 'what aims are worth pursuing' in education; any justification of what is being chosen for teaching will necessarily involve a reference to the aims the choice in question will help achieve. The aims will in turn be guided by the conditions of society and our vision of a democratic society (as has been discussed in the previous section on aims of education). For example, if we take 'development of capability to think rationally', on unpacking, it points to abilities to gather and make sense of information, consideration from as many perspectives as possible, fair amount of proficiency in logical reasoning, ability to spot inconsistency and incoherence, and an attitude to avoid inconsistency. The experiences and content that are likely to foster these aims is the question for content selection.

3.2 What is knowledge?

The selection of content is also dependent on the understanding of what knowledge is. If knowledge is a bundle of information then it will be presented in textbooks as such with

the expectation that children passively memorize. Here knowledge will be reduced to the correct use of terms, devoid of understanding and reflection. Alternatively, if we think of knowledge as something arising from experiences and thinking we will give space for the same in the textbooks. Such content will not be burdened with information that is cut-off from the child's world and will give space to a child's experiences for knowledge construction. The Andhra Pradesh Curriculum Framework recommends the latter view.

A question related to the question of *what is knowledge*, is *what are the implications of the nature of knowledge on the content*. For e.g. the nature of questions asked in Mathematics is different from those asked in Science. This has implications on the way concepts are presented in each and the processes for investigation and validation that a child should be introduced to. A brief description of the nature of various disciplines is given below-

Languages

- All children unless they suffer from some mental deficit acquire one or more languages before the age of four effortlessly if a caring environment is assured. The fact that children can internalize the complex structure of human language at the levels of sounds, words, sentences and meaning at such a young age shows that they are born with an innate Language Faculty.
- Language is generally regarded only as a tool for communication by most common people. It is viewed by professional linguists as a pairing of lexicon and a set of syntactic rules where it is systematically governed by different rules at the levels of sounds, words and sentences. But again this does not give us a complete picture. Language should be examined in a broader framework so that it can be useful for teachers, teacher trainers, textbook writers, curriculum designers and educational planners.
- It is difficult for us to imagine either individuals or societies without language. Language is actually constitutive of our identity and helps us to relate to other members of the society and nature. The representation of both society and nature in our minds is mediated through language.
- Language is the unique characteristic of human beings. It is the vehicle of thought. We use it for thinking, problem solving, play, dreaming, interpreting, communication of emotion and to share information. We use it not only for talking to others but also for talking to ourselves. We should also appreciate that

language is closely tied to our social attitudes and to the power relations in society.

- It is extremely important to understand that all children become linguistic adults by the age of four. No parents or relatives consciously teach languages to their children. Children acquire extremely complex and rich systems of rules that govern language at the level of sounds, words, sentences and meaning. Not only that, children also acquire the communicative competence to use suitable language in appropriate contexts.
- It should be clear from the above that children are born with an innate Language Faculty to learn languages. We may note that many children learn not just one language but all the languages that are there in their environment. It therefore follows that if we can combine innate language faculty with rich exposure and caring and loving environment language learning will automatically take place.
- The awareness that there is an innate language faculty has important pedagogical consequences; given adequate exposure children will acquire new languages with ease if we provide sufficient opportunities for rich exposure and careful reflection. Our teaching should therefore focus more on meaning than grammar.
- Nobody teaches language word by word or sentence by sentence but children acquire knowledge informally by participating in meaningful situations. We should not expect an instant translation of input into output in language acquisition. Children will speak when they are physically and cognitively ready to do so and when there is a suitable context to say something. Mechanical and meaningless drilling that forces children to reproduce rote-learnt language is a waste of effort.
- Language acquisition progresses in a spiral or cyclic mode and not in a linear and additive mode.
- Language is acquired not through repetition but through recurrence of linguistic facts in need based and meaningful discourses.
- Language is acquired not through isolated words and structures but through clusters of linguistic expressions involved in the reception and production of discourses.
- Language acquisition can take place only in a collaborative environment [cf Vygotsky, Bruner] where the child gets ample opportunities to get involved in interpersonal and intrapersonal communication.

- Teachers and parents must have patience. It is important for them to understand that in the beginning there may be lot of input required and children may not show much output. There is always a period of silence in the process of acquisition. Once the child is cognitively and physiologically ready, output is always greater than input.
- There is no order in language learning for e.g. sounds - words – sentences. Child acquires language holistically *not* from parts to whole. A child participates in a comprehensive discourse and from there goes on to create individual systems of sounds, words, sentences and meaning.
- Child internalises the meanings of the words through contexts in which they are embedded, participating in meaning making process.
- Child can produce an infinite number of sentences with limited and known vocabulary as the situation demands.
- The child needs a comprehensible and challenging input. Comprehension is essentially a mental process. There may be several things that help an individual while she is listening to other languages (things like the context, the communicational expectancy familiar words, gestures and so on)

Mathematics:

- Mathematics as an expression of the human mind reflects the active will, the contemplative reason and the desire for aesthetic perfection. Its basic elements are logic and intuition, analysis and construction, generality and individuality.
- Mathematics is the result of the human mind's ability to abstract from life. Created by the mind to count, numbers have no relationship to the individual characteristics of the objects being counted.
- Mathematics does not limit itself to such abstractions. It uses such abstractions to build many more abstractions, for e.g. even numbers, odd numbers, prime numbers are abstractions, building on the abstraction of numbers. Thus, Mathematics learns from human experiences, but its growth and progression is not dependent on them; what it relies on is, the logic and creativity of the human mind.
- Mathematics studies number and space. It answers many questions.
- Mathematics also studies patterns and relationships in the domain of numbers and space.
- Mathematics uses both deductive and inductive reasoning to build itself. When statements or propositions are based on a set of observations and experiences, drawing on patterns observed and generalizing from them, such reasoning is

called inductive. The basis of an inductive generalization is thus a collection of empirically verifiable statements.

- When reasoning is deductive it uses a given set of statements which we assume (premises or definitions), self – evident truths (axioms and postulates) and logic.
- Two forms of reasoning need to go hand in hand. We observe a phenomenon, notice a pattern in it and inductively generalize from that. Then we can attempt to establish it deductively (i.e., to prove it), using the available body of knowledge as base. Hence for the subject to advance there must be an opportunity for knowledge obtained to be organized, linked and gradually introduced. This is true at every level of learning of the subject, from school to research.
- The distinction between inductive and deductive reasoning also underscores a subtle difference between Science and Mathematics; for in Science most reasoning is inductive.

Science:

Knowledge creation in science is through observation phenomenon, experimentation, observations, establishment of relations, cause and effect relationships, exploration and discovery. The natural inquisitiveness, urge to find out answers to the problems, questioning the observations etc leads to development of knowledge in science. Thus science is not memorizing the facts, principles, theories and reading discipline knowledge for sake of information but to question, hypothesis collection of data, analysis, inferences, thus is scientific method. Therefore, science learning should focus on undertaking discovery, creation of knowledge through various investigative processes. This may be questioning the existing knowledge or creation of knowledge. Then science is doing, questioning, investigation, experimentation investigation and adding to discipline knowledge.

Social Sciences

The knowledge in Social Sciences establishes relationships across the Geography, History, Economics and Social and Political aspects.

- A number of disciplines (like history, geography, economics, political science, etc) each with their own distinct methodologies and perspectives constitute Social Sciences. While respecting the distinctiveness of each, it is also necessary to develop inter-disciplinary perspectives to arrive at a holistic understanding of social issues.

- Social Sciences study different aspects of human life to understand social phenomena and also to help us determining normative priorities and policies. They therefore cannot be divorced from the debates on 'what ought to be'. Thus Social Sciences strive to simultaneously nurture subjectivities and a broader impersonal vision of the world. It seeks to foster thus sensitivity and empathy on the one hand and a high degree of rigour in studying social issues. They study society by using rigorous methods which are both quantitative and qualitative. In quantitative approach social phenomena are studied through quantifiable evidence where in statistical procedures are adopted to create valid and reliable findings generalisations are made after studying many cases. In qualitative approach social phenomena are studied through direct observations, direct and indirect interaction with participants, analysis of texts and documents etc.
- The methods employed range between surveys or cross-sectional studies of in-depth analysis of individual units, contemporary issues to interrogation of historical documents.
- Another important feature of social sciences is that they always advocate multiple perspectives approach as human phenomena cannot and should not be understood from only one point of view. Any social phenomena affect people differently depending upon their social standing. Thus multiple perspectives approach gives voice to diverse points of view. In doing so it can be said to operate on a democratic principle. Multiple perspectives approach is more holistic and comprehensive as identification and utilization of various sources / points of view will help in development of analytic and critical thinking.
- Since Social Sciences involve such a high degree of subjectivity built into their inquiry, it is imperative to critically examine the subjectivities that shape them. Thus an important part of social science inquiry is an inquiry into itself, ie., an inquiry into the history of the disciplines themselves.
- While Social Sciences have the common characteristics outlined above, the different disciplines coming under it have developed vibrant and divergent methodologies and perspectives. The very idea of grouping them together under the nomenclature of 'Social Sciences' is a rather recent one.
- History as a discipline focuses on understanding social change over time and not only seeks to explain that change but also to understand how the change affected different social groups differentially and how that change was perceived and portrayed down the ages. Since history seeks to uncover the past by interpreting

the sources of information, it places great value upon critically evaluating and using the sources of information.

- Geography seeks to understand spatial patterns in social phenomenon in general and to explain spatial variation. An important component of this investigation is the relation between the natural environment and society.
- This has brought geographic studies of regions and regional development to the fore once again away from its previous focus on resource distribution and physical determinism. Geography has thus been transformed into a dynamic Social Science discipline with immense contemporary relevance.
- Spatial variation is typically depicted on a map and the skill of interpreting and making maps of varied kinds is essential part of the training that geography education provides. However, maps need to be seen more than a mere skill of depicting information. Cartography is deeply embedded in the history of Geography and its social contexts. The major drive behind mapping the entire earth comes from the colonial need to access resources of the entire earth and gain control over all the peoples of the world.
- ‘Social-Political Life’: This is a relatively a new theme in school curriculum which seeks to provide inputs to the budding citizens to understand the socio-economic and political world in which they live in. It thus draws from a number of Social Science disciplines like sociology, economics, political science etc. It also takes up the major challenge of addressing normative issues like plurality, equity and justice. It thus combines in itself a dual objective of developing basic tools of social, political and developmental analysis and fostering the humanist values enshrined in the Constitution of India.

3.3 The context and mental development of the child

The third thing that the content is dependent upon is the child's context and mental development. The child's context which may be interpreted as social, economic, cultural and linguistic etc, provides opportunities to build concrete examples and experiences in content areas. The child' mental development, partially determined by age determine her ability to handle abstractions and generalisations which provide feeler to content developers in building concepts through the classes.

4. Teaching Learning Methods and Classroom Practices

Teaching learning methods are determined by our aims of education, our understanding of the learning processes and our understanding of the child's context and mental development.

4.1 Aims of education and Classroom Practices

The various aims of education articulated earlier have implications for choices being made for classroom practices. The entire organization of the classroom and learning experiences needs to be such that they promote the same ethos, values, and principles. For instance, the aims of promoting equity, democracy, freedom, and plurality through education have to be reflected in all aspects of pedagogy including the method, the teacher– student relationship, and the kind and nature of learning experiences. Learners need to experience what equity entails, what democracy is, how it functions, and what it means to respect plurality in their classrooms. For instance, to provide a simple example, it would be difficult to promote equity and democracy through a classroom where teachers do not allow children to ask questions, where the teacher does not make extra effort to make a relatively silent child speak and participate, and where varying opinions are not encouraged to be voiced and debated, and so on. In other words, democracy or equality is not taught only by covering these as knowledge areas but have to be made part of the regular classroom process. The same principle would apply to other areas also. Certain specific activities could be chosen to break the existing stereotypes in the society, e.g., encouraging girls to play football or do cycling in those parts where such activities are not common at all. A conscious effort for preparing children for action in real life would also be valuable.

4.2 Understanding of Learning and Classroom Practices

4.21 Active Engagement of Learner

Learning is essentially a process of active engagement for the learner. Thus, in order to construct their own knowledge, learners need to be actively engaged. Active engagement refers to engagement of body and mind. A number of physical activities involve engagement of the mind, but some physical activities, especially if those do not require any simultaneous mental application, could also be as un-engaging and mechanical (therefore, mentally passive) as copying something from the notebook or blackboard is, or as the process of rote-memorization is. The repetitive acts of copying and rote-memorization do not lead to conceptual understanding and analytical capacities. Playing sports is a good example of simultaneous physical and mental engagement, which involves anticipation, reflection, response, and coordination.

Active engagement involves enquiry, exploration, questioning, debate, application, and reflection leading to theory building and creation of ideas/positions. This implies that it would be important to create opportunities for questioning, enquiry, debate, reflection, and arriving at concepts or creating new ideas. An element of challenge is critical for the process of active

engagement and learning various concepts, skills, and positions through the process. What is challenging for a particular age group may become easy and uninteresting for another age group, and may be remote and un-interesting for still another stage. Therefore, challenge has to be understood in the context of capabilities of children at that stage

4.22 Importance of experiences

Experience has an important place in the process of knowledge construction or understanding of a concept. It is a continuous challenge for teachers to look for suitable ways of ‘creating’ and ‘drawing upon’ experiences. New experiences could be organised for children in several ways. It could be through a process of observing something happen (e.g., observing the process of plant germination in a real situation, or observing different stages of milk collection and processing and packaging of different kinds of products in a dairy farm); participating in an exercise involving body and mind (planning a role-play around a theme and presenting that); or going through the mental process of reflecting on something the child has experienced (e.g., dialogue on gender-differentiated practices in the family and society, or participating in a mental game of numbers). Lived experiences, either in the form of exercises that help to relate to life outside the school or in terms of created experiences in the school, have value at all stages of education;

4.23 An Enabling Teacher–Child Relationship

An enabling teacher–child relationship in the process of schooling and learning. The process of learning requires an uninhibited participation and engagement of learners in a process that is largely guided and facilitated by teachers. Teachers’ expectations from students has proved to be an important factor in determining their motivation to learn, and consequently the pace and level of learning. However, the conception of a student being ‘bright’ or ‘weak’ has a direct association with the learner’s motivation, and affects his/her interest level. These notions also often have caste and gender connotations. Teachers need to realize that each individual has the potential to learn and they need to understand how to translate this potential into reality. Therefore, it is important for teachers to develop an affectionate and equal kind of relationship with students, irrespective of their background and specificities.

4.23 Importance of Multiplicity of Methods Different kinds of situations provide different kinds of learning experiences to students. Exposure to a variety of learning situations such as self-work, small group work, and whole class (or large group) work helps in widening the experiential base. It also helps in developing diverse perspectives. Therefore, it becomes important to have opportunities for self-learning, peer learning, and learning through interacting with teachers. The experience of working in diverse situations also helps in developing the skills for, and realizing the necessity of, inter-dependence and cooperation. The experiences of self-learning could help in developing capability for independent action. Similarly, there could be several ways of enquiry and exploration. If classroom questioning and dialogue could be suitable for

something, collecting information through observation followed by processing, analysis, and theory building would be more appropriate for something else. A place for work with hands would also be important in many cases.

4.3 The Child's Context and Classroom Practices

4.3.1 The Socio-economic Context and Identity of the Learner

The socio-economic context of the learner has significance for classroom practices. For instance, the economic background of the learners has implications for their health, nutrition level, and also their physical appearance. This could affect their concentration, energy level, and image based on their physical appearance, and all this has implications for their level of engagement and sense of belonging to the class. The teacher should be responsible for making the learner feel comfortable and acceptable in the class, which is one of the first requirements for learning to happen. Similarly, religion or caste forms part of the identity and self-image of most, including young children. The sex of a child too is part of the identity. Social as well as gender relations have power connotations and therefore implications for the learner's self-image, expectations from self, peer relations and also the teacher–child relations. The teacher needs to be aware of these and the impact that these factors have on the child's relations and learning, and have devices that would help facilitate a classroom where each child belongs and feels interested in learning. What is required is an understanding of these issues and practices, and sensitivity in dealing with the various needs of learners. For instance, if girls are usually not forthcoming in taking initiatives on their own, it becomes important for teachers to create more opportunities for them to speak and express themselves. Similarly, if a *dalit* child in an upper-caste concentrated classroom feels marginalised, teachers need to give greater attention to him/her. In certain circumstances, the issues of gender or caste or any other aspect relating to identity or society can be discussed directly, and sensitively, to initiate a process of introspection and reflection. Considering that many of our schools are now getting a good number of students who are first generation 'school students' and therefore do not come from a background where the culture of formal schooling exists, it would be important to understand its implications for the pedagogy. Teachers need to be sensitive to the fact that such children are more vulnerable and, therefore, could be irregular or less attentive for a variety of reasons: the need to help parents in work, high incidence of illness of self or others at home, and so on. In their early years of schooling, home language could be different from the main language of instruction and has implications for the teaching–learning approach. Diverse cultural practices should also be looked at as resources. An understanding of these practices would help teachers not only in understanding how to relate to the learners' perspective of the social and physical world around them, but also in building diverse perspectives and in developing a respect for plurality.

4.32 Learners' Age and Mental Development

Learner's age and cognitive levels are important aspects that influence the choice of methods and processes. Some children might find a particular kind of process challenging and enjoyable while others might not enjoy it as much, and the level of their engagement could vary. For instance, children with minor hearing or speech limitations would require special attention and some special devices from the teachers' side.

5. Teaching learning material and textbooks

Textbooks form the centre of all teaching learning activity in classrooms today. As a result of the undue importance given to the textbook, it has acquired an aura of supremacy and a standard format. It has to be completed from cover to cover in a strict sequence, has developed a language of its own that is difficult to comprehend, and is laden with dense concepts. It has become a symbol of authority difficult to ignore or disobey.

In this position paper, we are talking of a curriculum framework that enables schools and teacher to make choices and move towards greater autonomy. When we come to decisions regarding methods of teaching, pace of learning, material, and concrete examples to be used, we reach the level of school and the classroom. These are concrete decisions that can be made only for specific classrooms and children, as the actual learning happens only in the child's mind and depends totally on what has been learnt earlier. Therefore, the reinterpretation of the content, methods, and materials are completely within the sphere of practical decisions to be made by the teacher.

Clearly, in the light of this argument, what is needed is not a single textbook but a package of teaching– learning material that could be used to engage the child in active learning. At an early stage, it may contain concrete objects that help formation of concepts (i.e., shapes, counting objects, etc.), equipment to help observation, and charts and cards to illustrate, play with, and so on. At a later stage of school education, it could mean a variety of books on the relevant issues. The textbook as part of this package becomes one tool to engage the child in learning. The teacher in classroom practices can use a variety of activities, concrete learning material, as well as textbooks.

At the same time, no single package, however well and professionally designed, can address all the contextual situations in a country as large as India. Therefore, a large number of packages should be developed at state and district levels with adequate provision for cluster and school-level modifications and supplementary materials. In addition to squarely contextualising the educational processes, the production of TLM package at local levels will also increase avenues for teacher participation and teacher choice at a hitherto unprecedented large scale.

Textbooks are the expression of the syllabus and also the aims of education, stage specific objectives, understanding of knowledge that we have talked about previously.

NCERT Delhi lays down the following indicators for syllabus-

1. Appropriateness of topics and themes for the relevant stages of children's development from a psychological point of view.
2. Pervasive resonance of the values enshrined in the constitution of India in the organization of knowledge in all subjects.
3. Continuity from one level to the next.
4. Inter-disciplinary and thematic linkages between topics listed for different school subjects, which fall under discrete disciplinary areas.
5. Linkages between school knowledge in different subjects and children's everyday experiences and knowledge derived from them.
6. Infusion of environment related knowledge and concern in all subjects and at all levels, treating 'environment' as a holistic expression, covering nature, all forms of life, human values and socio-economic and cultural meanings of environment.
7. Sensitivity to gender parity, Ethics, values health and the needs of children with disabilities.
8. Integration of work related attitudes and values in every subject and at all levels.
9. Need to nurture aesthetic sensibility and values by integrating the arts and India's heritage of crafts in every aspect of the curriculum.
10. Linkage between school and college syllabi, avoiding overlapping.
11. Using the potential of educational technology, which includes the new information technology in all subjects.
12. Encouraging flexibility, epistemic activism and creativity in all areas of knowledge and its construction by children.

6. Evaluation

Evaluation of children's performance and achievement is one of the important aspects of curriculum. Assessment tells us the extent the educational aims and objectives have been achieved. It also impacts the quality of teaching learning processes, textbooks and attitudes of the teacher towards her job and learning.

Revamping the examination method ultimately is the first and most important step of any meaningful educational exchange. Examination determines what becomes of any content and method in practical terms. as long as it stresses on simple recall and the exact repetition of the content as stated in the textbook, all innovations will be frustrated.

The NCF - 2005 reflects on the nature and purpose of assessment as follows –

Evaluation is a relative term. In education it is always associated with educational aims and objectives and their implementation. By itself, it is a process that determines the course of action and recommends changes for the better of the individual, society, nation and mankind. If we consider education as preparation for a meaningful life the process of evaluation followed now, which measures and assesses a very limited range of faculties of mind, is highly inadequate and fails to give a true picture of an individual's abilities or progress towards aims of education.

The purpose of assessment is necessarily to improve the teaching learning process and materials, and be able to review the objectives that have been identified for different stages of school education. Also assessment is meant to gauge the degree to which objectives are achieved and capabilities of the learners are developed, and not just to know how many snippets of facts have been memorised. Lastly, the need for assessment is to give a meaningful report for inter school transfer of the learner, certificate of completion of a course, and periodic reports to the guardians, employers, and community about the quality and level of the learners progress. It is not a means to encourage competition, and if one is looking for quality attainment then segregating children and injecting a sense of inferiority in to them is not the way.

The NCF,2005 further states that –

In view of generating a meaningful report on quality and level of individual learner's progress, it is necessary to assess each child's learning. In addition to the learner's achievement levels, this should also encompass her attitude, interest and ability to learn independently. To understand all this, one of course, has to change the nature of classroom evaluation so that it is based on the very experiences that the learner goes through during learning. The very process of learning is assessed and decisions are made on the equality and nature of each learner without comparison, classification, or categorisation into slow and fast learners. Competency attained or not attained type of judgment or giving only marks or grades based on single observations are not desirable. Observation, especially self observation, is a powerful tool where a teacher learns a lot about others. Maintaining a daily based on observation helps in continuous and comprehensive evaluation.

The analysis of the above leads to following conclusions-

- Assessment is not the test of meaning less transient memory.

- It shall be aimed at assessing the student's learning in various domains of knowledge and not just be limited to the concept of student achievement.
- Variety of assessment methods and assessment tools must be developed to assess the children performance against various competencies.
- The assessment results may be used to review the achievement of stage specific educational objectives and plan further to improve the situation.
- Assessment results shall not be used to compare children and classify them into categories of 'dull' and bright'.
- It is not proper to decide that certain children only can learn based on one or two assessment. A continuous and comprehensive evaluation may be implemented by way of observing children performance during their participation and responses in learning activities, children. The teacher must document the individual child participation and development.

Thus what would be clear from the aforesaid discussion on the elements of the curriculum is that each one feeds into another

7. Guiding Documents

NCF – 2005 and RTE – 2009 have guided the position that the Andhra Pradesh Curriculum has taken on matters of content and pedagogy.

7.1 NCF – 2005 : Key Principles

In preparing the Andhra Pradesh Curriculum Framework, the fundamental principles that have guided NCF, 2005 have been taken into consideration. These are:

- Connecting Knowledge to life outside the school
- Ensuring that learning is shifted away from rote methods
- Enriching the curriculum to provide for overall development of children rather than remain text book centric
- Making examination more flexible and integrated into classroom life and,
- Nurturing an over-riding identify informed by caring concerns within the democratic policy of the country.

7.2 RTE - 2009

Section 29, sub section 2 of RTE Act-2009 mentions eight things that should be taken into consideration by the designated academic authority in laying down the curriculum and the evaluation procedures:

- Conformity with constitutional values
- All round development of the child
- Building - up the child's knowledge potential and talent
- Development of physical and mental abilities to the fullest extent.
- Learning through activities; discovery and exploration in a child friendly and child-centred manner.
- The medium of instruction shall 'as far as practicable', be in child's mother tongue
- Making the child free of fear, trauma and anxiety and helping the child to express views freely.
- Comprehensive and continuous evaluation of the child's understands of knowledge and ability to apply the same.

The aforesaid can be deemed to provide a fairly comprehensive coverage of the indicators of a child - centered curricular policy for the elementary stage of education. Some of these factors have been a part of the various guidelines prepared under central and stage - level programmes launched.

3. Need for curriculum and textbook development in Andhra Pradesh

Andhra Pradesh is one of the biggest states in India, both in terms of land area and population. Considerable progress has been made in providing schooling facilities to all children in the state. As per DISE, 2010-11 66840 primary schools, 15497 upper primary schools and 18875 high schools. (both government and private) cater to about around one crore children..

Like most states in India, Andhra Pradesh has not been involved in the process of curriculum writing and has on different occasions taken on the limited exercise of textbook change. There is an urgent need to take on a comprehensive exercise of developing the Andhra Pradesh Curriculum Framework to guide all school activity in the state.

Need for Andhra Pradesh Curriculum Framework

In the present context the need for Need for Andhra Pradesh Curriculum Framework is felt for various reasons-

1. Deteriorating quality of schooling

A very brief survey of the present-day classrooms would be enough to convince a keen observer that the most marked features of most of our educational practices in schools are a dull routine, bored teachers and students, and rote learning. Children's learning also remains a tenuous area. The system perpetuates a kind of education that aims at producing standardised products that can pass certain examinations, rather than thinking, sensitive, capable, and responsible people. It is necessary to deepen the dialogue on some fundamental areas- aims of education, nature of knowledge, understanding of how children learn and understanding of a child's context. The need to relook the curriculum is imperative in this situation.

2. Increasing privatisation of education

A loss of faith of parents and the community in government schooling is reflected in the mushrooming of private schools all over the state. Different types of private schools catering to the different economic sections are available. This differentiated schooling for the rich and the poor further deepen the divide between the rich and the poor leading to further marginalisation of the marginalised.

3. The social context of schooling

Hierarchies of caste, economic status and gender relations, cultural diversity as well as the uneven economic development that characterize Indian society also deeply influence access to education and participation of children in school. This is reflected in the sharp disparities between different social and economic groups, which are seen in school enrolment and completion rates. Thus, girls belonging to SC and ST communities among the rural and urban poor and disadvantaged sections of religious and other ethnic minorities are educationally most vulnerable. In urban locations and many villages, the school system itself is stratified and provides children with strikingly different educational experiences.

Unequal gender relations not only perpetuate domination but also create anxieties and stunt the freedom of both boys and girls to develop their human capacities to their fullest. It is in the interest of all to liberate human beings from the existing inequalities of gender. Textbooks and pedagogic practices are further accentuating the hierarchies instead of enabling children to think about them and question them.

4. The need for curriculum development is felt in the context of NCF,2005 and RTE,2009.

Need for Textbook Development

Textbooks are an expression of the curriculum. They reflect the overall aims of education as well as the grade specific objectives of education. The manner in which they present the concepts/content and the types of learning tasks they ask the child to engage in provide a picture of the writer's understanding about knowledge and how children learn.

Textbooks provide direction to teacher understandings and activity in the classroom and in many schools they might be the only source for doing so.

Review of Andhra Pradesh textbooks

A general review of Andhra Pradesh textbooks including the one done by RIE, Mysore bring out the following critique-

- Textbooks are not guided by a clear definition of the aims of education
- The content and learning tasks do not take cognizance of the nature of the subject.
- Textbooks equate knowledge to information and thus end up over burdening the child.
- Textbooks encourage repetition and meaningless practice.

- Textbooks lack a clear picture of the competencies to be built and in fact do not give space to many competencies.
- The quality of paper, printing and illustration is poor.
- They do not establish the relationship between grade specific objectives and learning tasks.
- The language used is difficult and above the level of children's understanding.
- The presentation of concepts is not comprehensive and often lack logical sequencing .
- The content does not draw upon the prior experience of the children.
- The knowledge of various community groups and traditional occasions is not being represented adequately in the textbooks.
- In many cases, technical terms do not have the required explanation with examples. Also, to what extent these terms should introduced in the lower classes has not been taken into consideration. .
- The evaluation activities at the end of the lessons/units are confined to only question, match the following and true or false activities. Little chance for children to learn through observation, learning by doing etc.
- In the name of improvement of standards, the curriculum load of textbooks is increasing with every successive textbook revision. Standard of the textbook is being felt by including topics from higher standards.
- The textbooks and teacher handbooks are being developed for the regular/ core subjects like languages, maths, science, social studies alone and no textbooks and teacher handbooks for co-curricular activities like ethics, health and physical education, work experiences, creative activities of art, craft etc.
- There is no clarity what content areas are required to be included in the textbooks for all round development of the child.
- No clarity of why and when to use workbooks.

Some reflections on the textbook writing process include-

- Lack of resources for the improving of professional standards of textbook writers and editors, as a result the textbook development is confined to addition and deletion of content matter without much rationale.
- The editorial board consists of members mostly from universities and higher education institutions who do have little understanding of the nature of the subject, its objectives and how children learn.
- Most of the professionals are from the government with very little involvement of NGO's, eminent educationists etc.

Keeping in mind the above critique and in view of then recommendations of the Andhra Pradesh Curriculum Framework, National Curriculum Framework- 2005 and RTE 2009 it is necessary to rethink the existing textbooks of Andhra Pradesh. Some questions that need to be asked in this process are-

- To what extent is the textbook promoting constitutional values of equity, justice, respect for the other etc.
- To what extent is the textbook supporting children coming from diversified backgrounds.
- How far is the textbook children and teachers to search for additional sources of learning beyond textbooks i.e. environment, peers, additional learning materials like resource books etc.
- Whether our textbooks providing information or facilitating for construction of knowledge.
- What idea do the textbooks convey about knowledge. Whether knowledge is treated as information or an understanding gained through or observation, exploration, research, experimentations and thinking.
- Whether textbooks look at children as receivers of information or develop children to think and question.
- To what extent is the content matter in the textbook according to the maturity levels of the children.

4. Features of a good textbook

What is good textbook?

- Textbooks should use reasonably good quality paper such that the quality of print and illustrations are not unduly affected.
- The size of the print should show sensitivity to the age of the child.; the print size for classes 1-3 being appreciably bigger than that of the higher classes.
- Illustrations should be clear and should help the child in understanding the concept or process that is being talked about or should be able to extend the child's boundaries of imagination
- The language used should be clear and unambiguous.
- The content and learning tasks should take cognizance of the nature of the subject.
- Knowledge should not be equated to information.
- Textbooks should establish the relationship between grade specific objectives and learning tasks.
- The presentation of concepts should be comprehensive with logical sequencing
- The content should The content matter – concept should built upon children's prior experiences and facilitate for construction of knowledge.
- The learning activities include observations, investigations, experimentation etc which facilitate children to think and learn through active engagement.
- The learning tasks should facilitate self learning as well as collaborative learning through group work.
- The exercises and questions should possible provide space for children to think and express in multiple ways based on their prior knowledge.
- Textbook shall facilitate for self evaluation and promote additional learning through projects, field experiments interviews.
- Wherever possible the concepts/ content should be planned in the interdisciplinary way.

Language Textbooks

The language text books should have the following features:

- The materials selected must match the cognitive levels and social and cultural background of children.
- The selection will include texts of various genre-stories, poems, plays, essays, letters, posters, advertisements, newspaper and magazine articles, various forms, tables etc.
- Texts will include various styles of writing-narrative, descriptive, expository and argumentative.
- The texts will include various themes like comedy, adventure, suspense, drama etc.
- They should help learners achieve the class-wise desirable language competencies, expected standards and learning outcomes.
- At primary level, the language text books should contain attractive and thought provoking pictures, reflecting children's environment. High quality paper and printing should be used and every care should be taken to provide suitable illustrations.
- The language used in the text books should be simple and the textbooks should provide such creative spaces where children can use their own languages.
- It should contain the suitable exercises, to enable the children to perform the class wise prescribed discourses.
- Lessons in the language textbooks should be based on discourses like songs, stories, poems, conversations, autobiographies, essays, letters etc. The discourses will create interest, curiosity, thinking towards language development.
- At elementary level lessons may be selected from ancient and modern literature, which should be appropriate to the age and level of the children. It must be kept in mind that the materials selected for children do not in any way violate the constitutional provision of our country and uphold and encourage all the secular values it enshrines.
- Selected lessons should represent different regions, ages and language forms.
- Self learning exercises should be given priority.

- Language exercises should be in the form of activities that lead to exploration discovery, research, observations. They may also consist of quiz, matrix, puzzles, language games etc.
- Space should be provided for the child in the text book to assess her progress through self assessment.
- To avoid boredom and monotony, lessons should begin with thought provoking questions.
- In text books there should be pictures related to situation/context. These pictures should lead to enhance children creativity, imagination etc.
- Exercises in the text books should promote individual, group and whole class activities.
- Exercises should be thought provoking and exploratory, tasks which lead to mechanical answers must be avoided.
- The exercises given in the text books should provoke the child to go through additional reading material to enable the child become an independent reader.
- Children should be able to grasp meanings of words from the context. Based on this vocabulary exercises should be given.
- A small dictionary text based words and their meanings in alphabetical order should be given at the end of the text book to improve study skills.
- In built grammar passages should be given contextually, so that children formulate grammatical rules by themselves. In this process, it is very easy for the teacher to involve the languages of children.
- Exercises may be given among others in the following forms: extending poems (adding lines) and stories; concluding stories; writing conversations; puppetry; dramatization; mono action; reviews; descriptions; translations; project works; riddles; cultural songs; proverbs; idioms etc.
- In the introductory text books (for beginners), language should not be introduced in isolated linear and fragmented mode (letters [in order], sentences in isolation) as per modern linguists letters may be introduced through meaningful situations. For it context → discourse → sentences → words → letters method may be followed.
- Language text books should reflect local customs, culture and traditions. They should also reflect local arts such as Burrakatha, Voggukatha, Harikatha, Pallesuddulu, Yakshaganam, Kolatam, Budabukkalata, Chiduthala Bhajana, Chekka Bhajana etc.
- Text book should be suitable for continuous comprehensive evaluation.

Mathematics Textbooks

- Textbooks should reflect the experiences of children. Situations that children encounter in real life should be used as far as possible for introducing concepts.
- Textbooks should be able to establish continuity with what children have previously learnt in the topic.
- Textbooks should use simple and unambiguous language. As far as possible they should act as self learning material for the student.
- Textbooks must be concise in appearance and structural in nature.
- Each concept and process should be given with examples and exercises. Children should be given practice (in both concepts and process) in various contexts.
- Wherever possible solve problems using more than one method. Encourage children to do the same and also come up with their own ways of solving problems.
- All proofs need to be given in a non-didactic manner, allowing the student to see the flow of reason.
- Wherever possible more than one proof to be given.
- Children are generally introduced to proofs in geometry. But it is important for them to understand that a similar process is followed for numbers and thus be introduced to proofs in number theory too.
- Challenging questions to be provided at the end of each chapter.
- Add anecdotes about the history of Mathematics and achievements of mathematicians to make it interesting for children.
- If two new concepts are being introduced to the child in a class, then as far as possible a concept in which both these new concepts are being utilized together should not be introduced then. Example: if one learns Integers and Algebra for the first time in 7th standard then it is important that we do not pose problems that combine these two like , simplify $-6x + 7x$. at the initial stage. There needs

to be a gradual build up of concepts, and connections should be rationalized. Other pairs of topics for which the same can be said: Direct Proportion and Inverse Proportion; Algebra and Exponents. However, when these have been done for some time it is very important to give such mixed problems.

- The principle of appropriateness needs to be upheld. Concepts must not be introduced at a stage where they do not belong. Example: Limits and Proof by Mathematical Induction need not be introduced before the Senior Secondary stage (classes 11 / 12). The same is true for topics like Symmetric Polynomials and Cyclic Expressions in three variables, and the Double Angle formulas in Trigonometry

Science Textbooks

- Science textbooks train children in a scientific method.
- Every science lesson should start with triggering questions.
- After completion of primary level Science, in the name of environmental studies, should help in developing competencies like observation, classification, experiments, drawing inference, hypothesis, production, drawing and labeling, generalisations, identify relationship better time and space, etc..
- In upper primary classes, Science textbooks should develop competencies – understand concepts, principles, laws, theories and postulates, questioning, doing experiments to prove things, understand and explain cause and effort.
- Textbook should reflect scientific principles behind daily life situation, experiences and technology and helps the children to apply such knowledge in their day-to-day environment.
- Science textbooks are not meant for passing information.
- Each and every concept mentioned in the textbook must be proved before put into textbook.
- Textbook should discard the misconception that experiments must be conducted in school labs only. There should be a large scope to conduct experiments with locally available material. .
- Space should be given to both illustrations and photographs in the science textbook..

Social Science Textbooks

- Social Science textbook help children to study society logically and making predictions with her observations.
- Textbooks should develop since the children respond to contemporary issues, able to ask questions and adjust in diversified environment.
- Textbooks should discuss protection and utilisation of natural resources, issues effects on economical development, customs and practices, identify the importance of human values, relationship between person to person, person to institutions, institution to institution, state to state, state to nation, country to country, to make the child as a responsible citizen.
- At primary level concept that showed discussed are child's nature and background, services, production play, etc... That develops competencies like observation, classification, giving reasons, data collection, analysis, drawing inference, making prediction.
- In addition to that textbooks promote the children to draw various map – village, mandal, district, state, country maps.
- At upper primary level social textbooks should have data collection skills, analysis, mapping skills, etc....
- There should be an integration is need between Geography, History, Civics, Economics at upper primary level.
- NCF 2005 says that understand Civics as social and politicalize issue. This section helps the children to understand how politics effects on societies. Textbook should frame lesson in this corner.
- Textbook should promote multidimensional thinking, critical thinking among children.
- By participating in filed trips, projects, school level activities children able to understand equality, social justice, freedom, synopsis, democracy, etc.
- Textbook should create awareness among children about environmental awareness and to make projects by their own.

Co-curriculum textbooks

- No special textbooks for co-curricular activities.
- Syllabus should integrate physical education, work, peace, ethics, arts, habitant learning, etc.
- Textbook authors and editions should have understanding of how to integrate co-curricular areas.
- These activities should be hand in hand, in the textbook.
- At upper primary level onwards additional reading material should be kept in libraries.

BIBLIOGRAPHY

Kelly, A. V. (1983; 1999) *The Curriculum. Theory and practice* 4e, London: Paul Chapman.

Stenhouse, L. (1975) *An introduction to Curriculum Research and Development*, London: Heineman.

Newman, E. & G. Ingram (1989) *The Youth Work Curriculum*, London: Further Education Unit (FEU).

Taba, H. (1962) *Curriculum Development: Theory and practice*, New York: Harcourt Brace and World.

Tyler, R. W. (1949) *Basic Principles of Curriculum and Instruction*, Chicago: University of Chicago Press.

R.F. Dearden, *The philosophy of Primary Education*, Routledge and Kegan Paul, London, 1968.

John White, *New Aims for a New National Curriculum*, in *The National Curriculum beyond 2000:*

the QCA and the aims of education, by Richard Aldrich and John White, *Institute of Education, University of London, 1998.*

Agnihotri, R K, et (2002) *Understanding Pedagogical Interventions: DPEP in Tamil Nadu - A*

Draft, Vidhya Bhawan Society.

Dewan, H. K., (2002) *A Study of Pedagogical Intervention under DPEP- Karnataka 'Vidhya*

Bhawan Society'.

Dhankar, Rohit (2002) "A Study of Pedagogical Intervention under DPEP, Kerala - Summary of

findings" Digantar.

Jain, Sharda (2004) Lessons from promising practices and implications for scaling up Girls'

Education (Draft), Presented at Commonwealth Conference on Promising Practices and

Implications for Girls' Education held in Chandigarh on September 20-23.

Jessop, Tansy (1998) A Model of Best Practices at Loreto Day School, Sealdah Calcutta Occasional

Paper, Department for International Development.

Jha, Jyotsna and Kokila Gulati (2004) 'Teaching Equity in Early Years: A Reflective Paper on

Developing and Implementing a Social Learning Curriculum at Primary Level (Draft)', Presented

at Commonwealth Conference on Promising Practices and Implications for Girls' Education

held in Chandigarh on September 20-23.

NCERT (1988) National Curriculum for Elementary and Secondary Education: A Framework

(Revised Version) "NCERT".

Rampal, Anita (2000) Curriculum Change for Quality Education: A Study of Schools in DPEP

and non-DPEP Districts in Kerala "UNICEF".

Sambhav (2002) A Study on Pedagogical Renewal Processes in Chattisgarh and Madhya Pradesh

"Sambhav".

Educational Consultants Ltd. (2001) Inside the School: A synthesis of case studies of classroom

processes "Ministry of Human Resource Development".

Yadav, S.K. (2003) 'Ten Years School Curriculum in India-A Status Study', NCERT

.

Govt. of India (1971), Education and National Development: Report of the Education

Commission 1964-66, NCERT, New Delhi.

Govt. of India (1968), National Policy on Education –1968, Ministry Education, New Delhi.

Govt. of India (1977), Report of the Review committee on “The Curriculum for the Ten-Year

School’ (Ishwarbhai Patel Committee), Ministry of Education and Social Welfare, New Delhi.

Govt. of India (1986), National Policy on Education-1986 and Programme of Action-1986,

Ministry of Human Resource Development, New Delhi .

Govt. of India (1990), Towards an Enlightened and Human Society: Report of the Committee

for Review of National Policy on Education, 1986 (Acharya Ramamurti Committee), Ministry

of Human Resource Development, New Delhi, December 1990.

Govt. of India (1992), Report of the CAGE Committee on Policy, Ministry of Human Resource

Development, New Delhi, January 1992.

Govt. of India (1992), National Policy on Education-1986 (As modified in 1992), Ministry of

Human Resource Development, New Delhi.

Govt. of India (1993), Learning without Burden: Report of the National Advisory Committee,

Ministry of Human Resource Development, New Delhi.

NCERT (1975), The Curriculum for the Ten-year School – A Framework, New Delhi.

NCERT (1988), National Curriculum for Elementary and Secondary Education - A Framework,

New Delhi.

NCERT (2000), National Curriculum Framework for School Education, New Delhi.

GOI (1992), Report of the CAGE Committee on Policy. Ministry of Human Resource

Development, Department of Education.

NCERT (1986), Evaluation of Textbooks from the Standpoint of National Integration Guidelines.

National Council of Educational Research and Training, New Delhi.

Lawton, D. et al (1978), Theory and Practice of Curriculum Studies. Routledge and Kegan Paul

London.

Goel, B.S and Sharma, J.D. (1984), A Study of Evolution of the Textbook, National Council of

Educational Research and Training, New Delhi.