

Innovations in Education



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by

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In 1976, the Government of India invited him to be Education Advisor in the Ministry of Education. In 1983, he was appointed Special Secretary to the Government of India, and he held the post until 1988. He was Member-Secretary of Indian Council of Philosophical Research from 1981 to 1990. He was also Member-Secretary of Rashtriya Veda Vidya Pratishthan from 1987 to 1993. He was the Vice-Chairman of the UNESCO Institute of Education, Hamburg, from 1987 to 1989.

From 1999 to 2004, he was the Chairman of Auroville Foundation. From 2000 to 2006, he was Chairman of Indian Council of Philosophical Research. From 2006 to 2008, he was Editorial Fellow of the Project of History of Indian Science, Philosophy and Culture (PHISPC).

Currently, he is Education Advisor to the Chief Minister of Gujarat.

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Introduction

Our system of education is the legacy of the colonial past. Sixty years have passed since we attained independence, but even though promised during the freedom struggle, we have not been able to change the system, except very marginally.

There are, however, voices all around which demand radical changes in education.

A study of this demand brings out one common cry; we want better education.

Nobody will dispute with this demand.

But disputes arise, when we try to define and give content to the phrase "Better Education".

The theme of this book is that "Better Education", whatever it may mean, is not enough.

The country needs a kind of education that is not yet being conceived, although greatest pioneers of the freedom struggle have already given us the glimpses of that education.

If education has to reflect the soul of India, and if India has to prepare itself to fulfill its own swadharma;

If India has to play a leading role in meeting the challenges of the contemporary civilization and also the contemporary crisis;

If India has to be protected from dogmatic or agnostic or

skeptical Materialism and its barbaric invasion, – then India has to be revitalized, and refashioned within the next twenty five years.

This task can be accomplished in some tolerable measure, provided one important condition is fulfilled.

We have to redesign our Education System during the next ten years.

This is an almost impossible task, and yet it is not entirely impossible. There is a possibility, and how that possibility can be utilized, is the theme of this book.

There are three enabling factors which can be utilized, if there is political will, and if the power of the government is to be used to sub-serve the evolution of education that we need:

- I. We have rich crop of valuable results of pioneering experiments which have been carried out by five leading educationists of the country:

Maharshi Dayananda Saraswati, Gurudev Rabindranath Tagore, Swami Vivekananda, Mahatma Gandhi, Sri Aurobindo

The results of the experiments conducted by them remain as yet to be pooled together and the conceptions behind their experiments need to be developed further; they also need to be synthesized with pioneering experiments conducted in the West under the influence of Rousseau, Pestalozzi, Montessori, Russell and Paulo Freire. Fortunately, these western educationists discovered and underlined one great need which Indian culture at its highest, right from the earliest Veda to the

present day, has underlined. They have underlined the need to discover the inmost centre of freedom in every child; they have maintained that the unfolding of center of freedom can, under enlightened guidance of well trained teachers, equip every individual with capacities to find a productive position in the society and constant progression towards enrichment of the powers of knowledge, heroism, harmony and creative and productive skills.

- II. Modern developments of communication technology can be utilized to accelerate the transmission of knowledge through the best teachers of the world to students in the remotest parts of the world. These technologies need to be mastered in our country and utilized for purposes of education in manners and methods that can be adapted to the target groups of students and learners.
- III. Vast fields of research are being explored all over the world and also, in some measure, in India. As a result, it is becoming easier today to meet the greatest need of the problems of India's regeneration and revitalization. Indian mind needs to be global, universal. This is the time when India needs to spread within itself and in the world the message of "*vasudhaiva kutumbakam*", the whole world is one family.

In this brief introduction, we may jump immediately to specifics.

The question is whether there is any machinery which can utilize the above three favourable conditions in a systematic and in a planned and sustained manner.

There is none in our country: neither at the National level nor at the State level.

Hence, we need to set up a “Commission for Educational Innovations”, which can carry out the above three tasks. This Commission has to be statutory in character, because otherwise the Commission will not have the required stability and long term duration which are absolutely indispensable.

This Commission should have powers to conduct the required research, to formulate innovations, implement them on experimental basis in selected schools and educational institutions or through new institutions which it can create. It should monitor the progress of the innovative experiments. And in order that students, parents and teachers are enabled to participate in the innovative experiments, the Commission should have the power to conduct its own experiments through innovative methods and confer certificates which have the same value as the certificates of the present Boards of examinations.

Ultimately, the proposed Commission will be able to develop a new curriculum for school education. This curriculum will be first used by the innovative schools established by the Commission, and it can gradually be generalized in the country. This curriculum will have five important components:

1. A programme of Science of Living (on the model which was developed and reflected in ancient glorious period of India).
2. An emphasis on studies of languages, which will have special concern for promotion of Sanskrit.
3. An emphasis on development of Skills (particularly related to agriculture, horticulture and cottage crafts).

4. A system of optional studies at various levels of proficiency.
5. A special emphasis on learning by explorations, discoveries and inventions, together with an emphasis on explorations of national value of Art.

The Commission will be able to evolve new system of examination, and it will also set up centres of national testing services, which will have unique methods that will underline importance of character development, intense sense of nationalism blended with progressive internationalism, and special concern for practical abilities and skills.

Thirdly, the Commission will have developed massive programme of pre-service and in-service teachers' training which will lay a special emphasis on the theme of human enrichment that can be fostered by exploration of the following four themes:

1. The aim of life;
2. Teaching that aims at awakening and infusion of inspiration and enthusiasm to learn;
3. Care and health of the physical body which can be vehicle of sustaining ideals of life (*śarīram ādyam khalu dharma sādhanam*);
4. Pursuit of knowledge, heroism, harmony and skills.

There will be many other benefits to the country's system of education resulting from the work of the proposed Commission, such as production of new teaching material, etc.

The next two chapters bring out more fully the proposal that is set forth.

Educational Innovations

(A theme that demands central attention)

I

We may recall that the great struggle for freedom had, in its early moments of resurgence, placed national education as an essential aspect of its core Programme for achieving India's independence. Under the inspiring leadership of the greatest educationists, radical experiments were carried out. National education was visualized in its widest implications so as to foster both nationalism and internationalism, and the lessons learnt from the great systems of education that had developed in India since its ancient period as also from progressive experiments which have been carried out in modern times in different parts of the world were also sought to be incorporated. Results of all these experiments need to be pooled together so that a new Programme of educational innovation can be initiated and developed. There is an urgent need to eliminate from the present system which, since the establishment of Macaulayan system in our country, has proved to be injurious to the growth of the spirit of India and the spirit of universality and universal fraternity.

Today, several innovations are being advocated, particularly with regard to child-centered education, value-oriented education, vocational education, and various aspects of curriculum and examination system. Care and education of the girl-child has rightly come to be emphasized; there is much talk of need of reduction of load of books; the integral development of personality has also come to stressed; study

of environment in order to inculcate the spirit of environmental care has also been acknowledged; importance of scientific, original and critical thinking has also been advocated and education that can relate science and values has also received special emphasis; the objective of promoting international peace is also sought to be promoted; education for the promotion of human rights as also fundamental duties is also being underlined; the role of art in education and the role of physical education are being increasingly supported.

While these desirable objects and Programmes need to be welcomed, the question is whether the present framework of education is capable of implementing these objects and Programmes in adequate measure, and whether they measure up to those visions, standards and ideals which have been put forth by the pioneering educationists of our renascent India. This is not an academic question, but it is central to the development of the road map of educational development of India. We are multiplying schools, colleges, and universities, but all this expansion sub-serves more and more insistently those objectives which Macaulay had envisaged in 1835. Our entire employment system is tied up with the present scheme of schools, colleges and universities. Parents are naturally driven to that very scheme so as to educate their children in order to enable them to enter employment market. Teachers are being trained to sub-serve that scheme; policy makers are under a constant pressure to expand the education system, and huge funds are being deployed to sustain that scheme. There is not much time available to parents, teachers, educationists, and policy makers to think of educational reforms in any radical and sustained manner.

Will there be a place and an institutional arrangement where educational innovations receive central attention, and where the great ideals of education are conceived, developed, experimented upon on a regular and sustained basis? Not occasional conferences, seminars, or working groups, which normally end in recommendations and nothing more. There must be created, at the national level or state level, a permanent commission for educational innovations, which should be statutory, and which should have powers not only to conduct reflections on the required educational innovations, but also to conduct and promote experiments which can sustain a methodical effort so as to bring about concrete implementation of innovations, which can measure up to those standards and ideals which were advocated by the pioneering educationists during the freedom struggle, as also those which the greatest educationists of the contemporary world have put forth to meet the needs of today and tomorrow. This Commission must have inbuilt power and ability to conceive that aim of education, that methodology of education, and that content of education which will respond to the highest care that we need to bestow on the new generations. It appears, as we ponder over the problems at a deeper level, that the present system will need to be greatly modified, and even an alternative and parallel system will also need to be envisaged, experimented upon and developed, so that students may have choice to be enrolled in one system or the other, depending upon which system will suit them. An alternative system, when created, will have to stand on footing of equality with the other, in terms of equivalence by virtue of recognition and by virtue of availability of opportunity to enter into the world of work.

II

If the argument which is advanced above, although briefly and inadequately, seems plausible, we need to think of launching upon a long-term Programme of action. But such a Programme of action can be sustained only through a new institutional framework which should be set up under appropriate legislation.

A few ideas on this subject are offered:

1. A legislative bill should be conceived and drafted;
2. The proposed bill should envisage the setting up of a permanent statutory commission;
3. The proposed commission may be named "Commission for Educational Innovations";
4. The main objective of the commission will be to conceive, experiment upon and implement such educational innovations that will transform the objectives, contents and methods of education in the light of the aspirations that inspired the visions of the ideals of national system of education during the freedom struggle;
5. The commission will also take into account the lessons of progressive experiments carried out in the different parts of the world that have aimed at the integral development of students, which would harmonize the values of physical education, aesthetic education, rational education, ethical education, and spiritual education;
6. A schedule will be annexed to the legislative bill, which

will indicate some specific lines on which innovations can possibly be conceived, and it could also specify certain concrete instances of innovations which can serve as guidelines for the Commission, which will have freedom to conceive, propose and implement other innovations which are not listed in the schedule;

7. This list of innovations will be related to aims of education, educational methodology and contents of education as also to training Programmes of teachers;
8. Character development that involves man-making education (to use the famous term of Swami Vivekananda), and which involves self-knowledge and self-control, will receive central attention of the proposed Commission;
9. Integral development of personality which will foster capacities of knowledge and wisdom, courage and heroism, universality, mutuality and harmony and skills of various kinds will also receive central attention;
10. The aims of vocational education, professional education, liberal education and scientific and technical education will be sought to be supplemented by profounder aims that are central to the inmost Spirit of India, and they will be sought to be fulfilled by means of a flexible and evolutionary curriculum;
11. A new framework of educational structure will be sought to be envisaged so as to harmonise the needs of individual attention with the increasing pressure on expanding the size of educational institutions, and new methodologies of education will be sought to be developed, which will harmonize the development of

faculties of the head, heart and hand as also those methodologies which can be developed by increasing freedom of self-learning, collective learning and learning through participation in large audiences to which stimulating exposures can be suitably administered by the mass media;

12. Care will be taken to develop methods, aims, and contents suitable to learning to know, learning to do, learning to co-operate and learning to be;
13. Care will also be taken to ensure implementation of methods of learning by exploration, discovery, invention and creative expression through art, music, poetry and through various kinds of crafts;
14. Subjects which are extremely important to every human being, but which have been neglected or ignored will be sought to be developed, even while the load of books will be sought to be reduced by careful and adequate pruning of all that is obsolete and irrelevant as also by redesigning courses through a system of optionals and a system of alternative goals of achievements, depending upon individual needs and capacities of growth and need to pursue ordinary standards, advanced standards or specialized standards;
15. Innovations will be sought to be developed which will encourage participatory processes of learning, project work, field work, manual work, and works that stimulate discipline, diligence, persistence, and needed patience and needed speed;
16. The Commission will provide financial assistance to educational and research institutions devoted to the

development of educational innovations and creation of innovative model of educational methodology and teaching learning material. The Commissions will also be empowered to conduct and develop centers, organizations and institutions with exclusive objective of experimentation and research in innovations, particularly those listed in the schedule or other radical ones as may be approved by the Commission, and with the objective of the evolution of a new system of education, a new curriculum, and new methods of testing that can be considered appropriate to the ideas, ideals and specific suggestions made by great educationists who pioneered educational experiments during freedom struggle as also those who have endeavored to eliminate from the present system those aspects which, since the establishment of Macaulayan system in our country, have proved to be injurious to the growth of the spirit of India and the spirit of universality and the spirit of universal fraternity;

17. The Commission will also develop and conduct or aid in conducting training Programmes of teachers, both pre-service and in-service, in order to create an ever-increasing cadre of teachers who can serve and sustain the Programmes of educational innovations;
18. The Commission will seek and obtain due recognition for the new courses, new testing systems and the new teaching-learning material at the hands of the present authorities empowered to grant recognition and also at the hands of a new authority that it will be authorized to institute for recognition that will open the gates for the students qualified in the new system of education for higher studies as also for entry into the world of work

and employment in terms of equality with students who qualify themselves in the present system;

19. Finally, the Commission will be entitled to take all necessary steps by which educational innovations are promoted and implemented, and thus set in the country a new dynamism for a fresh pursuit of excellence.

III

It is true that many educational innovations have been thought of, and many of them have been proposed for implementation. It is also felt that in due course of time the task of implementation will receive due support, and we can look forward to the development of a better and more enriched, less burdensome and yet more fruitful system. Why do we, then, propose to create a commission for innovations at the national or state level? What is the imperativeness of such a commission?

The answer to this question will be found, if we review the history of Indian education since 1835 when Macaulay placed before India the aim of creating in the country a class of people that will be externally Indian but otherwise British. He had declared that all that was important in the Indian heritage could be contained only in one small shelf in a huge library of knowledge and wisdom derived from the West. It has been widely acknowledged that Macaulay has succeeded in the aim that he set up for education, and that in spite of great educational experiments of the Gurukul system, of Shanti Niketan, of Nai Talim, and of the blazing message of Swami Vivekananda and radical experiments proposed and conducted by Sri Aurobindo, nothing palpable seems to have happened so as to arrest the onward march of the Macaulayan system. Reports of Dr. Radhakrishnan and of Dr. Kothari and of many others have stirred the minds of educationists and policy makers, but what is the net result in terms of the change that was so fervently advocated by the pioneering educationists at the turn of the last century? The real fact is

that all that has gone in the background, – basic education has been declared to be a failure, Shanti Niketan itself came to be declared as a university for purposes of instruction and examination, – a notion abhorrent to Gurudev Tagore, the founder of the Shanti Niketan, and the rest has been adjudged and almost condemned by the application of the criteria flowing from the Macaulayan system. There does not even seem to be any prospect for any radical change. If we feel contented with a few innovations that are being proposed but which will be declared in due course of time incapable of implementation, and if we do not underline the necessity of radical thinking and radical innovations and radical means of implementation, it seems that the reformists of education are fighting a losing battle. Radical measures are imperatively demanded, and a creation of a commission for innovations is only a small step, and that, too, can succeed only if it is accompanied by a number of measures which also need to be contemplated at this stage.

But why not a committee that can recommend innovations and leave the task of implementation to the government and existing authorities? But this has been tried for more than fifty years. The results are deplorable. The existing authorities are preoccupied with conduct and smooth running of the present system. Principals of the schools are occupied with maximum percentage of success of their students in the examinations set up by Macaulay. Many Vice-Chancellors congratulate themselves when they are able to conduct examinations on time. Councils of educational research are occupied with churning out text books (with annual fanfare of controversies in regard to some portions) and they are in a rush to make the text books available to the students with some tolerable or intolerable delay and the

government, central or state, has no special machinery through which innovations can be rightly conceived and rightly implemented.

Educational innovations cannot be reduced to inorganic mechanics of nuts and bolts. Innovations are organic in character, they need to be conceived and matured by process of incubation; even if conceptions are sound, they cannot be implemented unless they are enthusiastically received by teachers, and unless they are sufficiently internalized and absorbed in their nerves and fibers of motivation. New Programmes of teachers' training need to be undertaken, – preparing teachers of teachers, and subsequently those teachers who will participate in the first steps of experimentation. Generalization of innovations can only be a long-term proposition. Again, innovations require new sets of teaching-learning material; and even the best educationists find it difficult to prepare this material, and that, too, in a form that would be pedagogically appropriate to the demands of the proposed innovations. There is also the question of utilization of new methodology of education, and also the question of utilization of emerging media of communication. All this and much more is involved in the task of conceiving and implementing educational innovations. A patient and long term work is involved; every step of the work needs to be planned, executed, monitored, evaluated, revised and worked out to some satisfactory level of achievement.

But this is not all.

We often speak of creating a national system of education. At one time, there was a great deal of confusion on the meaning of “national system”. Even now, the phrase

“national system” connotes, to many, a system of the revival of the past and lessons in Chanakya and Bhaskaracharya in place of Newton and Einstein, in place of Mill and Rawls. In this sense the idea of national system comes to be rightly rejected. What is truly national? The true answer lies in the discovery and reascent formulation of the national spirit. There are three indisputable facts that emerge from an unbiased study of the Indian heritage. The first fact is that there is in India an overwhelming influence of the Upanishads, and it is this influence which accounts for the undeniable spirituality and profuse growth of number of religions, mutual understanding and harmonization among which has been an extremely important issue in the development of what may be called the heart and soul of India. The second is the robust intellectual and philosophical quest, resulting in the development of number of sciences and copious systems of rigorous speculations, systems of knowledge, and codes of various Dharma Shastras. Intellectualism of India is a necessary part of the national spirit. Thirdly, India has exhibited inexhaustible vitality and continuity which is exceptional in many respects. That India has declined from time to time, and deplorably in the last few centuries cannot be denied. The causes of the decline only underline the need to take special measures by which defects and imperfections of the past can be remedied; but the remedies will be effective only if those three aspects of the spirit of India are properly acknowledged and nourished. We need to create new forms of the spirit of India that are relevant and appropriate to the progressive climate of the country and the world. A national system of education, therefore, should not mean revival of the past or turning to the past, away from the present and the future, but recovery

of the deeper secrets of India's spirituality, India's intellectuality and India's vitality, and the national system of education has to be designed in such a way that these three aspects are properly underlined and presented to the growing generations in the forms that are suitable to the contemporary climate and to the future needs of India and the world. This is not an easy task, and such a task cannot be left to a committee and its recommendations. A serious attention to this task will necessitate a radical change in the very aim of education that will strike at the very root of Macaulay's prescriptions, the injurious effects of which still continue and multiply. Only a permanent Commission can promise the possibility of the fulfillment of the needed work, if it is mandated to work out a new system of education, vibrant with the soul of India, and capable of inspiring in the new generations a true spirit of nationalism, which is not limited to self-glory, but, true to its own sense of universality, dedicated to the task of serving internationalism and unity of human kind.

But apart from the aim of education, we are in need of the evolution of new methods of education and new methods of evaluation. On the one hand, there is today an effort to expand and universalize not only elementary education but also secondary education; on the other hand, there is an increasing awareness of the need to maintain an optimum size of the classrooms. Dilemmas resulting from these contrary pulls have to be confronted and resolved by innovative methods. Methods of demonstrations, explorations, discoveries and inventions need to be appropriately incorporated in the system. The lecture system will need to be supplemented or greatly modified by employment of audio-visual methods, methods of project work, and

methods by which individual's capacity of using freedom with discipline will also need to be developed. The present pedagogical methods of teaching various subjects will need to be revisited. We speak of reduction of load of books. It is a very laudable recommendation, but it has revolutionary consequences for the methodology of education and for the entire system of education, and this matter needs to be worked out patiently, assiduously and effectively.

The present methods of education have repeatedly come under adverse criticism. No satisfying formula has yet emerged. This is a very vast subject, but it needs urgent attention and remedies are not only to be thought of, but experiments have to be carried out, results of experiments have to be assessed, and solutions have to be implemented with great care and after meticulous preparation.

Once again, these tasks require a permanent Commission for educational innovations.

Finally, there is a need to revisit the entire domain of contents of education. Are we providing our students that essential knowledge which is really necessary for human and humane development? Are we providing enough options, considering that students of various inclinations and abilities demand different kinds of skills and different kinds of mental equipment? The present system is being defended as a liberal system of education and as a rational system of education. Is it really so? A number of students are in dire need of vocational education, which requires equipments, tools, and workshops, which our schools can hardly provide. The Macaulayan system is found to be adequate for clerical jobs and for preparations that aim at access to professional education. But even in this regard, how much is actually

achieved? How much do we provide to the students in a compulsory way, which the students retrospectively find to have had any utility in their lives? And what about physical education, what about art education, and the contribution it can make to the education of the inmost soul? Are we teaching the history of India and the world in the right perspective? This is a very sensitive question, but we have not yet dealt with it with that scientific rigour and that sensitivity which are required. These are only a few illustrations relevant to the domain of contents of education. How are we to deal with these and many other issues?

Here also, it will be found that there is necessity to set up a permanent Commission for educational innovations.

Innovations

The proposed innovations will be related chiefly to the quality of education. It has been increasingly acknowledged that our education system is deficient in many ways, but the deficiency in respect to quality is perhaps most deplorable and in need of urgent but careful repair. If we examine innovations which are being advocated in regard to the quality of education, they can be grouped in three categories:

1. Those related to aims of education;
2. Those related to contents of education;
3. Those related to pedagogy and methodology of education.

We may formulate a list of these innovations and make relevant remarks.

1. Innovations related to aims of education

What should be the aim of education has been a perennial theme of debate in the field of philosophy of education. In the prevalent climate, liberal education has come to be largely accepted, and, accordingly, promotion of scientific knowledge, scientific epistemology and rationality is being advocated; promotion of freedom of each individual is also regarded as an indispensable element of liberal education; finally, liberal education aims at the promotion of the study of man and his harmonious relationship with the society and the universe at large.

There has been, however, increasing demand for education that aims at development of skills, and this aim often demands neglect of the aims of liberal education. It is argued that the contemporary society requires job-oriented skills, and that job-oriented education and vocational education needs to be developed on a very large scale. It is even argued that the present system of education turns out unemployable youths and thus even when employment opportunities are augmented, even graduates are found to be incapable of finding proper avenues of employment. Hence, one of the important problems is to conceive and develop among young people varieties of skills, and innovations are demanded for designing education that will emphasize and facilitate varieties of skills that are relevant to the society which is increasingly dominated by machines, gadgets, techniques, and technologies.

Closely connected with demand for skill-oriented education, it is argued that in a country like India where 65% of population is occupied in agriculture, promotion of the study and skills related to agriculture should be made a permanent part of the general education system. Along with agriculture, crafts are also emphasized. It is even argued that while liberal education aims at promoting the faculties of the head, a more balanced system of education should also be developed so as to stimulate and foster the faculties related to hand and heart. It is also pointed out that even pedagogically, education that can combine the development of faculties of the head, hand and heart will be more conducive to dynamism and involvement of the total personality of an individual and the education system.

In continuation with the advocacy for the skill-oriented education, there is a growing demand to develop education

that aims at professional excellence at a very high level. Demand for professional education is growing everywhere, and not only education that can produce able lawyers, doctors and engineers, but also professional education that can train scientists, philosophers, scholars, writers, journalists and accountants and other professional experts is being advocated more and more insistently.

How to develop a system of education that can accommodate the legitimate demand of liberal education, vocational education and professional education has not been adequately addressed. At the same time, certain higher aims of education are being pressed, and the result is that educationists find it very difficult to come up with the needed solutions.

There are four higher aims of education which have been conceived and formulated in various forms and contexts. These higher aims are related to the promotion of

- (a) Nationalism, internationalism, peace, international understanding, universality and the ideal of universal fraternity in conjunction with the ideal of liberty and ideal of equality;
- (b) Character development and man-making education in conjunction with integral development of personality, and a special emphasis on value-oriented education that can develop and foster values involved in physical education, vital and emotional education, rational education, aesthetic education, ethical education and spiritual education;
- (c) Learning to learn or learning to know, learning to do, learning to co-operate, and learning to be; and

- (d) Exploration of the highest aim of life, exploration of human potentialities and exploration of the future in the context of the need of human survival and human or superhuman fulfillment.

If these higher aims of education were not felt to be imperative and urgent, innovations relevant to the aims of education could have been relatively less difficult. But these higher aims of education have come to be advocated as inevitable needs of education of today and tomorrow by expert bodies like UNESCO and by the greatest educationists who have, during the last two centuries, made pioneering experiments and who have striven to break the rigidity that imprisons the processes of the flowering of the soul of man, soul of nations and spirit of the freedom and unity of human kind. It has been argued that if these higher aims of education are not pursued, our educational systems will fail to respond to the central issues of the contemporary crisis through which humanity is passing today. It is contended that human civilization has reached such a critical point of development that unless higher aims of education are properly conceived and practiced, humanity will become so mechanized and dehumanized that machines and robots will rule the world and they will dethrone all that is valuable to human civilization, human happiness, and in the very *raison d'être* of human existence.

Against this background, the tasks of the education innovators will be found to be extremely difficult, but they will be seen to be more and more pressing and even inescapable.

2. Innovations related to contents of education

Aims of education determine the contents and methods of

education. Depending on the way in which innovators will evolve a satisfactory solution to the conflicts among various aims of education, we shall be in a position to develop corresponding curricula relating to various subjects and inter-disciplinary studies. Nonetheless, various reflections on the contents of education are currently debated amongst educationists, and they can be formulated and possibly presented as follows:

It has been contended that learning to learn and learning to know are basic to education, and that at minimum level, the basic curriculum should aim at securing good foundation in three R's, – reading, writing and arithmetic. This contention is almost universally conceded. But on account of explosion of information and exponential growth of knowledge, basic curriculum relating to three R's is continuously being expanded. As a result, load of books is getting increasingly heavier, and there is legitimate criticism that children's minds are being stuffed with heavy loads of information, which children are not able bear, grasp or digest, and that education tends to cater only to the needs of the development of the head at the cost of the needs of the development of the hand and the heart. It is also rightly complained that education, instead of being a joyous process of learning, has tended to become mechanical, abstract, uninteresting and even boring. It has been argued that among the reasons for a high rate of dropouts, this unbearable load of curriculum is perhaps the chief one. It has been estimated that out of 100 students admitted in class I, only seven are able to reach class X and XII. This implies a great wastage both in terms of economy and in terms of human resource development. As a result, innovations in the curriculum of primary education have become inevitable.

There is no doubt that the first aim in regard to learning of languages should be to prepare a sound basis for the mother tongue. At the same time, we have to recognize that the contemporary world is becoming global, and English has acquired the status of international language. Hence, a sound basis for English also needs to be laid during the first 4-5 years of primary education. It is unfortunate that during the last several decades, Sanskrit has been downgraded, but its high status as a pan-Indian language and also as a language in which highest treasures of Indian systems of knowledge have been stored. The *three greatest poets of India* – Valmiki, Vyasa and Kalidasa have written in Sanskrit, and just like no educated Englishman can be unread on the works of Shakespeare, no Indian should be unable to read the works of these great poets. In addition, provisions should be made to learn a fourth language, and that could be Hindi. A study of a language like French is bound to be beneficial from many points of view. It may be argued that innovations in proposed direction will mean a heavy load on students. But experiments have shown that during early years when the linguistic lobe of the brain is open and can absorb skills in various languages, the load can be minimized, and if appropriate methodology is developed and sound pedagogy for simultaneous learning of languages is applied, the coming generations will stand to gain, and faculties of understanding, imagination and subtleties of intellectual grasp and complexities in storing vast vocabulary will receive due nourishment and they will flower, and when matured will contribute to the intellectual robustness of the genius of India. This is an area, which causes acute controversies, but it needs to be studied with due impartiality, and without attempting to impose unwanted languages. Facility should be made available to

students to learn three or four languages in the very first years of learning, and they will provide an effective basis of learning to learn and learning to know.

After the first five years of grounding in three or four languages, an option should be given for students to choose between a course in languages at 'O' level and a course at languages at 'A' level. As far as 'O' level is concerned, the programme for next three years should ensure a first terminal level achievement, so that if a student (who will be by that time 14 years of age and who will have fulfilled the constitutional obligation under which every child in our country is required to be given compulsorily minimum level of education free of charge) wishes to leave the school, he/she, by virtue of his/her linguistic competence, can find a welcome entry into suitable field of work, and again, by virtue of that linguistic competence can, if he/she so chooses, continue study on his/her own during leisure hours at home or in any other system of open school education. The 'O' level proficiency should not be measured in terms of grammatical competence or competence in literary expression or competence that comes through study of literature. In other words, a distinction should be made between a course in language and a course in literature. In the course devoted to 'O' level, linguistic competence should be the measuring yard, and it may include correct spelling, correct expressions of simple sentences, compound sentences and complex sentences which have only one subordinate clause. In addition, the student should have capacity to take dictation and be capable of ordinary use of the computer so that, in due course of time, he/she may be able to use the computer at least for one language, and use it for taking dictation and writing on the computer.

For 'A' level, the programme of studies can extend up to the end of class XII, and the proficiency expected in at least two languages should be of such a high level that he/she should be able to use the languages competently like reading, writing, and conversing, enjoying the beauty of the language and of understanding and utilizing subtleties and complexities of the language.

A short course in literature may form a part of this programme. At the same time, a skill-oriented course in at least two languages should form a component part of this course, and this should include the competence of reporting, of sum-marizing, of commenting and of stenographic assistance as also related computer operation of a higher order.

A student may also have an option to branch off in a specialized course in two or three languages at the level of class IX, and the specialized course, when completed at class XII, should enable the student to pursue at the level of higher education a specialized course in relevant literature or specialized courses in subjects like philosophy, where the demands for linguistic competence are very high.

Provision should also be made for students to pursue bridge courses so that it may not be difficult for the student to shift from a course of 'O' level to a course of 'A' level or from 'O' level to specialized level or from 'A' level to specialized level. This would provide a good deal of flexibility.

Normally, a student in class X should have linguistic abilities in three or four languages at 'O' level and linguistic ability in one language at 'A' level or linguistic ability in three languages, one 'O' level, one 'A' level and one

specialized level.

The essence of specialized level in the linguistic competence is sure guarantee for enhancing competence in thinking with clarity, precision and with a wide range of scope. It is also assumed that competence in multiplicity of languages ensures increase in inter-cultural or inter-civilization dialogue, robustness of life, creativity and mobility, and when this is coupled with capacities for inter-linguistic translations; opportunities of options in the field of work also multiply.

Care should be taken that those students who are able to opt for 'O' level competence in languages up to class VIII should be burdened only with two other subjects, viz., a course in mental calculations and a course in a subject connected with a core programme. These students may, however, be encouraged to take part in any other programme of studies, which may be available in the school, but none of them should be compulsory. Preferably, these students should be counseled to take up one skill-oriented programme, including home science, masonry, carpentry or repair of ordinary gadgets and machines or vehicles.

As indicated above, there should be available for all students a course in mental calculation at 'O' level for the First five years of studies. Here, the emphasis should be laid on learning and mastering four operations of arithmetic and also of learning and mastering operations concerned with fractions and concerning measurements of various kinds which one meets in ordinary life. These measurements may also include those which are relevant to physics, chemistry, geography and astronomy. A further 'O' level course in

mental calculation may be combined with an elementary course in mathematics. This will again acquaint the student with the relationship between arithmetic, algebra and geometry, and simple operations of factorization and a few theorems in geometry. But much more importance is to be given to the development of practical skills that are required in the field of accounts, so that by the end of class VIII, the student may be able to prepare a bill with the right totals and can calculate economic factors such as rate, interest, wages and profit or loss. The students should also be able to maintain accounts books and also ledgers. Mechanical use of calculators should also be mastered by the end of class VIII.

The assumption in proposing the above is that a good number of students who opt out of the school at the end of the class VIII (around the age of 14) can do useful works connected with calculations and thus manage the calculations connected with the economy of any small unit of commerce or small industry. The proposed abilities will ensure that the concerned students can find useful work in the society. Additionally, if he/she has higher capacities of mathematics, the same can be pursued in leisure hours and/or through the open school system.

Students who are found to be good in understanding subtleties and complexities of mathematics at an early stage may be recommended to opt for a course in mathematics at 'A' level, but the 'A' level course should not neglect all that is proposed in 'O' level. Those students who would like to pursue physics, chemistry, all other sciences, economics, and other similar subjects should be advised to offer mathematics in class XI and XII. Specialized course in

mathematics would of course be indispensable for specializing in mathematics, statistics and similar subjects at the level of higher education.

Languages and mental calculations as suggested above should normally be pursued by all students. But this is not enough. Higher aims of education should be pursued right from early stages. These aims, including character development, man-making education, integral development of personality, care of the body and development of capacities of human body, qualities that foster pursuits of knowledge and wisdom, courage and heroism, harmony and universality as also refinement that gives entry to aesthetic joy and creativity, strain towards idealism, ethics and spirituality, value oriented education and sharpness of faculties that is contributed by exercises in scientific observation, exploration, discovery, invention and rigors of philosophical thought, and practices that are related to learning to know, learning to do, learning to co-operate, learning to be, – these and many more concerns such as those of nationalism, internationalism, human rights, fundamental duties and education for international understanding and peace should receive attention right from the commencement of processes of education. A well balanced programme needs to be chalked out in due course with regard to several subjects of study which can, optionally, be pursued at ‘O’ level. A special provision will be made for skill-oriented education, – preferably based on the needs for training in Agriculture, Horticulture, Cottage crafts, etc.

What is suggested above is the minimum as far as innovations in contents of education are concerned.

3. Innovations related to methods of education

The most important innovation in regard to methodology of education is related to stimulations and facilities that need to be provided to infuse in every student enthusiasm to learn, to study and to arrive at the capacity to master one's limitations and exceed levels of excellence for attaining higher levels of excellence.

In this connection, every school should create atmosphere of neatness and beauty as also programmes of exhibitions, demonstrations, dramas, slide-shows, film-shows and stimulating lectures through which the highest values are expounded and nourished. In addition, provision should be made whereby individualized learning is promoted. To use the Indian terminology, we may say that each one of us has his or her own *swabhava* and *swadharma*, and a learning-process that answers to the rhythm of *swabhava* and *swadharma* can properly be called the process of individualized learning. As soon as a student is able to read and write, facility should be provided to him/her to do individual work, which can be pursued in several different ways:

- (a) By quiet reflection and meditation;
- (b) By referring to books or relevant portions of books suggested by the teacher;
- (c) By working on "work-sheets";
- (d) By consultations or interviews with teachers;
- (e) By carrying out experiments;
- (f) By working out sums or problems or working out exercises which will provide mastery over a subject;
- (g) By writing compositions;

- (h) By drawing, designing, painting etc.; and
- (i) By any other work such as decoration, cooking, carpentry, stitching, embroidery, etc.

There should be available in every school, the following facilities:

- (a) A room of silence to which students who would like to do uninterrupted work or reflect or meditate in silence can go when they like;
- (b) Rooms of consultation, where students can meet their teachers and consult with them on various points of their seeking;
- (c) Rooms of collaboration, where students can work in collaboration with each other on projects, etc.;
- (d) Rooms of exhibitions, demonstrations, explorations, discoveries and inventions;
- (e) Hobby rooms, where students can work freely on various hobbies, such as aero-modeling, carpentry, fretwork, etc.;
- (f) Rooms for dancing, music, painting, dramatics, and subjects connected with programme of home-science;
- (g) Fields for agriculture, horticulture and some basic crafts like spinning and weaving, pottery, tailoring, etc.;
- (h) Lecture rooms where teachers can hold discussions with their students and where they can deliver lectures – short or long, according to the need;
- (i) Store rooms where material for exhibitions, hobbies can be kept carefully and systematically.

Individualized learning needs to be carefully blended with class work, project work and even with those activities where hundreds of students can participate together such as listening to special lectures, extension lectures, programmes of demonstrations and programmes of watching dramas, films, etc.

Innovations are needed whereby the methodology of lecturing can be combined with power-point projections and where maps, drawings, pictures and stimulating material can be presented. Innovations are also needed in regard to the framing of curricula for specific topics of interest or alternative curricula to be explored by students. Innovations are also needed in regard to tests and evaluations, so that tests are of varied nature, and for each student, tests must come in such a way that they are helpful for his or her growth. Innovative methods of testing progress in value-education also need to be designed.

Methodologies have also to be developed whereby processes of cultivation of faculties by stimulation of inherent urge to grow, unhampered by external pressures can be supplemented by programmes of training which aim at providing rapid courses. These programmes may require time-bound lessons involving strict discipline, regularity, close supervision and pursuit of vigorous and persistent exercises. For this purpose, schools should provide laboratories for each branch of knowledge and they might be organized in the following way:

(i) Information will be available here about:

- (a) What the subject in question means, and why it should be studied;

- (b) A few alternative syllabi for the subject;
- (c) An analysis of the various steps involved in learning the subject systematically and thoroughly;
- (d) An idea of the different ways of preparing for these steps.

(ii) there will also be available here:

- (a) Selected standard and reference books related to the subject;
- (b) Interesting and stimulating booklets or story books and other relevant documentation pertaining to the various topics of the subject;
- (c) Programmed books pertaining to the subject; these books often need to be supplemented by what may called “Work Sheets”, i.e. educational material so prepared that it can be studied only by the active participation and exercise of the student’s intelligent reflection and application. These work sheets should be of various types to permit alternative approaches;
- (d) A series of graded exercises which the students can handle on their own with the least help from the teacher; (there should be a facility for self-correction);
- (e) Various kinds of test papers, including what may be called ‘final test papers’; (these final test papers are those which the students under training may be required to answer in order to judge for themselves if they have achieved the necessary mastery).

(iii) The following activities will be encouraged:

- (a) Determination to work hard, work regularly, and to develop the habits of punctuality and discipline;
- (b) To fix up a short or long programme of work, and to stick to it rigorously (laxity in this may disqualify a student from the joining of the given programme of the laboratory work);
- (c) To arrange, from time to time, a short programme of lectures and seminars where a number of difficult problems will be discussed and dealt with rapidly and effectively;
- (d) To give written reports of the work done;
- (e) To pass certain tests (written, oral or practical);
- (f) Any other activities to achieve clarity, precision, efficiency, mastery.

Finally, innovations will be required with regard to education for values and for integral development of personality. There is also a need to develop new methods of teaching and learning each subject of study, and programmes of innovations should encourage the development of new methods of teaching and learning languages, mathematics, astronomy, history, geography and various sciences, technologies and various programmes of skill development.

Note: Suggestions for innovations in the Schedules I, II and III have been carefully pooled together from various sources and practical experiments which have been conducted in India and elsewhere. Further explorations and experiments will need to be conducted under the expert guidance of the Educational Commission for Innovations. New suggestions will be welcome.

Schedule I

Innovations related to Aims of Education

1. Aims of liberal education, vocational education and professional education need to be adequately addressed. For this purpose the following elements need to be harmonized:

Promotion of liberal education with its emphasis on scientific knowledge and scientific epistemology and rationality as also its emphasis on the study of art and science for promoting harmonious relationships between the individual, society and the universe at large.

2. Innovations need to be undertaken for the promotion of four higher aims of education which are related to:
 - (a) Nationalism, internationalism, peace, international understanding, universality and the ideal of universal fraternity in conjunction with the ideal of liberty and ideal of equality;
 - (b) Character development and man-making education in conjunction with integral development of

personality and a special emphasis on value-oriented education that can develop and foster values in physical education (viz., health, strength, agility, and harmonious and beautiful symmetry of the human body), vital and emotional education (viz., courage, heroism, adventure, sympathy, mutuality and compassion), rational education (viz., pursuit of clarity, complexity, subtlety, truth, synthesis and comprehensiveness and mental quietude and silence), aesthetic education (viz., pursuit of beauty, sensitiveness and love and appreciation of vision, imagination and artistic expression through various forms of expression), ethical education (viz., pursuit of goodwill, goodness, self-control and self-knowledge through self-control), and spiritual education (viz., pursuit of universality, unity, integration, oneness, and infinite reverence for the highest expressions of truth, beauty and goodness);

- (c) Learning to learn or learning to know, learning to do, learning to co-operate, and learning to be;
 - (d) Exploration of the highest aim of life, and exploration of human potentialities and exploration of the future in the context of the need of human survival and fulfillment of the highest aspirations of humanity.
3. Innovations relating to the Aims of education will underline the demands for skill-oriented education and the demands for study of man's skills related to agriculture and crafts as also skills related to machines, gadgets, techniques and technologies. These aims will be blended in a new system of education that will foster

the faculties related to hand, heart, and head.

4. Innovations relating to the Aims of education will include professional excellence in the programmes of training various branches of science, philosophy, scholarship and various specialized professions.
5. At the highest level, innovations will aim at inspiring students to discover the highest purposes of the march of human civilization and to become devoted soldiers in the tasks of the highest aims of civilization and culture, – at the national level, international level and at the level of relationship between humanity and the universe.

The Commission will endeavour to formulate ways and means by which the above aims of education are interwoven in the entire system of education.

Schedule II

Innovations related to Contents of Education

Contents of education need to be innovated, keeping in view that there is a great need to develop profounder pedagogy in learning various subjects of study.

I

A great emphasis needs to be laid on learning languages. The following innovative ideas regarding learning of languages may be recommended:

The mind should be accustomed first to notice the word thoroughly, its form, sound and sense; then to compare the form with other similar forms in the point of similarity and difference, thus forming the foundations of the grammatical sense; then to distinguish between the fine shades of sense of similar words and the formation and rhythm of different sentences, thus forming the formation of the literary and the syntactical faculties. All this should be done informally, drawing on the curiosity and interest, avoiding set teaching and memorizing of rules. The true knowledge takes its base on things, *arthas*, and only when this is mastered, knowledge proceeds to formalize its information.

There has been a great deal of discussion on the learning of mother tongue and several other languages. Innovative ideas are recommended for experimentation:

- (i) Programme for preparing a good base in regard to the mother-tongue; and after the first five years, introduction of other languages; or

- (ii) Introduction right from the beginning to 3-4 languages, which are similar to each other;

(Note: It has been contended that modern children have more than one mother-tongue, and even at home, children tend to speak in three or four languages; hence, effort should be made to teach these languages simultaneously on the basis of sound pedagogy for teaching and learning three or four languages);

- (iii) In the three-language formula, Sanskrit has come to be greatly neglected. This neglect should be remedied. An innovative idea is to introduce Sanskrit right from the beginning along with the mother-tongue and English. In the context of the globalised world, it has also been suggested that apart from English, another fourth language also should be taught right from the beginning. In this connection, one of the foreign languages could be encouraged, particularly those which since they have been recognized as international languages at the UNO: Arabic, Chinese, French, Russian and Spanish. It has also been suggested that English has a great similarity with French, and French has a great similarity with Sanskrit. Hence, the four-language formula, consisting of Sanskrit, mother-tongue, English and French, could be experimented upon, and sound pedagogy could be evolved for this purpose.

- (iv) It has often been suggested that the students of North India should study one of the languages of Southern India, and students of South India should all study Hindi which is not only a language of large parts of Northern India but also the official language of India.

Against this contention, it is argued that the study of Hindi, Sanskrit and additional Indian language is excessive and it is often recommended that it would be more useful if one of the three languages of India could be substituted by an international language, apart from English. In the innovative schools, experimental courses can be organized which would respect all these varied recommendations in order to gain experimental knowledge for further development of teaching and learning languages.

- (v) It will be seen that these experiments will take advantage of experiments which have already been made in our country or elsewhere and the results of these experiments need to be pooled together so that further experiments can be built up on the basis of successes and failures of the past experiments.

II

Since the learning of language constitutes the basic foundation of learning to learn, a great emphasis should be laid on the learning of languages, particularly between the ages of four and eleven. It seems desirable that the curriculum of the first five years of the school education should largely be devoted to the building up of a strong foundation in three or four languages. The emphasis should be on reading, writing and comprehension, and children should be able to take dictations without any mistakes in spellings. It is rightly maintained that once the foundations are well secured, much of the later programmes of learning can more easily be carried on through innovative methods of learning, such as through worksheets, programme books, reference books and various other written materials which

can be made available to the children. These new innovative methods will encourage learning different subjects at one's own pace of learning and in accordance with the interest one has for one subject or the other. Thus many programmes of education can be made optional, and this optionality would also help students to develop expertise in a given preferred subject even at an earlier stage. Even the learning of languages can have optional courses, so that those who have literary taste can have advanced or specialized courses in literature at an earlier stage, while others who wish to develop expertise in the grammatical aspects of the language, in the art of transliteration and translations and in secretarial practice (involving shorthand and stenography, and computer) can have advanced courses in these aspects at an earlier stage. An innovative school should have the possibility of various kinds of subjects with various kinds of options in learning and mastering one aspect in preference to the other.

III

An important experiment that needs to be carried out relates to the idea that education should not be limited only to the training of the head but also in the training of the hand and the heart.

Consequently, the following innovative programmes of participation by manual work can be proposed for student, right at the beginning of the primary level in connection with:

- (a) Agriculture; (b) Horticulture; (c) Handicrafts;
- (d) Recitations and dramatics; (e) Music and dance; and
- (f) Experimental science and simple techniques.

All these could be made optional in innovative experiments, and depending upon student's interests, a number of combinations can be allowed without making anything compulsory and without any formalized or strictly sequential programming of syllabus.

In any case, it would be also innovative if all the above subjects could be learnt by students without subjecting them in classroom situations. In other words, interesting programmes regarding themes of these subjects could be expounded through four alternative methods:

- (1) Demonstrations, recitation and dramatic programmes, Dance and Music programmes, Slide shows/Film shows;
- (2) Explorations resulting in discoveries;
- (3) Project work leading to Inventions; and
- (4) Correlation and project work.

Timetables should be so organized that the innovative schools can have daily some free hours where these programmes of demonstrations etc. could be held for small or large groups of students, and students can be encouraged to participate in them without being burdened by the pressures of the timetable of fixed hours and tests.

IV

Arithmetic and Mathematics:

During the first five years, the emphasis should be laid in the innovative schools on learning four operations of arithmetic: addition, subtraction, multiplication and division. Emphasis should also be laid on mental calculation, even though in our times calculators are available and students tend to ignore the value of mental calculations. As far as other aspects of

mathematics are concerned, they can be introduced marginally for average students, systematically and intensively for talented students; and they need not be insisted upon those who do not have initial interest in them, since at higher stages, more compact courses can be provided to them if they wish to pursue such scientific or technical subjects where the study of mathematics forms an essential part.

V

There is one important domain of studies which has come to be neglected under the colonial system of education, but which is extremely important for what is called man-making education or for character development or for integral development of personality. Thus subject should be developed in such a manner that emphasis falls upon the theme of self-knowledge and self-control. And the pro-gramme should be so built up that humanistic, scientific, artistic and technological subjects get interrelated and the values of physical, vital, emotional, rational, ethical, aesthetic and spiritual development get interrelated through an innovative and experimental pedagogy. And in this programme, study of stories and biographies should be the main instrument; elementary ideas pertaining to psychology, science, morality, art, spirituality, religion, and yoga should be provided at different grades to students. A great emphasis should be laid on studying definitions in regard to difficult ideas and topics. Finally, opportunity should be provided to study these subjects in Rooms of Silence and through methods of introspection, contemplation and meditation as also through voluntary activities of conduct and practice.

A Manual will be brought out in this connection in due course.

VI

One of the great deficiencies of our current system of education is the neglect of physical education. Even when some place is given to physical education, its place in the programme of studies is only marginal.

In the innovative programme of physical education, a comprehensive study and practice should be emphasized. This programme will include lessons in health-care, in diet and in methods by which students come to appreciate the value of developing proportional, symmetrical and beautiful form of the body. Emphasis should be laid on right habits which are conducive to the development of sound mind in sound and healthy, and proportional, symmetrical and beautiful body.

This programme should also include courses in gymnastics, athletics, aquatics and games as also exercises in *asanas* and *pranayama* under expert guidance. Daily one hour should be allotted for every student so that engagement with physical education and with games would ensure lifelong foundation for physical health, strength and agility. This programme should also include the study of anatomy and physiology, considering that the knowledge of human body is an essential aspect of what everyone as a human being ought to know.

This programme should also include elements of first-aid and study of those elements of allopathic, homeopathic and Ayurveda which are directly relevant to the cure of ordinary physical ailments.

Finally, this programme should also include the study of the inter-relationship between the human body and the

environment; students should also be encouraged to participate in programmes of adventure and programmes which demand high level of endurance.

It is important to correlate the programmes of physical education with the development of right attitudes that include self-control, discipline, team-work, obedience to the decision of the umpire and sporting spirit which accepts success and failure with equanimity. Man-making education, value-oriented education and physical education are intimately interrelated with each other, and a systematic twelve-year programme of physical education should be developed as a part of the programme of educational innovations.

VII

A good deal of new thought needs to be centered on the study of History of India and of the World.

The innovative lines for the contents of history and pedagogy of history that need to be developed may be mentioned as follows:

- (a) Indian history, with its uninterrupted continuity of more than five thousand years, has a rich account to be conveyed to students; this long panorama of Indian history has special dimensions which impose a larger load on Indian students and teachers than the study of other national histories imposes on their counterparts in most of the other countries. How to present this vast panorama to Indian students needs to be discussed among top historians of the country, and new guidelines need to be evolved.
- (b) Very often, the history of Northern India overshadows

the history of Southern India. How to create in the minds of students an overarching picture of the whole of India demands innovative thinking and innovative experimentation.

- (c) Study of suitable selections from the vast Indian literature will encourage appreciation of the overarching tendency towards synthesis as also appreciation of diversity in the ever-expanding largeness of comprehensiveness and unity.
- (d) For the study of World History, a subject which can be suitably named, could include the following topics: "Evolution, Humanity and the Future", "Human Unity", "National Integration", "Humanity and Environment", and "Civilization and Culture." A further suggestion in this context would be that these topics, when properly developed pedagogically, may help us in pruning the load of a number of subjects. They will help the system of education in reducing the load of books on students.

VIII

There is a strong argument in favour of introducing a subject like "Home Science" during the last three years of elementary education, considering that this subject could be very useful to all boys and girls in the development of the art of living and in management of homes which are indispensable for healthy, protective and economic framework of living. This subject may also be considered to be conducive to the simultaneous training of hand, heart and head. In determining the programme of home science at the elementary level as also at the higher levels, important elements of the Indian system of education which was related

to the study of sixty-four sciences and arts could also be used for guidance.

IX

As far as the other subjects are concerned, innovations can be suggested on the following lines:

In the current system of education, there are no options or only marginal options in the curriculum related to class I to class X. This compulsion in regard to the prescribed subjects and absence of optionals is in many cases injurious to student's natural growth on the lines which are suitable to their interests and capacities as also to their needs of specialization on one or two preferred subjects. Hence, while determining the contents of education, the following innovative ideas may be considered and different kinds of options should be offered:

It is true that education should aim at providing to students a large background. But it does not imply that the studies relevant to the large background should necessarily be compulsory or the curriculum of these subjects should uniformly be the same for all students. What is important is that students should be exposed to a number of domains which are relevant to the arts and sciences of living and to the harmonious relationships between humanity and the universe and to the general progression of humanity towards a brighter, happier and harmonious future of the world. Therefore, all the subjects which can be covered under this general formula can be sought to be given through what can be called methods of explorations and demonstrations, the aim of which would be to cultivate interest in various subjects. Contents of explorations and demonstrations

should be limited to those interesting parts which are likely to appeal to the students and which would help them to determine their preference in regard to the maximum level to which they would like to study in a systematic manner. Hence, there should be a possibility of providing freedom to students to study different subjects leading up to the preferred level. Hence, contents of courses of studies could be, in each subject of interest, at three levels: Average or minimum level; Advanced level; and Specialized level. If innovations in the courses and contents of courses are carefully worked out, the following three results are likely to follow:

- (i) Students' interests in many subjects will flower, and since nothing will be compulsory, students will study with joy and increasing pace of progression;
- (ii) Students will be able to determine how much load of studies they would like to undertake at the initial stage and subsequently at higher levels;
- (iii) Thirdly, students will be able to study faster in regard to chosen subjects, and they may even attain in one or two specialized levels, which are normally reserved for college education. If some students are interested greatly in music, they can reach a high level of proficiency even within six or seven years, if they are not burdened with studies of those subjects in regard to which they do not have the needed interest or ability.

X

In search of interdisciplinarity and redesigning overarching subject of study that would be conducive to the aims of integral development of personality as also to the

development of a tool for summing up the past and the present that would foster visions for a better future of humanity, four inter-related inquiries may be fostered through extension lectures or exhibitions as also through films and interesting books that may be prescribed for general reading:

- (i) Is there a secret which we can educationally provide to a child whereby it can grow continuously and yet remain a child, like Newton, playing with pebbles on the shores of the ocean of knowledge?
- (ii) Is there knowledge, as in the Chhandogya Upanishad, possessing which all can be known?
- (iii) Is there a subject, the study of which would necessitate synchronization of the pursuit of wisdom, heroism, harmony and skill as also synchronization of personal development with the needs of collective development of humanity?
- (iv) Is there a tool of the acceleration of the study of the lessons of history that would open the gates of the unfolding of the future?

These enquiries have become urgent because there is, today, exponential growth of information, in the expanding ocean of which the individual is likely to be drowned without discovering a remedy that lies in the integration, essentiality and unity.

XI

There is also a need to provide to the students the possibility of an adequate equipment to “read” the Book of Nature, of which Jawahar Lal Nehru spoke. For it is the ability to read

the Book of Nature that facilitates the exercise of the faculties of the total being by means of the concrete urge of experience. This was the main thesis of the original experiments of Gurudev Rabindra Nath Tagore. The inter-relationship between humanity and environment, the interrelationship between humanity and human evolution, humanity and the theme of integration – these are all inter-related themes, and they need to be encouraged.

XII

UNESCO has spoken of learning to be as also of learning to learn, learning to do and learning to co-operate. UNESCO has also spoken of life-long education, and of the need to create learning society. These are wide horizons, and our innovative efforts should be guided by the need to build roads that may open up on these wider horizons.

SCHEDULE III

Innovations related to Methods and Processes of Education

I

Child-centered education is being increasingly advocated in all programmes of innovative methods of education. That education should aim at each student's ability to exceed the present boundaries of limitations may be regarded as one of the possible formulations of child-centered education. How to materialize or actualize child-centered education is a difficult task, and it can be facilitated only if we can pool together the results of great experiments connected with basic education or *Nayi Talim*, or with Swami Vivekenanda's message of man-making education, creative education conceived and experimented upon by Gurudev Rabindranath Tagore, radical experiments in integral education conducted in the light of Sri Aurobindo, as also pioneering experiments conducted in different parts of the world under the inspiration of Rousseau, Montessori, Pestalozzi, Bertrand Russell, Paulo Freire and others.

It can be seen that the central knot of the problem that confronts child-centered education consists of the intertwining of three needs in a meaningful process of learning, – the need for self-learning, the need for different kinds and degrees of help from the teacher, and the need for a group or a collaborative study or work-experience. These needs are inter-locked, and yet the organization demanded by each is so different from the one demanded by the other, that a

series of difficulties begin to emerge as soon as we try to conceive or workout some complex and flexible organization which will harmonize all the needs.

There are areas of study where general stimulation is needed and where methods of group learning and learning through mass media may be found suitable. There are areas of study where detailed precision is necessary, and various methods of individual study or methods of individual consultation with the teachers will have to be employed. There are a number of areas of studies in regard to which regular and fixed timetables are necessary, but there are others where a free pursuit without constraints of timetables is quite legitimate. There are still further areas where project work would be useful and indispensable. Again, there are skill-oriented courses of study, where special kinds of time-tables need to be developed.

Innovative experiments are needed to develop a new framework of educational methodology and they will have to be conducted with great care and responsibility.

II

The first principle that may guide us in innovating methods and processes of education would be that each individual is, in a sense, unique, and each individual needs to develop in accordance with one's own essential nature and one's own law of rhythm of development. It is to be realized that the imperfect nature of each individual contains the materials of his or her perfection, but inchoate, distorted, misplaced, thrown together in disorder or a poor imperfect order. As Sri Aurobindo points out: "All this material has to be patiently perfected, purified, re-organised, new-moulded and

transformed, not hacked and hewn and slain or mutilated, not obliterated by simple coercion and denial.”

In the light of this, a new programme of teachers’ education will have to be developed so that teachers are able to observe the students, to appreciate their strengths, weaknesses and to extend help to each individual on the lines that are suitable to his or her pursuit of excellence and integral development. The development of innovative teachers’ programmes is an indispensable essential necessity for the development of radical reforms in education and for developing a new national system of education or a parallel system of education.

That there should be a possibility of allowing progress of students according to their individual pace of progress is an implicit condition of child-centered education. How to attain the fulfillment of this aspect of education will require radical innovations in the current systems of lectures, curriculum and examination.

III

These innovations can be facilitated, if efforts are made to harmonise two important needs of a happy processes of education that ensures progress, viz., freedom and discipline.

To harmonise freedom and discipline, the innovators need to recognize that:

- (a) Education must be a happy process, and happiness is a fruit of the inherent urge to grow, unhampered by external pressures.
- (b) In the absence of this inner will in the student, and where this inner-will is not yet disciplined, there is a

need to impose outer discipline. But this imposition should only be a temporary device and the aim should be to eliminate it gradually and totally. Even the temporary imposition of discipline must not be arbitrary and should not be offensive to the sensitiveness and sensibility of the students.

- (c) Educational organization at the lower levels should permit small classes, each consisting of not more than twenty students. The smallness of the classroom will provide to the teachers the time to observe the children under their care and to pay individual attention to those who need it. At the same time, the framework of “class-learning” fulfils children’s need to be together and to progress collectively. But the programmes such as those of horticulture, agriculture and elementary courses for skill development will require different kinds of grouping, depending upon requirements of the tasks involved in the respective courses. Finally, where the programmes of demonstration, exploration and presentation of power-point projections or films are concerned, large groupings may be both permissible and salutary.
- (d) At a level where students are able to read elementary books on various subjects, a different and innovative organization would be recommended. Individualized learning through personal study of programme books, work-sheets, text books or reference books can be encouraged. Here the freedom of the pace of progress and freedom to choose the subjects of study according to the immediate interest of the students could also be encouraged. Here the grouping of students can be more flexible, and even the time-tables could be partially or

fully eliminated. Even the necessity of pursuing a fixed syllabus could be made so flexible that different students can study the same subjects through alternative methods of learning or through different steps of sequence, which can be determined by the student's need to learn in accordance with his/her own immediate interest.

- (e) As a supplement to the framework of individualized free programme of learning, the innovative system of education will need to develop laboratories for each subject of study. These laboratories will aim at helping students in imposing discipline on themselves and developing habits of hard work, of regularity, of punctuality and self-discipline.

A manual of innovative education will be brought out which will give further guidelines, and experiments will be conducted for implementing these guidelines.

- (f) The system of examination needs to be reviewed, and the general principle of innovation will aim at creating a new system that will not impose tests but will provide tests when students express the need to be tested, and where teachers will need to suggest tests for those students who require occasions for exercise, revision, comprehension, encouragement and self-evaluation. The evaluation in tests has also to be innovative, and evaluation should promote encouragement and guidelines for further progress.
- (g) Tests for placement in the employment market should be conducted by a National Testing Service, and these tests should be open to anyone who wants to take them provided they have minimum qualifications certified

by the recognized current system of education or by the innovative system of education. These tests should be related to specific jobs or employment opportunities or certain pursuits of studies and disciplines of knowledge and skills. They will also test physical fitness, artistic and other talents, practical skills and value-orientation.

IV

- (a) The role of teachers in the innovative system of education is crucial. The teachers should have not only competence with regard to their subjects but also the necessary spirit and zeal.
- (b) If students are to be given education for integral development of personality as also for value-orientation and sound physical fitness, teachers would also need to be examples of integral personality, value-orientation and sound physical fitness. A separate manual will be brought out for proposing innovative programmes of teachers' education.
- (c) Teachers should be available to students for personal and academic guidance as also guidance required to help them in organizing their work and in learning the art of self-learning as also other ways of learning.
- (d) Teachers may, by personal contact, be expected to provide motivation to the students for various works, topics or subjects, according to the needs and circumstances.
- (e) They will also ensure that all the materials needed for studies and works are provided to the students, according to the circumstances.

- (f) Teachers would give necessary help in framing the time-tables, particularly where there will be innovative time-tables or no time-tables fixed in advance for the whole year.
- (g) Child-centered education can be nurtured only if teachers contribute to the creation of educative environment. They will be expected to provide an atmosphere of self-control and utmost inner discipline.

V

- (a) Students in the innovative system will endeavour to learn the secret of self-education and to work hard so as to remain steadily on the road to self-perfection by constant practice of self-knowledge and self-control.
- (b) To study and work widely and intensely, to study and work with joy and diligent application, to study and work to grow and to remain perpetually youthful – this will be the content of the work demanded from students.
- (c) Finally, to remain engaged in the quest of Truth, Harmony, and Liberty, and to surpass the limitations of their nature and capacities – this would be expected to be the very heart of the student's work.

Appendix

Copy
of

**THE GUJARAT EDUCATIONAL INNOVATIONS COMMISSION
BILL-2009**



सत्यमेव जयते

The Gujarat Government Gazette

EXTRAORDINARY

PUBLISHED BY AUTHORITY

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THURSDAY, FEBRUARY 12, 2009/MAGHA 23, 1930

Separate paging is given to this part in order that it may be filed as a Separate Compilation.

PART V

Bills introduced in the Gujarat Legislative Assembly

(To be translated into Gujarati and the translation to be published in the Gujarat Government Gazette. The date of publication to be reported.)

The following Bill is published with the consent of the Speaker given under the proviso to rule 127A of the Gujarat Legislative Assembly Rules :-

THE GUJARAT EDUCATIONAL INNOVATIONS COMMISSION

BILL, 2009.

GUJARAT BILL NO. 3 OF 2009.

A BILL

to promote conception, experimentation and implementation of educational innovations in the State of Gujarat and for that purpose, to establish the Gujarat Educational Innovations Commission and for the matters connected therewith and incidental thereto.

It is hereby enacted in the Sixtieth Year of the Republic of India as follows:-

CHAPTER I.

PRELIMINARY

1. (1) This Act may be called the Gujarat Educational Innovations Commission Act, 2009. Short title and commencement.

(2) This section shall come into force at once and the remaining provisions shall come into force on such date as the State Government may, by notification in the Official Gazette, appoint.

2. In this Act, unless the context otherwise requires,-

Definitions.

- (i) "Chairperson" means the Chairperson of the Commission;
- (ii) "Commission" means the Gujarat Educational Innovations Commission established under section 3;

- (iii) "Committee" means a Committee appointed under section 23;
- (iv) "Council" means a Council constituted under section 22;
- (v) "Executive Chairperson" means the Executive Chairperson of the Commission;
- (vi) "Fellow" means a person duly appointed as a fellow of the Commission under section 24;
- (vii) "Fund" means the Fund of the Commission;
- (viii) "member" means a member of the Commission;
- (ix) "regulations" means regulations made under section 33;
- (x) "rules" means rules made under section 32;
- (xi) "Vice-Chairperson" means the Vice-Chairperson of the Commission.

CHAPTER II

ESTABLISHMENT, INCORPORATION AND COMPOSITION OF GUJARAT EDUCATIONAL INNOVATIONS COMMISSION

Establishment and
Incorporation of
Commission.

3.(1) For the purpose of promoting conception, experimentation and implementation of educational innovations in the State, the State Government shall, by notification in the *Official Gazette*, establish a Commission by the name of the Gujarat Educational Innovations Commission with effect from such date as may be specified in the notification.

(2) The Commission shall be a body corporate with perpetual succession and common seal and may sue or be sued in its corporate name and shall, subject to the provisions of this Act, be competent to acquire, hold and dispose of property, both movable and immovable, and to contract and do all things necessary for the purposes of this Act.

Headquarters of
Commission.

4. The headquarters of the Commission shall be at Gandhinagar or at such other place, as the State Government may, by notification in the *Official Gazette*, specify.

Composition of
Commission.

5. (1) The Commission shall consist of the Chairperson and twelve other members as follows, namely :-

- (a) the Chief Minister of the State, *ex-officio* Chairperson;
- (b) the Minister for Education, *ex-officio* Vice-Chairperson;
- (c) the Executive Chairperson appointed or nominated under sub-section (2);
- (d) the Secretary to the Government of Gujarat, Education Department, *ex-officio* member;
- (e) the Secretary to the Government of Gujarat, Finance Department, *ex-officio* member;
- (f) the Secretary to the Government of Gujarat, Education Department (Primary Education), *ex-officio* member;
- (g) the Vice-Chancellor of a University, by rotation in the manner prescribed by rules, from amongst the Vice-Chancellors of Universities in the State established by law, *ex-officio* member;
- (h) the Chairperson of the Gujarat Secondary and Higher Secondary Education Board, *ex-officio* member;
- (i) the Director, Gujarat Council of Educational Research and Training, *ex-officio* member;

- (j) the member for innovations in science, technology and vocational courses;
- (k) the member for innovations in programmes relating to humanities, art, craft and other cultural courses and value-oriented education;
- (l) the member for innovations in pedagogical methods including those related to curriculum, evaluation and teaching-learning aids;
- (m) the member for innovations in physical education including courses related to gymnastics, aquatics, athletics, combatives, Indian and universal games, Yogic (physical and psychological) exercises, health, Scouts and Guides, National Cadet Corps and National Service Scheme programmes.

(2) The Executive Chairperson referred to in clause (c) of sub-section (1) shall be nominated by the Chairperson from a panel of three persons recommended by the Search Committee appointed under section 7:

Provided that the first Executive Chairperson shall be appointed by the State Government for a period of two years.

(3) Each member referred to in clauses (j) to (m) of sub-section (1) shall be nominated by the State Government from a panel of three persons recommended by Search Committee appointed under section 7:

Provided that the first appointment of the members referred to in this sub-section, shall be made by the Chairperson on the recommendation of the Executive Chairperson from amongst such persons as he thinks fit.

6. (1) A person to be nominated as an Executive Chairperson under sub-section (2) of section 5, shall possess the following qualifications, namely :—

**Qualifications
of Executive
Chairperson
and of certain
members.**

- (a) be a citizen of India;
- (b) be a renowned educationist, devoted to educational reforms and innovations;
- (c) have proven record of reforms and innovations;
- (d) have actual experience in experimentation and implementation of reforms and innovations;
- (e) be well versed in the educational philosophy of —
 - (i) pioneering educationists of India, and
 - (ii) leading pioneers of educational innovations in the world; and
- (f) have sound knowledge of Indian and universal culture.

(2) A person to be nominated as a member under sub-section (3) of section 5, shall possess the following qualifications, namely :—

- (a) be a citizen of India;
- (b) be a renowned educationist, devoted to educational reforms and innovations;
- (c) have proven record of reforms and innovations in the relevant fields of sciences, technology, vocational courses, humanities, arts, crafts and other cultural courses and value oriented courses, pedagogical courses and methods, physical education,

yoga, health, Scouts and Guides, National Cadet Corps and National Service Scheme programmes;

- (d) have actual experience in experimentation and implementation of reforms and innovations;
- (e) be well versed in the educational philosophy of —
 - (i) pioneering educationists of India, and
 - (ii) leading pioneers of educational innovations in the world; and
- (f) have sound knowledge of Indian and universal culture.

Search
Committee.

7.(1) For the purpose of nomination of Executive Chairperson and members under sub-sections (2) and (3) of section 5, the State Government shall appoint a Search Committee consisting of three persons who, in the opinion of the State Government, are eminent educationists having wide knowledge of educational reforms and innovations and are of high repute and integrity.

(2) The State Government shall designate one of these persons as the Chairperson of the Committee.

(3) The Search Committee shall follow such procedure as may be laid down by it.

(4) (a) A member of the Search Committee shall not be entitled to receive any compensation for his service but shall be reimbursed for the travelling and other expenses incurred by him in discharge of his duties.

(b) The expenses referred to in clause (a) shall be paid out of the Fund.

8. (1) (a) The term of office of members, other than *ex-officio* members, who are appointed on the recommendation of the Executive Chairperson, shall be two years from the date of their nomination.

(b) The term of office of the Executive Chairperson and members, other than *ex-officio* members, who are nominated on the recommendation of Search Committee, shall be five years from the date of their appointment or nomination.

(2) The term of office of an *ex-officio* member shall continue so long as he holds office by virtue of which he is such a member.

(3) (a) The terms and conditions of office of the Executive Chairperson and the members other than *ex-officio* members shall be such as may be prescribed by rules.

(b) The Executive Chairperson and the members referred to in clause (a) shall be whole time salaried persons.

(c) The salaries and other emoluments of—

(i) the Executive Chairperson shall not be less than that of the Chief Secretary to the Government of Gujarat; and

the members other than *ex-officio* members shall not be less than that of the Principal Secretary to the Government of Gujarat.

Terms and
conditions of
office of Executive
Chairperson and
of members other
than *ex-officio*
members.

9. (1) On occurrence of any vacancy in the office of the Executive Chairperson due to death, resignation or any other reason, the same shall be filled in by the Chairperson by nominating a person in the manner provided in section 5. **Filling up of vacancy.**

(2) On occurrence of any vacancy in the office of the member due to death, resignation or any other reason, the same shall be filled in by the State Government by appointing or, as the case may be, nominating a person in the manner provided in section 5.

10. A person shall be disqualified for being appointed or nominated or being an Executive Chairperson or a member of the Commission if such person,— **Disqualifications.**

- (a) is, or at any time, being adjudged insolvent;
- (b) is of unsound mind and stands so declared by the competent court;
- (c) is or has been convicted of any offence which, in the opinion of the State Government, involves moral turpitude; or
- (d) has, either directly or indirectly, any financial or other interest which is likely to affect prejudicially his functioning.

11. (1) Notwithstanding anything contained in sub-section (1) of section 8, the Chairperson or, as the case may be, the State Government may, at any time, remove the Executive Chairperson or any member from office if, in its opinion, such Executive Chairperson or a member,— **Removal and resignation of Executive Chairperson and member.**

- (a) is, or has become subject to any of the disqualifications mentioned in section 10;
- (b) has been guilty of misconduct in discharge of his duties;
- (c) has become physically or mentally incapable of discharging duties as an Executive Chairperson or member;
- (d) has so abused his position as to render his continuance in office prejudicial to the public interest; or
- (e) has, without reasonable cause, refused or failed to perform his duties for a period of not less than three months;

Provided that the Executive Chairperson or a member shall not be removed from his office unless an opportunity of being heard is given.

- (2) (a) The Executive Chairperson may, by writing under his hand addressed to the Chairperson resign his office.
- (b) Any member, who is appointed, may, by writing under his hand addressed to the Chairperson, resign his office.
- (c) Any member, who is nominated may, by writing under his hand addressed to the State Government, resign his office.

12. (1) The Commission shall meet at such time and at such place and shall, subject to sub-sections (2) and (3), observe such rules of procedure with regard to transaction of its business at the meetings as may be provided by regulations: **Meetings of Commission.**

Provided that the Commission shall meet at least once in every month.

(2) If the Chairperson, for any reason, is unable to attend any meeting, the Vice-Chairperson or in his absence, the Executive Chairperson shall preside over the meeting of the Commission.

(3) (a) All questions at a meeting of the Commission shall be decided by a majority of votes of the members present and voting, and in case when there is an equality of votes, the Chairperson or in his absence, the Vice-Chairperson or in his absence, the Executive Chairperson shall have and exercise a second or casting vote.

(b) The quorum at the meetings of the Commission shall not be less than three members.

Officers and
employees of
Commission.

13. (1) The Commission, in order to enable it to perform its functions, may —

(a) with the approval of the State Government,—

(i) appoint a Secretary, and

(ii) determine such number and category of other officers and employees, and

(b) appoint other officers and employees so determined.

(2) The manner of recruitment of, the salary and allowances payable to, and other conditions of service of the Secretary, officers and other employees, shall be such as may be determined by the Commission by regulations.

Acts and
proceedings
Presumed to be
valid.

14. (1) No act or proceeding of the Commission shall be questioned or be invalid on the ground merely of the existence of any vacancy in, or any defect in the constitution of the Commission.

(2) No act done by any person acting in good faith as an Executive Chairperson or a member shall be deemed to be invalid merely on the ground that he was disqualified to be an Executive Chairperson or a member or that there was any other defect in his appointment or nomination.

CHAPTER III

OBJECTS, FUNCTIONS AND POWERS OF COMMISSION

Objects of
Commission.

15. The objects of the Commission shall be as follows, namely :-

(a) to conceive, experiment upon and implement such innovative proposals in the field of education and learning as would transform the objectives, contents and methods of education in the light of the vision of great pioneers and educationists of India's freedom movement and of progressive educationists of the world and in light of the needs of the contemporary world in its march towards a future that would be in harmony with the ideals of liberty, equality and fraternity;

(b) to introduce and nurture innovations in the educational system so as to reflect India's perennial spiritual knowledge, robust intellectuality and creativity and the ideals of man-making education, integral development of personality, synthesis of scientific realism and artistic imagination, child-centered education, value-oriented education and skill-oriented education;

- (c) to study and derive lessons from the ongoing experiments in education that are taking place in Gujarat as also elsewhere and to foster all the valuable innovative work and promote the same for larger expansion and utilization;
- (d) to develop a system of education that reflects the highest ideals of Indian culture and imparts among students vibrant spirit of patriotism and deepest concern for the highest welfare of humanity, world peace and world unity;
- (e) to evolve, in particular, programmes and methods of studies that would instill, among students and promote in various sectors of the educational system, devotion to the duties enumerated in article 51A of the Constitution of India;
- (f) to promote, sustain and foster all innovative programmes related to the entire human life-style including earliest stages of pre-natal care and scaling up to the highest levels of excellence and leadership contributing to the growth of the individual, covering thus the entire gamut of the educational system appropriate to a knowledge society and the ideal of unending education.

16. (1) Subject to the provisions of this Act, the Commission shall conceive, experiment upon and implement such innovative proposals in the field of education and learning as would transform the objectives, contents and methods of education so as to promote the objectives of the Commission.

Functions of
Commission.

(2) In particular and without prejudice to the generality of the foregoing function, the Commission shall perform the following functions, namely:—

- (i) to promote experimentation, designing and development of the contents of learning which would inspire pupils to foster the over-arching aims of education to be achieved by the Commission;
- (ii) to promote, explore and invent new methods of pedagogy and evaluation so as to make the learning process interesting, instructive, experimental and practical;
- (iii) to experiment upon the contents and methods of learning at its own innovative institutions or innovative institutions selected by it from those existing;
- (iv) to promote and recommend, on the basis of results of its experiments carried out on its own innovative institutions or innovative institutions selected by it as are found by it to be appropriate to achieve the objectives of the Commission;
- (v) to establish institutions (including institutions for education and training of teachers) for experimentation and implementation of the educational innovations promoted, explored and invented by it and for education and training of teachers for that purpose;
- (vi) (a) to recognise as a recognised institution, any institution for experimentation and implementation of the educational innovations recommended by it and for education and training of teachers for that purpose;
(b) to withdraw recognition of an institution for breach of conditions of recognition after giving it an opportunity of being heard;

- (vii) to establish teachers' education and training institutions of innovative education and to provide for education and training of teachers for implementation of educational innovations recommended by them;
- (viii) to experiment, promote and develop the courses which facilitate students to switch over from existing system of education to the innovative system of education developed by it;
- (ix) to promote innovations in evaluations and to establish appropriate testing service;
- (x) to support innovations in schools and Universities and educational institutions of research, experimentation, training and extension services;
- (xi) to evolve programmes of innovations in regard to the aims, methods and contents of education;
- (xii) to endeavour to enrich the present system of education so as to make it more responsive to the ideals of Indian Nationalism and Internationalism;
- (xiii) to develop new system of education as supplementary or alternative to existing system of education;
- (xiv) to perform such other functions as are necessary for, and conducive to, the promotion of the objectives of the Commission.

Powers of Commission.

17. (1) The Commission shall have the power to do all such things as are necessary for, and conducive to, the efficient performance of its functions under this Act.

(2) In particular and without prejudice to the generality of the foregoing power, the Commission shall have following powers, namely:—

- (i) to carry out research in aims and contents of education and methods of pedagogy and evaluation;
- (ii) to institute fellowships and scholarships for carrying out research in aims and contents of education and methods of pedagogy and evaluation;
- (iii) to organize workshops, conferences, symposia and such other meetings to elicit ideas for educational innovations;
- (iv) to have access to all the materials, including books, manuscripts, lithographs, inscriptions on walls of ancient buildings and such other places, which are available with, or is in possession of, any authority established, by or under any law within the State and is relevant to the aims and contents of education and methods of pedagogy and evaluation;
- (v) (a) to recognize or establish and conduct innovative institutions of education with special provision for innovative aims, contents and methods of teaching, learning and evaluation;
- (b) to aim at excellence in the innovative system of education; and
- (c) to grant to the students of that system, certificates equivalent to the certificates granted by the established system of education at the appropriate level;

- (vi) to determine standards of courses proposed or supported by it under its functions related to innovations;
- (vii) to allocate and disburse grants out of the fund—
 - (a) for its innovations and for innovations in other institutions;
 - (b) to institutions and courses (including institutions and courses for teachers' education and training) recognized by it for the purpose of developing them so as to promote experimentation and implementation of educational innovations;
 - (c) for grant of fellowships and scholarships to carry out research in areas relevant to the aims and objects of the Commission;
- (viii) to appoint Secretary and other officers and employees;
- (ix) to constitute councils;
- (x) to temporarily associate persons with the Commission;
- (xi) to appoint committees for performing its functions and exercising its powers;
- (xii) to consult and obtain concurrence of the various bodies in respect of recognition and accreditation granted by the statutory boards and Universities for the purpose of arriving at equivalence of the courses, programmes and evaluation system established by it with the existing standards of education;
- (xiii) to conduct the processes of the consultation in the spirit of co-operation and flexibility and to enhance and encourage innovations by transcending the barriers of rigidity and obsolete methodologies;
- (xiv) to promote the spirit of decentralisation, freedom of initiative and strictness in regard to discipline and maintenance of high standards; and
- (xv) to collaborate, to negotiate and to arrive at agreements and arrangements with the Government, as also with schools, Universities, centres and institutions (including autonomous institutions).

CHAPTER IV FINANCE, ACCOUNTS, AUDIT AND ANNUAL REPORT OF COMMISSION

18. (1) The Commission shall have its own fund and all receipts of the Commission shall be carried thereto and all payments by the Commission shall be made therefrom.

(2) The Commission may accept grants, subventions, donations and gifts from the Central Government or the State Government or a local authority or any individual or body, whether incorporated or not, for the purposes of this Act.

(3) The Commission may spend such sums as it thinks fit for the performance of its functions under this Act and such sums shall be treated as an expenditure payable out of the fund of the Commission.

(4) All moneys belonging to the fund of the Commission shall be kept in any corresponding new Bank specified in column 2 of the First Schedule to the Banking Companies (Acquisition and Transfer of Undertakings) Act, 1970, and in column 2 of the First Schedule to the Banking Companies (Acquisition and Transfer of Undertakings) Act, 1980 and approved by the State Government for the purpose or invested in securities authorised by the Trusts Act, 1882, at the discretion of the Commission.

5 of 1970.
40 of 1980.
2 of 1882.

Budget. 19. (1) (a) The Commission shall, by such date in each year as may be prescribed by rules, submit to the State Government for approval a budget in the prescribed form for the next financial year showing the estimated receipts and expenditure and the sums which would be required from the State Government during that financial year.

(b) If any sum granted by the State Government remains wholly or partly unspent in any financial year, the unspent sum may be carried forward to the next financial year and taken into account in determining the sum to be provided by the State Government for that year.

(2) No sum shall be expended by or on behalf of the Commission unless the expenditure is covered by provision in the budget approved by the State Government.

Accounts and audit.

20. (1) The accounts of the Commission shall be prepared and maintained in such form and in such manner as may be prescribed by rules.

(2) The Commission shall cause to be prepared for each financial year an annual statement of accounts in such form as may be prescribed by rules.

1 of 1956. (3) The accounts of the Commission shall be audited by an Auditor duly qualified to act as an auditor of companies under section 226 of the Companies Act, 1956.

(4) The Auditor shall be appointed by the Commission.

(5) Every Auditor appointed to audit the accounts of the Commission under this Act shall have a right to demand the production of books of accounts, connected vouchers and other documents and papers, to inspect the offices of the Commission and to require such information from the Commission as he may think necessary for the performance of his duty as an auditor.

(6) The Auditor shall send a copy of his report together with a copy of audited accounts to the Commission which shall, as soon as may be after the receipt of the audit report, forward the same to the State Government.

(7) The State Government shall, as soon as may be after the receipt of audit report under sub-section (6), cause the same to be laid before the State Legislature.

Annual report.

21. (1) The Commission shall, during each financial year, prepare, in such form and at such time as may be prescribed by rules, an annual report giving a true and full account of its activities during the previous financial year and copies of such report shall be forwarded to the State Government.

(2) The State Government shall cause every such report to be laid before the State Legislature within a period of six months from the date of its receipt under sub-section (1).

CHAPTER V

EDUCATIONAL INNOVATIONS COUNCILS, COMMITTEES AND FELLOWS

22. (1) There shall be constituted by the Commission four Educational Innovations Councils as follows, namely :—

Constitution of Educational Innovations Councils.

- (i) a Council for innovations in programmes relating to science, technology and vocational courses;
- (ii) a Council for innovations in programmes relating to languages, humanities, value-oriented education, socially useful work, art, craft and other cultural courses such as music, drama, dance;
- (iii) a Council for innovations in pedagogical methods;
- (iv) a Council for innovations in physical education.

(2) Each Council shall consist of the Executive Chairperson who shall be the Chairperson of that Council.

(3) The member referred to in clauses (j), (k)(i) and (m) of sub-section (1) of section 5 shall respectively be the member-secretary of the Councils referred to in clauses (i), (ii), (iii) and (iv) of sub-section (1).

(4) (a) Each Council shall consist of four scholars nominated by the Commission in the manner specified in clause (b) as members thereof.

(b) The four scholars for each Council shall be selected in such manner as may be prescribed by regulations from amongst eminent educationalists in the subjects of innovations for which the Council is constituted.

(5) The Council shall meet at such time and place and shall observe such rules of procedure with regard to transaction of its business at the meetings as may be prescribed by regulations.

(6) The Council shall perform such other functions and exercise such powers as may be prescribed by regulations.

23. (1) (a) The Commission may appoint one or more committees consisting of not more than five of its members or members of a Council or both, for performing such of the functions or for exercising such of its powers as may be delegated by it.

Appointment of committees and delegation of functions and powers.

(b) The Commission shall, while appointing a committee under clause (a), designate one member of the committee as the Chairperson of the committee.

(2) The committee shall meet at such time and place, and shall observe such rules of procedure with regard to transaction of its business at the meeting as may be determined by it.

24. (1) For the purpose of carrying out research in educational innovations, there shall be a scheme of fellowships which shall consist of not more than twenty-five fellows.

Fellows.

(2) Each fellow shall be selected by a committee appointed by the Commission for that purpose, from amongst eminent educationalists.

(3) (a) Each fellow shall carry out research in such subject related to educational innovations as assigned to him by the Commission.

(b) He may, for the purpose of research in the subject assigned to him, organise consultation groups, seminars, workshops and conferences.

(c) He shall, during his term, write a thesis on the subject assigned to him.

(d) A fellow shall make himself available to the Commission for any consultation necessary in respect of the subject of research or thesis assigned to him.

(4) (a) The term of each fellow shall be one year:

Provided that where the Commission is of opinion that in order to enable the fellow to complete his research or thesis, it is necessary so to do, it may extend his term for a period not more than one year.

(b) The salary and allowances payable to a fellow shall be such as may be determined by the Commission by regulations.

CHAPTER VI MISCELLANEOUS

Temporary
associations of
persons with
Commission or
Council.

25. (1) (a) The Commission may associate with itself in such manner and for such purpose, as may be determined by the regulations, any person whose assistance or advice it may require in performance of its functions.

(b) A person associated by the Commission with it under clause (a) shall have the right to speak in or otherwise to take part in the meetings of the Commission but shall not have the right to vote thereat.

(c) The Commission may provide for payment of such allowances and expenses to a person associated with it under clause (a) as may be determined by regulations.

(2) (a) The Council may associate with itself in such manner and for such purpose, as may be determined by the regulations, any person whose assistance or advice it may require in performance of its functions.

(b) A person associated by the Council with it under clause (a) shall have the right to speak in or otherwise to take part in the meetings of the Council but shall not have the right to vote thereat.

(c) The Council may provide for payment of such allowances and expenses to a person associated with it under clause (a) as may be determined by bye-laws.

Authentication
of orders and
other
instruments.

26. (1) All orders and decisions of the Commission shall be authenticated by the signature of the Executive Chairperson or any other member authorised by the Commission in this behalf and all other instruments issued by the Commission shall be authenticated by the signature of the Secretary or any other officer of the Commission authorised by the Commission in this behalf.

(2) All decisions of a Council shall be authenticated by the signature of the Chairperson of the Council.

(3) All decisions of a Committee shall be authenticated by the signature of the Chairperson of the Committee or any other member of the Committee authorised by the Chairperson in this behalf.

27. (1) In performance of its functions under this Act, the Commission shall be bound by such directions on questions of policy as the State Government may give in writing to it from time to time:

Power of State Government to issue directions to Commission.

Provided that the Commission shall be given an opportunity to express its views before any direction is given under this sub-section.

(2) The decision of the State Government, whether a question is one of policy or not, shall be final.

28. (1) In performance of its functions under this Act, the Council shall be bound by such directions on questions of policy as the Commission may give, in writing, to it from time to time:

Power of Commission to issue directions to Councils.

Provided that the Council shall be given an opportunity to express its views before any direction is given under this sub-section.

(2) The decision of the Commission, whether a question is one of policy or not, shall be final.

29. The Executive Chairperson, member, officer and employee of the Commission shall, when acting or purporting to act in pursuance of the provisions of this Act or of any rules or regulations made thereunder, be deemed to be a public servant within the meaning of section 21 of the Indian Penal Code.

Members, officers and employees of Commission to be public servants.

45 of 1860.

30. No suit, prosecution or other legal proceeding shall lie against the Commission or any member, officer or employee of the Commission for anything which is in good faith done or intended to be done in pursuance of the provisions of this Act or any rules or regulations made thereunder.

Protection of action taken under the Act.

31. The Commission shall furnish to the State Government such returns or other information with respect to its property or activities as the State Government may, from time to time, require.

Returns and information.

32. (1) The State Government may, by notification in the *Official Gazette*, make rules for carrying out the purposes of this Act.

Power to make rules.

(2) In particular and without prejudice to the generality of the foregoing power, such rules may be made to provide for all or any of the matters expressly required or allowed by this Act to be prescribed by rules.

(3) All rules made under this section shall be laid for not less than thirty days before the State Legislature, as soon as may be, after they are made and shall be subject to rescission by the State Legislature or to such modification as the State Legislature may make during the session in which they are so laid or the session immediately following.

(4) Any rescission or modification so made by the State Legislature shall be published in the *Official Gazette* and shall thereupon take effect.

33. (1) The Commission may, with the previous approval of the State Government, by notification in the *Official Gazette*, make regulations not inconsistent with the provisions of this Act, and the rules made thereunder for enabling it to perform its functions under this Act.

Power to make regulations.

(2) In particular and without prejudice to the generality of the foregoing power, such regulations may provide for all or any of the matters expressly required or allowed by this Act to be specified by regulations.

Power of Council
to make bye-laws.

34. (1) The Council may, with the previous approval of the Commission, make bye-laws not inconsistent with this Act or with rules and regulations made thereunder for enabling it to perform its functions under this Act.

(2) In particular and without prejudice to the generality of the foregoing power, such bye-laws may provide for all or any of the matters expressly required or allowed by this Act to be specified by bye-laws.

Power to
remove
difficulties.

35. (1) If any difficulty arises in giving effect to the provisions of this Act, the State Government may, by order published in the *Official Gazette*, make such provisions not inconsistent with the provisions of this Act as appears to it to be necessary or expedient for removing the difficulty:

Provided that no such order shall be made under this section after the expiry of two years from the commencement of this Act.

(2) Every order made under this section shall be laid as soon as may be after it is made, before the State Legislature.

STATEMENT OF OBJECTS AND REASONS

The status of the educational system that is prevalent today needs to be innovated. The stake-holders in the field of education have been voicing the need for such appropriate changes that may cater to the multidimensional needs of students of modern India. Such changes are possible only if the primacy of the child and youth is kept in centre of attention of the society. Reformative ideas can be fruitful only if we keep in view the holistic nature of education and indispensable interconnections between various stages of education as also the aims, methods and contents relating to nationalism, internationalism, child-centered education, value-oriented education and skill-oriented education.

Modern developments of communication technology need to be utilized so that the processes of transmission of knowledge are enriched. Development of different methodologies need to be employed in order to ensure balanced growth of the Hand, Heart and Head, as also of man-making education and integral education. This necessitates harmonious blending of scientific, philosophical, aesthetic, ethical and spiritual pursuits. Educational researches conducted by pioneering educationists of India and the world need to be pooled together and fresh fields of research need to be developed, monitored and guided on a permanent basis.

The spirit of India's perennial spiritual knowledge, robust intellectuality and abundant creativity needs to percolate and inspire the renewal and updating of the curricula throughout our system of education. At the same time, the ideal of universe as a family contained in the Indian Aidge "Vasudhaiv Kutumbakam" has to guide the international dimensions of our education system.

The aforesaid theme could be ensured by the objectives specified in clause 15 of the Bill. For the purpose of achieving the said objectives, the Bill seeks to establish "the Gujarat Educational Innovations Commission" in the State.

The following notes on clauses explain, in brief, the important provisions of the Bill:

Clause 2.—This clause defines certain terms used in the Bill.

Clause 3.—This clause provides for establishment and incorporation of the Gujarat Education Innovations Commission.

Clause 4.—This clause provides for the headquarters of the Commission.

Clause 5.—This clause provides for composition of the Commission.

Clause 6.—This clause provides for qualifications of the Executive Chairperson and certain members.

Clause 7.—This clause provides for appointment of Search Committee.

Clause 8.—This clause provides for the terms and conditions of office of the Executive Chairperson and members other than *ex-officio* members.

Clause 9.—This clause provides for occurrence of vacancy in office of the Executive Chairperson and member and filling up of such vacancy.

Clause 10.—This clause provides for disqualifications for being appointed or being a Executive Chairperson or member of the Commission.

Clause 11.—This clause empowers the State Government to remove the Executive Chairperson and a member of the Commission for reasons stated therein and also provides for resignation of a member.

Clause 12.—This clause provides for the time, place, quorum and rules of procedure with regard to transaction of the business at the meetings of the Commission.

Clause 13.—This clause provides for the power of the Commission to appoint officers and the employees of the Commission.

Clause 15.—This clause provides for the objects of the Commission.

Clause 16.—This clause provides for the functions to be performed by the Commission.

Clause 17.—This clause provides for the powers of the Commission.

Clause 18.—This clause provides for the fund of the Commission.

Clauses 19, 20 and 21.—These clauses provide for preparation of budget of the Commission, maintenance of its accounts and audit thereof and laying of annual report before the State Legislature.

Clause 22.—This clause provides for constitution of Educational Innovations Councils.

Clause 23.—This clause provides for appointment of committees.

Clause 24.—This clause provides for appointment of fellows.

Clause 25.—This clause empowers the Commission to associate with itself persons whose assistance or advice is necessary.

Clause 27.—This clause empowers the State Government to give directions on questions of policy to the Commission in writing.

Clause 28.—This clause empowers the Commission to give directions on questions of policy to the Councils.

Clause 32.—This clause empowers the State Government to make rules for carrying on the purposes of the Act and the matter expressly required or allowed by the Act to be prescribed by rules.

Clause 33.—This clause empowers the Commission to make regulations for enabling it to perform functions under the Act.

Clause 34.—This clause empowers the Council to make bye-laws for enabling it to perform functions.

Clause 35.—This clause empowers the State Government to make order consistent with the provisions of the Act as appears to it to be necessary for removing the difficulties, arises within two years, in giving effect to the provisions of the Act.

RAMANLAL VORA,

FINANCIAL MEMORANDUM

Sub-clause (3) of clause 8, sub-clause (2) of clause 13 and sub-clause (4) of clause 24 provide for salaries and allowances of the Executive Chairperson, members other than *ex-officio* member, officers and employees and the fellows of the Commission. Moreover sub-clause (4) of clause 7 provides for reimbursement of travelling and other expenses to the members of Search Committee. Clause 25 provides for payment of allowances and expenses to the persons associated with the Commission or a Council. The aforesaid recurring expenditure is to be borne by the Commission. Clause 18 of the Bill stipulates that the fund of the Commission shall consist of all receipts of the Commission and clause 19 stipulates that the State Government shall provide Budgetary provisions to the Commission for carrying out the functions of the Commission. Initially annual grant of rupees five crores needs to be provided to the Commission. In the circumstances, if the Bill enacted and provisions are brought into force would involve recurring and non-recurring expenditure from the Consolidated Fund of the State to that extent.

RAMANLAL VORA,

MEMORANDUM REGARDING DELEGATED LEGISLATION

This Bill involves the delegation of legislative powers in the following respects:-

Clause 1.- Sub-clause (2) of this clause empowers the State Government to appoint by notification in the *Official Gazette*, the date on which the remaining provisions of the Act shall come into force.

Clause 3.- Sub-clause (1) of this clause empowers the State Government to establish by notification in the *Official Gazette*, the Gujarat Educational Innovations Commission with effect from the date as may be specified in the said notification.

Clause 4.- This clause empowers the State Government to specify by notification in the *Official Gazette*, such other place to be the headquarters of the Commission.

Clause 5.- Item (g) of sub-clause (1) of this clause empowers the State Government to prescribe by rules, the manner of appointment by rotation of the Vice-Chancellor of a University as a member of the Commission.

Clause 8.- Para (a) of sub-clause (3) of this clause empowers the State Government to prescribe by rules, the terms and conditions of office of the Executive Chairperson and the members other than *ex-officio* members of the Commission.

Clause 12.- Sub-clause (1) of this clause empowers the Commission to prescribe by regulations, the time and the place of the meetings of the Commission and the rules of procedure with regard to transaction of its business at the meetings.

Clause 13.- Sub-clause (2) of this clause empowers the Commission to determine by regulations, the manner of recruitment, salary and allowances and other conditions of service of the Secretary, officers and other employees of the Commission.

Clause 16.- Item (xiv) of sub-clause (2) of this clause empowers the Commission to prescribe by regulations, such other functions to be performed by the Commission.

Clause 19.- Para (a) of sub-clause (1) of this clause empowers the State Government to prescribe by rules, the date for submission of budget of the Commission to the State Government and the form in which the budget shall be prepared.

Clause 20.- (i) Sub-clause (1) of this clause empowers the State Government to prescribe by rules, the form and the manner in which the accounts of the Commission shall be prepared and maintained;

(ii) Sub-clause (2) empowers the State Government to prescribe by rules, the form in which the Commission shall prepare an annual statement of accounts.

Clause 21.- Sub-clause (1) of this clause empowers the State Government to prescribe by rules, the form in which and the time at which the Commission shall prepare its annual report and submit to the State Government.

Clause 22.- (i) Para (b) of sub-clause (4) of this clause empowers the Commission to prescribe by regulations, the manner in which the four scholars for each council shall be selected amongst eminent educationalists in the subject of innovations;

(ii) sub-clause (5) empowers the Commission to prescribe by regulations, the time and the place of meetings of the Council and the rules of procedure for transaction of business at its meetings;

(iii) sub-clause (6) empowers the Commission to prescribe by regulation, the other functions to be performed and other powers to be exercised by the Council.

Clause 23.- (i) Para (a) of sub-clause (1) of this clause empowers the Commission to delegate its functions to be performed and its powers to be exercised by the Committee as may be appointed by the Commission;

(ii) sub-clause (2) empowers the Committee to determine the time and the place of meeting of the Committee and the rules of procedure to be observed for transaction of business at the meeting.

Clause 24.- Para (b) of sub-clause (4) of this clause empowers the Commission to determine by regulations, the salary and allowances payable to a fellow.

Clause 25.- (i) Para (a) of sub-clause (1) of this clause empowers the Commission to determine by regulations, the manner in which and the purpose for which the Commission may associate with itself, any person whose assistance or advice is required;

(ii) para (c) of sub-clause (1) empowers the Commission to determine by regulations, the allowances and expenses payable to a person associated with it;

(iii) para (a) of sub-clause (2) empowers the Commission to determine by regulations, the manner in which and the purpose for which the Council may associate itself, any person whose assistance or advice is required;

(iv) para (c) of sub-clause (2) empowers the Council to determine by bye-laws, the allowances and expenses payable to a person associated with it.

Clause 27.- This clause empowers the State Government to issue directions to the Commission, on questions of policy as may be required in performance of its functions.

Clause 28.- This clause empowers the Commission to issue directions to the council, on questions of policy as may be required in performance of its functions.

Clause 32.- This clause empowers the State Government to make rules, by notification in the *Official Gazette*, generally for carrying out the purposes of the Act and particularly for the matters expressly required or allowed by the Act to be prescribed by rules.

Clause 33.- This clause empowers the Commission to make regulations, by notification in the *Official Gazette*, with the previous approval of the State Government, not inconsistent with the provisions of the Act and the rules made thereunder and to provide for all or any other matters expressly required or allowed by the Act to be prescribed by regulations.

Clause 34.- This clause empowers the Council to make bye-laws not inconsistent with the provisions of the Act, the rules and the regulations made thereunder, with the previous approval of the Commission, to provide for all or any of the matters expressly required or allowed by this Act to be prescribed by bye-laws.

Clause 35.- Sub-clause (1) of this clause empowers the State Government to remove difficulties, by order published in the *Official Gazette*, arising within two years from the date of commencement of the Act.

The delegation of legislative powers as aforesaid is necessary and is of a normal character.

Dated the 11th February, 2009.

RAMANLAL VORA.

By order and in the name of the Governor of Gujarat,

Gandhinagar
Dated the 12th February, 2009.

H. D. VYAS,
Secretary to the Government of Gujarat,
Legislative and Parliamentary Affairs
Department.

Authored by Kireet Joshi
on
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Episodes from Raghuvamsham

The country needs a kind of education that is not yet being conceived, although greatest pioneers of the freedom struggle have already given us the glimpses of that education.

If education has to reflect the soul of India, if India has to be protected from dogmatic or agnostic or skeptical Materialism and its barbaric invasion, – then India has to be revitalized, and refashioned within the next twenty-five years.

We have to redesign our Education System during the next ten years.

This is an almost impossible task, and yet it is not entirely impossible. There is a possibility, and how that possibility can be utilized, is the theme of this book.