

TOWARDS QUALITY EDUCATION FOR ALL

**Concept Paper on Collaboration between
Eklavya and Government of Madhya Pradesh**

**For improvement of Science Teaching in all Schools of
Madhya Pradesh**

In the context of current debate regarding Hoshangabad Science Teaching Programme and the decision to discontinue the programme in the district of Hoshangabad and elsewhere, the Government of Madhya Pradesh has expressed a desire to improve Science Teaching in all the schools of Madhya Pradesh. It has asked Eklavya to submit a proposal to mainstream the learnings from the HSTP. This concept paper is in response to this desire of the Government of Madhya Pradesh. It is being submitted with the hope that it will lead to a renewed process of State-Civil Society partnership to improve quality of education being imparted in our schools. Eklavya solicits reactions and suggestions to the ideas presented in this paper and would like other concerned people across the country (and outside too) to join and contribute to this process.

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A FRAMEWORK FOR IMPROVING SCIENCE EDUCATION IN THE STATE AND LOOKING BEYOND

- A comprehensive science education policy for all levels of schooling.
- Involvement of educationists, scientists and other professionals to evolve and implement such a policy.
- Reform and improvement of textbooks to suit an experiment-based science teaching methodology and scope for a plurality of textbooks.
- Redefinition of the objectives and methods of student evaluation, including public examinations, to suit the requirements of pedagogical methods introduced in the field.
- Provision of resources necessary for implementing activity based teaching in all government schools.
- Empowerment of the teacher as an active participant in the entire process of implementation as well as innovation.
- Consolidating administrative reforms for public participation through institutions of panchayati raj and decentralized governance to ensure proper implementation of an academically sound effort of improving quality of education.
- Provision of space for field-level experimentation and innovation as part of an R&D policy on education.
- Restoration of HSTP in the field area to facilitate the process of taking its learnings to the entire state, until such time, as the state level expansion process is complete.
- Communication of the state policy on science education to the people, and providing space in it for their hopes and aspirations without compromising the basic perspectives of science education.
- Initiation of similar processes of developing and implementing innovative teaching methodologies for other subjects as well, so as to impact the entire school system.
- Extending the process of quality improvement upto Class 10th within a larger perspective of eventually ensuring Ten Years of General Schooling of Good Quality. Involving the Board of Secondary Education on this process to ensure linkage and continuity.

1.0: INTRODUCTION

Science should be taught through experiments. It is not a subject to be learnt by rote from textbooks. Hardly anybody would disagree with this. But in our schools science teaching continues to be taught by rote from textbooks and guidebooks.

Elite schools charging very high fee advertise science labs and practical work for children even in junior classes to attract parents. Children do get to do some practical work in these schools, but the main learning on basis of which children are evaluated is still largely information recall forcing them to learn by rote.

There is an urgent need to break this hiatus. Every scientist asserts that science and experimentation go together. Any attempt to improve teaching of science in schools must at a minimum ensure that children get to do experiments. The challenge is to create opportunities for children even in ordinary rural and urban schools to learn science by doing experiments with their own hands.

But this is not all. There are stronger reasons to do something about the way science is taught in our schools.

Parents expect their child to do well in science and mathematics in the hope that s/he will one day become a doctor, an engineer or some such professional. And so often a child doing well in early classes develops an aversion for the subject, finding it very difficult to cope with the ever-increasing course content. It is common knowledge now that a student who only relies on school level teaching of science cannot hope to succeed in a variety of competitive entrance examinations s/he is required to face as gateway to a professional career. The multi crore coaching 'industry' with its high profile advertising is a testimony to this reality. How can the formal education system respond to this crisis?

The way science and other subjects are taught in schools is not in consonance with needs of higher learning or professional careers. Young men and women have to go through a process of un-learning and re-learning when they move into these spheres.

Within the Indian context, there is also the issue of large numbers of children discontinuing their studies at the middle or high school level, either as a result of economic pressures or because they find school education increasingly irrelevant and uninteresting. They enter the job market early to earn a living by taking up different vocations in the agricultural, industrial and service sectors. How far does the education they receive equip them to face up to the challenges of life?

So education should not be seen only in the context of the rat race for a seat in professional courses. It has a more universal meaning and a far more fundamental role to play in society. While education is the key to human resource development and the base for progress and development, it is also a process of learning how to live and interact with others and the world around us. In fact, education essentially is, and should be, a preparation for life. At a national level, the challenge is to create an ever learning and knowledge creating society.

In order to fulfill such diverse expectations education needs to develop in children a self confidence and capabilities of self-learning, creative outlook, comprehension and articulation, problem solving, conceptual understanding, organising and analysing information and drawing logical inferences. It must develop the ability to cooperate, live in

The question boils down to how science and other subjects are taught in schools, how are the curriculum and teaching-learning materials designed and whether these attributes are made central to our evaluation system.

At the level of elementary school it is universally accepted that science should be taught through an experiment-based method structured on the principles of 'learning by discovery', 'learning through activity' and 'learning from the environment', in contrast to the prevailing textbook centred 'learning by rote' method. There is no dissenting opinion on this score.

Every policy document since even before independence has reiterated this viewpoint. In fact what is shocking is that the school system continues to function in total contradiction to the recommendations and policy directives given by learned commissions and committees and various governments.

It is in this context that the work of Eklavya (and the wider resource network it represents) in the teaching of science, social science and primary education takes on significance. Of particular importance is the Hoshangabad Science Teaching Programme (HSTP) developed by a large body of scientists and academicians and subsequently nurtured together by Eklavya and the School Education Department of Government of Madhya Pradesh over last thirty years.

HSTP has developed and actually put into practice the pedagogical principles outlined above, thereby equipping children to become life-long learners. It has sought to bridge the gap between the national goals and policy directives on science education and the actual reality of science teaching in schools. Beginning as a small experimental model in 16 schools it has developed an effective model of progressive educational change on a macro scale within the constraints of the departmental education system.

Since the state government has expressed the desire to incorporate the learnings of HSTP in science education at the state level, we would like to suggest a process by which these learnings can be identified, the prerequisites for initiating the process and the manner in which Eklavya can contribute.

At this juncture, it needs to be pointed out that Eklavya's work in education in the past has been undertaken in government and private schools with the permission and active participation of the government, its educational bureaucracy and other institutions. So apart from the school teachers themselves, who have contributed to all phases of development of its innovative programmes, Eklavya has worked in close collaboration with the SCERT, DIETs, colleges and schools as well as the educational administration at the state, district and block level.

Despite the closure of its innovative programmes in science, social science and primary education by the government, Eklavya has expressed its willingness to again collaborate with the Education Department, with the hope that conducive conditions for doing so will be created once again. This is also a reiteration of Eklavya's commitment to continuously work for fundamental improvement of quality in education being provided by our systems of mass education.

2.0: LEARNING FROM THE HSTP EXPERIENCE

As stated earlier, HSTP has developed and put into practice an experiment-based method of teaching science that equips children to become life-long learners.

However, the greater significance of HSTP lies in the fact that it does not see classroom learning in isolation but as one segment of a larger whole. Eklavya strongly feels that in any process of educational change, it is not enough to change the textbook or the methodology of teaching but to also modify evaluation systems and introduce a series of changes, which together constitute a curriculum package. Piecemeal attempts at reform cannot succeed in face of a complex enmeshing of factors that sustain the status quo. We must simultaneously address all factors that impact classroom teaching and children's learning.

A holistic approach is, therefore, required if the desired educational objective is to be achieved. Classroom processes need to be reinforced and supported. The teaching-learning environment needs to be nurtured and widened through the development of new support structures within the school system as well as out-of-school support structures centred in the community. In addition, certain key administrative inputs need to be provided to catalyse and sustain processes of change. Real curriculum change is a slow process, which needs to be built up over a long period, not something that can be instituted and deemed completed in two or three years.

Also required is the creation of structures for peer group interaction and capability enhancement of teachers, who are the key in any learning process. They need to be involved intensively in continuous improvement of curriculum and evaluation methods. Such interaction not only helps build up the knowledge base of teachers but enhances their motivational levels giving them a sense of ownership of the reform process. It is only when teachers are empowered academically, administratively, intellectually and socially that any fundamental change in education can be contemplated.

Any effort to improve school education would need the involvement, commitment and support of the best scientists, researchers and academicians of our country. And when innovative educational programmes are sought to be introduced into the system at a macro level it can be affected only through a process of close and complementary working of the government, self motivated NGOs and other committed groups in actual field level practice. In order to sustain changes at the field level sustained input, support and nurturing are required. Official systems by themselves are unable to provide this kind of leadership and inputs.

Some of the structures and processes both within and outside the classroom to achieve these objectives are outlined below. District level systems for each of these have been worked out and implemented in Hoshangabad and Harda districts in last twenty years. Eklavya considers these as basic essentials in any curriculum package. Any work it undertakes in collaboration and on behalf of the government would be structured around the introduction of these elements into the system.

2.1: Within the classroom/school system

Learning methodology and innovative text-cum-workbook: In teaching of science, HSTP has evolved an experiment-based methodology wherein children perform experiments in groups and are guided by leading questions to an understanding of scientific concepts. The process involves observation, tabulation and analysis of data, discussion and other aspects that broadly replicate the method of science within the

This approach has led to development of 'Bal Vaigyanik' series of books for classes 6th to 8th. These books have been developed through an extensive process of trialling in the field and incorporating feedback received from the teachers. The discovery approach, in which children are led through a series of connected questions to think and discover their own answers and arrive at their conclusions and understanding, has been evolved. It has been proven as a practically feasible method of learning in actual school situations.

The point of departure for HSTP is activity based science teaching. But this has given rise to the criticism that HSTP has ignored the product aspects of science while focusing on the process aspect and hence the books are poorer in content. Another criticism is of linkage with the content and methodology of science teaching in higher classes. These issues have been examined in depth and the criticisms addressed to a large extent in the latest revision of the science workbooks.

The linkage problem will also need to be addressed at the high school level where the present science curriculum is too heavily loaded in content with learning by rote and information recall predominating. At a conceptual level, the transition from qualitative to quantitative concepts and analysis is too abrupt in the present state level curriculum. The HSTP curriculum has already tried to address this problem by introducing children to measurements and quantitative analysis by Class 8th itself.

However, an expert committee needs to look into these aspects to formulate a comprehensive science education policy from primary to secondary classes and place the middle school curriculum within that context.

Classroom organisation: The environment within the classroom is important in a teaching-learning situation. Eklavya has sought to alter the architecture of the classroom from rows of children listening to a lecture to groups of children interacting, with the teacher as guide and philosopher. Such an arrangement encourages discussion and questioning among children and redefines the concept of the teacher as the fount of all knowledge. It also ensures that children have greater scope to be involved in classroom processes taking an active part in learning and constructing knowledge.

A recurrent theme in the polemic against HSTP has been that while it may be the ideal method of teaching science, it is increasingly becoming impracticable in the actual classroom situation because of the high student-teacher ratio and the insufficient amount of time available for teaching in the classroom. Critics suggest it may be better to teach through purely text-based methods.

It is necessary for an expert committee to go into actual classroom situations to assess if the popular perception of reduced time available for teaching is valid and whether the strategies the teachers have devised to handle the situation in HSTP schools are an improvement over the strategies evolved in non-HSTP areas. Since the time spent by teachers in working with children is crucial for improving education, the steps taken by the government to ensure greater student-teacher interaction time should also be reviewed.

Reforming Evaluation Method: The progress of students exposed to a teaching-learning methodology that encourages performing experiments, situation-specific problem-solving, measurement, analytical and data-handling skills etc cannot be evaluated by an examination system that tests for memory recall. The current evaluation system encourages rote learning with no scope for encouraging development of other skills and attributes in children.

HSTP has developed an alternative open book evaluation system that tests for the learning objectives and skills emphasised in its teaching methodology. It has also devised

has been time tested at the Class 8th level Board exam across the entire district and is well codified in form of an examination manual.

But there are some even more basic differences in the evaluation system. Since children are asked open-ended questions, it is not advisable to set pre-determined marks and valuation standards because the range and variety of children's responses cannot be anticipated. So the relative weightage of marks for individual questions is determined through a random sampling of answer scripts and a survey and statistical analysis of the spread of various kinds of answers. This ensures that the allocation of marks can actually represent the variation among students and differentiate both accurately and sensitively between different levels of performances.

The impact of such an evaluation on actual activity and teaching in classroom cannot be underestimated and is crucial for a fundamental change.

Sawaliram: If the objective of an education process is to encourage children to ask questions, there also needs to be a system to answer such questions in the event of the teacher being unable to do so. HSTP has established such a system through a character called Sawaliram who answers any type of question a student may raise, whether it be from his or her immediate environment or elsewhere. Such a provision for out-of-class interaction must be an essential feature of any education programme promoting inquisitiveness.

2.2: Teacher Training/Orientation and Motivation

The teacher is an important factor in good education. A motivated and knowledgeable teacher can perform wonders even with limited resources. Motivation depends on various factors like the status of the teaching profession, the knowledge base of the teacher and the respect (s)he has in the community as well as the administrative system. It is important to break the academic and geographical isolation of teachers particularly in far-flung schools.

Eklavya has developed structures for continuous training and motivation of teachers, expanding their knowledge base and grasp of the subjects they teach. A crucial input is provided by promoting peer group interaction in an organised way wherein teachers get opportunities to discuss and share their classroom experiences in a free exchange of ideas. Some of these structures are discussed below.

Teacher Training and Orientation: A large majority of teachers teaching science at the elementary level have themselves never studied beyond that stage. Even those who have studied science at higher levels have had no training in experimentation and relating conceptual learning to it. Often they are unaware of their own environment and the rich source of learning that it can be. Lack of even basic mathematical skills is another severe limitation. Used to lecturing methods, they lack the confidence to adopt discussion based pedagogy that encourages children to ask questions.

An initiating training-cum-reorientation programme is an essential prerequisite for improving their science teaching capabilities. A programme of three-week duration has been designed for each of the three middle classes. It consists of doing all the Bal Vaigyanik experiments, field trips and other activities and discussing and practicing various pedagogic, philosophical and functional aspects of the programme.

Each training class is assigned to a resource team of 4 to 6 persons to assist all teachers to perform experiments with their own hands and ensure expert level input in the subject. The resource group follows a very rigorous schedule of preparation, feedback collection

Continuing support: Apart from the three-week **orientation training** given to all teachers for each class, providing continuous academic and administrative support to teachers in the field has been recognized as an essential input for effective teaching. Organised peer interaction has proved to be an effective way of motivating teachers and ensuring coordinated functioning at a block level. Teachers meet every month at the block level (Sangam Kendra) to review their work in the classroom and exchange ideas and experiences on classroom transactions. These **monthly meetings** are also used as a forum for continuous training, filling in gaps in understanding and broadening the knowledge base of teachers through inputs from resource persons on related topics.

In addition, teachers are periodically visited at their schools by resource persons, generally a teacher from the higher secondary school or even an identified motivated middle school teacher, and sometimes a resource person from Eklavya. Such **follow-up** visits help the teacher to cope with immediate classroom problems and assuage any feelings of isolation.

Monthly meetings and follow-up visits also provide crucial and continuous feedback for academic and administrative improvements in the programme.

2.3 Mobilisation of a Resource Group

HSTP has built up a dedicated resource group over the years. Its quality, motivation and commitment have been crucial to the activities of the programme. The resource group comprises trained and motivated middle and secondary school teachers and faculty members from teacher training institutions, supported by a committed group of scientists, academicians and research students from leading centres of research and education of the country.

The resource group has been actively involved in developing teaching-learning materials, training teachers and resource persons, conducting follow-ups and monthly meetings, preparing examination papers and evaluation guidelines, answering the questions children ask Sawaliram and conducting trainings, exposure workshops etc in other states.

In fact, efforts like HSTP would not have been possible without the academic inputs provided by strongly motivated scientists, academicians and teachers. It is unlikely that any innovative initiative at the state level would be able to take off and sustain itself without the backing and involvement of such a wider support network.

2.4: Administrative support systems

The educational administration can make or break an innovative programme because of its hold over both human and material resources in education. If it is receptive to new ideas, it can facilitate their rapid implementation in the field. Eklavya has sought to foster the evolution of new structures within the educational administration to facilitate the organisational needs of an experiment-based teaching methodology and more efficient functioning of the school system.

Administrative structures: These structures have been created at three levels – the state level, district headquarters and block level. At the state level there is a coordination committee (Sanchalan Samiti), which sees to the academic and administrative coordination of the programme under the chairmanship of the Commissioner of Public Instruction. At the district headquarters, a science cell (Vigyan Ikai) has been set up to see to the material and administrative needs of experiment-based teaching. These would include facilitating teacher training programmes, monthly meetings, annual evaluations etc and streamlining the flow of kit materials to schools. At the block level, the school complex model has been effectively implemented.

School Complex: This concept, enunciated by the Kothari Commission, seeks to establish organic linkages between higher secondary and high schools and their feeder middle and primary schools in a pyramidal structure. The HSTP programme has introduced this concept in the form of Sangam Kendras in which the Principal of the higher secondary school where the kendra is located is responsible for its functioning. A full-time kendra in-charge is appointed who is usually a teacher trained in the experiment-based methodology of HSTP.

The sangam kendra, which covers both government and private schools in its fold, is the focal point for academic, training and other activities of the entire cluster. It is responsible for processes like organising training, monthly meetings of teachers, follow-up visits to schools by resource teachers, conducting examinations etc.

The Sangam Kendra framework was evolved two decades ago and may need a re-look in light of reorganisation of the district level education administration. It would need to address the issue of including private schools also in the effort to improve quality of education. The recent reorganisation of the elementary education administration from state down to the block and cluster level and promulgation of the Jan Shiksha Adhiniyam also need to be taken into account in designing these support structures.

For the last several years, the need has been felt for reworking this management structure to incorporate Panchayati Raj institutions, which now have considerable control over the functioning of government schools. Such involvement would have to be worked out through actual field practice.

Provision for continuous orientation of persons in the administrative structures has been felt very strongly to make these decentralised structures function efficiently and effectively.

2.5: Kit organisation

To enable children to perform experiments in schools, it is essential to provide them with the necessary kit materials. HSTP has designed an activity kit, which enables children to perform all the experiments in the Bal Vaigyanik books. Initially the kit for an average school requires a one-time investment of Rs 5,000 at current prices with some additional provision for appropriate storage facility.

Some recurring expenditure is required for consumables and breakable like chemicals used in experiments. To overcome the bottleneck of annual recurring expenditure for kit replenishment and breakage the nominal science fee of fifty paise per month taken from each child is utilised. This provision prevails in all schools of the state.

As a complementary step Eklavya has developed a system for ensuring kit material availability, which has been built into the existing retail trading infrastructure of the local area. Thus, the science teacher and the school headmaster are entrusted with the responsibility of ensuring availability of kit for doing experiments for children.

2.6: Out-of-school activities

A child who reads a book, or writes a poem, or paints a picture, or builds a model, or acts in a play, or participates in a discussion is generally more receptive to learning new things. Establishing a climate within a village or community that fosters creative activity, encourages discussion, questioning and interaction is of utmost importance in improving teaching and learning within the classroom.

Eklavya encourages motivated youth to run libraries and organise children's activity

the opportunity to develop their creative faculties through contributions. It also organises bal melas, where children can nurture their creative faculties and social skills.

An organised effort is required to enhance opportunities of learning, creative activity and social interaction for children outside the formal classroom. We feel that such an effort must compliment innovation in classroom teaching.

3.0: PROCESSES FOR IMPROVING SCIENCE EDUCATION IN MADHYA PRADESH

Eklavya has been pursuing its objective of developing methods to mainstream successful innovations in school education consistently. In case of science teaching at middle school, the HSTP was further seeded in school complexes in 14 districts of Indore, Ujjain and Hoshangabad divisions in the eighties under the aegis of the SCERT. Subsequently in the nineties three major initiatives at improving science education across the entire state were taken. They were:

- In 1990, through submission of an initiating proposal by Eklavya to State and Central Governments. This was followed by commissioning of an Expert evaluation by MHRD, Govt. of India. The Evaluation Committee strongly recommended that the state level expansion be carried out. Govt. of India offered to provide two-thirds of financial resources required. The initiative was held back due to change of government at the state level.
- In 1994, by constitution of a committee under Chairmanship of Director, SCERT to prepare a detailed proposal and budget for state level implementation of HSTP. The Committee submitted its proposal that was reviewed in a meeting of senior officials of the State Government. The proposal could not move forward because of lack of financial resources.
- In 1997, the SCERT constituted a State Level Science Advisory Committee under the Chairmanship of Principal Secretary, School Education. The Committee drew up a detailed plan of action in its first meeting and three subcommittees were constituted with specific briefs. The action plan could not be pursued further after change of Director, SCERT.

In light of these experiences of false starts, the present initiative needs to be developed with the following essential elements:

3.1: Commitment of active political support at the highest level.

Such active political support is required to ensure the following:

- Adequate mobilisation of financial and human resource to ensure effective implementation.
- Ensure continuity of commitment and active implementation even if changes in official leadership at the highest level take place.
- Mobilise widespread support and participation of political leadership, local administration and media for successful implementation of the programme.
- Provide the strength and backup to withstand attacks from various conservative and status quoist elements that can be anticipated in any effort to improve quality of education

3.2: Setting up an expert steering committee under SABE

As an NGO working with public funds, Eklavya is not in a position to either determine government policy or decide on what programme it should undertake at the state level. It can only make suggestions and it is for the government to decide on the nature of the collaborative partnership.

However, Eklavya does feel that it would be appropriate for the government to set up an expert body of educationists, scientists and other professionals to advise it on science education, particularly in relation to undertaking a statewide initiative to improve the quality of science teaching in schools.

Improving science education is a complex process. It needs to bring together expertise from a number of fields and go more deeply into various aspects related to the philosophy of science, education, child development etc. Professional norms of discussion and debate need to be laid down in order to arrive at a method of teaching science through experiments, which is acceptable to all sections of the community.

What is required is a common set of objectives along with the freedom to explore different approaches. It is an erroneous view of equity and bad pedagogic practice that everyone should transact exactly the same content. A progressive state would seek an institutional mechanism that can help make the break from rote-learning which is responsible for the guidebook culture that is all pervasive and leads to a tremendous waste of intellectual energy. It is necessary to find institutional ways through which these objectives acquire a central position. Only then can the current rot be checked and this broader vision should be provided by the state.

In a welcome decision the state government has already set up a State Advisory Board for Education (SABE) to advise it on educational policy. The committee has some of the leading academics of the country, though unfortunately the scientific community is somewhat underrepresented. SABE could set up such an expert committee under its overall coordination to assist the state in matters of science education.

This expert committee would set out the objectives of science education at various levels, the processes by which they can be realised and the systems to monitor the progress of any programmes undertaken and review their outcomes. It would assess the relevance and utility of various innovative models of science teaching in the country, including HSTP.

Insofar as HSTP is concerned, the programme provides a macro-level working model of science education in ordinary government and private schools. The committee could conduct a detailed review of the programme and submit its recommendations to the state government. Such a review could help in the process of both formulating a policy and an action plan for the future. Eklavya has already submitted to the state government its assessment of the learnings of the HSTP, which may be implemented across the state.

The action plan could outline ways in which government agencies can collaborate with civil society institutions, institutions of higher learning and subject and education experts. It would provide the platform from which high quality human resource input for the statewide effort could be mobilised to ensure its academic quality and sustain its enthusiasm.

Involvement of leading scientists and educationists will on the one hand ensure a high quality programme of improving science teaching, on the other hand it will promote a high level of debate and action on issues concerning education. In fact, it will prevent trivialising of these debates by vested interests and ensure a high degree of public faith and credibility in the entire programme.

3.3: Establishing HSTP in its field area as a live model of progressive change and for developing State-level Resource Group

It is, indeed, ironic that a programme that is considered worthy of being made the anchor for a state level science education improvement process has been closed down without sufficient grounds in its 'home districts'. Whatever may have been the rationale behind the decision, if the state government is serious about using the HSTP experience for a macro-level process it needs to reexamine its decision and take corrective action. The reinstatement of HSTP and Eklavya's Social Science programme in the field have to contribute substantially to state level processes.

The field area has been a live laboratory where methods, systems and innovations have been evolved, improved and evaluated on a continuing basis in preparation for implementing them over the entire state. Such an area is not only necessary, but also a must to generate the large resource group that can provide intensive inputs in the state level processes. A successive working model on a macro scale is the strongest basis to build confidence in the larger system that progressive changes are possible in our school education system. This is essentially needed in the prevailing atmosphere of self-defeating cynicism.

The confidence and morale of the resource teachers associated with HSTP has already been seriously undermined by the closure of the programme and the signals being sent across the state that the government favours rote learning in science. In recent teacher orientation courses conducted by SCERT, teachers were told that they are not expected to perform experiments suggested in SCERT science textbooks and they only need to be explained. Experiments were not even demonstrated during the training. This contradicts the government's pronouncements about taking the learnings of HSTP across the state.

The district administration in Hoshangabad has been adopting aggressively hostile postures towards these sincere and hard-working teachers. This is most unfortunate and needs to be urgently checked.

3.4: Preparing for linkage with high school - involving Board of Secondary Education

Establishing a strong linkage with the high school curriculum and inducing progressive changes there as well should be one of the important goals of this effort. This can be ensured only by active involvement of the Board of Secondary Education. It should also be the objective that the public examination at the end of high school should be so reformed that the standard of a high school certificate from Madhya Pradesh would compare with the best across the country.

It is suggested that efforts to reform high school teaching of science should begin in right earnest as part of this programme so that when the first batch of children studying under the reformed curriculum pass out of Class 8th they do not have to face any problems of transition to high school.

4.0: EKLAVYA'S ROLE IN THE PROCESS

There can be no denying the fact that the manner in which Eklavya's school programmes were closed down and the subsequent statements on the legitimacy of intervention by civil

Eklavya group in the possibility of a dignified partnership with the state education department.

It may also be possible that the state government may have its own problems with Eklavya and its role as an NGO, which may have precipitated the current impasse in what has, till now, been a fruitful relationship. As such it would be necessary to go into the areas of discomfort and discuss them frankly and, if possible, work out an understanding consistent with the broad principles of liberal education and democratic norms.

Eklavya is wary of decisions taken without adopting proper academic procedures, as was the case with HSTP, the Social Science programme and the Seekhna Sikhana package. It is necessary to ensure that decision-making processes are conducted in an open, transparent and participative manner.

Eklavya is of the opinion that civil society organisations with a commitment to secular, scientific and democratic values should be allowed space to collaborate with government agencies in the Herculean task of improving the state of education in Madhya Pradesh. Eklavya does not and cannot claim any exclusive treatment in this regard. Thus it is necessary to establish norms and procedures for collaboration with such agencies.

Once the framework for the collaboration with civil society institutions is clarified Eklavya can fruitfully assist the state government in formulating action plans and executing them.

Eklavya is an institution of modest resources but actually is part of a very large fraternity of concerned individuals and groups and has been coordinating HSTP as a trustee. The human resource, expertise and goodwill that this fraternity can generate are not inconsiderable. This is an asset the state government can call upon.

4.1: Textbooks and evaluation

The government has publicly announced that there will be only one textbook and evaluation system for the entire state. Eklavya feels this is a retrogressive step that militates against generating innovative inputs for improving education. It is widely accepted that a forward-looking policy would incorporate plurality of approaches in textbook production. This is, in fact, the prevailing position, with different schools opting for the MP Board course, CBSE course, ICSE course, National Open School course, MP Open School course etc, all of which have different textbooks. Even within some of these courses, there is the option for schools to use textbooks brought out by different publishers.

So Eklavya sees an inherent contradiction in the government asking the group to help in textbook preparation. It goes against the very spirit of HSTP in contextualising education in child's environment. Moreover, government bodies like SCERT do have certain limitations imposed by their structure and work style. These limitations could well become the limitations of any innovative programme undertaken, constricting the scope for improvement. It is for this reason why it is important to have a body of experts to oversee the work at the state level, as mentioned earlier.

Also, as pointed out earlier, there is a distinct gap between a rote-based methodology and an experiment-based one and the kind of evaluation system needed for each. Identifying some common ground for an action programme does pose problems. Since Eklavya's expertise and basic competencies lie in the area of experiment-based pedagogy in science and inculcating a questioning and analytical approach to learning in all subjects, it cannot introduce such inputs without also modifying the evaluation system.

presently being conducted by DIETs. Is it not possible for SCERT to introduce more innovative evaluation systems through this rather than enforce the present inefficient system? Even under CBSE, the first common exam that children face is at the end of Class 10th. The schools develop their own evaluation systems in lower classes. One definitely cannot claim that CBSE schools are worse off because of this freedom.

Keeping these debates in the background, Eklavya can actively collaborate with SCERT under the guidance of the SABE or similar Committee of Experts to help develop appropriate teaching-learning materials, pedagogic processes and evaluation systems.

4.2 Field level testing of materials/programmes

The principle behind intervention in schools, which has been reiterated in major efforts like Lok Jumbish, DPEP etc, is that it is not enough to prepare good books. In fact there can be no good books without an in-depth understanding of curriculum. In order to make a meaningful curriculum we need to go into wider questions. Questions that also include the nature of the subject and its underlying conceptual structure, apart from the purpose and sociological context of education.

Such questions can be examined in depth only if there is an experimental field level programme under way. Eklavya is of the firm opinion that any state level venture cannot be sustained in the long run if it is not constantly fed by new ideas generated from such experimental field level efforts. There is need for such lab areas as an R&D policy which SCERT should also use to field-test its academic inputs.

This space is not a concession given to Eklavya but a way of continuous improvement which involves all civil society groups. It is the space needed for groups like Eklavya to continue their current work and also venture into new areas such as mathematics, languages and all subjects upto high school in future for the continuous improvement of education.

4.3 Teacher motivation and development

Eklavya feels that its greatest strength lies in motivating teachers to adopt experiment-based teaching methodologies in science and a more analytical approach to the teaching of other subjects. It cannot train teachers in rote learning methodologies. So any training would implicitly mean the adoption of such teaching methodologies and their evaluation strategies at the state level.

It is worth noting that in HSTP a majority of teachers teaching science at the elementary level had never themselves studied science beyond that stage. Even those who had studied science had no exposure to experimentation or relating conceptual learning to it. They lacked the confidence and understanding to see their own environment as a rich source of learning. Many were weak in basic mathematical skills. They also lacked the confidence to adopt a discussion-based pedagogy that encouraged children to ask questions.

The model of training evolved in HSTP was able to address all these issues. Teachers perform all the experiments and other activities the children need to do. They also discuss social, philosophical, pedagogic and subject-related issues, broadening their understanding of education and pedagogy.

Many of these middle school teachers are now part of the core HSTP resource group and have conducted science teacher trainings across the country. Eklavya would like to continue to expand this group to create a rich human resource base for science education

4.4 Development and mobilisation of a resource group

Over the thirty years of HSTP, a large number of people with varied backgrounds, vision and perspective, but with high levels of motivation and expectations, have contributed in a number of ways to the programme.

In addition, as stated above, many middle school teachers have also been playing the role of resource persons in the programme. This has had two-fold benefits. It has reinforced their motivation to perform as good teachers and leaders of a process of educational change. Secondly these middle school teachers have effectively demonstrated to their colleagues the feasibility of actually implementing innovations in a classroom situation.

Eklavya would like to continue this process of identifying and involving persons from schools, colleges, research establishments and professional institutions with potential to contribute to innovative programmes in different parts of the state. It would also continue to identify and orient new resource teachers, organising special concept enrichment trainings and participation in curriculum development, teacher training and evaluation. This group of resource persons and teachers will be a crucial asset in a state-level implementation of innovative programmes.

4.5 Other areas for cooperation

Eklavya would like to collaborate in the area of creating a resource base for conducting out-of-school activities around schools and within the community across the state. Eklavya has considerable expertise in this area and could train resource persons for carrying out such programmes. The resource persons could, in turn, undertake out-of-school activities in their areas of work and action.

Finally, Eklavya would again like to underline the fact that it looks at curriculum as a total package involving, apart from improving textbooks and learning methodologies, systems of peer group interaction for teachers, provision of resource materials like science kits and providing crucial administrative inputs. So all these structures like monthly meetings, follow-up, school clusters, academic cells etc should be incorporated in any state level programme for improvement of school education, not just in science but in all subjects.

Eklavya feels these are the essential contours of any state level programme for improving education in schools. Such an understanding is based on its field level experience over the past 20 years. So Eklavya awaits a government initiative to constitute an expert body to work out a state level plan of action based on the principles enunciated in the National Education Policy and put into practice by HSTP. It also awaits a blueprint of action at the state level worked out by this expert panel.

In Conclusion,

Eklavya would like to emphatically restate that the experience with HSTP and other curriculum reform programmes has demonstrated the advantages of a pluralistic strategy in educational change. The space allowed by the Madhya Pradesh government to develop an alternate conception of teaching-learning methodologies has yielded rich dividends and these learnings should not be lost. The synergy that has emerged between the government and an NGO has led to a quality and scale of innovations that would not have been possible by either one working alone. The modalities of this collaboration need to be

Improve all aspects of the quality of education and ensure the excellence of all so that recognized and measurable learning outcomes are achieved by all, especially in literacy, numeracy and essential life skills. In 2000, 189 countries and their partners adopted the two EFA goals that align with Millennium Development Goals (MDGs) 2 and 3, which refer to universal primary education and gender parity. The World Bank recognizes that achieving these goals requires supporting the full EFA commitment. Why is EFA important? Although there has been steady progress towards achieving many EFA goals, m Quality education for all. From a girl's point of view. Quality and access in education. Basic education is the right of every girl and boy. UNICEF is especially concerned about including children who are excluded from learning: those who are out of school, and those who are excluded while in school. Providing all children with access to schooling was the primary focus of the early drive towards Education For All (EFA) following the World Conference on Education For All in Jomtien, Thailand, in 1990. Progress has been made towards this goal. Primary-school enrolments have increased in all regi Keywords: quality of education for all, international and comparative education, learning outcomes, EFA. Introduction.Â Grisay, 1995; UNESCO, 2000, 2007). Efforts towards Quality Education for All: Global Efforts to Improve Learning. Outcomes. At the World Conference for Education for All (WCEA), Dakar, March 2000, a significant importance was given to measuring improvement in learning outcomes. Besides.