



JOURNAL OF INDIAN EDUCATION

Volume XXXV

Number 3

November 2009

CONTENTS

Editor's Note	3
Education as Empowerment — Twins in Search of an Alternative Education SWAPAN MAJUMDAR	5
Pedagogy in Patha-Bhavana School of Tagore's Santiniketan SARMILA BANERJEE	18
Educational Philosophies of <i>Advaita-Vedanta</i> and Islam SHAMIM AHMAD	27
An Introduction to Cognitive Constructivism in Education RAJESH KUMAR and V.K. GUPTA	39
Role of Kasturba Gandhi Balika Vidyalaya in the Educational Development of Scheduled Tribe Girls in Jharkhand PUSHPA MANDAL	46
Relevance of Pre-service Elementary Teacher Education Curriculum to Real Classroom Situation ANITA RASTOGI and CHANCHAL GOEL	60
Basic Facilities in Secondary Level Schools in Rural India VIRENDRA PRATAP SINGH and SANDEEP KUMAR SHARMA	72
How Informed Citizens, Prospective Teachers Are? An Exploratory Study of Political Interest and Political Efficacy ALOK GARDIA and SOMU SINGH	90

Status of Para-teachers in India S. ESWARAN and AJIT SINGH	102
Environmental Education at School Level : Issues at Glance KAVITA SHARMA	111
Engineering in Mathematics Education: Mathematical Engineering PRAVEEN KUMAR CHAURASIA	120
Motivation and Stress Management Essential Skills for Parents, Teachers and Students JASIM AHMAD	133

EDITOR'S NOTE

Development of human beings has been passing through different phases since time immemorial. In almost all the phases, many philosophers, educationists, scholars, scientists, and leaders made their contribution on varied aspects viz., educational, psychological, scientific, economic and political, and lead the processes ahead. Contributions of a few of them e.g., Einstein, Gandhi, Tagore, Piaget, Vygotsky, etc. were proved transformative to be carried out from phases to phases and generation to generation as benchmark. In many respects, their ideas stand uncontested and valid even today. This is why, often authors, writers and researchers attracted by their writings and practices and philosophies try to explore these ideas with respect to contemporary perspectives in different fields.

With regard to education contemporary writings based on earlier works need to find place in different forums to provide educational practitioners food for thinking and guidance for implementing emerging ideas. One such forum i.e., Journal of Indian Education (JIE) contributes towards this objective. The present issue of JIE includes written text of a Memorial Lecture 'Education as Empowerment : Twins in Search of an Alternative Education' bestowed by Swapan Majumdar highlighting the educational thoughts/philosophy of Rabindranath Tagore and also an article written by Sharmila Banerjee 'Pedagogy in Patha-Bhavana School of Tagore's Santiniketan' which provides readers reading material containing glimpses of the realisation of Tagore's philosophy into practice. Further in this series 'Educational Philosophies of Advaita -Vedanta and Islam' is an article by Shamim Ahmad where he differentiates on the ideological perspective of two philosophies. He draws the relevance of Advaita-Vedanta and Islam with the present world educational system. His analysis shows that both the philosophies are still relevant for the educational curriculum which carries the basic subjects of spiritual and temporal faculties of learning. Learning is a process of the construction of knowledge. Rajesh Kumar and V.K. Gupta in their article 'An introduction to Cognitive Constructivism in Education' explain that human beings construct their own knowledge through experience and also by connecting new ideas to the existing ideas on the basis of materials presented to them. These ideas, unless, find place in schools or in some spaces of learning stay as ideas without any recognition in the practical world. In this context, articles : 'Role of Kasturba Gandhi Balika Vidyalaya in the Educational Development of Scheduled Tribe Girls in Jharkhand' by Pushpa Mandal, 'Relevance of Pre-Service Elementary Teacher Education Curriculum to Real Classroom Situation' by Anita Rastogi and Chanchal Goel and 'Basic Facilities in Secondary Level Schools in Rural India' by Virendra Pratap Singh

and Sandeep Kumar Sharma highlight school scenarios in our country. When the issue of schools arises, one can not leave teachers behind. What do we expect from teachers and what we are providing them in the name of facilities and training. An article : 'How Informed Citizens, Prospective Teachers Are? An Exploratory Study of Political Interest and Political Efficacy' by Alok Gardia and Somu Singh reflects the role of teachers in promoting educational programmes and making children aware of political participation. An article entitled 'Status of Para-teachers in India' by S.Eswaran and Ajit Singh brings out how Para-teachers are being exploited in many states.

This issue also includes writings on various other concerns such as Environment, Mathematics Education, etc. In this sequence articles such as 'Environmental Education at School Level : Issues at Glance' by Kavita Sharma; 'Engineering in Mathematics Education : Mathematical Engineering' by Praveen Kumar Chaurasia and 'Motivation and Stress Management : Essential Skill for Parents, Teachers and Students' by Jasim Ahmad contribute in broadening the gamut of education.

It is our sincere hope that this issue will help the readers to reflect on various issues of educational development in our country.

Academic Editor
JIE

Education as Empowerment

Twins in Search of an Alternative Education*

SWAPAN MAJUMDAR

Abstract

Of the multi-faceted activities of Rabindranath Tagore, education had been the corner-stone. He was not only a visionary and philosopher of education, he was at the same time an ardent activist for the cause of education. He stands unique also as a writer on education which extends from creative to critical constructive writings on the subject. On the other hand, he even sacrificed personal family property to give his ideas a tangible form. Tagore's first effort in setting up a family school started at Sialadh in 1898. In the same year, in keeping with the stipulation of the Trust Deed willed by his father Devendranath Tagore. Tagore's nephew Balendranath started a Brahmacharyasrama in Santiniketan. It was a very short-lived enterprise. In 1901, Tagore moved to Santiniketan and revived the school which passing through a process of reforms was made into an eastern university, Visva-Bharati, in 1921. In 1924, he added a new school, Siksha-Satra for the deprived section at Sriniketan, among the cluster of faculties. Tagore was constantly engaged in experimenting and improving the pedagogic quality and system practised in his institution. His other worry was to collect adequate finance to sustain it. Many fellow travellers throughout the world came forward to help him in different ways. It was truly an essay negotiating with western modernism on the one hand, and colonial education system, on the other. For Tagore, education did not consist in achievements alone. His ideal was to help create a complete man by making open choices and opportunities before the students and thereby letting them develop their latent talents. Generation of Atmasakti or self-reliance for him was not conditioned by anti-colonial excitement, it was the result of all out self-disciplining in life. Through Visva-Bharati Tagore was also trying to negotiate the East-West relations seen from the vantage of the East. That too was aimed at a reconciliation of the best features of the two cultures. In the process Tagore had also been trying to create alternative spaces for cultures of creativity – the ultimate ideal of education for Tagore. The second half of the paper deals with the theme of empowerment as approached by two great minds of our times – Tagore and Gandhi. Their approach routes may be apparently different, they might also have differences in opinions and positions, yet the innermost truth they had been seeking in their educational enterprises underlines the amity of visions.

*Text reproduced from NCERT Memorial Lecture Series published by NCERT on a lecture delivered as Rabindranath Tagore Second Memorial Lecture by Swapan Majumdar, Director, Culture and Cultural Relations and Adhyaksha, Rabindra Bhavan, Vishva Bharti, at RIE Bhopal on 14 January, 2009.

Education as Empowerment : Twins in Search of an Alternative Education

We all know, Rabindranath Tagore (1861-1941) was essentially a poet. We usually think, poets are driven more by emotion rather than by reason and consequently are weak in essaying discourses. Tagore was an exception on all counts to this common belief. His writings on education: its pedagogic philosophy and applied apparatus in particular have been providing food for thought no less for the present day education scientists. For example, no poet of Tagore's eminence from Aeschylus to Eliot has ever cared to compile primers for the tiny taught – and that too in three languages, namely, Bengali, English and Sanskrit as Tagore did. It proves beyond doubt his anxieties and concerns for the cause of education. It may seem ironic that the fled-school student had set up a school itself that organically grew into an international university. Yet it also explains the compulsions he realised for changing – or at least make an effort to do so – the then prevalent colonial education system in our country.

The long line of illustrious thinkers on education that includes Rousseau, Pestalozzi, Froebel, Montessori, Grundtvig and Dewey in the West and Vidyasagar in his own country tried in their own inimitable ways to modify the system, but none like Tagore's endeavoured to question the basic premises that lie at the back of the system itself. He wrote number of articles on education almost spanning his whole creative life besides publishing several

books, addresses, monographs, pamphlets and very many letters containing gems of thoughts on the subject. Even he ventured to write a scathing sarcastic story on the theme of tyranny of forced education, a classic of its kind, "The Parrot's Tale". And above all, by the time he barely crossed two scores of his life, he was busy setting up a residential school at then a remote suburb away from Calcutta. For the sake of nurturing a faith, he spared not selling his wife's ornaments and attending to all sorts of teething problems of the new found institution.

The Poet's father, Devendranath Tagore stipulated in the Trust Deed of the Santiniketan *Asrama* to set up a school on the traditional lines of *Gurukul Parampara*. Accordingly, Balendranath, Tagore's nephew, brought into existence the *Brahmachary Asrama*, the precursor of *Patha-Bhavana*, the school modelled after the *Tapovana* style of education of ancient India. After a brief life, it was reborn as it were in 1901 under Tagore's supervision. The revival of the ideals of the Brahminic past was soon to be found too restrictive for his own ideas. The rechristened *Brahma Vidyalaya* also could not satisfy him until he arrived at a non-connotative name, that is, the Santiniketan School. In between, the primary and the secondary sections were also called the *Purva-Vibhaga* and the *Uttara-Vibhagas* respectively. When other *Bhavanas* came up within the fold of Vishva-Bharati (1921), it was given a faculty status and was renamed as *Patha-Bhavana*. Vishva-Bharati which Tagore himself dubbed as an 'Eastern University', chose 'Yatra Visvam

Bhavatyeka Nidam ('Where the world meets in one nest') as the institution's motto. Twenty-three years' experience in school education made him realised the urgent need for pragmatic education and its dissemination among the rural masses and led Tagore once again to venture in establishing a new school, with a new vision altogether, one for the destitute and the weaker sections of the society, *Siksha-Satra* in 1924.

Tagore's initiation in educational institution building had begun in 1898 at Sialdah. It was not indeed a school in the formal sense but a coaching home organised for the tuition of his son and a few more from among the poor subjects' children of the estate. The mission continued till his death. In spite of some common and constant features running through the phases, the venue shifted along with the group of teachers to Santiniketan in 1901. Though there had been no temporal discontinuity, a close observer may not fail to notice the inherent changes it had passed through under the leadership of Brahmabandhab Upadhyaya to Manoranjan Bandyopadhyaya, down to Ramananda Chattopadhyaya. The name of the school also changed from *Brahmacary asrama* or *Brahmavidyalaya* to *Purva-Vibhaga* and *Uttara-Vibhaga* and thereto *Patha-Bhavana*, suggesting significant shifts in ideology as well : the quasi-religious overtones being removed gradually.

Tagore was simultaneously praised and derided for the absence of a well-defined structural system in his institution. It was in fact a cantilever pattern of education comprising the School i.e., the *Sisu-Vibhaga* and the then *Vidya-Bhavana* or the Research

Division. Now, if we recollect the very lay out of the school compound during Tagore's lifetime, we would find the research library located at the very centre with two sprawling playgrounds adjacent to it. Classes were held all around in the open air. The seats of teachers were fixed and students were given five minutes time to move from one class to another, thus having an opportunity to break the monotony of continuous classes as well as to refresh their spirit. The idea was that the little boys would observe the senior scholars spending the whole day at the library, which will be an implicit instance to emulate for them. Nor would the scholars feel distracted by the fun and frolics of the boys; their juvenile enthusiasm would help them relate their study to life and reality – an existing reality Tagore would never lose sight of, particularly in the rural Bengal suburb. He knew full well the uneven standard of the students. As a possible remedy he improvised a system of mobility among them depending on their merit in a given subject. One who was advanced than the rest was allowed to attend the higher class; another who was just the reverse was asked to take lessons in the lower class and make up the deficiency. Apart from the regular curricular study, it was obligatory for every student to take lessons in fine arts – be that music or painting or craft. The range of options in elective subjects had no compartmentalisation: arts and science subjects could be opted for simultaneously. It was designed to bring out the latent potentiality of a student as also to let him find for himself the area of his interest. It resulted not only in a reduction in

number of total drop-outs on the one hand, on the other it also served as a process of talent search. The most important feature, however, was his decision to do away with the practice of examinations that bred according to him an undesirable tension arising out of a break neck competition.

The basic philosophy underlying the removal of exams was to create a space for the students which would be free from torture of a suffocating process of accumulation and reproduction. Study for the students, he thought, must be as much an enjoyment as the games are for them. As and when they would learn how to derive pleasure from studies or practices of any other arts up to their taste, their learning would turn creative. For Tagore, creativity did not mean earning an authority in any field of expression. It was essentially an awakening of the mind – an awakening not merely of the hunger for knowledge, but of an awareness of belonging to a social setting – micro and macro at the same time. Even in a text like *Santiniketan*, which many educated readers think to be a compilation of religious sermons, we come across an article entitled *Jagaran* (Awakening). This awareness of mind can neither be attained nor created by gathering or disseminating information. It can grow only through human contacts. The realisation of the ideal of education rests on this spirit of togetherness, another recurrent theme in the cosmology of Tagorean thought.

If we analyse the motivations that may have driven an artist in life to become an activist in education, we shall find that something more profound than mere

philanthropy, a vision or a philosophy must have been working deep in him. That the classes were – or even are still – held at these schools in the open air in a mango orchard or a Bakula grove in the natural ambience are, but their external features though learning in the nearest proximity of Nature must have had something far more deeply interfused in such a notion which may seem anachronistic to many today. That it is not so, may be exemplified if we try to relive the ideas and ideals of its founder closely.

In his celebrated essay *A Poet's School*, Tagore tells us : “The highest education is that which does not merely give us information but makes our life in harmony with all existence.” The pronouncement needs elaboration. ‘Information’ is most certainly a part of education. But it remains to be collected rather than to be created. Collection is not a faculty of the mind or intellection; it is a matter of habit, of cramming, of collation, of putting things together. The so-called good students excel in the exams because they have a knack for gathering information and of course displaying it coherently. This tendency leads to showmanship and competitiveness. And competitiveness when turns out to be intense and aggressive, takes recourse to make everything subservient to itself, ceasing it's bond with all extant living organisms around oneself. The fundamental object of education then, according to Tagore, would be to substitute competition by collaboration between Man and Man, Man and Nature, between Man and every other object, animate or inanimate. This generates Love which lies at the root of all

creativity. Education for Tagore hones this culture of creativity.

Such realisation often tends to be abstract. Tagore would also have run the risk of being too elusive and non-ethereal had he not tried to translate his ideas in concrete terms and to give these a form and shape through the discipline and process of practical training. He was explicit in incorporating these aims and objects while formulating the Memorandum for Vishva-Bharati:

To study the Mind of Man in its realisation of different aspects of truth from diverse points of view. To bring into more intimate relation with one another, through patient study and research, the different cultures of the East on the basis of their underlying unity. To seek to realise in common fellowship of study the meeting of the East and the West, and thus ultimately to strengthen the fundamental conditions of world peace.

The idea and institution of Vishva-Bharati, what Tagore considered the greatest achievement of his life, was virtually a culmination of that ideal imprinted on his mind at an early age. He obtained a first-hand experience of western culture since the late 70s of the 19th century and studied the western society not as an outsider tourist would do, but as an insider to whom both the naïveté and the complexities, merits and demerits of it were far more exposed. He was certainly averse to the modish modernism of western poetry of the early 20th century, but the quintessence of modernity never disenchanting him. And for Tagore modernity did not consist in the deployment of a mere device or style, a technology of language and form, on the contrary it guaranteed a freedom of

choice in determining one's course of action or shaping a view of life. Political freedom was not unimportant to him, but freedom of mind was of much greater import. Assertion of one's individual identity was a matter of value for him, but of greater consequence was how that individuality was to be related to the society at large. The most seminal premise of this idea was contained in his concept of *Atmasakti* formulated as early as 1901. I consider this concept as the driving force of all that Tagore did in his efforts to translate such ideas into practice.

The other point that deserves to be remembered is that, it will be nothing short of foolishness on our part to believe that Tagore's thoughts were like a monolith ever since he engaged himself in the process of opinion formation. Quite late in life – in a different context though – he frankly admitted, 'I have changed my opinion; I have been changing them constantly.' This, I don't think had been a Voltairesque ploy for Tagore to find an excuse to escape. In fact, in him was a restless mind that yearned for ceaseless move towards perfection. He never took his views as impeccable, nor did he think himself free from errors or even misjudgments. And that is why he kept on correcting, honing and developing them again and again. I would even venture to say that the ideal too was not immutable for him; an effort to reformulate them from time to time had caused many misgivings among his associates, yet he never gave up. His entire life is an explicit example of such protean changes on both the planes.

Tagore's experiments in education may perhaps be best analysed in respect

of his other constructive and creative activities – not counting the literary for the time being – namely in experiments with rural reconstruction, creating environmental awareness or innovative festivities – some apparently diverse and disjointed projects – projects, of course, not in the management sense of the term – under the megalith of education. And all these were experimented in the hothouses of Santiniketan and Sriniketan. Tagore's search for alternative models of cultures of creativity obviously began with his literary and musical compositions. To begin with, it was primarily a matter of establishing one's distinctive features of identity clearly distinguishable from his predecessors and contemporaries. Gradually, it turned out to be his sole self: spontaneous and uncontrived.

The idea of institution-building was but an extension of the same urge. The urge, again, was compounded by the necessities arising out of the compulsions of the colonial situation. Tagore's early association with the Congress ended rather prematurely with the exposure to the Moderate and the Extremist divisions within the party. Curzon's partition of Bengal got him intensely involved in the anti-partition movement only to be disillusioned by the militancy of bomb, burning and boycott in the aftermath. These also made him feel the exigency with greater gravity to build up an alternative model of education distinct from that of the colonisers almost as a means to qualify to stand in equal terms with them. Of course Tagore had started his Santiniketan experiment before all these events, but I believe, the impact of these

experiences completely changed his approach to education. The gradual shift from a mode of education modelled after the Upanishadic Brahmoism to a secular, self-reliant and at the same time artistic and comprehensive education was conditioned simultaneously by the forces of this nation-wide crisis and his very personal shattering experiences of a series of bereavements that stood him as a solitary man left to justify his ways and means only to himself.

For Tagore, the ostensible alternative to the western education was not to jump for indigenous education as a matter of reaction. He was certainly not a nationalist of that breed. All he wanted was to pay back the masters in their own coins. But he would hasten to insist that it must reach the masses and find the roots in our own soil. In 'Saphalatar Sadupay' [*Atmasakti; Bangadarsan*, Caitra 1311BS (March-April 1905)] his call was simple though covered with a somewhat sentimental metaphor:

Hopeless laments won't do. We shall have to strive for what we ourselves can do. ... Necessity impels us to take upon ourselves the responsibilities of our education. I know well that it will not be a stone replica of the huge Oxbridge model to be enshrined in our educational establishments; their infrastructure will be befitting that of the poor. ... But the living Goddess Sarasvati seated on the hundred-petal lotus of our reverence would dispense like a Mother the nectar to the children unlike the wealth-proud merchant-wife giving away alms to the beggars from the high balcony.

It would inevitably be an alternative education for the poor yet without any trace of poverty in thought. Such

alternative education would obviously desist from creating a class of subalterns in the colonisers' employment hierarchy, but would do all it could to generate an ambience of righteousness which would ensure the structuring of a civil society and that again as an alternative to the nation/state build up after the western pattern and superimposed on us.

Tagore was not satisfied with creating alternative spaces theoretically, he immediately wanted to have these implemented in practice. It was out of this anxiety that Tagore after running the school at Santiniketan for more than two decades decided to set up another school at Sriniketan at a distance of only three kilometers. Could the distance be the only reason for such a move? Perhaps not. He knew from experience that the middle or upper middle class boarder students of Santiniketan almost refused to mix up with the day scholars from Sriniketan, Surul and the adjoining villages. This was symptomatic of temperamental differences between the city and the village, affluence and poverty. Tagore wanted his second school to cater to the needs of the surrounding villages. They were trained in vocational arts: from carpentry to weaving, husbandry to harvesting. The community now comprised of students drawn virtually from the same class – both economically and socially. They were asked to extend camp services to the villages on school holidays, instruct the villagers in the rudiments of health and hygiene and the like. The Sriniketan experiment so impressed even the senior members of the community that Tagore introduced without late an adult education programme where the school

students served as prime reciters or *Sardar Paduyas*. The success was greeted with the enthusiasm of the rural people. It also helped them initially to earn a few rupees during the harvesting and later on by selling their artifacts at the *Silpa Mela* also introduced by Tagore and exclusively organised by the Sriniketan students. It developed an organisational skill among them as well. Sriniketan realised what Tagore envisaged as complete education. But the apathy of the Vishva-Bharati authorities relegated the set up to the second fiddle soon after Tagore's death.

A cry has been raised in our country: We shall have nothing to do with Western Science – it is Satanic. This we, of Sriniketan, must refuse to say. Because its power is killing us, we shall not say that we prefer powerlessness. We must know that power in order to combat power, power is needed; without destruction cannot be staved off, but will come all the faster. Truth kills us only when we refuse to accept it.

Tagore might not have accepted the superficialities of modernity, but would have never denied the truth of modernity.

As late in his life as in 1925, Tagore was almost obsessed with the idea of Mass Education. Men and women of the country who were deprived of basic education in their childhood either for economic reasons or for belonging to remote areas were planned to be brought under an education scheme under the aegis of the New Education Fellowship. As early as in 1917, Tagore contemplated of bringing out a series of books on basic areas of knowledge with a target readership of non-Matriculantes of those

days. The idea of educational extension programme also inspired him to set up the *Lokasiksha Samsad* which was designed to expand the network of literacy and basic education in the country. The *Samsad* in this way simultaneously became a council for adult education, mass education as well as distance education through correspondence. In order to make the project complete in all respects, he also initiated a series of books called *Lokasiksha Granthamala* and contributed the first book on physical sciences to it. The basic intention of the scheme was to reach out to would be students in their own home environment rather than forcing them to reach the school. Introduction of exam and study centres throughout the country was also one of the innovative aspects of the system conducted by Vishva-Bharati.

For Tagore, education was most certainly a means of empowerment and yet much more. His vision of a complete man was not a philosophical idea. For him, completeness consists in one's readiness to face any situation with equal poise and weather it. The modern man in the western sense might have some faculties more developed than the others, thus causing an imbalance that could seriously upset him and his actions. Modernity is circumscribed in terms of temporal frames. Tagore's alternatives are not chained in time and space. In spite of a more logically plausible formulation of a principle of education conducive to the growth of a mind that would make a man complete, many of Tagore's experiments have failed – or better be said, we have made

him fail – the full potentials of his ideas still remain to be fully explored.

Tagore, like his other illustrious fellow traveler Gandhi, may have failed apparently – or better to say, as we have spared no pains to make them fail – the potentials of their experiments are still not exhausted. The unfinished results are no testimony to the fallibility of their visions.

II

Both are called *Asramas*. As originally conceived, one was planned to be a meeting place of religious believers of different orders, the other to be a centre of social service among the untouchables living around the place. Today they represent the rudiments of basic education as envisioned by two almost contemporary personalities living in the same country. In one, the library holds the centre stage, in the other, it is the prayer square. The playground is laid out adjacent to the library in one, in the other it is beyond the cluster of huts composing the establishment. Apparently both look like traditional *Ashramas*, but certainly are not rehashes of the heritage *Vidyapeeths*. Both the institutions include a combination of the *Kala-Bhavana* and the *Sangit-Bhavana*. I am talking about Tagore's Santiniketan and Gandhi's Sevagram.

Tagore's Santiniketan school was started in 1901, Gandhi's Sevagram in 1937. But their preparations started earlier – Tagore's at Sialdah and Gandhi's in South Africa. It must be accepted without much hair-splitting that the two savants' primary reputation did not rest on their philosophies of education, nor did they ever strive for formulating a

regular philosophy either. It grew from their hands on enterprises in devising a workable model for them. Yet, if both the poet and the activist shared one common anxiety, it was most certainly for education. Living as they did in a colonial situation, the alterity of their ideologies are often attributed to their anti-colonialist, hence anti-British, attitude. It is commonly believed that these tenets are etched out to experiment on possible alternatives to the model provided by western education system. I believe, both were in search of a new dispensation in education – not buckled by the state aid, neither western in toto, nor oriental in and out. It aimed at a happy and simultaneously judicious combination of the two. The most interesting points, however, were the proportion between the western and oriental elements in their thoughts and actions on the one hand and the third factor of their original contribution on the other. But such bare simplifications blur the complexities as well as the originality of their positions.

Let us accept at the outset that both Tagore and Gandhi were exposed to the best possible western education available at their times. Because of his family background, Tagore perhaps had a deeper involvement with the heritage of our culture than Gandhi's. At the same time, we must not lose sight of the fact that Gandhi perhaps had a greater understanding of the ground realities prevailing in the country at that point of time. No poet of Tagore's eminence from Aeschylus to Eliot ever cared to compile primers for the tiny taughts – and that too in three languages, namely, Bengali, English and Sanskrit; Tagore did. No activist of Gandhi's standing from Plato

to Russell would ever care to set up basic primary schools as Gandhi did. The school system in the scheme of both the thinkers, again, was erected on a theistic foundation. Both had in their own individualistic ways drawn up schemes for extension of its field of operation among the rural and down-trodden people as well.

Education – the highest and the noblest form of it – did not consist in the scale of preferences of Tagore and Gandhi in acquisition of information alone; according to them, it would succeed only if it could make our life harmonies with all possible situations of life, with multiform of meaningful living. Most certainly would they admit information as an essential part of education, but would hasten to add that it is more a faculty of collection rather than of creation. Any act of gathering – be that material or abstract – does not enrich the power of the mind, it is more a matter of habit. It brings about a proclivity towards competitiveness, putting up a resistance, as it were, against the fundamental object of education, that is, cooperation between man and man, man and nature, between man and every other phenomenal object, animate or inanimate. Such a realisation often tends to be abstract and elusive. Almost parallel, they had involved the students in what we call today social welfare schemes. The concept of *Palli Punargathana* or Rural Reconstruction in Tagore and *Gramodyoga* in Gandhi were based by and large on similar social values. But the volunteer corps or *Vrati Balakas* in the former system were also required to document the basic statistics on the living conditions of the people in

the adjoining villages they covered. Tagore and Gandhi did not stop short at theoretical formulations; they did their best in translating their ideas into practice – refining their positions time and again, but never completely drifting away from the quintessence of their respective visions of ideal education.

Knowledge, says the proverb, is power. Education – a Tagore or a Gandhi would argue – does of course ultimately lead to knowledge and hence to power. But the attainment of the ultimate is not obtainable for all. There are at least three stages to reach this state: *Patha* (Learning), *Siksha* (Education) and finally *Vidya* (Knowledge). *Bodhi* (Wisdom) or *Jnana* (Enlightenment) is beyond yet dependent on these previous stages. Tagore and Gandhi would rather think of empowerment through education in two different ways. For Tagore, true empowerment lies in the awakening of the self, aware enough to decide for oneself the oughts of life: the duty, the desirability and the good. We shall have to accept that Tagore does not seem to be concerned with the basic problems of opportunity to education. A confirmed pragmatist as he was, for Gandhi creating a truly congenial ambience of and an open avenue to education was the foremost of the problems to negotiate with.

Historical evidences force us to admit that Tagore's and Gandhi's intended students come from two different cultural and economic strata altogether. This also partly explains the debate between them regarding the need and justification for introducing possibilities to earn during the students' years of learning. Gandhi's *Nai Taalim* created a space for earning

by simple investment of one's labour and thus decide for one's possible future means of livelihood. He knew full well that academic merit could not be expected among the majority of the students. As a result of his experiences at Santiniketan, Tagore also perhaps realised the necessity of imparting honest labour but not linked with direct personal earning. Interestingly enough, *Seva* or cashless service to the less fortunate people around occupies perhaps more an important place in Tagore's second school, *Siksha Satra* at Sriniketan than in his first, *Patha-Bhavana* at Santiniketan, and in Gandhi's second school at Sevagram than in his first at Sabarmati.

Tagore and Gandhi believed in disciplining the mind. But the concept of discipline had different connotations for them. In Tagore's *Patha-Bhavana* and *Siksha Satra* and Gandhi's Sabarmati and Sevagram, the entire responsibility of self-governance was delegated to the students. They were to devise means to deal with any situation that would come their way – be that misbehaviour of a fellow student or the maintenance of health and hygiene in the *Asrama* and its vicinity. Teachers were around watching the team work, but would hardly interfere ever. Yet, if asked to underline the difference between Tagore's and Gandhi's conditions of nursing the budding minds of the students, I would dare say, it was the emphasis on the values of Beauty and Duty, respectively, in their order of priorities. I would never say so in absolute terms but relatively. In other words, aesthetics and ethics divided their domains. But are the two really so

opposed to each other? Ethics when properly practiced in life develops on aesthetics of its own, similarly as aesthetics when freed from individualistic confines, produces almost an ethical value. When Tagore wanted to have his students trained in such a way that one could appreciate the play of colours and notes of music and distinguish between one medium scale and another, the aesthetics of appreciation would structure an autonomous hierarchy of its preferences and values which, in turn, would be no less ethical. Gandhi would advise his disciples to turn their back to every evil of life, to abstain from saying, seeing or hearing anything ill. If honestly pursued, it would produce equilibrium of aesthetic enjoyment of comparable distributions of emotions. Gandhi, on the other hand, would endeavour to elevate human beings from their baser instincts. Tagore, on the other hand, was firm in his belief that the number of the good always exceeds that of the bad. These not only indicate differences in their visions of life, but also reflect their very own individual personality types that complement one another mutually and vindicate two processes of edification of the mind.

Empowerment, according to Tagore and Gandhi, then would follow two different tracks: one through humane and aesthetic empathy and the other through economic and moral rearmament. For Tagore, the end of education consists of a wholesome blossoming of the faculties of the mind and the body through learning, work and service, in obtaining what he terms as *Atmasakti*, in achieving 'a rhythm of life'. It is evident that such an optimum

student will participate in the greater arena of social life, both as a role model as well as through one's services to the cause of the society. In other words, Tagore emphasises on the inner or the mental empowerment of the student. Not that in Gandhi's scheme of things the mental aspects are relegated, but for him the social responsibility of the student, one's readiness to sacrifice self-interest for the sake of it along with the achieving economic self-sustenance perhaps are of greater consequence.

Students' activities in their schools included indeterminable creative energy, quantifiable productive pursuits as well as social service and self-governance programmes. Learning and work, they would argue, must go hand in hand and necessarily be related to the prevailing social system. It is often glibly remarked about Tagore that a poet as he had been, he lacked pragmatic attitude to various systems of life, education in particular. In repudiation of such a position, I take the liberty to quote a letter of Tagore written to his friend C.F. Andrews from Agra as early as 05 December 1914:

I was surprised to read in the Modern Review that our Bolpur boys are going without their sugar and ghee in order to open a relief fund. Do you think this is right? In the first place, it is an imitation of your English school-boys and not their original idea. In the second place, so long as the boys live in our institution they are not free to give up any portion of their diet which is absolutely necessary for their health. For any English boy, who takes meat and an amount of fat with it, giving up sugar is not injurious. But for our boys in Santiniketan, who can get milk only in small quantities, and whose vegetable

meals contain very little fat ingredients, it is mischievous.

Our boys have no right to choose this form of sacrifice – just as they are not free to give up buying books for their studies. The best form of sacrifice for them would be to do some hard work in order to earn money; let them take up menial work in our school – wash dishes, draw water, dig wells, fill up the tank which is a menace to their health, to the building work. This would be good in both ways. What is more, it would be a real test of their sincerity. Let the boys think out for themselves what particular works they are willing to take up without trying to imitate others.

A number points ensue from the observation: (1) any sort of imitation is to be discarded; (2) sacrifice is good but not at the cost of health; (3) to serve, earn and sacrifice the earning for a greater cause; and (4) let the students devise their own original modes of social service.

Gandhi, on the other hand, is primarily concerned with the *Buniyadi* that is primary and secondary school education, collegiate or higher education does not come within his immediate purview. His basic inclination is most certainly directed towards vocational education that begins with the *Takli* and leads upto the gospel of the *Charkha*. Obviously, the community of students, Gandhi had in mind, turned up from a section economically weaker than the one Tagore was to deal with in his school. The former idea of *Svaavalamban* (Self-reliance) was basically a means to meet the expenses of education of oneself, at the same time he did not consider imparting a kind of training in doing one's own work as much as of nurturing the softer sentiments through music

lessons in any way an inferior assignment.

*Main is baat ke liye bahut hi utsuk hoon ki dastkari ke jariye vidyarthi jo kuch paidaa kare, uski kimat se sikshaa ka kharch nikal aaye, kyonki mujhe yakin hai ki des ke kadoron bacchon ko taalim dene ke liye sivaa iske dusraa koi raasta nahin hai! ... Aap log yah bhi samajh lijiye ki prathmik sikshaa ki is yojanaa me saphaai, aarogya aur aahaarsastra ke prarambhik siddhaanton ka samaaves bhi ho jaata hai! Isme bacchon ki vah sikshaa bhi saamil samjhiye, jise ve apnaa kaam khud karnaa sikhenge aur ghar par apne maan-baap ke kaam me bhi madad pahunchaayenge! Main chahungaa ki unke liye sangit ke saath lazimi taur par aisi kavaayad aur kasrat bagairaa ka intzaam ho jaaye, isse unki tandurusti sudhre aur jivan taalbaddh vane! ("Gandhiji kaa udghaatan bhashan", Devi Prasaad sa., *Nai Taalim ka Sandes, Nai Dilli: Gandhi Shanti Pratishthan*, 1988, p 9).*

Jivan taalbaddh in Gandhi is unmistakably reminiscent of Tagore's *Jivaner Chanda* (p.133). It is also interesting to note that Sabarmati School did not have Sangit or *Kala-Bhavanas*, but in Sevagram these two were integral parts of the *Asrama*. Gandhi was most certainly inspired by Tagore's *Vishva-Bharati*.

Following this inaugural declaration of Gandhi's Wardha Scheme or the *Nai Taalim* (*Harijan*, 11 December 1937), Tagore admitting of Gandhi's practical genius quipped in strongest words:

As the scheme stands on paper, it seems to assume that material utility, rather than development of personality, is the end of education in the true sense

of the word may be still available for a chosen few who can afford to pay for it, the utmost the masses can have is to be trained to view the world they live in the perspective of the particular craft they are to employ for their livelihood. It is true that as things are, even that is much more than what the masses are actually getting but it is nevertheless unfortunate that even in our ideal scheme, education should be doled out in insufficient rations to the poor, while the feast remains reserved for the poor. I cannot congratulate a society or a nation that calmly excludes play from the curriculum of the majority of its children's education and gives in its stead a vested interest to the teachers in the market value of the pupil's labour.

(*Vishva-Bharati News*, Jan. 1938, p 53. New Education Fellowship Conference, Calcutta).

If Tagore assessed the question of students' earning depriving themselves of their play-time and paying for the teachers' honoraria, Gandhi was no less pained to negotiate the wider question of being declassified as an upshot of academic attainment.

Tagore, we shall have to admit, was not much aware of such evil some social backlash of a philanthropic enterprise!

Tagore and Gandhi even though did not demean learning English as it was the language of the colonisers thruster down our throat, both of them felt that education through mother-tongue was most certainly better suited for creating a confidence in articulation as much as in generating conviction of thought. And building self-assurance is an unfailing key for empowerment. Both of them realised that creating an ambience of self-reliance is not confined to the extent of the school-going children alone, even the adults require being administered booster doses to bring back their self-possession. The *Lokasiksha* or Mass education programme organised by Tagore and the *Uttar-Buniyadi* projects of Gandhi had almost polygenetic growth, though the *Aryanayakams* – Asha and William – were most certainly the connecting links between the two establishments of Wardha and Bolpur, one basic difference in attitude distinguished the both, in turn. While Gandhi relied more on imparting lessons in certain particularities of applied social sciences, Tagore wanted to initiate the masses in elementary sciences not merely for the sake of their contents so much as for the very fact that such exposures would make the mind alert and intelligence free from illusions.

Pedagogy in Patha-bhavana School of Tagore's Santiniketan

SARMILA BANERJEE*

Abstract

The crankiness of the school environment can be eased linking the school knowledge with the child's experience outside it in the community. Children grow in intimate contact with the nature around them. School can enrich and enhance child's intimacy with the nature by sharpening child's awareness of his own natural environment. Tagore's ideas about the education of children realized in his own created Shantiniketan. This article takes our readers to patha bhavan, school of Tagore's Shantiniketan, where innovative ideas like bringing child's experience into the classes which are without boundaries, plurality of textbooks and material, moving beyond textbooks, etc., found adequate place and till today surprising the other systems of education rigid enough to come out of the irony of boundaries in each and every aspect of education.

Visva-Bharati is unique in the way that the idea of this university grew out of a school 'Ashram Vidyalaya' founded by Tagore. This school is the manifestation of Tagore's idea of education and is the bedrock of Visva-Bharati. The Ashram Vidyalaya founded in 1901, is now named Patha Bhavana. It is partly a residential co-educational school for elementary and secondary education, preparing students for the School Certificate Examination of Visva-Bharati. Its unique features are open-air classes, personal contact between teachers and

the taught, and training in self-governance. Besides curricular performance, emphasis is given on co-curricular activities aiming to unfold a child's personality through social, literary, artistic, musical and various other activities. In planning and execution of these varied aspects of co-curricular activities, Ashrama Sammilani, a student council plays a vital role. There are several wings of the Asram Sammilani and in each wing a teacher acts as an Adviser / Guide. All these activities like weekly Sahitya Sabha

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(literary meeting), *Dan Sangraha* (Collection of donation), *Gram Paridarshan* (Visit to village), *Vana Bhojana* (Annual Picnic), Excursion etc. are conducted with enthusiasm.

The Indian poet – educator Rabindranath Tagore was one of those who in his whole life tried to spread the spirit of co-operation, brotherhood and universalism through education. He advocated 'Universal-education' – i.e. education for toleration and mutual respect, love and fellow feeling, national integration and international understanding irrespective of differences in geographical region, race and religion. As the world situation today demands building a system of universal education to turn human rights into a reality for all and to make peace strong and all pervasive, education must be associated with "Universal Humanism". It is education that can help profoundly for the growth of fellow feeling and fraternity surpassing the barriers of races and religions and for dissemination of the spirit of universalism.

Perhaps, Rabindranath Tagore is the unique example in the world who was versatile enough to step into almost all fields of human experience. This is easily conceived by any reader when he finds the poet of *Geetanjali* (song offerings) writing 'Our Universe' a treatise on astronomy. So it is no wonder that the great poet is also an educationist. His turn from poetry to education enriched his contribution in both fields. Through his experiments in education Rabindranath came in close contact with the child's mind which gave birth to a good amount of excellent juvenile literature. His poetic feelings helped him

to perceive varied needs of the children for their growth to maturity, which he tried to satisfy through his educational efforts. His educational experiments were not the outcome of his poetic whims but had their root in the painful memory, which he received in his own childhood. His experiments on education were the product of his own experience, his prolonged thinking and his keen study and observation. His early writings on education came out of the press even earlier than 1892 when he was in his early thirties and had not yet received a worthwhile respect as a poet in his country. Towards the end of nineteenth century Tagore observed and studied child's nature in his newly established primary school at Sialdah and after that he started his formal educational experiments at Santiniketan in 1901. Thereafter, 12 years, he received world recognition as a great poet through the Nobel Prize for literature in 1913.

Tagore went on his long journey with the sacred task of education of the child receiving both appreciation and bitter criticism in India and abroad. The growth of his educational ideas was the growth of his life. Tagore's educational thoughts are not found formulated in one or more systematic treatise like Rousseau's 'Emile', Locks's 'Thoughts Concerning Education' or Froebel's 'Education of Man'. His educational ideas and views are scattered in a large number of independent essays, speeches and letters. Also, his treatments to different themes are so expressive of poetic vision and fine emotions as to construct a unified and objective rationale of his educational philosophy is many times very difficult.

If we go through Tagore's comprehensive work on Education, a crucial question naturally arises as what is there in the background of Tagore's educational endeavors? Surprisingly, we find answers in his words and that too explicitly. A few examples are presented below:

"The founding of my school had its origin in the memory of that longing for freedom which seemed to go back beyond the sky line of my birth." (See Tagore, Rabindranath, 'A Poet's school, V.B. Bulletin, pg. 5.)

Rabindranath's one of the noblest creations came out of his saddest experience in his boyhood. The painful experiences of his school life, kept such a permanent imprint on his mind that even after forty years he could vividly describe the humiliation to which he was subjected. Further in his own words:

"We had to sit like dead specimens of some museum while lessons were pelted on us from high like hail storms on flowers." (See Chakraborty, Amiya (ed.) "Tagore Reader", Macmillan & Co., London 1961, pg. 214.)

"The rooms were cruelly dismal with their walls on ground like police man. The houses were more like a pigeonholed box than a human habitation. No decoration, no picture, not a touch of colour, not an attempt to attract the child's mind." (See Tagore, Rabindranath, "Reminiscences", Visva-Bharati, 1961, pg. 60-61.)

Because of his aversion about the process of education prevailing in those days, Tagore grew into a revolutionary against the educational system in vogue and hence always disparaged the initiation of the West in Indian educational system. He satirically says:

"What we now call a school in their country is really a factory and the teachers are parts of it (See, Tagore, Rabindranath, "Towards Universal Man", Visva-Bharati, 1961, p. 66.)

Rabindranath wanted to break the isolation of school from home and the society. His idea of bridging the gap between school and home on one hand and school and society on the other, led him to found his residential school, Santiniketan Bramhacharya Ashram, later on renamed as 'Patha-Bhavana'. Now he had time to think over the concrete aspects of school education, e.g., child's nature, curriculum, school environment and teaching method.

Tagore's view regarding the teaching in his school is an innovative idea of his own. His dreams he fulfilled in his Ashrama school 'Patha-Bhavana', Santiniketan. He disliked children studying in a closed bricks mortar building. He wanted children to mingle with nature for the development of their inner potentiality. He disliked the idea of punishment and routine class teaching. He in his experimental school had given lot of space to other co-curricular activities such as craft, music, dance, painting, art, mud work, etc. with the regular subjects of the syllabus. These co-curricular subjects are now considered as core subjects and are must in the school of Santiniketan with all other subjects. Thus, the child learns everything, along with the development of his/her inner potentialities.

Tagore thought that the education provided in this Ashram School is for the fulfillment of the life. He was of the opinion that people with closed mind and

heart can also study and excel in academic area, they might get many medals of success but they cannot win the love of the world. So, Tagore wanted the children at Santiniketan should be inquisitive, creative, and engaged in experimentation with learning and thus, have relationship with all other things exist along with human life. They should have a searching mind for all the things around them and thus, after examining them they should collect and preserve they feel important. The teachers of this institution should be above the bookish level and rise high to have vision for intellectual and creative students. Teachers should also be inquisitive and have joy in their heart. In 1928 This Ashram School was named as '*Patha Bhavana*'. On 7th December 1905 the Ashram school had started with five students. The name of the school then was Santiniketan Bramhacharyy ashram. The very first students were Rathindranath Tagore, Sudhir Chandra Nan, Prem Kumar Gupta, Gour Govindo Gupta and Ashoke Kumar Gupta. The teachers then were Retchand, Jagodananda Rai and Sibdhan Bidyanarbo. Brahmabandhab Upadhayay and Rabindranath Tagore himself were also present there as teachers.

Accordingly the teachers devoted to Tagore's principle of teaching mainly required to mention are Satish Chandra Rai, Ajit Kumar Chakraborty, Bidhu Shekar Sastri, Khitimohan Sen, Dinendranath Tagore and Santosh Chandra Majumdar. Among the foreigners he got great teachers such as Dinobandhu Andrews and William Pierson.

School specifics

The school till Std. IX is a residential school. Only children of the staff and Ex-students can get admission as day-scholars. The medium of instruction is Bengali but equal importance is given to subject English and other subjects. The session starts in the month of June. The school is open for all. School starts at 6:30 a.m. for all, Kindergarten to Class VIII. Up to Class IV children stay at school till 10:30 a.m. and learn Maths, Bengali, Music, Dance and Drawing and listen stories in KG and I. Children in Classes II to IV learn Maths and Bengali and do a number of activities such as nature study, painting and modeling, music, dance, craft and listen stories.

For Classes V to VI children need to stay in school little longer i.e., up to 11:15 a.m., and study Maths, Science, Bengali, English, Hindi, Sanskrit, History and Geography, Tagore studies, Craft and Modeling, whereas in Classes VII to VIII alongwith aforementioned subjects, in science, they study life science and physical science separately and stay at school till 11:50 a.m..

On Tuesdays higher class students go for social work in nearby areas and villages.

On Wednesdays all students take part in Upasana (prayer) in the temple (Kacher mandir). (Tomb of Rishi Debendranath Tagore) This day is celebrated as the foundation and holy day for the believers of the Bramha Samaj and holiday for the school.

In Std. IX and X, students study 8 periods a day. They stay at school from 1st period (6:30 a.m.) till the last period (12:30 p.m.) Different subjects like

Bengali, English, Maths, Science, History, Geography are taught with other activities i.e. singing, dancing, handicraft, modeling, wood work, metal work, weaving, instruments playing.

No Examination till Std. VIII. Weekly tests i.e. unit tests are taken.

In Santiniketan teaching is not based on syllabus or textbooks. It goes beyond this. Development of creativity in child is in built in teaching. Teachers provide them opportunity to express more and more in oral and written form. Sahitya Sabha or literary discussions are held in schools regularly in 3 groups i.e. Std. II – IV, Std. V to VII and Std. VIII to X. Each student can participate by giving writings, poems, music and dance. Students committee with a teacher as a guide, looks into the matter of arrangements.

There is also a magazine committee, which invites writings, poems drawings, etc. from students and include in the magazine. From Std. IX Ashram Sammalani i.e. Self-government is formed from the students through election. The main aim to form such association is make students learn to carry out responsibilities in various matters of the school administration and thus be self-dependent and make their life in the ashram happy and well disciplined. This was established by Tagore in 1912 with an objective to develop holistic personality of students. The Ashram Sammalani or the development of self-governance is an important component in Tagore's total education of students.

There are seven departments / *Vibhagh* under this association to look into different matters. They are *sahitya*

Vibhagh, *Sasta Vibhagh*, i.e. health, *Parivesh Vibhagh* / environment, *Kidra* / Games *bibhagh*, *Seba* / Service *bibhagh*, *Ashaarjo* / Kitchen *bibhagh* and *Sakha* / library *sangha*.

- (1) The *sahitya bibhagh* – conducts the *Sahitya Sabha* / literary discussion. The group has to conduct the *Sabha* and make proper arrangements with prior notice.
- (2) *Sebha Vibhagh* – Conducts the collection of money for donations. Visit nearby villages to donate this money to the unprivileged. This department also make arrangements for providing facilities such as deep tube-well, bathrooms etc. in the nearby *Santhal (Adivasi) gram*.
- (3) *Kidra Vibhagh* – It looks after sports and other events. Every evening this department monitors games played by the students.
- (4) *Sasta Vibhagh* – It looks after the health of students. It makes students aware and conscious about their health.
- (5) *Parivesh Vibhagh* – Monitors the cleanliness in ashram area. It takes care of trees and other plants and also protects them from being destroyed by outsiders.
- (6) *Library / Sakha Sangha* – It manages *Library* or student's collection of books. Each student get to read the book of his choice.
- (7) *Ashaarjho bibhagh* – Std. IX students monitor the matter related to *Kitchen* of the hostel.

Thus, in this way all the programmes of the Ashram School are looked after.

These collaborative efforts help in developing decision-making, self-discipline and self-respect in children. They learn from their mistakes without developing ego. Students from themselves select secretary and assistant secretary for the association. A teacher as a guide is always there to help and guide them.

Pedagogy and Teaching in Patha Bhavana

In patha bhavan teachers can teach in their own innovative way. Students have to write by themselves. They need to do and express with their own way of thinking. Teachers give themes and topics for writing as per children's needs and contexts. There are no prescribed notes for this. Teachers have autonomy to develop their own curriculum for children. Creativity of children is given importance from Std. II to X. Text books are also followed but with teachers' choices and selections for the content. Teachers select prose and poetry even for Std. IX and X. Main books of the school are from Visva-Bharati 'grantha-bibhag' (print) Regular assessment on the basis of weekly tests and class-works is done. Not more than 25-30 sits in a particular section of a class, so attention is given to all students equally with regular assessment. Reference books for learning are recommended i.e patha bhavan teachers believe in plurality of textbooks and material. Students do lot of projects related to their subjects. Practical classes are held for science subjects from Std. VIII onwards. Library facilities are good. Students have access to any teacher for clarity of doubts

whenever they require. Subjects, such as arts, crafts, health, etc., are given equal importance with regular subjects. Exhibitions are held regularly.

There is no formal examination system or failure till Std. VIII. Only weekly test with regular class assessment is done with the students. Examinations start from Std. IX .

Another important feature that makes the school different from others is its *open air classes with nature as surroundings*. The school premises are surrounded by a plenty of trees and beautiful plants and flowers. Close to nature the surrounding makes the place enjoyable that students love to go to school everyday. They are taken to different departments (curricular sites) such as *Kala-Bhavana, Rabindra-Bhavana, etc.*, learning moving beyond textbooks. Students mingle with nature and learn about various plants and trees from their surroundings. Students are free to take any subject such as music, dance, painting, sculpture and many other vocational courses as core subject and continue his/her higher studies in the concerned departments of the University.

To motivate and facilitate students to read rich Bengali literature, the medium of instruction at *patha bhavan* is Bengali. Children understand better all subjects in their mother tongue. Further, English as a second language is also given due importance in the curriculum.

Teachers take pain to teach each topic of each subject. They relate themes to the contexts of children, share their experiences and give them opportunity

to further enquire and question experience school is going to provide them. Films and guest lectures are very often in *Patha Bhawan* in view of benefiting students with multiple resources of learning.

Rabindranath wanted to present through his school a section of the life in the society with its realities so that through experiences in life the pupils might understand the practical utility of learning certain subjects and might become interested in learning them. In such a way the pupils of Tagore's School realised the utility of knowing English when introduced as a school subject.

Tagore also introduced in his school teaching of music, dance and drama, painting and modeling and a good number of crafts. To discover and develop the dormant promises of the children Tagore set up a hobby house where pupils spent their leisure hours in the pursuit their hobbies. Physical education was also a part of the curricular programme. The pupils participated in physical trainings and out-door and indoor games. Varied performances in the areas of music, dance, and poetry recitals were the regular features of life in Tagore's school. To train students in democratic citizenship Tagore attributed significant power, rights and responsibilities to the students under the programme of 'self-government', which contributed to the pupils' growth in mutual understanding, co-operation, and sense of responsibility, self-respect and respects for other rights.

Over and above these, Tagore introduced in his school an vitality of

work. Joyful exercise of inventive and constructive energies intended to build character and personality. He wanted to impart through educational programme to the pupils a harmonious blending of intellectual pursuits with creative activities and ethical values, and of mutual endeavor with social consciousness. He wanted to sweep away meanness, selfish jealousy and moral lethargy through co-operative living in his School.

When he was asked about his religious faith, Kaviguru Rabindranath Tagore expressed that he believed in 'Religion of Man'. He wanted to cultivate in his school this spirit and an inclination to the 'Religion of Man' and he wanted to turn his school ethos into "Santiniketan" – Abode of Peace. Great aspiration for peace and universalism formed his educational attitude.

"In Santiniketan, Rabindranath Tagore had sought to develop the idea of a House of Peace, a children's Republic a school house without a task master to serve a model to India and the world" (Earnest Rhys).

Thus, all-round development of the students is done giving equal importance to all subjects. Tagore's open-air system of schooling with softness and toughness of nature and school – society linkages provides students a sense of freedom and responsibility. Tagore expanded this system to another school 'Siksha-Satra', established in 1924 in Santiniketan, and later shifted to Sriniketan (1927), to catering the educational needs of children of villages, who were deprived of opportunities of any form of education due to lack of facilities or poverty. India

lives in her villages and that it is impossible to maintain the organic health by enriching urban centers and neglecting rural India. This is an enduring truth, which Tagore tried relentlessly to establish. Towards the upliftment of the rural people through education and development of self-reliance, Tagore devoted himself and directed his efforts. Tagore was conscious of varied needs of the rural and urban people and imaginatively developed curricula to address such needs.

“Siksha-Satra is the natural outcome of some years of educational experiments at Santiniketan and at the Institute of Rural Reconstruction at Sriniketan. Here, an attempt is being made to give an all-round education to village children and provide them with training which will not only enable them to earn a decent livelihood but also to equip them with the necessary training and creative imagination with which they help to improve the rural life of Bengal in all its aspects” (Tagore, *Visva-Bharati Bulletin* 21, 1936).

Tagore says “In this ashram school I have tried my best to fulfill the wishes of each child. In this mechanical world children are treated as machines in their daily school routine. Thus to fulfill the wishes of each child I have tried to create a ‘tapovan’ i.e. ancient schools held in the forest, in the midst of nature. In this bricks and mortar school building, expression of the inner self is obstructed or suppressed. Thus, to bring forth the inner self of the child, I want them to be free under the open sky without the bindings of rules and regulation of the regular system of education. I want to be

their companion in their joyful playing and study

According to Tagore, children are like the new saplings growing happily. He thus, wants to bring out their in born qualities and potentialities. (Dinalipi, 1928).

The present concern

With changing time this institution grew into a great institution. However, now the ethos of this institution has slowly been changing. Syllabus started taking place an important seat. Classes are now preferably being conducted within the four walls because of distraction outside as tourists used to come to visit the great institution and also other factors such as teachers and students feel that they can study better in classroom. With technological advancements teachers started using different methods of teaching to complete the Syllabus in time. Children's creativity has taken a back seat. Subjects such as computer education, etc., are being introduced without creating its needs in the system where curriculum emerged out of needs and contexts of the children. But still there are a few senior teachers (ex-students of the school) who maintain Tagore's way of teaching. There is an immense need to conserve this system as heritage school to guide new generation of school education for imparting meaning full education beneficial for the entire humanity.

One is reminded of the nineteen-year-old teacher who came to help Tagore with the teaching in school.

“With him boys never felt that they were confined in the limit of a teaching class; they seemed to have their aces to

everywhere. They would go with him to the forest when in the spring the *sal* trees were in full blossom and he would recite to them his favourite poem, frensied with excitement... He never had the feeling of distrust for the boys' capacity of understanding... He knew that it was not at all necessary for the boys to understand literally and accurately, but that their minds should be roused, and

in this he was always successful. He was not like other teachers, a mere vehicle of textbooks. He made his teaching personal, he himself was the source of it, and therefore, it was made of life stuff; easily assimilate by the living human nature."

(Source: Aims of Education, National Focus Group's Position paper, 2006, NCERT)

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Educational Philosophies of Advaita-Vedanta and Islam

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Abstract

This write-up deals with various shades of Advaita-Vedantic and Islamic philosophy. Main focus is on the ideological perspective of these two philosophies, viz a viz their relevance in the present world educational scenario. This is also a comparative study aimed to reconstruct and re-pattern the concept and methodology of education in consistence with our cultural heritage and challenges of time.

Introduction

Various philosophical theories evolved to probe into the genesis of the existence and nature of the universe. One of these schools contemplates the interactions of natural phenomena- monistic, dualistic and pluralistic- responsible for stabilising the chaos into the cosmos, leading ultimately to the present shape of this world. The other school holds that natural phenomena, being of temporary existence, are to perish in due course of time. The majestic mountains and high altitudes are leveled to the ground, the rivers go dry and leave no traces of their existence, the plains turn into oceans and new islands emerge out of oceans. All this happens as a part of the creative process of the universe and the time,

leaves its mark in the space, on the earth, and on the bottom of oceans. Philosophical thought presents a continuum which neither records the point of beginning nor hints at the final end, and so it can not be compartmentalized. This explains how various thoughts centre around man and present an intermingled proposition leading to some solution.

Statement of the Problem

The present study can precisely be stated as 'A Comparative Study of the Educational Philosophies of Advaita-Vedanta and Islam'. The basic forms of educational considerations including aims, curricula, methods and discipline have been focused in the frame work of the

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philosophical formulations propounded and established by these two philosophies.

Exposition of the Concepts Used in the Study

Advaita-Vedanta or the philosophy of non-dual reality as a stream is the non-dualistic interpretation of Vedanta, which attempts to guide the individual to enlightenment. According to the Advaita, 'jiva' in his basic nature, which is Brahman, is the self-illuminated non-dual reality, but it is due to *avidya* (absence of perfect/objective knowledge) that he is not able to realise his own original state, the Brahmanhood. All difference and plurality are illusory. So, this is the essence of Advaita theory that at the level of permanent reality, there is nothing else except Brahman, the absolute. Islam comes from an Arabic root meaning "peace" and "submission" that teaches 'one can find peace in one's life only by submitting to Almighty God (Allah) in heart, soul and deed'. The Qur'an, is claimed to contain the final edition of instructions and guidelines revealed by God for the eternal benefit of mankind. The Qur'an is the word of Lord revealed to the last Prophet Mohammad through the angel Jibriel (Gabriel) in pure Arabic language during the last twenty-three years of the prophet's life; the recitation of which is an act of devotion and worship. *Sunnah* is the Muslim code of practice; a body of traditional law based on the sayings, actions, and guidance of the prophet Muhammad, as detailed in the *Hadeeth* and the *Sirah* (a biography of the prophet's life). It is a source of legislation

for the *ummah*, whether in the form of his utterance, his action or his approval of an act witnessed by him or reported to him. No tradition is to be held true, or cited as a proof, if not authentically ascribed to the prophet.

Rationale for Selecting the Topic

The academic enquiry aimed at promoting the cultural ethos, national integration and most importantly a common concern regarding our existing system of education. It was designed to eradicate the misconceptions and misgivings prevailing in the misguided fringe-elements of the followers of Advaita-Vedanta and Islam. Numerous innovations are conceived of and put to experimentation but with little outcome. Everyone, worth the name, is crying from the hill-top that an overall change in the educational set-up is a dire need of the hour but no body has been able to come forward with any practical solution, with the result that everything in the name of change and improvement has gone away. The investigator is of the opinion that innovations without any philosophical foundation will remain sheer wishful hope of the planners. It will amount to thinking of a healthy tree without fruits. All these justify selection of the present topic as a problem for academic investigation.

Objectives of the Study

- To discuss the historical perspective of Advaita-Vedanta and Islam;
- To find out the metaphysics, epistemology and axiology of Advaita-Vedanta and Islam;

- To study comparatively the educational philosophies (with special reference to aims, curricula, methods and discipline) of Advaita-Vedanta and Islam and its contribution to the field of education; and
- To assess the utility of theories, principles and practices of the educational philosophies of Advaita-Vedanta and Islam in the present scenario.

Assumptions of the Study

- The philosophies of Advaita-Vedanta and Islam have resemblance with reference to the concept of God.
- Both the philosophies are of the view that one can attain real happiness, pleasure and peace of mind only through the submission and obedience to God.
- These two philosophies of education are more relevant and they fulfill the integrated approach of education.
- Both the educational philosophies are value and goal-oriented and can be applied to reconstruct a viable and verifiable system of education which fulfills the aspiration of the learner.

Delimitations of the Study

It was necessary to delimit the scope of the study, so that its results may be used within the framework of those reasonable restrictions. Educational philosophies of Advaita-Vedanta and Islam were discussed and a comparative analysis was done in the backdrop of these two philosophical considerations to find out

its impact on the existing educational order. Apart from the investigator's lack of command over the Sanskrit and Arabic languages, the other limitations which made him somewhat handicapped was the paucity of time and funds. This study, therefore, suffers from limitation more than one. In more favourable circumstances, perhaps, this study would have been much better than what it is.

Review of the Related Literature

The investigator has gone through various research theses, literature, abstracts and reviews to investigate the related issues. **Iqbal's** (1934) study entitled '*The Reconstruction of Religious Thought in Islam*' has emphasised on the critical study of Islamic philosophy. **Divekar's**, (1960) study entitled '*A Critical Study of the Educational Philosophy of Upanishads*' brings forth the educational philosophy of the Upanishads with a view to search for solution of the radically wrong in the fundamentals of existing education in India. **Alam's** (1992) study entitled '*A study of the Islamic Concept of Education in the light of the Concept of Man and Society*' has attempted to analyse and evaluate the Islamic concept of education. **Mishra's** (2002) study entitled '*A Critical Study of the Educational Philosophy of Adi Shankara*' has focused on certain philosophical aspects of Shankara's Advaita theory. **Masoodi's** (2004) recent study entitled '*Al-Gazzali and Iqbal: Their Perspective on Education*' has focused on the relevance of Islamic philosophy of education in the light of two illustrious thinkers of Muslim *Ummah*

Imam Gazzali and Allama Iqbal. The investigator found no clear-cut trace of any academic enquiry at doctoral level pertaining to the educational philosophies of Advaita-Vedanta and Islam and their impact on the educational theories and practices which ensured those theories.

Research Strategy

The methodology adopted is qualitative analysis of primary and secondary sources which followed comparative method based on library research with the help of authentic sources available in English, Hindi and Urdu languages. It is mainly a philosophical study where ideas, comments and pieces of information are collected from the primary sources and reference books. The investigator consulted relevant references from the reputed libraries and with a view to marshalling the facts in a proper order, cards were used where excerpts, quotations and statements from renowned scholars, intellectuals, philosophers and educational thinkers were noted down with reference to writer/ editor, number, edition, title, publisher, press and page. Possible Arabic and Sanskrit texts have been consulted with the help of dictionaries and encyclopedias. The investigator has further tried to consult relevant content available in journals, magazines, encyclopedias and other documents. The analysis and synthesis was done on the basis of collected data in a scientific manner and important citations were inserted in the body of research. The facts were analysed and written in a lucid and scientific language. The text of the report was placed under suitable chapters with

footnotes where needed and lastly conclusions were drawn with all objectivity and emotional detachment.

Metaphysics

Welfare of man is a common programme which every philosophy takes up; preparing a better man, ensuring for him a comfortable life, and enkindling in him the desire to aspire for divinity. Man is, nowhere degenerated, and rather placed on a high platform and so man's superiority is not questioned anywhere. Man forms the centre, man the core and man the crux. Thus, the basic philosophies of Advaita-Vedanta and Islam have been exposed; keeping in view that the problem of metaphysics is rampant in both these philosophies and always assumes a dominating shape. Ontology is basic and fundamental hence the discussion has been made in the light of their metaphysical character. According to the philosophy of Advaita-Vedanta the cause of creation is Brahman, the absolute. Brahman is permanently existent, consciousness and bliss and beyond the limit of time and space and of cause and effect. Brahman has been stated as the creator, controller and protector of the world. Similarly, in Islamic philosophy, the creator of the universe is the ultimate God. Man has been endowed with various faculties and God intends to test him whether he selects or not for himself by applying the faculties given to him, the right path shown by His messengers. Islamic philosophy deals with equality of man and the difference of the colour, race and nationality are for the sake of recognition and identification and not to establish superiority. Islamic philosophy

believes in the final day, which is the 'Day of Judgment' (*Qayamat*) when people will be resurrected alive to remain in the abode of enjoyment or in the abode of severe punishment. Contrary to this, the Advaitins hold the concept of rebirth in other way round. It believes that generally, everybody is to die and to take birth again and again so this makes a systematic ground for rebirth. While in Islamic philosophy there is no concept of taking birth again and again but once man is born and dies, he will only be resurrected alive on the 'Day of Judgment' and also in the same form. Contrarily, Advaita-Vedanta proclaims the formula of creation that the origination has the seeds of destruction and so the destruction has the roots of origination. Both Advaita-Vedantic and Islamic philosophies confirm that God is only one and that is absolute. It is further understood that the ultimate God is real, omni-present, omniscience and omnipotent. In the beginning, mankind was one single community and followed one way of life, based upon the non-duality and oneness of God. Later on man differed in opinion and adopted different ways of life. Then, God sent His prophets to reform their thoughts and practices. The Advaita holds that this visible world is false and is destructible and only Brahman is true and immortal. Islamic philosophy proclaims that the first man (*Adam*) on the earth was in the complete civilised form and was endowed with knowledge and guidance. He did not start his journey of life in the darkness of ignorance. It urges the mankind to lead collective human life. Thus both the philosophies of life fix faith in the supreme power which they recognise as

the ultimate reality and which incarnates itself in the true, the good and the beautiful. It is this power, "a conglomeration of the supreme values" which manifests itself through various organisms, creates them all; of which man is the superior most.

Epistemology

Aims, curricula, method and discipline can not be conceived of unless these are hued in the concept of epistemology. Advaita-Vedanta, concerning to epistemology, establishes that real knowledge of the object depends upon the object itself and not on the human mind. Since any objectively existing reality can be known by appropriate means of valid knowledge, Brahman can also be known by appropriate means of valid knowledge. The Advaitins hold that the entire human beings are the source of infinite power and they are to do every action according to the knowledge acquired by them. Due to the improper knowledge man does not recognise the true Brahman, all powerful and the great commander and he is unable to find the infinite knowledge, divinity and vision already in him. Man suffers due to the darkness of ignorance and so this is the root cause of all human sufferings. *Advaitic* theory admits that knowledge is meaningful only in involving a knowable and a knower. Islamic philosophy which claims to be a system of thought and practice establishes that the source and end of all knowledge is God, who is all-knowing (*al-Aleem*). The knowledge has been transmitted to the mankind through His different successive prophets, as the true teachers and educators. Revelation is considered the most reliable source of

knowledge. The other sources of knowledge such as sensation, perception and reason are also attributed valid sources of knowledge. For, unless one has a sound knowledge he can not understand and appreciate the wisdom (*hikmah*) of the Qur'an, nor he can be able to follow the tenets of Islam in its true spirit. It is because of this paramount importance of knowledge in Islamic philosophy that acquisition and dissemination of knowledge has been made a sacred duty of the Muslim. In brief, it can be stated that the theory of knowledge in the Islamic perspective combines knowledge, insight, and social action as its ingredients. Contrary to this, reason is recognised as a potent medium of knowledge in Advaitic philosophy which follows a scientific course leading from one step to another and is basically logistic. A step onward one takes to intuition to arrive at the knowledge of reality or truth. Islam gives importance to theology, as well as empirical sciences. The *ilm* (knowledge) means the acquisition of knowledge of Islam, is one of the most essential requirement of human being. It raises him to the heights of goodness and gives a noble position and real happiness in the two worlds, and above all it helps to attain the divine approbation. God has promised great rewards for those who seek such knowledge.

Axiology

So far as the axiological beliefs are concerned, the Advaitins hold dharma with *acara* (conduct) as the significant. *Dharma* is not separate from religious philosophy, in Advaitic thought; it

becomes a means of salvation as well as a way of noble human conduct. The Advaita aims at strengthening moral responsibilities and appreciates ethical and spiritual values. It shows the path of life. The ethics without the practice of *dharma* is meaningless. The truth, beauty and goodness are omniscient qualities which can be realised by man through meditation. It is on this fundamental tenet that Advaita-Vedanta constructs its theory of education. Contrarily, Islamic morality is deeply rooted in the fundamental beliefs of Islam. *Iman* (faith) becomes the basis of relationship between man and God, between man and his fellowmen as well as the whole external world. Axiology in Islamic philosophy appears to surpass religious rites and encompasses the entire gamut of social problems with God's pleasure, as the ultimate end, and accountability to Him in the hereafter as a necessary warning. Aesthetics is deeply rooted in the belief that God Himself is beautiful and whatever He creates is beautiful. Beauty, according to the Qur'an, brings *surroor* (the pleasant experience) to its beholder. It gives satisfaction to the senses and joy to the heart. It also establishes that beauty is neither objective nor subjective. It appears in the external structure of the object as well as in the internal quality of the subject.

Concept of Education

According to Shankara, education paves the path of salvation. Man should learn to maintain a balance between spiritual and material values of life. To achieve this, greater emphasis must be placed

on vocational subjects, science education and research along with the spiritual perspectives in the process of education. The teacher and learner are equally important, since the process works on the basis of the active co-operation of both. Educated person should have a high moral character which makes man efficient and also adds to the understanding of the cultural heritage in the light of contemporary educational concerns. In Islam education is a continuous effort to disseminate the knowledge and skills that lead to the internalisation of the teachings based on the Qur'an and Sunnah of the Prophet. It develops among its followers the attitudes, skills, character and a vision of life that enable them to see themselves as servants of God. It aims at developing and moulding the individual to become a knowledgeable, respectable, pious and devoted follower so that he may be a faithful and responsible vicegerent of God. It may be justifiably claimed that Islamic theory of education was responsible for blossoming of a culture of free inquiry and rational scientific thinking that also encompassed the spheres of both theory and practice. Treating knowledge and education as sacred duty; both regard it as the best kind of charity. The education which fails to lead the individual from ignorance to knowledge is hardly acceptable according to these philosophies. These always inspire to pray to God that He should direct the seeker from untruth to truth, from darkness to light, and from death to immortality. Therefore, stress has been laid down on both the acquisition as well as diffusion of knowledge.

Aims and Objectives of Education

Seeking the pleasure, attainment of collective human life and salvation are the main aims and objectives of Advaitic philosophy. It lays stress on the development of ideal values- truth, beauty and goodness. It includes love, compassion, kind-heartedness, sympathy, service to humanity etc. It is further stressed that all these ideal values should be translated into action. It also emphasises on the liberation of self from physical bondage. With a view to elaborating the concept it is better to quote the words of Shankara, the propounder of Advaita philosophy, that education paves the path of salvation. Contrarily, Islamic philosophy aims at the pursuit of truth and happiness here and hereafter. The approach towards educational aims and objectives was responsible for bringing about a revolutionary change in a society which was barely aware of reading and writing; it set in motion a movement for literacy, learning and knowledge. Islamic philosophy came to lay great emphasis both on acquisition as well as diffusion of knowledge. Moreover, in the process of learning, utility, honesty and purity in the cultivation and advancement of knowledge are expected to be maintained. The ultimate aim of education is *amra bil maarooif wa nahiya anil munkar* (enjoying what is good and forbidding what is wrong) and also to win the pleasure of God. Education aims at inculcating Islamic values for creating in the learners a pattern of behaviours to reflect Godly virtues. Moreover, *sabra* (patience), *taqwa* (fear of God), *adl* (justice), *ihsan* (generosity), *shukra*

(thankfulness) are the aims and objectives considered essential to be instilled in the minds and hearts of the learners.

Curriculum

The Advaitic philosophy of education aspires for the physical, intellectual and moral growth of man and offers a curriculum to achieve this. In this way, the spiritual knowledge, the behavioural and materialistic subjects are also studied. Contrary to this, main emphasis in the curriculum of Islamic philosophy was laid on the Qur'an and Sunnah followed by other subjects relevant to the requirements of the community. The Islamic curriculum is not confined only to religious information rather its entire contents are formulated within the spirit of Islam. Both the philosophies of education maintain a balance between the requirements of material as well as spiritual life. That way, curriculum is a frame in which scientific facts are arranged in Advaitic and Islamic perspective. In the early days of Islam mosques were not only the centres of theological studies but there were arrangements of instructions of the subjects that today count as secular sciences. It is reported that modern sciences along with the theological subjects were instructed in the vicinity of mosque.

Methods of Teaching

Advaitic philosophy offers worship, meditation, memory, imitation, lecture, questioning, discussion, self-study, traveling, exercise and practice, reason and review as methods of education. In these methods the learner is required to

be active while seeking knowledge. It also emphasises on *sutra-* method which is helpful in the practice of concentration and meditation. It is applied especially when higher learning and spiritual knowledge are to be attained. As part of methods of teaching, it consists of hearing the Vedantic texts (*saravana*), reflection on their import (*manana*) and meditating on what has been ascertained as the true self (*nididhyasana*). It is well known as *sravana- manana- nididhyasana vidhi*. In reasoning both inductive and deductive approaches are applied. Shankara says that reasoning is a good device for removing one's doubt. He also suggested preferring *Vyakhya Vidhi*. This method is also known as *Bhashya* or *Tika* or commentary or annotation. Islamic philosophy of education suggests the teacher to adopt different methods at different stages as the lesson proceeds. It offers sermon, lecture, experience, memory, discussion and debate, example, monitoring and traveling as method of teaching. It is evident from the study that the teaching methods of Islam are mostly oral and based on repetition technique with a view to cram the facts in the minds of the learners. There are guidelines available in the sources regarding creation of interest and aspiration in the learners, providing in them a very high degree of motivation, drawing their attention towards the lesson, and presenting the lesson to them in suitable manner. Receptivity of the learners to instruction, gradation and continuity in teaching, explanation of the subject-matter, conclusion of the lesson and home assignment etc. are the significant items of the Islamic methods of teaching.

Teacher - Student Relationship

Advaita-Vedanta claims that if the teacher embodies and reflects the values he is teaching then the impression he leaves on his pupils is very deep and indelible. A teacher must be conscious and careful in his behaviour, attitude and professional ethics. Both the teacher and learner are travelers on the path of self-realisation but the teacher is comparatively advanced and superior in age, experience and dignity. And hence, he is well-equipped with knowledge and wisdom through meditation and great penance. By virtue of these he becomes the *guru* and the other the *shishyas*. In Islamic philosophy the actions and deeds of the teacher are taken as examples for his learners. The character of teacher is most important factor in the present social condition. If on the one hand Islam raises the teacher's status, on the other, it demands him to be conscious of his responsibilities. The last prophet of Islam, Mohammad was a teacher in the truest and widest sense of the word. Though he himself was an *ummi* (unlettered) he taught his followers the importance of literacy, learning and knowledge. He is reported to have said that he was sent only as a teacher. That is why the teacher in an Islamic philosophy holds the most prestigious place and regarded to be the model for mankind. His reward in the life hereafter continues as long as the influences of the knowledge imparted by him remain on the horizons of world.

School System

Shankara accepts the ancient Ashram system as the basis for determining the

institution of education. *Mathas* were established keeping in view of transmitting knowledge to the ignorant and providing adequate guidance to those deviated from the right path. A peaceful natural place is recommended for study and therefore such type of places should be in natural and peaceful environment, away from the crowd and disturbing and contaminated areas. Sources suggest that the learner has to go to the residence of guru for seeking knowledge. It is better to quote here the sutra of Vedantic philosophy: 'yatrakagrata tatravisheshat'. It makes clear that while acquiring knowledge one should select the peaceful environment because it is helpful in the concentration of mind. Islamic institutions of learning such as *maktab*, *kuttab*, *darul-arqam*, *al-suffah*, *dar-al-qurra*, *madarsa*, and *jamia* etc. are evident. Many renowned companions of the prophet Mohammad embraced Islam in *Darul arqam* and received their first instruction here. It would appear that there used to be two categories of *kuttab*, firstly the *kuttab* for teaching the Qur'an and elementary religious knowledge, and secondly, the *kuttab* for teaching, reading and writing. The prophet built a mosque at Madina, known as *Masjid-al- Nabawi*, which soon became not only a place of worship but also a centre of education. The teaching sessions were generally held in the afternoon. As it was not possible for the women to attend these sessions, one day in every week was exclusively reserved for their instruction. The prophet thus paid due attention to the education of women, though co-education was not there.

Discipline

Self-control and self-discipline are regarded as fruitful discipline in Advaitic philosophy. Yoga, meditation and exercise may be examples of repressive theories of discipline. It advocates impressionistic approach while maintaining discipline. Similarly, Islamic philosophy is also concerned with the impressionistic theory of discipline. During the course of instruction disciplinary punishment is not suggested but in very exceptional cases. If it is thought essential the learners are assured that the punishment is on the account of their bad conduct. The enforcement of discipline is taken seriously throughout the educative process for attaining better results from the educational endeavour. In this way it is concluded that none of these philosophies of education speaks in favour of the corporal punishment.

Concluding Remarks

- The educational philosophies of Advaita-Vedanta and Islam give a new perspective by which one can find pointers to develop an integrated personality.
- Both the philosophies are inclined towards creating an atmosphere of love, compassion, kindness, harmony, sympathy, service to humanity through an appropriate system of education.
- Education of these philosophies is value based and aims at producing the righteous servants of God and true well wishers of humanity.
- Both the philosophies of education advocate that all the ideal values

should pertinently be translated into action in one's life.

- These two philosophies complement each other on the focal point that the true education paves the path of salvation and aims at the pursuit and realisation of truth and goodness, and above all it helps to attain the divine approbation.
- The educational thoughts of the two philosophies of education are equally important for the development of intellectual, emotional, humanistic, physical, moral, artistic and spiritual qualities.
- The Advaita-Vedanta speaks of cultivation and consolidation of various traits like truth, beauty, goodness, ahimsa, brahmacharya, purity and forgiveness etc. based upon its insightful philosophy. Similarly, Islamic philosophy lays great emphasis on diffusion of knowledge in the backdrop of creating an integrated ideal atmosphere entrenched in universal values i.e., *sabra* (patience) *taqwa* (fear of God) *adl* (justice) *ihسان* (generosity) *shukra* (thankfulness) etc.
- Both the philosophies of education offer a substantive and composite curriculum which carries subjects of spiritual and temporal faculties of learning. Further, human life and education are related in curriculum. Hence, the philosophies of education are inclined towards developing national integration and international understanding.

- In Advaitic methodology of teaching teacher should be a role model for learners while Islamic methodology of teaching has declared the teacher as a spiritual mentor of learners. Further, method of teaching is not confined to self-education only but covers gradation and continuity in teaching, explanation, drawing conclusion and home assignment. Hence, both the philosophies share a common ground with reference to methodology of teaching.
- Both the philosophies pass the sacred string of their consent through the intricacies as well as the lucidity of the educational process.
- It is well explicated by *Advaita-Vedanta* and Islamic philosophy that serenity and sylvan glades should reign the school atmosphere.
- Both the philosophies of education criticise in unequivocal terms the corporal punishment given to the learners as it is believed that the learner regulates himself and eddies towards perfection which every soul craves for.
- Although there are similarities between these two philosophies in the backdrop of conception of 'Real

and Ideal', 'Matter and Spirit', but so far as the concept of God is concerned Islamic philosophy has defined it in a clear and unambiguous way while as *Advaita-Vedanta*, undoubtedly, has characterised this concept, yet, the ambiguity chases its definitions and connotations all along.

Educational Implications

There are many more similarities between the two systems, which can be worked out. But, unfortunately, the misgivings prevailing in the misguided fringe-elements of the followers of the two religions often erupt in communal violence and tension, posing threat to national unity and progress. By discovering common ground between the two epistemological systems of *Advaita-Vedanta* and Islam, some ground has been created for the Hindus and the Muslims coming closer. This may be implied for promotion of communal harmony, national unity and solidarity and international understanding. Both these epistemological systems imply the promotion and integration of cultural ethos and value system. Common concern regarding our existing system of education can be promoted and developed by applying the common and integrated approach.

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An Introduction to Cognitive Constructivism in Education

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Abstract

Many theories of learning have been proposed in the last century until recently, behavioural psychology has influenced education to such a starting degree that it had a virtual stronghold on how textbooks were defined and how teachers planned and implemented lessons. Constructivism reflects this philosophy; Cognitive Constructivism is based on the work of Swiss developmental psychologist Jean Piaget. Piaget's theory of cognitive development proposes that humans can not be 'given' information which they immediately understand and use. Instead, humans must 'construct' their own knowledge. They build their knowledge through experience. Experiences enable them to create schemes – mental models in their heads. These schemes are changed, enlarged and made more sophisticated through two complimentary processes: assimilation and accommodation.

History of Constructivism

As a philosophy of learning, constructivism can be traced back to the eighteenth century and to the work of the philosopher Giambattista Vico, who maintained that human can understand only what they have themselves constructed. A great many philosophers and educationists have worked with these ideas, but the first major contemporaries to develop a clear idea of what Constructivism consists in, were Jean Piaget and John Dewey.

According to John Dewey, education depends on action. For him, mind is a

means of transforming, reorganising, reshaping, accepted meanings and values, a means of attending to “the lived situations of life.” Dewey kept telling his readers, “Mind is active, a verb and not a noun” (Fosnot, 1996). Dewey stressed the importance of having a student's knowledge grow from experience. Knowledge and ideas come only from a situation where learners had to draw them out of experiences that had meaning and importance to them.

Jean Piaget was another psychologist who had a great influence on the theory of Constructivism. Piaget was interested

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in the way that children think. Piaget's constructivism was based on his view of the psychological development of children. He believed that the fundamental basis of learning was discovery: "To understand is to discover, to reconstruct by rediscovery, and such conditions must be complied with if in the future individuals are to be formed who are capable of production and creativity and not simply repetition."

Constructivism certainly has a long history in education and philosophy, and there is much to be learned from that history. However, a review of that history could easily be a book in itself and cannot be presented in the constraints of a paper.

Meaning of Constructivism

The Verb 'to construct' is derived from the Latin word 'Con struere' which means to arrange or to give structure. Ongoing structuring (organising) processes are the conceptual heart of constructivism. Constructivism is a theory about knowledge and learning; it describes what "knowing" is and how one comes to know (Fosnot, 1996). "A basic assumption is that children learn when they are in control of their learning and know that they are in control," (Green & Gredler, 2002).

Constructivist epistemology assumes that learners construct their own knowledge on the basis of Interaction with their environment. Constructivism focuses on knowledge construction, and not on knowledge reproduction. Our view of the external world differs from others because of our unique set of experiences. **"We don't describe the world we see; we see the world we can describe."**

Types of Constructivism

1. Radical constructivism (Propagated by Von Glasersfield)
2. Social constructivism (Propagated by Lev Vygotsky)
3. Cognitive constructivism (Propagated by Jean Piaget)

This paper specially deals with cognitive constructivism in view of its specific implications for teaching-learning process at school without going into the purview of social radical and constructivism.

Cognitive Constructivism — Introduction

Cognitive constructivism is based on the work of developmental psychologist Jean Piaget. Piaget's theory has two major parts: an "ages and stages," which predicts what children can and cannot understand at different ages, and a theory of development that describes how children develop cognitive abilities (Chambliss, 1996). The theory of development is the major foundation of cognitive constructivist approaches to teaching and learning. Piaget's theory of cognitive development suggests that humans cannot be "given" information which they automatically understand and use, they must 'construct' their own knowledge.

Humans have to build their knowledge through experiences. An experience allows them to create mental images in their head. The role of the teacher in Piaget's theory is to provide a classroom full of interesting things to encourage the children to construct their own knowledge and to have the ability to explore. The classroom must give the

students opportunity to construct knowledge through their own experiences. They cannot be 'told' by the teacher. There is less emphasis on directly teaching specific skills and more emphasis on learning in a meaningful context.

Cognition in Piagetian constructivism generally regard the purpose of education as educating the individual child in a fashion that supports the child's interests and needs; consequently, the child is the subject of study, and individual cognitive development is the emphasis. This approach assumes that students come to classrooms with ideas, beliefs and opinions that need to be altered or modified by a teacher who facilitates this alteration by devising tasks and questions that create dilemmas for students. Knowledge construction occurs as a result of working through these dilemmas.

Theory of Cognitive Constructivism

Piaget work has identified four major stages of cognitive growth that emerge from birth to about the age of 14-16.

A child will develop through each of these stages until he or she can reason logically.

The learner is advanced through three mechanisms:

1. Assimilation – fitting a new experience into an existing mental structure (schema).
2. Accommodation – revising an existing schema because of new experience.
3. Equilibrium – seeking cognitive stability through assimilation and accommodation.

Principles of Cognitive Constructivism

There are two key Piagetian principles for teaching and learning:

Learning is an active process: Direct experience, making errors, and looking for solutions are vital for the assimilation and accommodation of information. How information is presented is important. When information is introduced as an aid to problem solving, it functions as a tool rather than an isolated arbitrary fact.

<i>Approximate Age</i>	<i>Stage</i>	<i>Major Development</i>
Birth to 2 years	Sensory motor	Infants use sensory and motor capabilities to explore and gain understanding of their environments.
2 to 7 years	Preoperational	Children begin to use symbols. They respond to objects and events according to how they appear to be.
7 to 11 years	Concrete operational	Children begin to think logically.
11 years and beyond	Formal operational	Children begin to think about thinking. Thoughts are systematic and abstract.

Learning should be whole, authentic, and 'real': Piaget helps us to understand that meaning is constructed as children interact in meaningful ways with the world around them. That means they give less emphasis on isolated 'skill' exercises that try to teach something like long division or end of sentence punctuation. Students still learn these things in Piagetian classrooms, but they are more likely to learn them if they are engaged in meaningful activities (such as operating a class store, bank or writing and editing a class newspaper). Whole activities, as opposed to isolated skill exercises and authentic activities which are inherently interesting and

meaningful to the student, and real activities that result in something other than a grade on a test or a "Great, you did well" from the computer lesson software, are emphasised in Piagetian classrooms.

Within the field of educational computing, the best-known cognitive constructivist theoretician is Papert (1993), who characterises behavioural approaches as 'clean' teaching whereas Constructivist approaches are 'dirty' teaching. The contrast emphasises the differences between approaches that isolate and break down knowledge to be learned (clean) versus approaches that are holistic and authentic (dirty).

Difference between Cognitive Constructivism and Social Constructivism

	Cognitive Constructivist	Social Constructivist
<i>The mind is located:</i>	in the head	in the individual-in-social interaction.
<i>Learning is a process of:</i>	active cognitive reorganisation	acculturation into an established community of practice
<i>Goal is to account for:</i>	the social and cultural basis of personal experience	constitution of social and cultural processes by actively interpreting individuals
<i>Theoretical attention is on:</i>	individual psychological processes	social and cultural processes
<i>Analysis of learning sees learning as:</i>	cognitive self-organisation, implicitly assuming that the child is participating in cultural practices	Acculturation, implicitly assuming an actively constructing child
<i>Focus of analyses:</i>	building models of individual student's conceptual reorganisation and by analyses of their joint constitution of the local social situation of development	individuals' participation in culturally organised practices and face-to-face interactions
<i>In looking at a group, we stress:</i>	the heterogeneity and eschew analyses single out pre-given social and cultural practices	that the homogeneity of members of established communities and to eschew analyses of qualitative differences.

Different Aspects in Cognitive Constructivism

Knowledge

Behaviourists maintain that knowledge is a passively absorbed behavioral repertoire. Cognitive constructivists reject that claim, arguing instead that knowledge is actively constructed by learners and that any account of knowledge makes essential references to cognitive structures. Knowledge comprises active systems of intentional mental representations derived from past learning experiences. Each learner interprets experiences and information in the light of their extant knowledge, their stage of cognitive development, their cultural background, their personal history and so forth. Learners use these factors to organise their experience and to select and transform new information. Knowledge is therefore actively constructed by the learner rather than passively absorbed; it is essentially dependent on the standpoint from which the learner approaches it.

Learning

Because knowledge is actively constructed, learning is presented as a process of active discovery. The role of the instructor is not to drill knowledge into students through consistent repetition, or to goad them into learning through carefully employed rewards and punishments. Rather, the role of the teacher is to facilitate discovery by providing the necessary resources and by guiding learners as they attempt to assimilate new knowledge to old and to modify the old to accommodate the new.

Teachers must thus, take into account the knowledge that the learner currently possesses when deciding how to construct the curriculum and to present the sequence, and structure new material.

Motivation

Unlike behaviourist learning theory, where learners are thought to be motivated by extrinsic factors such as rewards and punishment, cognitive learning theory sees motivation as largely intrinsic, because it involves significant restructuring of existing cognitive structures. Successful learning requires a major personal investment on the part of the learner (Perry, 1999). Learners must face up to the limitations of their existing knowledge and accept the need to modify or abandon existing beliefs. Without some kind of internal drive on the part of the learner to do so, external rewards and punishments such as grades are unlikely to be sufficient

Instruction

Cognitivist teaching methods aim to assist students in assimilating new information to existing knowledge and enabling them to make the appropriate modifications to their existing intellectual framework to accommodate that information. Thus, while cognitivists allow for the use of “skill and drill” exercises in the memorisation of facts, formulae, and lists, they place greater importance on strategies that help students to actively assimilate and accommodate new material. For instance, asking students to explain new material in their own words can assist

them in assimilating it by forcing them to re-express the new ideas in their existing vocabulary. Likewise, providing students with sets of questions to structure their reading makes it easier for them to relate it to previous material by highlighting certain parts and to accommodate the new material by providing a clear picture because learning is largely self-motivated in the cognitivist framework. Some cognitivists have also suggested methods which require students to monitor their own learning. For instance, the use of upgraded tests and study questions enables students to monitor their own understanding of the material. Other

methods that have been suggested include the use of learning journals by students to monitor progress and highlight any recurring difficulties, and to analyse study habits (Campione, Shapiro and Brown 1995).

Comparison of Classroom Scenario

Brooks & Brooks (1993) offer an interesting comparison of the visible differences between the traditional and the cognitive constructivist classroom:

A cognitive constructivist classroom provides children opportunities to observe, work, explore, interact, raise question enquire and above all share their experiences with others.

<i>Traditional Classroom</i>	<i>Cognitive Constructivist Classroom</i>
Student primarily work alone.	Students primarily work in groups.
Curriculum is presented part to whole, with emphasis on basic skills. (bottom-up) Curriculum is presented whole to part with emphasis on the big concept (top-down).	Strict adherence to a fixed curriculum is highly valued. Pursuit of student questions is highly valued.
Curricular activities rely heavily on textbooks of data and manipulative materials. Curricular activities rely heavily on primary sources.	Students are viewed as "blank slates" onto which information is etched by the teacher. Students are viewed as thinkers with emerging theories about the world.
Teachers generally behave in a didactic manner, disseminating information to students.	Teachers generally behave in an interactive manner mediating the environment for students.
Teachers seek the correct answers to validate students lessons.	Teachers seek the student's point of view in order to understand student learning for use in subsequent conceptions.
Assessment of student learning is viewed as separate from teaching and occurs almost entirely through testing.	Assessment of student learning is interwoven with teaching and occurs through teacher observation of students at work and through exhibitions and portfolios.

They build up school knowledge on their experience base and get a task of understanding. They often are assessed on what they know rather than what they don't know. Here it is important to quote from the National curriculum framework 2005 the following:

"In the constructivists perspective, learning is a process of construction of knowledge. Learners actively construct their own knowledge by connecting new ideas to existing ideas on the basis of materials/activities presented to them. The curriculum must

enable children to find their voices, nurture their curiosity- to do things, to ask questions and to pursue investigations, sharing and integrating their experiences with school knowledge rather than their ability to reproduce textual knowledge. Reorienting the curriculum to this end must be among our highest priorities, informing the preparation of teachers, the annual plans of schools, the designs of textbooks, learning materials and teaching plans, and evaluation and examinations patterns." (NCF 2005 p.17)

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Role of Kasturba Gandhi Balika Vidyalaya in the Educational Development of Scheduled Tribe Girls in Jharkhand

PUSHPA MANDAL*

Abstract

Elementary education for all the children of age group 6-14 years in the India is an essentiality. It is considered as fundamental to all round development of the individual, both at material and spiritual levels. Elementary education is known to lead to better family health and slower population growth. It creates in the individual, the capacity to take advantage of technological changes, leading to enhancement in productivity and economic benefit.

Introduction

The Government of Jharkhand runs various schemes to universalise elementary education in the State. All the educational ventures are developed and implemented by the Ministry of Human Resources, Government of Jharkhand, through The Department of Primary Education and the Department of Secondary Education. Jharkhand lags behind substantially in literacy rate in comparison to the national literacy levels. The overall literacy level in Jharkhand is 54 per cent in comparison to the national average of 65 per cent.

The female literacy level in the State is dismally low at only 39 per cent against the national female literacy level of 54 per cent. The literacy level of the Scheduled Tribes in the State (41 per cent) is also below the national average literacy level for the Scheduled Tribes (47 per cent).

Gender-wise, the literacy level for the Scheduled Tribes males in the State (54 per cent) is lower in comparison to the literacy level for the Scheduled Tribes males at the national level (59 per cent). Similarly, the literacy level for the Scheduled Tribes females in the State

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(27 per cent) is lower in comparison to the literacy level for the Scheduled Tribes females at the national level (35 per cent).

This shows that the State needs to provide special attention towards improving the literacy level of the people of the State in general and the Scheduled Tribes and the women in particular through focussed interventions directed towards the Scheduled Tribes and women.

Sarva Shiksha Abhiyan

One of the major interventions for the development of education after creation of Jharkhand was the implementation of *Sarva Siksha Abhiyan* (SSA) - a mission mode program of the Government of India to achieve Universalisation of Elementary Education (UEE) under Education for All (EFA) Program. Jharkhand Government has initiated a number of programs under SSA. Thrust has been given to improve educational facilities through SSA; particularly to increase female literacy among SC and ST communities in the State.

In the entire state Implementation of Kasturba Gandhi Balika Vidyalaya (KGBV) Yojana is a viable intervention in this endeavor particularly in providing opportunity to continue education to the girls from marginalised groups who are out of school or have not completed elementary education. The scheme has been operationalised in the year 2000 in over 3000 educationally backward blocks in the country, where the female rural literacy rate is below the national average and the gender gap in literacy is higher than the national average.

Thrust areas of KGBVs

- Focus on educationally backward blocks in terms of girl's education.
- Focus on disadvantaged sections of girls, like those belonging to the Scheduled Castes, Scheduled Tribes, Minorities, etc.
- Gender specific issues and focus on the educational needs of adolescent girls.
- Girls: Reinforcing their needs for participating in educational programs.

Norms and guidelines are issued with regard to location of school building and other infrastructural aspects of KGBVs. Accordingly, it is decided that School building should not be in a crowded place and boundary wall should be ensured with school and hostels (separate kitchen) in the same campus along with residential facilities for teachers inside the campus.

Further, as per norm pupil teacher ratio should not be more than 30:1. There should be adequate number of teaching (subject teacher) and non-teaching staffs. Campaign activities visualised to be an important aspect to motivate parents to send their daughters' to KGBVs.

Curriculum

- NCERT Curriculum has been adopted in the schools.
- Arrangements are made for bridge course for drop-outs and over aged girls.
- Course content of bridge courses should cover Classes I to V and course duration is maintained for each girl separately.
- Extra curricular activities are ensured.

Monitoring and Community Support

There is thrust for evolving a proper strategy for external monitoring and supervision of KGBVs and community support as well.

KGBV in the Context of Jharkhand

Under KGBV Yojna in Jharkhand, 74 schools have already been made functional in the first phase and another 84 schools are planned to be started shortly by the Department of Human Resources Development, Government of Jharkhand. These schools are meant for the drop out girls to facilitate them to continue their education by providing a second opportunity for mainstreaming. Under the scheme, these girls were being provided an opportunity to complete their education upto Class VIII. KGBV has emerged as a landmark in girl's education in Jharkhand. The objective of KGBV is to ensure access and quality education to the girls of disadvantaged groups of the society by setting up residential schools with boarding facilities. Keeping in view the objectives of KGBVs broad objective of the study was to find out the role of Kasturba Gandhi Balika Vidyalayas in the educational development of Scheduled Tribe girls in Jharkhand and how effective there have been in mainstreaming these girls in the education system. The specific objectives of the study were:

1. To find out the physical status of Kasturba Gandhi Balika Vidyalayas, including the infrastructure facilities available.
2. To assess as to what extent KGBVs are equipped to impart quality education to the clientele group.

3. To explore the role of Kasturba Gandhi Balika Vidyalayas in promoting education among Scheduled Tribe girls in Jharkhand.

Sampling Plan

The state of Jharkhand is administratively divided into 5 divisions. There are 74 KGBVs (first phase) in the State in 74 different blocks, spread across 16 districts of the 5 divisions. For this study, 5 KGBVs were randomly selected from each of the 5 divisions. Thus, a total of 25 KGBVs were selected for this study.

Research Method

In each selected school, two separate schedules were administered, one for the school warden and another was the observation schedule. Separate schedule was administered to the Block Extension Education Officer (BEEO) of the selected blocks. Thus, 25 BEEOs were covered under the study.

Keeping in view the objectives of the study, thrust was given to find out the socio-economic and educational status of ST students studying in these schools. In order to find out the role of these schools on educational development of students particularly of the ST students, the sample drawn consisted of both, ST students (73 per cent) and non-ST student (27 per cent).

From each school, a total of 15 students were randomly selected - 5 each from Class VI, Class VII and Class VIII. A separate schedule was administered to their students and their Parents. In this way the study covers a total of 375 students and many parents.

Profile of Students

Average Age of Students Admitted in KGBVs

The average age of ST students admitted in KGBVs in comparison to non-ST students is found to be slightly higher. The average age of ST students studying in Class VI was 13.20 years, while the average age of ST students studying in Classes VII and Class VIII was 13.99 years and 14.45 years respectively.

Educational Profile of Students at the Time of Admission to KGBV

53 per cent ST students presently in KGBVs had completed education of Class V level while another 27 per cent of the ST students had completed studies up to Class VI earlier. Another 8 per cent ST students had education of Class VII level. While less than 1 per cent had completed up to Class VIII. About 6 per cent ST students were such who had completed only Class IV, while 5 per cent had completed Class III before joining KGBV. About 1 per cent such ST students were admitted to KGBVs who had never been to school before.

Overall (ST and non-ST), half the students (51 per cent) presently studying in KGBVs had completed studies upto Class V.

Reasons for Drop out from Previous School

Following reasons have been reported by the students and their parents for drop-out:

- Poverty of the parents.
- Location of the middle school far away from the village.

Teacher absenteeism was the reason for drop-out for 15 per cent ST students and 20 per cent overall students.

Around 13 per cent ST students and 17 per cent overall students currently studying in KGBV said that they did not leave their previous school, they were regularly attending school, however, they stated that since all the expenses in KGBVs are borne by the Government, they preferred KGBV.

Position and Profile of Teachers

Three-fourths (71 per cent) KGBVs had 4 teachers in the school, while remaining one-fourths (29 per cent) KGBVs had 3 teachers. All KGBVs except one had a science teacher. Data also revealed that in 29 per cent schools, there was no separate mathematics teacher.

Educational and Professional Qualification of Teachers

Around 44 per cent teachers in KGBVs were graduate, while remaining 56 per cent teachers were post graduate. Around 46 per cent teachers had some kind of professional qualification while the remaining 54 per cent teachers do not have any professional qualification. Amongst the teachers who had some kind of professional qualification, 78 per cent were B.Ed. qualified, while 12 per cent teachers had done a course in Computer Application. Remaining (10 per cent) teachers had done other courses like, LLB, Music, Typing, etc.

Experience of the Teachers

Two-third (64 per cent) teachers were fresher, who had no prior experience of teaching in school.

Infrastructure Facilities in KGBVs

Location of KGBVs

About 80 per cent KGBVs were located in the block where they were sanctioned. In the remaining 20 per cent cases, KGBVs were located in some other block of the same district.

Availability of infrastructural facility is pertinent in imparting quality education. In view of this it was observed that in 64 per cent, of the school buildings were found to be in "Good Condition". As far as number of classrooms is concerned 68 per cent of the schools had three class-rooms while only in one KGBV there was four class-rooms.

Two-thirds of the schools (68 per cent) were found to have electricity connection in working condition. In another 8 per cent schools, there was electricity connection but it was not in working condition.

In all the KGBVs, except in block Iechagarh, district Seraikela, there was proper and adequate toilet facility for the students.

For drinking water facility there is either hand pump or facility of overhead tank or supply water. Only in 4 per cent of the schools children use the hand pump located outside the school campus.

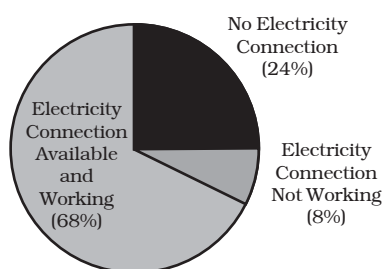


Fig. 1: Availability of Electricity in the School

In 44 per cent schools, there was boundary wall. However, in another 20 per cent schools, boundary wall was incomplete. In the remaining one-third of the schools (36 per cent), there was no boundary wall.

Seating Arrangement

In three-fourth of the schools (76 per cent) there were desks and benches in the classrooms. In the remaining one-fourth of the schools (24 per cent), *durries* were provided in the classrooms.

School Uniform

There was dress code for students for school hours. All the students had been provided one set of school uniform (1 skirt, 1 shirt, 1 neck tie and 1 pair of shoes) free of cost at the time of admission. It was observed that there was requirement for additional uniform sets.

Availability of Teaching Learning Materials (TLMs)

As far as TLMs are concerned all the students were provided with the text-books as per the curriculum. Almost all (96 per cent) schools had variety of maps available in the school.

As such, there was no formal library facility in its true sense with proper seating arrangements for reading.

Status of Vocational Education to Children

In 92 per cent KGBVs there was provision for vocational education. Such as painting, sewing, embroidery, knitting, making artificial jewelery, horticulture, music, dancing, handicraft works, etc. Suitable training is being provided to the students. In remaining 8 per cent

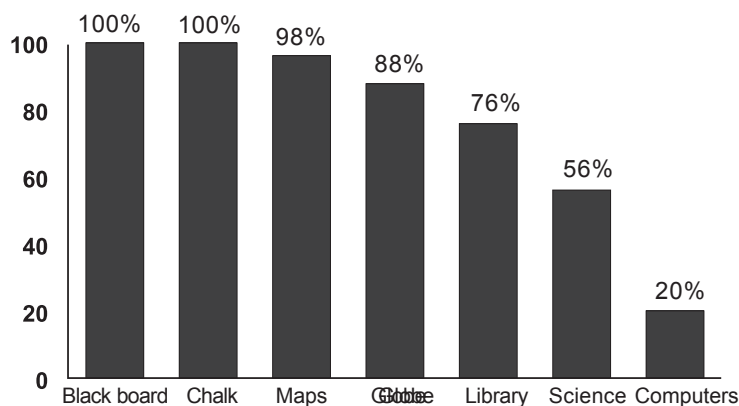


Fig. 2: Availability of TLMs/TLEs

KGBVs, there was no provision for vocational education. As far as games and sports is concerned, variety of indoor and outdoor games and sports equipments were available in the schools.

Infrastructure Facilities in Hostels

Infrastructural facilities in the hostels in terms of electricity was found to be in satisfactory condition in 84 per cent. However, in 16 per cent of the hostels, there was no electricity connection. Whereas, 80 per cent of the KGBVs had generator facility, while in the remaining it was lacking.

As per norms of KGBVs only in three-fourth (76 per cent) of the KGBV hostels, there was separate kitchen facility. In the remaining 24 per cent KGBV hostels there was no separate kitchen facility.

Boarding Facilities

Boarding facility in terms of availability of beds, could not find to be satisfactory. Only in one-fourth (24 per cent) of the KGBVs, separate cots were available for

each student. As far as Medical and Telephone Facility is concerned it is available in two-third (64 per cent) of KGBV and only in one-fourth (24 per cent) of the KGBV hostels respectively.

Recreation Facilities in Hostel

In 88 per cent KGBVs, television was available in the hostel, while in the remaining 12 per cent KGBVs television was not available.

Perception of Students about KGBV

(i) Perception about Teaching Methodology

Among ST student, 73 per cent student found teaching methodology very satisfactory and satisfactory respectively. According to them teaching had made learning easy, interesting and joyful, because variety of teaching aids is used during teaching.

(ii) School Environment

As per academic environment of the schools is concerned, About 98 per cent students (both ST and non-ST) mentioned

that the school environment was joyful in terms of learning together, teaching-learning strategy, TLEs/TLMs and other facilities as compared to their previous school. Along with learning environment, extra curricular activities and vocational training impetrated has created a joyful environment in the school.

(iii) Perception about Behaviour of Teachers

About 36 per cent students expressed that the behaviour of teachers in school was "cordial", while 43 per cent ST students were of the same view.

(iv) Scholarship

Under KGBV scheme, there is a provision of scholarship of Rs. 50/- for the students. Around 42 per cent students said that they get a monthly scholarship of Rs. 50/- from the school. On the other hand, about 53 per cent students said that they do not get any scholarship, while the remaining 5 per cent students said that they were not aware of any scholarship. When asked, it was informed that the scholarship amount of Rs. 50/- for each

month is directly deposited in the bank. Hence the students are not aware of the same.

(v) Quality of Food

As far as quality of food is concerned, 54 per cent ST students told that the quality of food was very good and good respectively. While 2 per cent ST students told the food was 'average'. For remaining 2 per cent ST students however food was 'bad'.

(vi) Strength and Weaknesses of KGBVs

Effort has been made to find out Strength and Weaknesses of KGBVs in terms of teaching-learning strategies and extra-curricular activities.

Multiple responses recorded shown in the table below:

(vii) Weaknesses about KGBV

- Inadequate number of beds and desk-bench in the classroom
- Lack of playground
- Unsatisfactory toilet facility
- Lack of cleanliness/hygiene in and around school

Table 1: Strengths of KGBV

<i>Description</i>	<i>ST Students (%)</i>	<i>Overall (%)</i>
Teaching Method is good	73	74
There are Extra curricular activities	66	70
All activities of KGBV are good	56	54
All facilities are available in the school/hostel	49	49
Quality of food is good	54	49
Behavior of teachers is cordial	43	36
Vocational trainings imparted	19	18
Overall discipline of the school is good.	9	10

In spite of the above stated weaknesses, all students expressed their desire to stay in hostel and study in KGBV. Specific reasons behind this stated by the students mentioned below:

imparted in the school would help her in future in contributing financially to the family. Positive behavioural and attitudinal changes in the child observed by parents are of satisfaction. She

Table 2 : Reasons for Staying in Hostel

<i>Description</i>	<i>ST Students (%)</i>	<i>Overall (%)</i>
Get more time to study.	45	45
Like to stay in KGBV hostel because they get all facilities.	33	32
Holistic development opportunities available in the school/hostel.	28	31
Attention and support of teachers provided in studies.	10	10

Perception of Parents about KGBVs

(i) Reasons for Sending the Child to School

Till recent past, particularly in rural areas, people would not give much importance to education of their girl child. Opening and functioning of KGBVs has been able to bring an attitudinal change and change in the perceptions among parents regarding education of their girl child. Now they accept that education will bring development and success in their daughter's life.

Parents expressed that by providing education, they want their daughter to be capable of earning her livelihood and they also want to make her independent (56 per cent). They further added that their daughter should study further (35 per cent) to learn more. It will facilitate her in solving problems herself and make her an educated citizen (17 per cent parents).

Parents belonging to ST community mentioned that Vocational Skill training

maintains discipline in her daily activities mentioned by parents.

(ii) Development and Achievements of Students

Ninety six per cent parents (both ST and non-ST) said that there had been improvement in the academic achievements of their daughters after they have been enrolled in KGBVs. The remaining 4 per cent said that they could not say anything on this matter as they are not literate and it is beyond their comprehension to assess this change. Observations of both ST and non-ST parents are found to be quite similar. Developments in achievements of students as observed by the parents are mentioned below:

Role of KGBV in development of Girls' Education

Staying in remote rural areas and getting education was a dream for the parents, particularly for the parents from ST

Table 3: Achievements of Students

<i>Description</i>	<i>ST Parents (%)</i>	<i>Overall (%)</i>
Her understanding has improved, particularly in English, Hindi and Mathematics.	54	54
She is able to share her experiences and things learnt in school. She is eager to learn new things.	31 16	35 12
Earlier she could not speak Hindi. Now she can communicate in Hindi.		

community. Now they can see their dreams come true for their daughter by providing them education in KGBVs in their area. The perception of parents regarding education of girls has changed. Now they believe that education is equally important for girls for better life and living. Development of self-esteem and self confidence through education will facilitate girls to contribute for the family, community and the society, as a useful and productive citizen they mentioned.

Overall Perception of ST Parents about KGBV

Ninety per cent parents were satisfied with working of KGBVs in terms of food, safety measures for the security purpose, provision of extra-curricular activities including sports and medical facilities. 96 per cent parents were satisfied with the availability of textbooks for children in KGBVs.

About 94 per cent parents were satisfied with the school uniform given to their children. Opening of KGBVs motivated and generated aspirations to parents (ST community, particularly) for further education of their daughters. All parents said that they wish their daughters to continue studies after

passing out from KGBV. However, 14 per cent said that because of poverty they would not be able to send their daughter to pursue higher education after KGBV. They wish that every girl in the village should enroll in KGBV.

During interactions, it was realised that both parents and the children wanted to continue education in KGBV and beyond. They find KGBV as an opportunity to enter in the mainstream of education and lead a better life. Precisely parents and the children were satisfied with the education and overall facilities available in KGBV and hence assured that they would inform their friends and relatives about KGBV so that more and more girls could avail this opportunity.

Imparting Quality Education to Students

Quality in and of education has always been a priority area and a prominent agenda of various committees and commissions from time to time. Efforts have been made accordingly to achieve quality in education. The NPE 1986 and the Program of Action 1992 had recommended a number of measures for improvement in content and processes of classroom teaching, improvement in

school facilities, provision of additional teachers, standardising levels of learning for primary stage and many more.

Quality of education is complex and relative in nature. It depends on a number of parameters and various contexts, such as rural, urban, tribal, non-tribal, socially disadvantaged and marginalised groups etc. On the other hand it is also a fact that by providing one or two inputs/conditions, quality education can not be ensured. Quality education is based on number of factors. Precisely the major factors that influence quality in elementary education are as follows:

- Basic infrastructure and other facilities
- Learning environment
- Teacher and teacher preparation
- Curriculum and teaching-learning material
- Teaching-learning process
- Instructional time (Teaching-learning time)
- Evaluation, monitoring and supervision
- Community participation and support

Keeping in view the above analysis regarding various infrastructural facilities it is observed that various conditions for imparting quality education as enumerated above are existing in KGBVs.

As far as curriculum is concerned Jharkhand has adopted NCERT syllabus for school education including KGBVs as well. During study hours, teachers are available to provide guidance and solve their difficulties. In all KGBVs examinations are conducted on regular

basis i.e., monthly, quarterly, half-yearly and annually.

Organisations of various co-curricular activities such as, debates, quiz competitions, spelling and word meaning competitions, general knowledge test etc., have been able to create an environment which is conducive for learning. Learning environment of KGBVs has been able to create awareness and interest of students in studies, facilitating them to strive for better results. Prizes are distributed for motivating students.

Students in each class have been classified into categories A, B, C and D as per their achievement level. However, data revealed that there is no arrangement for remedial teaching for students who were weak and slow in learning (21 per cent schools) while 8 per cent of parents mentioned about the Bridge Courses. The teachers in KGBV are also aware of quality education. In 17 per cent schools, the teachers told that they use child friendly teaching methods while teaching, such as, demonstration method, illustrations and citing various examples to explain different curricular areas and for better comprehension. Regular monitoring and evaluation of children are conducted in order to assess their achievement level and to identify their areas of hard spots.

Role of KGBV in Promoting Education of ST Children

Jharkhand is a state where more than 26 per cent population is tribal (Census 2001), who primarily lives in the rural areas of the state. The tribals are the marginalised and disadvantaged

community in all aspects due to their traditional style of living and poor social and economic conditions over the centuries. The rural tribal women and girls have always been deprived of proper education and have been the most disadvantaged group of the society.

These groups constitute a sizeable proportion and although engaged in pursuits of vocational activities in primary or secondary sectors, have failed to take the advantage of various educational programs. They are unable to acquire knowledge of three R's (reading, writing and arithmetic) and to upgrade their vocational skills which in turn will be able to contribute towards their family and the society at large.

KGBVs have been successful in attracting these targeted girls once again to mainstream them in the education system, providing them a second opportunity and be at par with children from general category. In Jharkhand, there are large numbers of blocks where female literacy rate is lower than the national female literacy rate. In these blocks the female literacy rate needs to be increased, to empower the women and made them emancipate from ignorance and poverty.

A new avenue has been created for the rural girls from ST community to continue their education since the functioning of KGBVs across the state. KGBVs have provided a platform in reducing gender gap in education which is an important step towards achieving the goal of UEE. It is education that will provide the next generation with the tools to fight poverty and conquer diseases. It is this parity in education that will ensure a future in which girls

are safe, healthy, protected and empowered.

Education of girls is inextricably linked to other aspects of human development. It allows women greater control of their lives and provides them with skills to contribute to the societies. Through women empowerment produces all the other developmental and social benefits. It is envisaged that the initiative of KGBV is to provide educational facilities to the girls belonging to ST, SC, minorities and marginalised sections of the society. And in turn prove to be significant in empowerment of the girls in rural areas. More so, this will pave the way for the girls in ST communities to be in the main stream who are mostly first generation learners.

Schedule tribes community who were unable to avail the educational facilities earlier has now found to be interested in sending their daughters to school. They have realised the importance of education, particularly for their daughters. The study revealed that now more and more parents are coming forward and are motivated to send their girls to KGBV to continue their education, which could not afford due to socio-economic constraints.

Data also revealed that as much as 92 per cent parents are now expecting that their dream about their daughter's education would come true. They observe that there is improvement in various aspects of their personality with regard to their daughter's behaviour and attitudinal change, communication skills, discipline, awareness regarding personal healthcare and hygiene. They were found to be satisfied with their daughter's overall progress in school.

Number of over aged children is more in ST category as compared to general followed by SC categories. The scheme has provided opportunities to such children to join KGBV and pursue their education. Since KGBVs are functioning from recent past it is envisaged that gradually it would be established with all basic amenities and infrastructure facilities to meet the needs. In spite of some of the shortcomings it has successfully been able to mobilise girls for their participation in the process of education.

Days are not far when these schools would prove to be a viable alternative in rural areas in promoting education amongst ST girls, facilitating government and non-government agencies in achieving the goal of Universal Elementary Education (UEE) under Education for All (EFA).

Learnings and Recommendations

The learning from the study has been classified into three broad heads, namely, academic, administrative and infrastructure along with recommendations for strengthening the working of KGBVs.

Academic Issues

- Teacher Pupil ratio as per norms (1:32) in the KGBVs indicates a positive step towards the concern for quality education.
- Efforts should be made to appoint separate teachers for all subjects.
- Preference should be given to recruit trained teachers only.
- In-service training should be provided to the existing teachers in

KGBVs to facilitate improvement in teaching-learning process.

- To inculcate reading habit among children, there should be a fixed time in the time table when the children should go to the library and have access to variety of books, journals, magazines and newspapers.

Administrative Issues

- Provision of one additional set of uniform, stationary items and toiletries should be ensured to avoid inconvenience of the students.
- Quality of food given in the hostel should be regularly monitored so that a basic minimum standard is maintained on the quality of stuff served to the students.
- Parents should be encouraged to attend parent teacher meetings as parent teacher meetings are an important source of information for the parents to know about their ward's progress and achievement level.
- More and more parents should be encouraged and invited to attend the school functions by which they will be able to identify the potentialities and talents of their wards.

Infrastructural Issues

- Efforts should be made to expedite the process of establishing KGBVs in the same block where they have been sanctioned.
- Basic infrastructural facilities with regard to boundary wall, class rooms, should be constructed to

create desired learning environment in the school.

- Adequate arrangements for costs and provision of telephone should be made available in the hostel for safety and convenience of the hostellers.

Conclusion

From the research study conducted in 25 KGBVs spread over 5 districts and ascertaining the views of the parents, teachers and teachings regarding the role of KGBVs, their contribution towards educational development of tribal girls in Jharkhand, following conclusions can be drawn:

- KGBV scheme has made a good beginning and started fulfilling the expectations of the government, parents and children from ST communities in particular. As far as infrastructural facilities are concerned it needs more concerted efforts to improve the same for better achievements of the students.
- Though inadequate in some aspects girls from disadvantaged community in the rural areas have got opportunity to continue their education. It has given them the exposure which has opened the window of the world for them.
- Lack of trained subject teachers is one of the important areas where it calls for immediate attention of state authorities. This has direct affects on the quality of teaching, hence definite and positive intervention need to ensure.
- KGBVs should be up-graded up to high school if not +2 level, so

that such students may get the facility for completion of education up to a respectable standard. It is this parity in education that will ensure a future in which girls are safe, healthy, protected and empowered.

- Since most of the students who are admitted in KGBVs are from socially and economically disadvantaged society there should be provision of more and more skill training enabling them to undertake income generating activities in future which will facilitate them to establish themselves in their life and contribute for the society. This kind of education will provide the next generation with the tools to fight poverty and disease. It has generated hope and aspirations among ST parents to visualise a better life and living in future for their daughters.
- Since the scheme has rendered positive and appreciable results, it is desired to extend the coverage of KGBVs in all the blocks predominantly ST community where the scheme has not been extended as yet.
- The state Government is committed to achieve UEE within the targeted period of time therefore it has to work harder in the future, to rectify and address the shortcomings of workings of KGBVs to achieves its objectives.
- Concerted, systematic determined and calculated efforts, suitable policy decisions and their execution, monitoring and

supervision at all levels with involvement and missionary zeal is called for on the part of government teachers, community people and

local body members to fulfill the goals of KGBV in imparting quality education enabling the tribal girls to achieve a brighter future.

Note: This Article is based on a Research Study undertaken by the author and Shri Vikram Srivastav as Research Associate, Unit Head, AMS (an NGO) sponsored by Jharkhand Education Project Council, under Ministry of Human Resources, Govt. of Jharkhand, Ranchi, during 2007-08.

Relevance of Pre-service Elementary Teacher Education Curriculum to Real Classroom Situation

ANITA RASTOGI* and CHANCHAL GOEL**

Abstract

Good education demands good teachers. But inspite of establishment of a number of teacher training institutions, it is still found that primary school instruction in general conforms to a mechanical routine. There is a growing feeling that teacher education is not effective in turning out efficient teachers. The system still prepares teachers who don't necessarily become professionally competent and committed at the completion of initial teacher preparation programme. This highlights the need to study how far the inputs provided in the PSTE programme are relevant to classroom situation; what are the problems faced by these teachers in applying the methodologies learnt and what needs to be done for making Pre-Service Teacher Education (PSTE) programme inputs more relevant. In present study perception of teachers, working in Municipal Corporation Primary schools of NCT Delhi with the professional qualification as diploma in ETE from DIETs of Delhi has been studied regarding the relevance of 'Teaching of Mathematics' curriculum in Pre-service Elementary Teacher Education Programme for teaching Mathematics at primary stage. The study revealed that the content designed for 'Teaching of Mathematics' curriculum suits to the requirements of the elementary teachers at large but the way it is being transacted in teacher training institutions suffers from various lacunas.

Education can build up qualified and creative work force that can adopt new technologies and advance knowledge in such a way that economic development goes hand in hand with responsible

management of the physical, human and cultural environment. Thus, education is the corner stone for increasing the productive capacity of societies and their Political, economic and scientific institutions.

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There is an overwhelming concern regarding the quality and relevance of the education. Education of satisfactory quality has a pre-requisite, it demands teachers who are professionally well prepared and are aware of the latest developments in the curriculum transaction strategies and techniques of teaching. They need to have an understanding of the changing socio-economic scenario; the changing demands of the society and the expectations of the people from education. It can be stated in very simple terms 'good education demands good teachers'. Thus, the 'goodness' of an educational programme to a large extent is dependent on the quality of teachers available to implement it. A school may have excellent material resources in the form of equipments, buildings and textbooks and though curricula may be appropriately adapted to community requirements, if the teachers are misfits or are indifferent to their responsibilities, the whole programme is likely to be ineffective and largely wasted (Ryan, 1969). Thus, improved physical facilities, teaching techniques etc., no doubt supplement a teacher's efficiency, but these cannot substitute an effective teacher. The importance of an effective teacher in educational process is indeed indisputable. The quality of school education is the direct consequence and outcome of the quality of education of teachers. According to Willey and Maddison (1971) "Sending into school unsuitable persons, badly trained, can be as harmful to school children as any shortage of teachers". In fact poor teaching by badly trained teachers can be more harmful than no teaching; for

in the former case the child has learnt wrong things whereas in the later case he has not learnt anything wrong.

Over the years, various steps have been taken to improve the quality of education of teachers. Establishment of District Institute of Education and Training (DIETs) is one of the major steps in this direction. DIETs are supposed to act as pace setters for other institutions in terms of meticulous, effective and efficient planning, execution functions, harmonious and creative organisational climate, maintenance of clear and attractive campus etc. Of the various functions performed by DIETs, the function of providing Pre-Service Teacher Education (PSTE) to the prospective teachers occupies a place of paramount importance.

Keeping in view the teachers' role at elementary stage, DIETs offer a full time two year diploma programme in the Elementary Teacher Education (ETE) for preparation of elementary teachers, comprising of- foundation courses and other related areas; pedagogical courses in different school subjects; school experience programme; and practical work.

The programme aims at enabling the prospective teachers to understand the demands that the society expects of education to fulfill, the problems and issues related to education, the teaching-learning strategies to promote learning among children etc.

However, inspite of establishment of DIETs and a number of other teacher training institutions, it is still found that primary school instruction in general conforms to a mechanical routine. It continues to be dominated by old besetting evil of verbalism and therefore

remains dull and uninspiring. It has been observed that majority of teachers are not able to perform their roles and function effectively. Somehow they have developed the perception that their role is to teach the prescribed syllabus and textbooks. Even in this limited role aim of teaching is to stuff children's mind with bit of information rather than development of higher order mental abilities like critical thinking, creative thinking and independent thinking (SCERT; 1999). There could be two possible reasons for this miserable condition of primary schools i.e. either the teachers working in these schools don't do what they are expected to do or they can't do at all. Teachers don't do their work effectively reflects that these teachers are not motivated enough to perform their function well. They are not at all willing to do so. Teachers can't do means these teachers are not competent enough to face present challenges of education. They are not well trained and are not able to practice what they have learned during their training programme. The shortcomings in teaching process and the poor achievement level of the students reflect the deficiencies in the teachers' training. There exists a gap between what is there (present situation) and what is required. Teacher education by and large is conventional in its nature and purpose. There is a growing feeling that teacher education is not effective in turning out efficient teachers and this concern is adequately reflected in the National Policy on Education (NPE) 1986 and the Programme of Action (POA) 1992. The system still prepares teachers who don't necessarily become professionally

competent and committed at the completion of initial teacher preparation programme (Curriculum Framework for Quality Teacher Education; 1998). This highlights the need to study how far the inputs provided in the PSTE programme are relevant to classroom situation; what are the problems faced by these teachers in applying the methodologies learnt and what needs to be done for making Pre-Service Teacher Education (PSTE) programme inputs more relevant.

Teaching of Mathematics is an important component of ETE programme. Rationale for introducing this component is to enable teachers to develop competence to introduce mathematical concepts effectively and develop computational skills, logical thinking, confidence and interest in mathematics among students using varied motivational techniques and activity based teaching - learning.

The Education of mathematics teachers comprises both their education in mathematics as a subject and their education as teachers of this discipline. First of these while essential to good teaching, does not necessarily provide for an easy acquisition of the second. To a considerable extent and more than many other school subjects mathematics is a discipline typically driven more by memory and tight logic than by first hand experience and experimentation. The contrast between learning one's discipline and learning to teach can be acutely uncomfortable for teachers of mathematics, if it is not understood and resolved during teacher education. So, an attempt has been made to study the relevance of teaching of mathematics curriculum in Pre-service Elementary

Teacher Education Programme for teaching Mathematics at primary stage as perceived by practicing assistant teachers.

Objectives

Following were the objectives of the study:

- To study the perception of teachers about the relevance of Teaching of Mathematics curriculum for teaching mathematics in actual classroom situation.
- To identify the relevant and irrelevant inputs in Teaching of Mathematics Curriculum.
- To suggest modifications in the existing Teaching of Mathematics Curriculum.

Methodology

Method

The survey method had been used for the collection of data in accordance with the nature of present study.

Sample

Sample for the present study comprised 50 teachers, working in Municipal Corporation, Primary Schools of NCT Delhi with the professional qualification as Diploma in ETE from DIETs of Delhi and 1-2 years of teaching experience in Municipal Corporation Primary School of Delhi. The method used for the selection of schools was purposive.

Selection of Teachers

From the selected schools all the assistant teachers with one or two years of experience who have passed the Diploma in ETE course from DIETs not more than three years before joining the

school were considered for the study. These teachers were selected as the investigators felt that the teachers who were having less than one year of experience may not be able to say categorically about the relevance of curricular inputs in the real classroom situation and the teachers who have passed their diploma in ETE course three years ago might have forgotten about the details of the curricular content transacted and the strategies adopted for its transaction during the programme.

Tools Used

For conducting the present study the investigators constructed the tool due to the non availability of any standardised tool for collection of data related to the present study.

A questionnaire had been developed for:

- Studying the perception of teachers.
- Finding out reasons for not finding certain inputs relevant.
- Seeking suggestions of practicing teachers for modification of existing curriculum.

For development of questionnaire the ETE curriculum document was consulted and discussion with ETE first year and second year students was held to identify the curricular inputs in Teaching of Mathematics. The final form of questionnaire consisted of two parts. Part one contained three questions and part two contained 43 questions. All the items in the questionnaire were related to the relevance of 'Teaching of Mathematics' curriculum to real classroom teaching. The questionnaire included the items related to following aspects-

Objectives of Teachings mathematics at primary and upper primary stage:

- (a) Piagetian stages of number development
- (b) Knowledge of different mathematical concepts
- (c) Lesson-planning
- (d) Teaching Learning strategies
- (e) Maths Kit
- (f) Teaching Aids in general
- (g) Motivational Strategies
- (h) Recreational Activities
- (i) Instructional Material
- (j) Activities for average below average and above average students
- (k) Integrated Teaching
- (l) Evaluation
- (m) Suggestions from teachers for improving the teaching of Mathematics Curriculum.

Data Analysis and Interpretation

The data was analysed qualitatively. To make meaningful inferences the results of the study were interpreted and discussed on the basis of deductive reasoning, logic, rationale, actual experiences and general observations of the prevailing conditions.

Results and Discussion

Results of the study have been dealt in two parts. The first part deals with perception of assistant teachers regarding various aspects of 'Teaching of Mathematics Curriculum' and second part covers the suggestions given by assistant teachers regarding modifications required in the existing curriculum.

Perception of Assistant Teachers Regarding Various Aspects of 'Teaching of Mathematics Curriculum'

It was found that all the teachers were in favor of including 'Teaching of Mathematics' as a subject in Pre-service elementary teacher education curriculum, as it provided them necessary knowledge of various teaching-learning strategies. However, around one-third teachers considered it helpful only to some extent in real-classroom teaching, thereby pointing towards inadequacies in pre-service teacher education Mathematics curriculum. Perception of teachers related to various aspects of 'Teaching of Mathematics' curriculum is as follows-

- (a) **Objectives of Teaching mathematics at primary and upper primary stage-** Teachers considered the knowledge of objectives of teaching mathematics at primary stage as a relevant component of ETE curriculum as it helps them in choosing appropriate techniques of teaching and evaluation. But around 50 per cent teachers found objectives of teaching mathematics at upper primary level relevant only to some extent. This may be because of present administrative structure of school education. At present no such designation as elementary teacher exists and as a result the students even after doing ETE are absorbed as primary teachers and are to teach primary classes. Therefore, these teachers did not find teaching of objectives of teaching mathematics at upper primary stage a relevant component.

(b) Piagetian Stages of number development-

It was found that about 50 per cent teachers did not remember anything about Piagetian stages of number development and those who remembered use it to determine the cognitive level i.e. to which stage (sensory motor, pre-operational, concrete operational or formal operational) child belongs. There is need to provide practical knowledge in addition to theoretical one, so that student-teachers can make use of Piagetian stages later in real classroom situation rather than just focusing on cramming for the sake of examination purpose only.

(c) Knowledge of different mathematical concepts-

Substantial number of teachers ranging from 27.5 per cent to 47.5 per cent found knowledge acquired during 10+2/graduation stage regarding different mathematical concepts sufficient to some extent, thereby indicating the need of their inclusion in PSTE curriculum. The curriculum analysis revealed that these concepts have been included in the curriculum and most of the teachers

considered that PSTE has provided them additional conceptual knowledge about different mathematical concepts and a large percentage of them found this additional knowledge relevant to a large extent in real classroom situation (geometry- 80%; Fraction-72.5%).

(d) Lesson Planning-

Most of the teachers (77.5%) planned their lesson before going to classroom, but in the name of lesson plan teachers (41.9%) just write their weekly dairy, which is also a compulsory part of their job. Only 9.7% teachers follow the actual technique of lesson planning taught during ETE programme which reflects the need to develop and teach new models of lesson planning in the PSTE programme keeping in mind the real situation.

(e) Teaching Learning Strategies-

'How to teach' is really a problem for teachers. 'How to enable the children to learn' is a question that needs to be answered. Different teaching-learning strategies have been propounded by different educational thinkers. It is desirable for a teacher to know about all

Table 1 : Relevance of ETE Programme in Training Teachers for Using Teaching-Learning Strategies in Classroom

Teaching- Learning Strategy	% Response		
	To a Large Extent	To some Extent	Not at all
Problem Solving Method	57.5	30	12.5
Play-way Method	62.5	30	7.5
Project Method	35	45	20
Inductive-deductive	60	30	10
Activity based method	67.5	27.5	5
Lecture Method	42.5	50	7.5

of them, so that he/she can make a rational choice for him/herself.

From Table-1 it may be inferred that most of the teachers expressed that they have been trained for using activity-based method (67.5%); play way method (62.5%) to a large extent and for lecture method (50%) and project method (45%) only to some extent. This may be because ETE programme focuses mainly on preparing primary teachers who are supposed to use activity based and play-way method for teaching primary school children.

A perusal of Table-2 shows that more than one-third teachers revealed that only theoretical inputs were provided to them regarding various teaching-learning strategies that can be used for transaction of content at primary and upper primary stages leaving them insufficiently trained for their use in real class-room situation whereas in some cases demonstration was also given. It was also found that majority of teachers (92.5%) were still following black-board chalk method in their day to day classroom teaching which shows that

these strategies had been transacted to teachers in a way that these are partially assimilated but not fully utilised by teachers. There is a need to inculcate competencies in teachers to adopt the strategies according to the needs of the students.

(f) **Maths Kit-** The responses revealed that pupil-teachers were taught about the use of maths kit during ETE programme whereas 87.5 per cent considered it helpful in real classroom situation and only 27.5 per cent used it for teaching mathematics to students. This may be because most of the teachers (75%) were not taught to improvise any of the items of maths kit during ETE programme. If teachers are not-taught to improvise items, it becomes difficult for them to make use of maths kit in their day to day teaching, as in each M.C.D. school there are at least five sections and only one kit is available which can not be used by all teachers at the same time. Moreover during their regular teaching teachers don't get time to get the kit issued and returned again and again. Hence, teaching the use of maths kit as

Table 2 : Mode Adopted by Teacher Educators for Transacting Teaching-learning Strategies to Teachers

<i>Teaching-learning Strategy</i>	<i>% Response</i>		
	<i>Not at all covered</i>	<i>Only theory covered</i>	<i>Teacher Educator had given demonstration</i>
Problem Solving Method	10	37.5	27.5
Play-way Method	7.5	32.5	45
Project Method	22.5	32.5	30
Inductive-deductive	7.5	32.5	52.5
Activity based method	5	30	47.5
Lecture Method	15	42.5	32.5

such in ETE programme is of no use. It would be relevant only when improvisation of maths kit is included in the curriculum.

(g) **Teaching Aids**– Most of the teachers (90%) were aware of the importance of teaching aids for teaching mathematics. But only 72.5 per cent teachers considered the knowledge provided during ETE programme regarding preparation and use of teaching aids adequate for them in real classroom to a large extent.

A perusal of Table-3 shows that inputs in one form or other were provided to teachers during ETE programme. Teachers ranging from 7.5 per cent to 35 per cent revealed that workshop was conducted for giving them practical training. However, a substantial number of teachers (15 per cent to 40 per cent) revealed that they had developed these aids even during ETE programme on their own. A need was felt by teachers for inclusion of preparation of zero cost

teaching aids during ETE programme so that these can be prepared even when no administrative support is available.

(h) **Motivational Strategies**– Teaching-learning process is facilitated by the presence of motivation and hampered by the absence of it. It is, therefore, important for a teacher to understand the concept of motivation and procedure for motivating the children to learn. Though there are no well-set procedures or techniques for enhancing motivation for learning, as the teaching-learning situations with which a learner has to deal with are dynamic and complex. Knowledge of certain techniques, such as providing knowledge of results, distribution of practice and rest in learning, use of divergent questions etc., can be of immense use to teachers in organising effective and efficient system of teaching and learning. The study has revealed that the learners have very limited knowledge of the motivational strategies and adopted a few conven-

Table 3 : Inputs Provided by Teacher Educators

Teaching Aids	% Response			
	Only theory was taught	Work-shop was conducted	Work done by previous students was shown	Developed these aids by their own
Charts	15	30	25	37.5
Geometry-Box	20	37.5	25	17.5
Abacus	35	35	25	15
Geo-Board	35	20	20	17.5
Models	10	-	37.5	32.5
Puppets	7.5	32.5	17.5	37.5
Paper-folding	27.5	32.5	10	40

tional strategies such as praise-95%; writing excellent or good on their work-giving them reward-67.5%; assigning them some responsibility-67.5%; giving grades-42.5%; telling them story-37.5%, punishing them- 12.5%, giving them extra marks- 7.5%. Majority of the teachers (90%) have learned these strategies as a part of ETE curriculum and advocated the need for inclusion of more motivational strategies.

(i) **Recreational Activities-** All the teachers considered the knowledge of recreational activities essential for creating student's interest in mathematics and use them in one form or the other (quizzes-80%; mathematical games-75%; organisation of Exhibitions-17.5%; organisation of Maths club-15%). They considered the knowledge of recreational activities provided during ETE programme helpful for them to a large extent. However, more than one-third of teachers also revealed that only theoretical inputs were provided during ETE programme which reflect the need to strengthen the efforts made by teacher educators to develop skills in organisation of these activities among teachers, so that they may prove to be useful in real spirit in the classroom.

(j) **Instructional Material-** 75 per cent teachers were in favour of using instructional material other than textbooks. Teachers ranging from 50 per cent to 77.5 per cent revealed that they had been trained to use other textbooks but considered the knowledge provided during ETE programme relevant only to some extent in real classroom situation (57.55%). Of 75 per cent teachers who were in favour of using

other instructional material, majority of teachers (82.1 %) use only workbook, which is ready made and compulsory part of school curriculum. This shows that ETE programme has not developed the competence among trainees to develop the instructional material and also has failed to change the attitude of trainees from being a slave of textbook to an innovative teacher.

(k) **Activities for average, below average and above average students-** A large percentage of teachers identify average, below average and above average students in classroom and majority of them (89.7%) do this on the basis of students' classroom performance and ask either brighter group or parents to help slow learners which may be considered as an easy way to skip from providing remedial teaching or using specialised strategies suited to the requirement of bright students. Majority of the teachers revealed that they have not been trained at all for using different types of activities and instructional material for students of varying potential.

(l) **Integrated Teaching-** About 87.5 per cent teachers perceived themselves to be trained to teach in an integrated manner during ETE programme and 85 per cent teachers even try to integrate mathematics with other subjects during their teaching, but it was found that these teachers perceived integration in a very narrow sense. They considered using numbers or mathematical shapes in other subjects as integration e.g. teaching historical dates and years, parts of body, English rhyme - Let us do etc. So there is need to develop among teachers understanding of concept of integration in the right perspective.

(m) **Evaluation-** About 75 per cent teachers make use of continuous evaluation by giving students problems to solve in classroom just after the concept taught. However 67.5 per cent teachers evaluate them through unit test; 62.5 per cent through term end exams and 75 per cent by giving problems to the students to solve just after the concept taught. They evaluate students either to judge their progress (85%) or to promote them in next grade (77.5%). Whereas some teachers also evaluate students for remedial teaching (67.5%), to locate common error (57.5%) and to diagnose students' difficulties (57.5%). However, the comprehensive nature of evaluation has been ignored by all the teachers. Teachers were only aware of the theoretical meaning of the concept of comprehensive evaluation. They revealed that this aspect needs to be included in the curriculum with its practical component.

Suggestions Given by Assistant Teachers Regarding Modification in Existing Curriculum

Following suggestions have been made by assistant teachers regarding modification in existing pre-service elementary teacher education curriculum run by DIETs.

Regarding Teaching-learning Strategies

- More chance should be given to student-teachers to practice teaching-learning strategies taught, in real classroom and accordingly supervision must be

done so as to help student teachers to improve upon these strategies.

- Teacher educators must themselves use those strategies during their teaching which they want student-teachers to use later on in real classrooms.
- Student teachers must be taught those strategies that are effective in dealing with overcrowded classrooms.

Regarding Motivational Techniques

- Student teacher must be taught some effective and novel motivational techniques to deal with young learners, as existing techniques proved to be insufficient in real classroom situation. Besides, opportunities must be given during the programme to discuss the teaching learning situation faced during teaching practice from the standpoint of motivational strategies too.
- The strategies must be taught by taking some real case studies by teacher educators and discuss them with student-teachers.

Regarding Co-curricular Activities

- Co-curricular activities suitable for large sized classes must be taught during ETE programme.
- There is a need to include more co-curricular activities in ETE curriculum as students learn more effectively with the help of activities and these help them in the all round development of their personality.

Regarding Classroom Management

- Practical knowledge related to classroom management must be provided during ETE programme.
- Some skills to handle fun loving children (problematic students) and gifted students must be taught.
- Classroom management skills keeping in mind real classroom situation (over crowded classrooms) must be taught.

Regarding Remedial Teaching

- Various strategies of identification of gifted and slow learners must be taught. Student teachers must be taught how to handle below average students with rest of the class.
- Some more interesting and feasible techniques should be introduced.

Regarding Integrated Teaching

There is need to focus more on this aspect of teaching primary children.

Regarding Teaching of Mathematics Curriculum Structure

Curriculum should be divided in three parts:

- Part-I (Pedagogical aspects) should include the objectives and other specific information related to teaching of mathematics.
- Part-II Specific content matter of mathematics i.e. the content of maths from Classes I –VIII.
- Part-III Practical work on every method and teaching aids.

All the three sections should have equal weightage and it must be compulsory for every student teacher to score atleast 75% marks in each part.

Regarding ETE Curriculum as a Whole

- The number of practice lessons in mathematics should be increased thereby giving more stress to practical aspect than theoretical one.
- After school experience programme weak points of the student teachers should be discussed individually.

Conclusion

The extent to which Teaching of Mathematics curriculum helps the elementary teachers in teaching effectively in ground realities is an acid test of the relevance of the curriculum adopted by the ETE institutions. The study has revealed that the content designed for 'Teaching of Mathematics' curriculum suits to the requirements of the elementary teachers at large but the way it is being transacted in teacher training institutions suffers from various lacunas. In teacher training institutions, no serious attempt is made to train teachers in different strategies; methods and techniques which results in following only a convenient approach to teaching using established routine procedure. Most of the teachers opined that inputs provided during pre-service teacher education were predominantly theoretical and pleaded for change so as to emphasise practical aspects. Such a need is also being reflected in various studies conducted on evaluation of pre-service teacher education curriculum (Upasani 1966, Banerjee 1967, Marr Arora and Gupta 1969, Kohli 1974, Sukla 1976, Bhatia 1987, Behari 1998). It is also being found that even after having undergone teacher training, teachers do

not practice the methods and strategies, if any, learnt in training and hence leave a gap between expectations from teachers and their performance. In order to make the teacher education system really professional, like other professional courses, it has to completely get rid of such aspersion as gap between theory and practice, between the training college and school, between the process of education and the community etc. Stress must be given on the development of competencies among teachers, to provide them adequate theoretical and conceptual understanding and also to empower them to perform their responsibilities with professional insight and confidence.

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Basic Facilities in Secondary Level Schools in Rural India

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Abstract

This paper specifically deals with the need of basic infrastructural facilities and non-availability thereof in secondary level schools in rural area based on the secondary sources of data of fifth, sixth and seventh educational (census) surveys conducted in India. The selected parameters of basic infrastructural facilities in this paper are number of rural habitations not having access to secondary and higher secondary schooling facilities. In addition, management-wise data analysis on rural secondary level schools (covering secondary and higher secondary schools) in the study include number of schools; having Kutcha buildings; non-availability of drinking water facility, non-availability of urinal facility; non-availability of lavatory facility; number of sections not having usable blackboards; number of sections having inadequate and not having mats / furniture for students; and non-availability of playground facility. The paper reveals about the condition of these selected parameters of basic infrastructural facilities, and provides some directions with regard to areas of concern required for quality learning and physical environment in schools, and may certainly be considered to take up by the public authorities in coming decades to improve the quality of education in secondary level schools existing in Rural India.

Introduction

In a democracy, it is the people who ultimately decide major issues of public policies. It is obvious that there can be no intelligent decision without acquaintance with the numeric facts and figures. With the growing condensation of space and time, relations

between countries and peoples are becoming continually closer. Modern democracy, therefore, demands that the people at large must have knowledge not only about their own country but also of the world in general. It is largely the function of secondary education to meet this demand of democracy. Secondary

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education seeks to provide the basic information and skills needed for survival. Higher education seeks to expand the boundaries of knowledge, and is often an end in itself. Secondary education provides knowledge of the world, and also serves as the connecting link between secondary and higher education.

In India, as in many other countries, secondary level (lower and higher) schools are the main source of supply for teachers in secondary schools. Secondary level schools also prepare students for higher education, especially, for universities and institutions of higher learning. Besides, this is the stage which in all countries marks the completion of education for a large majority of people. All these factors make secondary education crucial in the educational programme of a democracy. The issue of secondary education after independence has been overviewed in detail by Kabir (1955), the then, Education Secretary of Union.

The exact boundary of secondary stage education varies from country to country and even within them, but is generally around the seventh to the tenth year of education. The secondary stage education occurs mainly during the teenage years. The States/UTs, namely, Andhra Pradesh, Assam, Goa, Gujarat, Karnataka, Kerala, Maharashtra, Meghalaya, Mizoram, Orissa, Dadar & Nagar Haveli, Daman & Diu and Lakshadweep in India follow the class structure VIII-X of three years other than the national pattern of class structure IX-X of two years for secondary education in terms of years or academic sessions. The higher secondary education

comprises a specialised two years of school education of class structure XI-XII in terms of years. While the importance of secondary education in a democratic society is thus, beyond question and it is widely recognized that purpose of secondary education is to give common knowledge, and to serve as a bridge between secondary and higher education in preparing young persons of the age group 14-18 years for entry into either higher education or vocational education, or to train directly to a profession [Singh, 2002 and Singh, 2004].

With India to be the world's second top populated nation, and given India's very long experience since time immemorial and commitment of her Government during last half century to promote education for all, it seems worthwhile to analyse the Indian traditions, which expressed the global sentiments of *education for all*. To achieve it, the Indian Constitution in 1950 required that within 10 years of its commencements, free and compulsory elementary education should be provided for all children up to the age of fourteen years in the country. Subsequently, the Government of India being conscious of situation and considering impediments and bottlenecks in the implementation of educational policies and programmes, have made some land mark constitutional provisions from time to time at the grassroots level, particularly, for rural education (Singh, 2004).

The Social Scientists-cum-Educationists has generated plenty of literature on social, economic and political importance of the school education to ensure education for all children to achieve the goals of

universalisation of elementary education and have recommended to re-model the rural education system at school level in reference to education as a fundamental right of children in the light of recent constitutional amendments. Recently, Singh (2006) and Singh and Kumar (2006) have taken up studies on rural elementary education in India with an emphasis on the North-East and Western States/UTs, respectively. The referred studies present some important aspects of school education, and have not considered the gaps prevailing in basic facilities in schools at secondary level due to limitations and scope of the studies.

The present study is, therefore, a modest attempt in view of significance of educational surveys on census basis for systematic planning of school education in the country and will examine the non-availability of facilities in secondary schools prevailing in Rural India on selected parameters considered necessarily a yardstick for bringing out quality education based on the fifth, sixth and seventh school education surveys to demonstrate conditions/status of these facilities in schools to understand and re-visit aims of policies and programmes by public authorities accountable to the People of India in reference to the quality education. Tangible comparisons based on statistical measurements will also be made to reveal the temporal changes over different points of time covering a period of nearly two decades.

Materials and Methods

The data on availability of facilities in secondary level schools for Rural India are collected from the reports on Fifth All

India Educational Survey as on 30th September 1986, Sixth All India Educational Survey as on 30th September 1993, and Seventh All India School Education Survey as on 30th September 2002. The National Council of Educational Research and Training (NCERT) have conducted these referred surveys on census basis under administrative and financial support of the Government of India – Ministry of Human Resource and Development [NCERT (1992), NCERT (1998) and NCERT (2007)].

The survey data are, further, re-processed to derive information on number of rural habitations not having access to secondary and higher secondary schooling facilities and management-wise information on rural secondary level schools that are - number of schools; having *Kutcha* buildings; non-availability of drinking water facility, non-availability of urinal facility; non-availability of lavatory facility; number of sections not having usable blackboards; number of sections having inadequate and not having mats/furniture for students; and non-availability of playground facility. The available information on referred parameters are analysed longitudinally and vertically using simple statistical methods.

Results and Discussion

We shall present our major findings of study regarding non-availability of facilities and concerns thereof in secondary level schools in Rural India. The observed changes provide the status of basic infrastructural facilities in secondary level rural schools that are

taking place in the rural area right from the fifth to seventh survey to quantify the impact of public policies and programmes underlying therein in the absence of non-availability of such facilities in the schools.

Rural Habitations and Access to Secondary Level Schooling Facilities

Availability of schooling facilities in rural area is measured by a set of indicators concerning access on the basis of rural habitations (Singh, 2006). As per the practice followed, of course without having statutory norms, a rural habitation is entitled to have a secondary school, if it has a total population of 300 and more, and has no school within a distance of five km. For higher secondary schools, the corresponding norms are total population of 500 and more, and a distance of eight kilometers (GOI, 2001: 4, 27). Table 1 presents the number of rural habitations and habitations having secondary and higher secondary schooling facilities in Rural India from 1986 to 2002.

It is evident from Table 1. that total number of rural habitations has increased from 9,81,864 habitations in fifth survey to 12,09,521 habitations in seventh survey, thereby registered a growth of 8.02 per cent in sixth survey and 23.19 per cent in seventh survey as compared to fifth survey, respectively. The reasons for increase in number of habitations are due to obviously population growth for which India has not adopted a public policy in the national interest till date. In order to assess the extent of provisions according to norms based on distance criteria,

nearly 30.27 per cent and 26.82 per cent rural habitations are not having access to secondary schooling facilities upto five km during sixth and seventh survey, respectively. On the other hand, in case of higher secondary schooling facilities it is estimated that 54.20 per cent, 43.04 per cent and 37.66 per cent rural habitations are not having access to higher secondary schooling facilities upto eight km during fifth, sixth and seventh survey, respectively. It is, therefore, required to bring this gap at zero per cent level to fulfill the aspirations of general public in providing access to secondary level schooling facilities to all rural habitations based on distance criterion in the country.

In terms of longitudinal growth with respect to sixth survey, it is also clear that growth in number of rural habitations not having secondary schooling facilities upto five km is on increasing side in rural area that are 1.02 percent during seventh survey, respectively. Contrary to this, the growth with respect to sixth survey, that is, number of rural habitations not having higher secondary schooling facilities upto eight km is on decreasing side, and numerically these are found -0.21 per cent in seventh survey, respectively, and this achievement during seventh survey appears probably due to up-gradation of secondary schools into higher secondary schools, government policies and programmes on school education and dynamic concept and definition of rural habitations. The dynamic concept and definition of rural habitation used under educational surveys on school education in India are reported by Singh (2006).

Secondary Level Recognised Schools

As per the educational survey reports, "A recognised school is that in which the course(s) of study followed is/are prescribed or recognised by the Government (Central/State) or a University or a Board constituted by law or by any other agency authorised in this behalf by the Central or State Government, and satisfies one or more of the authorities, e.g., Directorate of Education, Municipal Corporation/Committee, Board, etc. with regard to its standard of efficiency. It runs regular classes and sends candidates for public examination, if any" (NCERT, 2002: 179). In order to this concept and definition, there has been substantial expansion in number of recognised secondary level schools during 1986-2002, except schools under private aided management in rural area. Table 2 provides management-wise number of secondary level schools in Rural India.

The seventh survey has identified 86,423 recognised secondary level rural secondary and higher secondary schools thereby the seventh survey has recorded a growth of 87.88 per cent points as compared to the fifth survey within a period of 16 years in the country. These schools are further segregated by management, that is managed by the government, local body, private aided and unaided respectively. The details of concepts in regard to the referred managements are available in Singh and Raju (2006).

The management-wise percent longitudinal change in secondary level schools during seventh survey over fifth survey is observed nearly 89.52 per cent

for government, 124.50 per cent for local body, 29.13 per cent for private aided and 356.59 per cent for private unaided schools in Rural India. The growth in schools managed by the private unaided schools affirms the findings of Singh (2004) on the entry of private educational entrepreneurs associated with school education in creating the schooling facilities, and achieving goals (yet to be proposed) of universalisation of secondary education in the country.

The vertical proportion of secondary level schools by management with respect to total number of schools over different surveys in rural area points out that government schools are increasing from 41.48 per cent in the fifth survey to 41.84 per cent in the seventh survey, whereas this proportion for local body schools is increasing from 8.76 per cent in the fifth survey to 10.47 per cent in the seventh survey. Besides, there is a decrease in proportion of private aided schools from 42.02 per cent in the fifth survey to 28.88 per cent in the seventh survey – *this decrease shall be a cause of concern for the Public Authorities associated with the formulation of ensuing programme on the universalisation of secondary education*. On the other hand, the proportions of private unaided schools have recorded an increase from 7.74 per cent in the fifth survey to 18.81 per cent in the seventh survey in rural area.

It is, therefore, important to look into the some selected infrastructural facilities and non-availability thereof in schools in rural area in view of arithmetic on secondary level schools as presented herein in the country. The

succeeding paragraphs will address these selected issues with an objective to consider for having provisions of such facilities in rural schools. It will certainly help in providing quality education befitting to the children residing in Rural India.

Secondary Level Schools Having Kutcha Buildings

The school buildings face difficult challenges in serving the needs of children and public education. The Central/State Governments actively support the development of programmes that recognise and deal with the particular needs of students, educators, school employees and communities in the nation's vast rural area. The school buildings in which the majority of classes are held during the surveys have been mainly classified as: *pucca*, partly *pucca*, *kutcha*, tent and open space. Table 3 provides management-wise number of secondary level schools having information on kutcha buildings including schools without buildings in Rural India.

Table 3 indicates that secondary level schools having kutcha buildings are reducing in rural parts of the country. It has increased longitudinally by 23.96 per cent in sixth survey, and subsequently decreased by - 19.17 per cent in seventh survey with respect to the fifth survey. It is, further, evident from Table 3 that there has been continuous decrease over a period of 16 years in terms of negative growth in kutcha buildings in secondary level rural schools managed by the government, local body and private aided

managements. Empirically, percentage negative growth in number of schools over the years reveals that there has been a progress in having more kutcha or partly kutcha schools buildings vis-à-vis an improvement in the conditions of school buildings in the country. On the other hand, the situation for local body management schools is not good and it reflects an increase in the Kutcha buildings from 160.87 per cent in sixth survey to 223.60 per cent in seventh survey as compared to fifth survey, although the Constitutional Amendment on *Panchayati Raj Institutions* is being expected to play a vital role in the development process of rural school education in the country through active community participation (Education Committee or so). The probable reasons may certainly be due to longitudinal increase of 124.50 per cent in number of secondary level schools as reported elsewhere in preceding section in this paper or so.

Table 3 also provides information Kutcha buildings with respect to total number of schools for corresponding management. It indicates that a per cent of Kutcha buildings within management are having decreasing trend for all types of school management from fifth survey to seventh survey except for local body schools. However, the maximum proportion of Kutcha buildings is with the local body schools, and that is nearly 5.76 per cent, followed by the private unaided (4.92 per cent), government (3.99 per cent) and private aided (3.33 per cent) schools in rural area. In aggregate, Table 3 indicates that nearly 4.16 per cent secondary level schools are having Kutcha buildings at the time of seventh

survey as compared to 9.27 per cent schools in sixth survey and 9.67 per cent schools in fifth survey in rural area, respectively. The schools reported with Kutcha buildings in seventh survey can be identified from the survey database, and may be considered for creating pucca buildings in the schools under regulatory provisions by the public authorities.

Non-availability of Drinking Water Facility in Secondary Level Schools

It has been established finding for many years that children do not drink enough water during the school day – that are resulting in dehydration, and that contributes to a number of short and long-term health problems. In order to find out more about the drinking water situation in schools, the educational surveys collect information on drinking water facility in schools, with the aims of increasing public awareness of the health benefits to children of drinking good levels of water. The survey also conducts how to improve the quality of provisions and access to fresh drinking water facility in the schools [Singh and Sharma (2008)]. The comprehensive information on availability of drinking water facility within the school premises in secondary level schools have been collected in the educational surveys. Accordingly, management-wise non-availability of drinking water facility in secondary level schools in rural India is being worked out, and presented in Table 4.

It is evident from Table 4 that per cent change over fifth survey for total secondary level schools in seventh

survey has been 20.17 per cent for the non-availability of drinking water facility in the schools. The non-availability of drinking water facility in secondary level schools indicates that there has been decline in such schools over a period of time in terms of growth in such secondary level rural schools in the government, private aided and private unaided schools except local body schools as far as management is concerned. The longitudinal growth in seventh survey with respect to fifth survey indicates that there is an increase in non-availability of drinking water facility in 72.42 per cent government, 75.27 per cent local body, 11.30 per cent private unaided secondary level schools, whereas the private aided schools with non-availability of drinking water facility has decreased by 54.59 per cent in terms of per cent points, respectively. In sixth survey, the situation has been comparatively better as compared to seventh survey with respect to fifth survey on the account of non-availability of drinking water facility in rural secondary level schools.

It is clear from Table 4 that per cent of non-availability of drinking water facility with respect to total number of schools for corresponding management of secondary level schools have exhibited the decreasing trends in rural area from fifth survey to seventh survey except for the government schools in sixth survey, thereby, it provides a better situation of schools in terms of availability of drinking water facility. However, it is a matter of concern that nearly 12.50 per cent government, 19.75 per cent local

body, 4.48 per cent private aided and 6.97 percent private unaided secondary level rural schools are not having drinking water facility with respect to total number of schools for corresponding school management at the time of seventh survey. Admittedly, Table 4 records in totality that nearly 9.90 per cent secondary level schools falls in this category at the time of seventh survey as compared to 18.21 per cent in sixth survey and 15.48 per cent in fifth survey in rural area, respectively. In totality, such pathetic situation in respect to non-availability of drinking water facility in secondary level schools should be considered by the public authorities to evolve the effective monitoring methodology after granting recognition to such secondary level schools during the school day to avoid health hazards among the rural children.

Non-availability of Toilet (Urinal and Lavatory) Facilities in Secondary Level Schools

Children often say that they have problems with their toilets in school. The educationalists and health workers need to be aware of potential difficulties, and need to improve these facilities for school children. Barnes and Maddocks (2002) have recommended based on a study on the standards on school toilets that the same standards for toilet facilities in the workplace should apply to schools. Sub-standard toilet facilities in schools may contribute to the suppression of '*call to urinal and stool*', leading to chronic constipation among the children. Infectious illnesses may be more easily spread among the children attending the schools. The information on non-

availability of toilet facilities (covering urinal and lavatory) in secondary level schools is presented in Table 5 and Table 6 for Rural India.

It is evident from Table 5 that non-availability of urinal facility has been inducing longitudinally by 37.77 per cent in seventh survey as compared to fifth survey in secondary level rural schools in India. Similarly, Table 6 provides information regarding non-availability of lavatory facility, which shot up nearly 23.59 per cent during the referred period. The non-availability of urinal and lavatory facilities in secondary level schools in Table 5 and Table 6 indicate that it have gone up in such schools over a period of time that is from fifth survey in 1986 to seventh survey in 2002 in terms of positive growth in the government, local body and private aided schools. On the other hand, non-availability of urinal and lavatory facilities has shot down by the margin of more than 45 per cent and 27 per cent, respectively in the private aided schools.

The Tables also provide a poor status in respect to sixth survey while making a comparison from fifth survey in terms of growth in percent points on urinal and lavatory facilities. This indicates an example of self examination to guess that where do we stand on account of these prime facilities in an era encompassing the nation-wide programmes on the education for all up to secondary stage which may certainly converge to higher secondary stage in coming decade.

A vertical analysis of Table 5 and Table 6 over different points of time (surveys) across the school management point out that schools having shortage of urinal and lavatory facilities managed

by the government (25.22 per cent and 41.39 per cent) and local body (39.48 per cent and 52.91 per cent) are much higher than as compared to the private aided (8.43 per cent and 29.88 per cent) and private unaided (13.46 per cent and 32.28 per cent) secondary level schools, respectively. Although, the resulting situations based on data analysis reflects an overall decrease in the non-availability of toilet facilities in all types of school managements in rural areas over the period of study are taken into account in this paper.

In spite of decrease in non-availability of toilet facilities, large number of secondary level schools does not have urinal and lavatory facilities for children enrolled in the schools. The Tables referred herein provide an alarming situation that nearly 19.65 per cent and 37.56 per cent secondary level rural schools at the time of seventh survey do not have urinal and lavatory facilities, respectively in the country. It requires attention of the social scientists-cum-educationalists to include toilet facility in the indicators' basket pertaining to school education having an impact on health of rural children in the country.

Non-availability of Usable Blackboards in Sections of Secondary Level Schools

The schools should be an environmentally healthy place for children to learn and for teachers to teach. Our society suffers when schools become so run-down and toxic that going there becomes a stress to the body's systems rather than an inspiration to young minds. In this process, the

significance of usable blackboard in classroom (section) for children learning and teachers' teaching process has been well recognised elsewhere in the literature. It has been considered that usable blackboard is an essential requirement for a classroom (section) in the schools. The educational surveys provide information in this regard. The management-wise number of sections not having usable blackboards in secondary level schools in rural area is presented in Table 7.

In totality, the number of sections not having usable blackboards in secondary level schools has gone down longitudinally from -11.19 per cent in sixth survey to -78.77 per cent in seventh survey in respect to the fifth survey vis-à-vis the availability of usable blackboards are having an increasing trend. Besides, Table 7 indicates that management-wise number of sections is having declining trends in respect of number of sections not having usable blackboards in rural area. The per cent decline in number of sections not having usable blackboards indicates that private aided and private unaided secondary schools are now fully well equipped in respect of usable blackboards in schools whereas secondary schools run by the public authorities that are government and local body schools have a sharp decline in per cent change in number of sections that are -65.88 per cent for government and -94.40 per cent for local body schools respectively. As a result it indicates an increase in the availability of usable blackboards in sections vis-à-vis classrooms of rural secondary level schools.

An overview of Table 7 provides that vertically the management-wise number of sections not having usable blackboards is demonstrating a slow progress in positive direction in terms of percent points. It is evident that in aggregate nearly 8.67 per cent sections in secondary level schools in rural area are running without usable blackboards in the country. In numeric terms, 7,496 sections of schools are not having usable blackboards in the country. Table 7 also presents a declining trend in number of sections not having usable blackboards from fifth to sixth survey and from sixth to seventh survey for all types of school management in rural area of country. However, the status of number of sections not having usable blackboards is found maximum for government (3.99 per cent) and local body (0.68 per cent) secondary level rural schools whereas private aided and unaided secondary level rural schools are fully equipped with usable blackboards at the time of seventh survey.

Non-availability of Mats and Furniture for Students in Sections of Secondary Level Schools

The classrooms (sections) in schools require mats or furniture for students so that they can study in hygienic conditions. These items are considered basic amenities for a section in formal education system since time immemorial. The information in regard to section on non-availability (or inadequate) and not having mats or furniture for students in secondary level schools in Rural India are presented in Table 8.

It is evident from Table 8 that number of sections having inadequate and not having mats or furniture for students in secondary level schools are in decreasing trends. In per cent points, the total longitudinal decrease in terms of per cent growth has been from 38.20 points in the sixth survey to -16.47 points in the seventh survey as compared to the fifth survey in rural area. While comparing by school management, it is found that the number of sections having inadequate or not having mat or furniture are in rising trends for local body (24.93 per cent) and private unaided (144.06 per cent) schools whereas the same are in decreasing trends for government (-23.71 per cent) and private aided (-47.78 per cent) schools at the time of seventh survey as compared to fifth survey in rural parts of the country.

Table 8 also provides a vertical comparison within the school managements and demonstrates in totality that 16.54 per cent sections in secondary level schools are not having adequate mats or furniture for students in rural area. Of course, this figure is less than the figures of fifth (24.23 per cent) and sixth (23.90 per cent) surveys but it can't be considered a good condition in terms of facilities in classrooms (sections) under formal education system. Approximately, nearly 75,413 sections with a crude hypothesis of 40 students per section indicates that nearly 30,16,520 children are sitting in their classrooms with either inadequate or without mat or furniture in the schools at the time of seventh survey. The strength of these children constitutes nearly 8.64 percent of total number of

school children enrolled in secondary level rural schools as per the reports of seventh survey. In per cent points, the local body (38.97 per cent) and government (22.88 per cent) schools are having maximum number of classrooms (sections) with either inadequate or without mats or furniture followed by the private unaided (10.35 per cent) and private aided (6.41 per cent) secondary level schools for students in rural area.

Non-availability of Playground Facility in Secondary Level Schools

The playgrounds should be places where children can play without risk of being exposed to the pesticides/insecticides, contaminated play structures or other health hazards. In a time where so much of our focus is on improving secondary education, it should be paramount that we should act to improve the quality of physical learning environment [Singh and Sharma (2008)]. Realising this fact, the present study has undertaken the non-availability of playground facility in secondary level schools in Rural India to indicate the depleting trends or more precisely disappearance of playgrounds in schools. In this regard, Table 9 presents management-wise information on non-availability of playground facility in secondary level rural schools.

It is important and evident from Table 2 that schools are increasing in rural area, thereby, the non-availability of playground facility in schools as indicated in Table 9 are also increasing and that too at the secondary level of schools in rural parts of the country. In aggregate, there is a growth of 310.85 percent in number of secondary level

schools in terms of non-availability of playground facility in rural schools at the time of seventh survey which is nearly three times in comparison of the sixth survey (118.66 per cent) with respect to the fifth survey. Management-wise, the longitudinal growth in non-availability of playground facility has been observed surprisingly maximum for the local body (532.79 per cent), followed by the private unaided (402.25 per cent), government (391.91 per cent) and private aided (122.75 per cent) schools at the time of seventh survey with respect to fifth survey in rural area of the country.

The non-availability of playground facility in secondary level rural schools over different points of time/survey by school management reveals that there has been substantial increase in number of schools without having playground facility for their students. It describes an improper situation/condition, and records that 21.73 per cent rural secondary level schools do not have playground facility at the time of seventh survey. This non-availability of playground facility is comparatively on higher side with respect to the sixth survey (16.81 per cent) and fifth survey (9.94 per cent), respectively. Management-wise, proportion of schools having non-availability of playground facility are found 27.59 per cent for government, 30.29 per cent for local body, 14.48 per cent for private aided and 15.07 per cent for private unaided schools. These percent points of secondary level rural schools indicate that large number of schools at secondary level has not been able to provide playground facility to their school

children at the time of seventh survey. This prevailing status provides an alarming situation, that too in rural area of the country. It may be considered for an improvement to bring the quality of physical learning environment surrounding the school children covering the school age group of 6-18 years by the public authorities associated with the secondary level rural school education in the country.

Conclusion

The present study on basic infrastructural facilities and non-availability thereof in secondary level rural schools in India concludes that:

- The gap between not having access of 'secondary and higher secondary schooling facilities' as per the norms based on distance criterion are found in nearly 3,24,373 and 4,55,480 rural habitations, respectively. This existing gap certainly requires bringing it at zero percent point level in providing access to all rural habitations up to secondary level schooling facilities in view of the universalisation of secondary education, yet to be initiated by public policy makers, in the country.
- The seventh educational survey has recorded a growth of 87.88 per cent in secondary level rural schools as compared to fifth educational survey over a period of 16 years in the country.
- The management-wise secondary level schools without building in rural area has a decreasing trend except for local bodies with an increase of 223.60 per cent during seventh survey as compared to fifth survey. These reported schools in rural area with kutcha buildings can be identified very easily with the help of school directory prepared during seventh survey and may be considered for creating pucca-building infrastructure in the schools under regulatory provisions by the public authorities.
- The availability of drinking water and toilet facilities in secondary level rural schools should necessarily be considered while providing recognition to avoid health hazards among the children. The position of drinking water facilities in private aided school management is better in comparison to other school managements, viz., private unaided, local body and government. Similarly, findings in respect to non-availability of toilet, viz., urinal and lavatory facilities are being observed in the present study.
- The number of sections not having usable blackboards in secondary level rural schools reveals that schools managed by private (aided and unaided) organisations are well equipped with usable blackboards in comparison to schools managed by public (government and local body) organisations as far as usable blackboards are concerned in the sections vis-à-vis classrooms.
- Nearly 75,413 sections in secondary level rural schools are not having adequate mats/furniture for students. Besides, 18,780 secondary level rural schools do have reported the non-availability

of playground facility. Management-wise local body schools has a substantial growth of 532.79 per cent points in regard to non-

availability of playground facility during seventh survey as compared to fifth survey in Rural India.

Table 1: Number of Habitations Not having Access to Secondary and Higher Secondary Schooling Facilities in Rural India

<i>Educational Survey</i>	<i>Total Number of Habitations</i>	<i>Number of Habitations Not Having Access to Secondary Schooling Facility Upto Five Km</i>	<i>Number of Habitations Not Having Access to Higher Secondary Schooling Facility Upto Eight Km</i>
1	2	3	4
5 th Survey (Year-1986)	9,81,864	2,06,978 (upto 8 km)	5,32,161
6 th Survey (Year-1993)	10,60,612 (8.02)	3,21,083	4,56,451 (-14.23)
7 th Survey (Year-2002)	12,09,521 (23.19)	3,24,373	4,55,480 (-14.41)

Note: Figure in parenthesis indicates per cent change over Fifth Survey (Year-1986). As per available survey reports on 5th Survey, data on number of rural habitations not having access to secondary schooling facility upto 5 km is not available.

Table 2: Management-wise Number of Secondary Level Schools in Rural India

<i>School Management</i>	<i>Educational Survey</i>			<i>Per cent Change Over 5th Survey in</i>	
	<i>5th Survey (1986)</i>	<i>6th Survey (1993)</i>	<i>7th Survey (2002)</i>	<i>6th Survey</i>	<i>7th Survey</i>
1	2	3	4	5	6
Government (a)	19,080	25,458	36,161	33.43	89.52
(b)	41.48	42.81	41.84		
Local Body (a)	4,029	6,354	9,045	57.71	124.50
(b)	8.76	10.68	10.47		
Private Aided (a)	19,328	21,255	24,958	9.97	29.13
(b)	42.02	35.74	28.88		
Private Unaided (a)	3,561	6,403	16,259	79.81	356.59
(b)	7.74	10.77	18.81		
Total (a)	45,998	59,470	86,423	29.29	87.88
(b)	100.00	100.00	100.00		

Note: a-represents actual figure, b-represents per cent w.r.t. total number of schools for correspondings management.

Table 3: Management-wise Number of Secondary Level Schools Having Non-pucca Buildings in Rural India

School Management	Educational Survey			Per cent Change Over 5th Survey in	
	5th Survey (1986)	6th Survey (1993)	7th Survey (2002)	6th Survey	7th Survey
1	2	3	4	5	6
Government (a)	1,659	2,419	1,443	45.81	-13.02
(b)	8.69	9.50	3.99		
Local Body (a)	161	420	521	160.87	223.60
(b)	4.00	6.61	5.76		
Private Aided (a)	1,775	1,567	832	-11.72	-53.13
(b)	9.18	7.37	3.33		
Private Unaided (a)	854	1,109	800	29.86	-6.32
(b)	23.98	17.32	4.92		
Total (a)	4,449	5,515	3,596	23.96	-19.17
(b)	9.67	9.27	4.16		

Note: a-represents actual figure, b - represents per cent w.r.t. total number of schools for corresponding management. Non-pucca buildings include kutchha building, thatched hut, tent and open space.

Table 4: Management-wise Non-availability of Drinking Water Facility in Secondary Level Schools in Rural India

School Management	Educational Survey			Per cent Change Over 5th Survey in	
	5th Survey (1986)	6th Survey (1993)	7th Survey (2002)	6th Survey	7th Survey
1	2	3	4	5	6
Government (a)	2,621	5,527	4,519	110.87	72.42
(b)	13.74	21.71	12.50		
Local Body (a)	1,019	1,372	1,786	34.64	75.27
(b)	25.29	21.59	19.75		
Private Aided (a)	2,462	2,508	1,118	1.87	-54.59
(b)	12.74	11.80	4.48		
Private Unaided (a)	1,018	1,423	1,133	39.78	11.30
(b)	28.59	22.22	6.97		
Total (a)	7,120	10,830	8,556	52.11	20.17
(b)	15.48	18.21	9.90		

Note: a-represents actual figure, b - represents per cent w.r.t. total number of schools for corresponding management.

Table 5: Management-wise Non-availability of Urinal Facility in Secondary Level Schools in Rural India

School Management		Educational Survey			Per cent Change Over 5th Survey in	
		5th Survey (1986)	6th Survey (1993)	7th Survey (2002)	6th Survey	7th Survey
1		2	3	4	5	6
Government	(a)	4,987	7,209	9,119	44.56	82.86
	(b)	26.14	28.32	25.22		
Local Body	(a)	1,923	2,480	3,571	28.97	85.70
	(b)	47.73	39.03	39.48		
Private Aided	(a)	3,846	3,308	2,105	-13.99	-45.27
	(b)	19.90	15.56	8.43		
Private Unaided	(a)	1,571	2,117	2,188	34.75	39.27
	(b)	44.12	33.06	13.46		
Total	(a)	12,327	15,114	16,983	22.61	37.77
	(b)	26.80	25.41	19.65		

Note: a - represents actual figure, b - represents per cent w.r.t. total number of schools for corresponding management.

Table 6: Management-wise Non-availability of Lavatory Facility in Secondary Level Schools in Rural India

School Management		Educational Survey			Per cent Change Over 5th Survey in	
		5th Survey (1986)	6th Survey (1993)	7th Survey (2002)	6th Survey	7th Survey
1		2	3	4	5	6
Government	(a)	10,308	12,546	14,967	21.71	45.20
	(b)	54.03	49.28	41.39		
Local Body	(a)	2,968	3,721	4,786	25.37	61.25
	(b)	73.67	58.56	52.91		
Private Aided	(a)	10,297	8,746	7,458	-15.06	-27.57
	(b)	53.28	41.15	29.88		
Private Unaided	(a)	2,692	3,890	5,249	44.50	94.99
	(b)	75.60	60.75	32.28		
Total	(a)	26,265	28,903	32,460	10.04	23.59
	(b)	57.10	48.60	37.56		

Note: a-represents actual figure, b-represents per cent w.r.t. total number of schools for corresponding management.

Table 7: Management-wise Number of Sections Not Having Usable Blackboards in Secondary Level Schools in Rural India

School Management	Educational Survey			Per cent Change Over 5th Survey in	
	5th Survey (1986)	6th Survey (1993)	7th Survey (2002)	6th Survey	7th Survey
1	2	3	4	5	6
Government (a)	21,139	20,158	7,213	-4.64	-65.88
(b)	13.30	8.54	3.99		
Local Body (a)	5,052	2,238	283	-55.70	-94.40
(b)	18.40	5.10	0.68		
Private Aided (a)	8,160	6,989	Not	-14.35	Not
(b)	4.85	3.36	Applicable		Applicable
Private Unaided (a)	955	1,971	Not	106.39	Not
(b)	5.34	5.72	Applicable		Applicable
Total (a)	35,306	31,356	7,496	-11.19	-78.77
(b)	9.47	6.01	8.67		

Note: a-represents actual figure, b-represents per cent w.r.t. total number of schools for corresponding management.

Table 8: Management-wise Number of Sections Having Inadequate and Not Having Mats/Furniture for Students in Secondary Level Schools in Rural India

School Management	Educational Survey			Per cent Change Over 5th Survey in	
	5th Survey (1986)	6th Survey (1993)	7th Survey (2002)	6th Survey	7th Survey
1	2	3	4	5	6
Government (a)	54,235	71,349	41,378	31.56	-23.71
(b)	34.11	30.24	22.88		
Local Body (a)	13,060	19,356	16,316	48.21	24.93
(b)	47.57	44.11	38.97		
Private Aided (a)	20,005	29,030	10,446	45.11	-47.78
(b)	11.88	13.97	6.41		
Private Unaided (a)	2,980	5,028	7,273	68.72	144.06
(b)	16.68	14.58	10.35		
Total (a)	90,280	1,24,763	75,413	38.20	-16.47
(b)	24.23	23.90	16.54		

Note: a-represents actual figure, b-represents per cent w.r.t. total number of schools for corresponding management.

Table 9: Management-wise Non-availability of Playground Facility in Secondary Level Schools in Rural India

School Management	Educational Survey			Per cent Change Over 5th Survey in	
	5th Survey (1986)	6th Survey (1993)	7th Survey (2002)	6th Survey	7th Survey
1	2	3	4	5	6
Government (a)	2,028	5,811	9,976	186.54	391.91
(b)	10.63	22.83	27.59		
Local Body (a)	433	983	2,740	127.02	532.79
(b)	10.75	15.47	30.29		
Private Aided (a)	1,622	2,399	3,613	47.90	122.75
(b)	8.39	11.29	14.48		
Private Unaided (a)	488	802	2,451	64.34	402.25
(b)	13.70	12.53	15.07		
Total (a)	4,571	9,995	18,780	118.66	310.85
(b)	9.94	16.81	21.73		

Note: a-represents actual figure, b-represents per cent w.r.t. total number of schools for corresponding management.

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How Informed Citizens, Prospective Teachers Are?

An Exploratory Study of Political Interest and Political Efficacy

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Abstract

An informed and competent citizenry is the basic essential for the progress and prosperity of any country in the world. A country is known by its citizens; their skills, resourcefulness and most importantly their participation into political issues contributes towards national progress. But nowadays, the bond of democracy is weakening which is an alarming concern; particularly for education which is the strongest agency to provide effective membership for the society. Therefore, we need teachers as informed citizens who can work as role models. In this premise, an empirical study was conducted to study the political interest and efficacy of prospective teachers. The results indicate that prospective teachers are better in political interest than political efficacy. Various personal and environmental variables of the study showed different pattern of influence in which the prominence of family is reaffirmed. On the whole, the study recommends including education of democratic citizenship in teacher education programs and outlines the importance of teachers in education of democratic citizenship.

In the beginning of the twenty first century, there is renewed interest in Education for Democratic Citizenship (EDC) at international level (Europe Commission, 1977; council of Europe, 2000, 2002). In Indian context too, today's socio-political scenario is dreary with lot of negative democratic practices. The low voting turnout, regional conflicts, religious intolerance and rampant

corruption pose the need of strengthening education for democratic citizenship. The society is once again looking towards education for resolving this predicament. In this context the role of teachers becomes very important. The big responsibility comes to the shoulder of teachers who are considered to be the pillars of society. They have the prerogative to shape the future of the

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country. Political efficacy and political interest are one of the important dimensions of citizenship education. These dimensions are needed to be developed among students so that they can judge their worth as a citizen of the country.

In terms of educating the children in making an ideal citizen Easton and Dennis (1967) in their study concluded that even very young children begin to conceptualise political figures and a sense of political efficacy. They further concluded highlighting the role of education that with longer period of education, political efficacy also increases. Political efficacy may be defined as the feeling that individual's action does have or can have an impact upon the political process i.e. worthwhile to perform one's civic duties. It is the feeling that political and social change is possible. Malik (1974) analysed the interrelation between belief, efficacy and attitude towards democracy among urban students of Class IX and concluded that school is an important agent of political socialisation. He also found that teachers are more effective than parents to mould student's behaviour towards democratic way of life. Political interest is one of the essentials to develop democratic attitude among youth which refers to either expected or actual involvement in political activities, issues, affairs and processes. Ehman (1980) in a study conducted in United States and Canadian schools concluded that formal curriculum effectively transmit political knowledge, particularly to lower classes but does not substantially influence political attitude or participation. School and classroom

climate, teachers and student participation in extracurricular activities, however, do significantly influence political attitude and participation. Francis, et al. (2003) assessed the attitude of trainee teachers towards education for global citizenship and found that majority of trainee teachers recognise the importance of education for global citizenship within social curriculum. 76% of trainee teachers agree that global citizenship have a high priority in the secondary school curriculum. Gupta (1987) studied the political interest and political efficacy among undergraduate students and concluded that familial affiliation of undergraduates with politics is positively correlated with their political interest and political efficacy.

In the review of literature, it was also found that at international level a lot of research work related to need and importance of citizenship education, political efficacy of young children, political socialisation has been done. In Indian context however, researches related to political socialisation of students, attitude towards democracy, assessment, curriculum particularly of civics curriculum have been done, but no research was found on political interest and political efficacy among prospective teachers. So there is need to study two important traits of a democratic citizen i.e. political interest and political efficacy among prospective teachers.

Objective of the study

The main objective was to study the level of Political interest and Political efficacy among prospective teachers.

The effect of socio-economic-status, gender and stream of study was also studied in political interest and political efficacy of prospective teachers. Further, the study also draws the difference in political interest and political efficacy between prospective teachers coming from politically affiliated families and politically non-affiliated families.

Operational Definitions of Key Terms

Political Interest

Political interest refers to either expected or actual involvement in political activities proclivities, issues, affairs and process.

The test of political interest developed by Gupta, R. (1987) was used to measure the political interest. The score obtained on the scale is considered as political interest.

Political Efficacy

Political efficacy has been conceptualised as an individual's ability to understand the government, its functioning, Programs and policies and to feel that he/she or other citizens have the power to influence political decisions. The scores obtained on political efficacy scale of Gupta, R. (1987) considered as political efficacy.

Prospective teachers

Prospective teachers refer to the teacher trainees under pre-service program (B.Ed.) from different teacher education departments of different universities in Varanasi, Uttar Pradesh.

Hypotheses of the Study

Following null hypotheses were framed to study the political interest and political efficacy of prospective teachers.

- [1] (i) Prospective teachers having familial political affiliation do not differ significantly in political interest from prospective teacher who come from politically non-affiliated families.
- (ii) Prospective teachers having familial political affiliation do not differ significantly in political efficacy from prospective teachers who come from politically non-affiliated families.
- [2] (i) There is no significant difference in political interest between male and female prospective teachers.
- (ii) There is no significant difference in political efficacy between male and female prospective teachers.
- [3] (i) There is no significant difference in political interest between prospective teachers of humanities and science group.
- (ii) There is no significant difference in political efficacy between prospective teachers of humanities and science group.
- [4] (i) Prospective teachers from high, average and low socio-economic status do not differ significantly in political interest.
- (ii) Prospective teachers from high, average and Low socio economic status do not differ significantly in political efficacy.

Method

Descriptive survey methodology was applied to achieve the objectives.

Population

Students of B.Ed. enrolled in the session 2007-08 in different teacher education departments of university of Varanasi City was the population of the study.

Sample

B.Ed. Students of three universities of Varanasi i.e. Banaras Hindu University, Mahatma Gandhi Kashi Vidyapeeth and Sampurnanand Sanskrit University have been selected randomly as sample

of the study. Sample was consisted of 412 students. Distribution of the sample is as follows.

Instruments

Scale of political Interest and Political efficacy developed by Gupta, R. (1987) was used for data collation. The scale consists of 38 items carrying the dimensions of political interest i.e. (i) Political leadership (ii) Political Discussion (iii) Political involvement (iv) Political participation

Scale of political efficacy was a five point Likert scale which was consisted of 38 items. The dimensions of Political efficacy taken in the study were: (i)

Table 1: Distribution of the Sample

<i>Name of University</i>	<i>Number of Male Students</i>	<i>Number of Female Students</i>	<i>Number of Students</i>
Banaras Hindu University	130	52	182
Mahatma Gandhi Kashi Vidyapeeth	98	36	134
Sampurnanand Sanskrit University	68	28	96
Total	296	116	412

Table 2: Distribution of the Sample according to Stream of the Study and Type of Family

<i>Category</i>	<i>Humanities</i>	<i>Science</i>	<i>Family with Political Affiliation</i>	<i>Family with Non-Political Affiliation</i>
Number	220	192	288	124

<i>Name of Scale and its areas</i>	<i>Intrinsic Validity</i>	<i>Reliability</i>
Overall in Political Interest	0.92	0.84
Political leader	0.56	0.31
Political Discussion	0.83	0.48
Political Involvement	0.69	0.64
Political Participation	0.80	0.69

Name of Scale and Its Areas	Intrinsic Validity	Reliability
Political efficacy	0.86	0.79
Political involvement and Election	0.54	0.29
Governmental Policies and Programmes	0.78	0.61
Political Leader and Governmental officials	0.73	0.54
Government	0.81	0.65

Political involvement and Election; (ii) Government policies and Problem; (iii) Political leaders and Government officials; (iv) Government

Findings of the Study

The sample of the study was normally distributed and suitable to apply parametric statistical techniques. In order to achieve the findings of the study general descriptive analysis was done and t-Test was applied to draw the inferences.

Political Interest and Political Efficacy of Prospective Teachers

Table – 3 reveals that the Mean of the sample for political interest is approximately equal to the expected mean. The maximum and minimum score which can be obtained on the political interest scale was 38 and 0

respectively. The expected mean will be 19 on this sale of political interest. It was also found that about 88 per cent of the scores fall above expected mean, thus, it can be concluded that prospective teachers do possess an above average level of political interest.

Further, the table also shows that Mean of the sample for Political efficacy is also greater than the expected mean (114). The maximum and minimum scores for the political efficacy scale were 190 and 38 respectively, it is also worthy to mention that 55 per cent of prospective teachers have gained less than the mean score. It is clear with the analysis that prospective teachers are better in political interest than political efficacy, although, for both the variables prospective teachers are in better status. The difference among political interest and efficacy is quiet understandable

Table 3: Descriptive Statistics for the whole sample for Political Interest and Political Efficacy

Political Interest		Political Efficacy	
N	412	N	412
Mean	18.98	Mean	121.68
Median	19.5	Median	123.32
Standard deviation	7.6	Standard deviation	12.73
Skewedness	-0.205	Skewedness	-0.007
kurtosis	.260	kurtosis	0.329

according to the nature of the construct that having interest is very general but the development of real efficacy needs serious involvement.

Findings related to Political interest of Perspective Teachers

Political Interest of Prospective Teachers according to Type of Family

It is evident from table - 4 that prospective teachers coming from politically affiliated families differ significantly from their counterparts of politically non-affiliated families; therefore, the hypothesis 1(i) was rejected. Tims observations were also emphatic, as his study on graduate students he found that "father's political orientation was moderately associated with respondent's political orientation indicating some transmission of political attitudes within the family. Eakin's (1971) study also supports the present findings. Eakin in his study found that 85 per cent of the respondents were from homes where the father tried to keep himself informed of public events, almost half of the fathers were party supporters

or members and a fifth of the students lived in homes where politics was discussed regularly among the family. Definitely, the kind of environment in family which facilitates awareness toward surroundings and discussion on current political issues must have contributed towards such finding. The conclusion drawn reaffirms the importance of family in child development and in political interest too.

Gender Difference among Prospective Teachers in terms of Political Interest

The Table - 5 shows that no significant gender difference exist in terms of political interest among prospective teachers, therefore, the hypothesis 2(i) is accepted. It infers that male and female prospective teachers do have similar political interest. All the prospective teachers are graduates and most of the teachers are post graduates too. Their educational qualifications and their socio-cultural background could be the reason for this conclusion. However, the positive side of the conclusion shows

Table 4: Effect of type of Family on Political Interest of Prospective Teachers

<i>Group Compared</i>	<i>N</i>	<i>Mean</i>	<i>S.D.</i>	<i>t - value</i>
From politically affiliated family	288	24.20	6.13	5.49*
From politically non-affiliated family	124	16.56	6.79	

* Significant at .05 Level

Table 5: Effect of Gender Difference on Political Interest of Prospective Teachers

<i>Group Compared</i>	<i>N</i>	<i>Mean</i>	<i>S.D.</i>	<i>t - value</i>
Male Prospective teachers	274	19.58	3.47	1.41
Female Prospective teachers	138	18.55	6.13	

that female prospective teachers too possess equal political interest which is the sign of their interest and competence in future serious responsibilities.

Political Interest of Prospective Teachers According to Stream of Study

In order to draw an authentic conclusion the two major streams humanities and science have been taken for the analysis. Table-6 shows that prospective teachers coming from humanities and science group do not differ significantly in terms of political interest. The finding is congruent with the earlier research of Spence (1972) on Indian students. He concludes that, "students in the social sciences and humanities were more politicised and more leftist than were science students, who in turn were more so than the students preparing the students for profession. Most of the universities selected for sampling, have entrance exams for selection in teacher

training courses which needs to have good knowledge of all areas including the contents related to humanities for science students and vice versa. This and other variables like educational qualifications, media exposure, kind of family environment must have contributed towards such conclusion. Although, the findings is encouraging in the sense that prospective teachers have good interest on political issues and concerns which is a positive trait for their future teacher effectiveness.

Political Interest of Prospective Teachers of Different Socio-economic Status

The table-7 reveals that prospective teachers coming from high socio-economic status only differ significantly from their counterparts coming from average SES, and low SES. No significant difference found with respect to other groups. The finding can be interpreted

Table 6: Effect of Stream of Study on Political interest of Prospective Teachers

<i>Group Compared</i>	<i>N</i>	<i>Mean</i>	<i>S.D.</i>	<i>t - value</i>
Humanities	220	18.72	7.75	.006
Science	192	18.68	6.49	

Table 7: Effect of Socio-Economic-Status on Political Interest of Prospective Teachers

<i>Groups</i>	<i>High SES</i>	<i>Average SES</i>	<i>Low SES</i>
N	78	203	131
Mean	19.89	19.33	19.17
Standard deviation	4.9	5.96	5.83
1. High SES		1.97*	2.28*
2. Average SES			1.22
3. Low SES			

* Significant at .05 level.

in terms of the traits belonging to higher SES. News papers, magazines, cable television, visit to important places, literate and high qualified parents, educated mother, education in good institutes; these and other traits definitely contribute towards generating different kinds of interest including political interest. Thus, it is obvious that teachers coming from higher SES are better in political interest. This finding is supported by Jones (1985) as "Better off and better educated citizens tend to participate more in politics because their costs of information are lower, their feelings of efficacy are higher, they have greater discretionary resources, and on issues such as taxes, they have no more to gain or lose. The finding implies more responsibility for educational institutes to nullify the effect of SES.

Findings Related to Political Efficacy of Prospective Teachers

Political efficacy of prospective teachers according to type of family

Table-8 shows that prospective teachers from non-affiliated families are better in

political efficacy than their counterparts from politically affiliated family. Therefore, the hypothesis 1(ii) was rejected. The finding was against the obvious phenomena that teachers from politically affiliated families are less politically efficacious. Since, population is of adult group, who have their own pattern of interest and thinking. Thus, the personal awareness and inclination of the teachers and their educational qualification must have contributed towards the conclusion drawn. It implies that teachers are aware about their socio-political scenario and have desire towards contributing in political concerns. Findings of Barakat (1978) are also in the same direction i.e. he also maintains that familial political affiliation does not play any role in developing sense of political efficacy among the children.

Gender Difference in Political Efficacy of Prospective Teachers

Table-9 shows that there exist gender difference in political efficacy among prospective teachers in contrast to political interest. Therefore, the

Table 8: Political Efficacy of Prospective Teachers according to type of family

<i>Group Compared</i>	<i>N</i>	<i>Mean</i>	<i>S.D.</i>	<i>t - Value</i>	<i>Inference</i>
From politically affiliated family	288	121.33	19.24	2.17	Significant at.05 level
From politically non-affiliated family	124	121	21.38		

Table 9: Gender difference in Political Efficacy Prospective Teachers

<i>Prospective Teachers</i>	<i>N</i>	<i>Mean</i>	<i>S.D.</i>	<i>t - Value</i>	<i>Inference</i>
Male	274	120.86	19.32	6.2	Significant at .05 level
Female	138	126.02	17.53		

hypothesis 2(ii) has been rejected. The finding is congruent with the earlier study of Oldfield (1978) who also found gender difference in political efficacy. However, Varshney's (1983) findings are not in agreement with the present finding. In her study she found that women are at par with men in the sense of political efficacy.

Political efficacy is an individual's ability to understand the government, its functioning, programs and policies and to feel that he/she or other citizens have the power to influence political decisions. It was observed that most of the male prospective teachers of the sample drawn were hostlers; living independently in an outside station which facilitates more exposure and involvement in settling various serious and important issues. On the contrary most of the girls of the sample selected were day scholars living with their families with good parental patronage. This might be the reason of better performance of male prospective teachers in political efficacy.

Political Efficacy of Prospective Teachers of different Subject Groups

Table-10 reveals that Prospective Teachers of humanities group are better in political efficacy than their counterparts from science stream. Varshney (1984); Asthana (1989) and Dhand, et al. (1991) have also favoured that the humanities curriculum does contribute towards developing citizenship qualities. Tims (1980) study also indicates that social and humanities students are more politically oriented than science students which also support the finding of the present study. Thus, the finding of present study also affirms that teachers from humanities are getting better exposure in understanding the government, its functioning, programs and policies and their role in influencing the political decisions. This must have been the reason of better political efficacy of prospective teachers of humanities group.

Table 10: Effect of Stream of Study in Political Efficacy of Prospective Teachers

<i>Group Compared</i>	<i>N</i>	<i>Mean</i>	<i>S.D.</i>	<i>t - Value</i>	<i>Inference</i>
Humanities	220	121.98	19.32	4.38	Significant at .05 level
Science	192	118.37	20.81		

Table 11: Effect of Socio-economic Status on Political Efficacy of Prospective Teachers

<i>Groups</i>	<i>High SES</i>	<i>Average SES</i>	<i>Low SES</i>
N	78	203	131
Mean	121.32	120.92	121.82
S.D.	22.75	19.78	20.12
High SES		0.18	1.38
Average SES			1.62
Low SES			

Political Efficacy of Prospective Teachers of different Socio-economic Status

The Table-11 shows that prospective teachers coming from higher, average or low Socio-economic-status do not differ significantly in political efficacy. The finding related to SES of the present study is not congruent with the findings of Hess and Torney (1965). He found that the lower class children are less politically efficacious than higher SES. But in Indian context SES did not show any significant effect on political efficacy. The finding authenticates the conclusion drawn with respect to the variable type of family (Table - 8), that the personal variable likes type of family or SES do not affect political efficacy. As drawn earlier, it is concluded that the personal awareness and inclination of the teachers and their educational qualifications must have contributed towards nullifying the effect of SES.

Conclusion and Suggestions

The findings of the study lead to the conclusion that prospective teachers are at good level in terms of political interest and political efficacy. However, the percentage of teachers scoring more than the expected mean was high in political interest (88 per cent) than political efficacy (55 per cent). Thus, there is need of orienting prospective teachers towards state and state's functions; the role and influence of each citizen towards political issues and decisions. The finding has implications for teacher education too; that there is need to infuse citizenship education in teacher preparation programs. Such efforts should be done at knowledge, skill and attitude level.

Political interest of prospective teachers coming from politically affiliated families and higher SES was greater than teachers coming from politically non-affiliated families and average or low SES. It outlines the importance of educational institutes in bridging up the skills which could not be developed in family settings. In schools as well as in higher education sufficient exposures of dimensions of citizenship education (political interest, political efficacy) need to be given through curricular and co-curricular concerns. No gender difference exists among prospective teachers in terms of political interest which is an encouraging sign, and this need to be maintained and further strengthened. In terms of political efficacy prospective teachers of politically non-affiliated families were found more efficacious than the students coming from politically affiliated families. Further, female prospective teachers and teachers from science stream were also found less politically efficacious than their male counterparts.

All these and other observations lend urgency to the issue of coalescing democratic citizenship in teacher education programs. A teacher who is considered to be the pivot in developing citizenship qualities among future generations, must have the belief about the impact of a person in political process as a result of his/her own skills and confidence, or of the skills and confidence of people just like him/her. A teacher needs to be responsive towards an individual as a citizen concerning one's strength; fundamental rights and duties and most importantly individual's

dignity that being the citizen of the country supreme power is vested upon him/her. Thus, the teachers trained on such dispositions could serve the task of developing an ideal citizenry for the country and the world.

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Status of Para-teachers in India

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Abstract

Over the last a few years, para-teachers are being recruited in almost all the states in India. This is primarily being done to meet the shortage of teachers particularly in primary and upper primary schools. At present there are more than half a million para-teachers. The present study covered 22 states which are affiliated to the All India Primary Teachers' Federation. Of these states, only 6 states are not recruiting para-teachers and the rest are recruiting them. Para-teachers are being deployed both in rural and urban areas. Only in some states such as Chhattisgarh, Haryana, Rajasthan and West Bengal, they are being deployed in rural areas only. The nomenclature of para-teachers is different in different states. Para-teachers are being appointed against vacant posts of teachers and additional posts created under Sarva Shiksha Abhiyan. Professional qualification for appointing para-teachers is not mandatory in states like Andhra Pradesh, Bihar, Chhattisgarh, Jharkhand, Meghalaya, Uttar Pradesh, Uttarakhand and West Bengal. So in these states, professionally untrained teachers are being appointed as para-teachers. Some states such as Gujarat, Haryana, Madhya Pradesh, Maharashtra, Orissa and West Bengal have discontinued appointment of regular primary teachers. In these states only para-teachers are being appointed. Local authorities such as Village Education Committee, Zila Panchayat/PRI have also been empowered to make recruitment of para-teachers. Remuneration being paid to para-teachers is much less than that which is paid to regular teachers. State governments are exploiting these teachers. The tenure of appointment of para-teachers ranges from one to five years. But most of the states are appointing para-teachers for one year or so. Only few states such as Gujarat, Orissa, Maharashtra and Himachal Pradesh have made some provisions for regularising the services of para-teachers.

The term para-teacher is a generic one. It covers all teachers appointed on a contract basis under varying conditions. When we peep into the history of appointment of para-teachers in the country, we find that their appointment in primary schools started in the eighties. It was in 1984 when the government of

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Himachal Pradesh introduced the Scheme titled 'Volunteer Teachers'. Thereafter, para-teachers have been being employed in most of the states in the country.

Para-teachers are not being appointed in India alone. In recent years, the use of para-teachers has been growing in other developing countries too. They are in Africa, Latin America and Asia. The most extensive use of contract teachers has been in the West and Central Africa over the last one decade where it has been encouraged by the World Bank perspectives regarding cost effectiveness and efficiency in education (Fyfe, 2007). In 1995, Senegal introduced an experimental programme of recruiting volunteers and, now along with Niger, "has around half of its teaching force under short-term contract. Further, Guinea has 39 per cent of its teaching workforce as contract teachers, Togo 31 percent, Burkina Faso 24 per cent and Cameroon 20 per cent. However, other countries in the sub-region such as Chad and Ivory Coast have no contract teachers (Fyfe, 2007). In Latin America, contract teachers in Peru represent about 11 per cent of the teaching workforce and in Chile upto 20 per cent. China, Kenya and Cambodia have also appointed contract teachers. In India as many as 499 thousand teachers were appointed upto 2005-2006 which is 10.64 per cent of total teachers"(Mehta, 2007). The number of these teachers is steadily increasing. The scheme of appointment of para-teachers originated in the background of achieving Universalisation of Primary Education (UPE) and Universalisation of Elementary

Education (UEE). States particularly educationally backward ones resorted to appointment of para-teachers to meet shortage of teaching workforce in existing schools and newly opened ones to provide access schooling to children.

Need for the Study

Para-teachers are being appointed under varying service conditions in terms of their emoluments, recruitment qualifications, etc. The All India Primary Teachers' Federation (AIPTF) felt the need to study their service conditions in terms of emoluments, possibilities of making them regular teachers, admissibility of leave and other benefits.

Objectives of Study

The main objectives of the study were to:

- find out the states in which para-teachers are being appointed;
- determine the recruitment conditions of para-teachers in different states; and
- determine service conditions of para-teachers in different states.

Design of study

The study covered those states in which state primary teacher associations are affiliated to the AIPTF.

Development of tool

A questionnaire was developed for collecting requisite data from the states.

Collection of data

The questionnaires were mailed to the state primary teachers associations in different states with the request to collect

the requisite data from the Education Department and the office of the Sarva Shiksha Abhiyan in their state. Discussions were held with General Secretary of different affiliates of the AIPTF.

Delimitations

The following were the delimitations of the study:

- Only para-teachers working in Government primary schools were covered in the study; and
- It was limited to those states in which state primary teachers associations are affiliated to the All India Primary Teachers Federation. Thus the study covered 22 states. Two affiliates of the AIPTF could not make available the requisite data.

Operational definition of the term – para teacher

Para-teachers are those teachers who are contracted for a very limited period and are paid remuneration considerable below of the salary paid to regular teachers in the state.

Findings of the Study

The main findings of the study are highlighted below:

Deployment of Para-teachers

About 93 per cent of the total para-teachers have been appointed in rural areas (Mehta, 2007). Of the total para-teachers, 61 per cent of them are male and the remaining 39 per cent female during 2005-2006 (Mehta, 2007). During 2005-2006, the percentage of male and

female para-teachers to total male and female teachers comes to be 11.21 and 10.47 respectively. In other words, about 11 per cent of total teachers (all categories) are para-teachers (Mehta, 2007).

Majority of the para-teachers are appointed in the states of Andhra Pradesh (63,323), Bihar (68,728), Chhattisgarh (38,596), Madhya Pradesh (95,773) which together constitute a total of 417 thousand para-teachers, i.e. 84 per cent of the total para-teachers across 35 states and UTs of the country. Further, it is observed that 23.89 per cent of the total para-teachers are appointed alone in the state of Madhya Pradesh.

Schools Solely Manned by Para-teachers

In as many as 79,480 (7.07%) of total schools, only para-teachers were working in 2005-2006. Of 22 states, 17 states are recruiting para-teachers. The states such as Tamilnadu, Karnataka, Punjab, Goa and Mizoram are not recruiting para-teachers.

State Governments Discontinued Appointment of Primary Teachers on Regular Basis

Six state governments discontinued appointment of primary teachers on regular basis. These states are mentioned in table 1.

Introduction of the Policy of Recruitment of Para-teachers

The year in which different states started the recruitment of para-teachers is highlighted in table 2.

Table 1: States Discontinued Appointing Teachers on Regular Basis

<i>State</i>	<i>Year from which the appointment of teachers on a regular basis discontinued</i>
Gujarat	1998-1999
Haryana	2005
Madhya Pradesh	1994
Maharashtra	1994-95
Orissa	1996-97
West Bengal	2006

Table 2: Appointment of Para-teachers in Different States

<i>Sl. No.</i>	<i>State</i>	<i>Year</i>
1	Andhra Pradesh	2000-2001
2	Bihar	2000
3	Chhattisgarh	1998
4	Delhi	2001
5	Gujarat	1998
6	Haryana	2005
7	Himachal Pradesh	1984
8	Jharkhand	2003-2004
9	Madhya Pradesh	1994-1995
10	Maharashtra	2001-2002
11	Meghalaya	
12	Orissa	1995-1996
13	Rajasthan	1997
14	Uttar Pradesh	
15	Uttarakhand	1998-1999
16	West Bengal	2002

Academic and Professional Qualifications Prescribed for Para-Teachers at Primary Level

Academic and professional qualifications prescribed by different state governments for appointment of para-teachers are highlighted in table 3.

It is evident from the table that a good number of states, professional qualification are not compulsory for making of appointment of para-teachers.

Appointing Authority of Para-teachers

Table 4 highlights the appointing authority of para-teachers in different states.

Table 3: Qualification Prescribed for Para-teachers

<i>State</i>	<i>Academic Qualification</i>	<i>Professional Qualification</i>
Andhra Pradesh	Intermediate /Senior secondary or its equivalent	Not necessary
Bihar	Intermediate/Senior secondary or its equivalent	
Chhatisgarh	Shiksha Karmi Grade – I Post graduation Shiksha Karmi Grade – II Graduation Shiksha Karmi Grade – III Sr. Secondary	
Delhi	Senior Secondary	Diploma in Education or its equivalent
Gujarat	Senior Secondary	PTC/CPED
Haryana	Senior Secondary	Two years Diploma in Education
Himachal Pradesh	a) N.T.T. Matriculation b) Vidhya Upasak - Sr. Secondary c) Gramin Vidya Upasak - Senior Secondary d) Prathmic Sahayak Adhyapak-Senior Secondary e) Contract teacher	One year training Not necessary
Jharkhand	a) Primary school-Intermediate/Senior Secondary or its equivalent b) Upper primary school-Graduation with intermediate with Science	B.Ed./DM/Shastri/PET Not compulsory
Madhya Pradesh	Grade – I Post graduation Grade – II Graduation Grade – III Senior Secondary	Professional qualification is not necessary at the primary level but at the upper primary level, D.Ed./B.Ed. is required
Maharashtra	Senior Secondary	Two year diploma in education
Meghalaya	Senior Secondary	Not necessary
Orissa	a) Matriculation/+2 for 70% of the posts b) B.A./B.Sc./B.Com for 30% of the posts	Certificate in teaching B.Ed.
Rajasthan	Senior Secondary	B.S.C.T./B.Ed./D.P. Ed. / C.P.Ed./B.P. Ed./B.P.E. or its equivalent
Uttar Pradesh	Intermediate or its equivalent	
Uttarakhand	Intermediate Remote areas - Matriculation	Not compulsory
West Bengal	School Final which is equivalent to Class X	

Table 4: Appointing Authority of Para-teachers in Different States

<i>State</i>	<i>Appointing Authority</i>
Andhra Pradesh	Village Education Committee (VEC) / SDMC
Bihar	PRI/Village Level PRI/Nagar Parishad/Nagar Panchayat
Chhattisgarh	Grade – I Zilla Panchayat Grade – II Zilla Panchayat Grade – III Janpad Panchayat
Delhi	Director of Primary Education
Gujarat	State Education Department
Haryana	Block Education Officer
Himachal Pradesh	a) Gramin Vidya Upasak / Volunteers/ PAT by Panchayat b) NTT/Vidhya Upasak/Contract teacher by Deputy Director of Primary Education
Jharkhand	VEC
Madhya Pradesh	Grade-I Zilla Panchayat Grade – II and III Janpad Panchayat
Maharashtra	Chief Executive Officer of Zilla Parishad
Meghalaya	–
Orissa	PRI/ Zilla Parishad
Rajasthan	Panchayati Raj Institution (PRI)
Uttar Pradesh	VEC
Uttarakhand	DEO on the recommendations of the VEC
West Bengal	District Project Officer through Sub-inspector of schools

It is quite clear from the table that para-teachers are being appointed by authorities at the District/ Block/Village level. On the other hand, teachers on regular basis are appointed mostly by the state governments.

Remuneration being paid to Para-teachers

The monthly remuneration being paid to para-teachers in 2007 for different states is highlighted in table 5.

Table 5 highlights that remuneration paid to para teachers in 2007 in the states of Andhra Pradesh, Meghalaya, and West Bengal is very low i.e. Rs. 1500/- per month.

It is the highest in the state of Delhi. Para-teachers are paid remuneration of Rs. 9,500/- per month. There is a difference in remuneration paid to untrained and professionally trained para-teachers in a few states. In Haryana, para-teachers are paid wages at the rate of Rs. 225/- per day.

Tenure of Appointment of Para-teachers

Generally the appointment of para-teachers in different states is made for about a year or so. In some states like Bihar, Gujarat, Maharashtra and Chhattisgarh, the tenure of appointment ranges from 3 to 5 years.

Table 5: Remuneration Payable to Para-teachers in Different States

<i>State</i>	<i>Remuneration</i>
Andhra Pradesh	Para-teachers were paid a fixed amount of Rs. 1000/- per month. Their remuneration has been increased to Rs. 1500/- from 2007-2008.
Bihar	The honorarium is different for trained and untrained para-teachers. The trained teachers get an honorarium of Rs. 5000/- per month and the untrained ones Rs. 4000/- per month. After completion of three years of service, a para-teacher is entitled to an increment of Rs. 500/-.
Chhathishgarh	From 1 st Sept. 2003, Shiksha Karmis are placed in the following pay scale: Shiksha Karmi : Grade – I 3000-75-5400 Grade – II 3250-60-4450 Grade – III 2700-50-3700 In addition to the basic pay in the said scales, Shiksha Karmis are also entitled to 24% dearness allowance, Rs. 100 per month as interim relief and Rs. 100/- as special relief.
Delhi	Rs. 9500/- per month
Gujarat	Rs. 2500/- per month
Haryana	Rs. 225/- per day
Himachal Pradesh	NTT / Vidhya Upasak - Rs. 2500/- PAT/Gramin V. Upasak - Rs. 2000/- untrained - Rs. 2500/- trained Contract teacher - Rs. 6825/-
Jharkhand	a) For primary schools - Trained Rs. 3000/- - Untrained Rs. 2500/- b) For upper primary schools - Trained Rs. 3500/- - Untrained Rs. 3000/-
Madhya Pradesh	Grade – I Rs. 4500/- Grade – II Rs. 3500/- Grade – III Rs. 2500/- After completion of three years of service, the para-teacher gets an increment of 15 per cent of her/his pay in the scale.
Maharashtra	Trained Rs. 3000/- Untrained Rs. 1500/-
Meghalaya	Rs. 1500/-
Orissa	Rs. 3000/-
Rajasthan	Rs. 2000/- with an annual increment of Rs. 200/-
Uttar Pradesh	Rs. 3000/-
Uttarakhand	From December 2006 Rs. 6000/-
West Bengal	Rs. 1500/-

Regularisation of Services of Para-teachers

Most of states covered in this study have not made any provision for regularisation the services of their para-teachers. Some states have made provisions in this regard. Table 6. provides information in this regard.

Conclusion

The study reveals the plight of para-teachers in different states. They are poorly paid. Their remuneration is much less than those appointed on a regular basis. Since their tenure of appointment is for a year or so in most of the states, they suffer from the sense of in-security. Unemployment prevailing in the country

forces them to accept employment at a very low remuneration. There is also no provision for contributory provident fund for para-teachers in all the states. All this is against the canon of social justice. Their future is therefore, dark as only a few states such as - Gujarat, Maharashtra, Orissa and Himachal Pradesh have made provisions for regularizing their services. If this state of affairs continues, many of them may suffer from depression. Some of the para-teachers are not professionally trained. State governments are urged to impart them necessary induction/in-service training and bring all the para-teachers into the main stream. This is most desirable in our socialistic pattern of society.

Table 6: States having Provision for Regularising Services of Para-teachers

Sl. No.	State	Period
1	Gujarat	After the completion of 5 years service
2	Orissa	After completion of 3 years satisfactory service a para-teacher is eligible to become a junior teacher. The junior teacher, on completion of 3 years of continuous satisfactory service is eligible to become a regular teacher at the primary level.
3	Maharashtra	After completing 3 years of satisfactory service, para-teachers are appointed as regular teachers. NTT – 8 years 3 months
4	Himachal Pradesh	Volunteer 86 scheme – 10 years Volunteer 92 scheme – 6 years 6 months Vidhya Upasak – 7 years 9 months Contract teachers – 8 years G. V. Upasak & PAT – No policy for regularisation of their services

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Environmental Education at School Level : Issues at Glance

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Abstract

Environment related problems being complex need complete understanding of social, ecological as well as economic factors of all resources, their short and long term advantages/disadvantages and analysis of the problems and issues arising out of that in order to protect the environment along with taking care of the needs of all living beings through sustainable development. Sustainable development, which is the need of the hour, can be very strongly boosted through Education. A paradigm shift can be provided to it through Environmental Education (EE) which should neither be restricted to water tight compartments of the subject streams nor be dealt in isolation as a separate subject. Emphasis should be on holistic learning with a multi-disciplinary approach. This article explores various issues, dimensions and scope pertaining to environmental education and its implementation at the school level.

Our Environment

The environment, literally, means everything that surrounds us i.e. it includes natural as well as man made elements in it. It is often confused with ecology, which is the study of different processes and phenomena occurring in the natural world.

Ecosystems tend to remain in a state of equilibrium and possess self-regulating mechanisms for maintaining their balance. Thus, they become the source as well as the sink of all human activities. They lose that capacity to do so, because intricate connections that

exist between various components of nature get disturbed by different human activities, which are a result of development in technological terms i.e. different activities carried out in our environment impact the ecological aspects causing an irreparable loss to ecology by technology.

Receding glaciers, swathes of deteriorating forests, unpredictable monsoon, global warming and vanishing tigers are a few examples. Hence, the environmental problems of the world today are largely a consequence of the course of development and lifestyle of

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modern human society that endangers health and well being of all the living beings, degrade environmental stability which faces a threat of its destruction (Gore, 1992, 1994).

On one hand, we come across incidents which reveal a growing awareness about environmental hazards among all the stakeholders, as is evident from the public interest litigations and protests filed by the citizens, like cutting of the trees in the Delhi University campus for creating sports complexes for 2010 Commonwealth games, residents of Vasant Kunj in Delhi protesting for construction of a wall granted without environment clearance, introduction of Compressed Natural Gas (CNG) fuel for public transport etc. However, our efforts are still proving to be insufficient to deal with global change in climate, loss of biodiversity, loss of soil fertility, soil erosion emerging global diseases etc. The so called educated but environmentally illiterate society still needs to be awakened about living in harmony with the environment as depicted in our ancient literature and culture.

One of the biggest challenges to society is to find a balanced relationship between human and natural environments. An amicable solution to this was introduced by the World Commission on Environment and Development (1987) by introducing the concept of sustainable development i.e. development at the cost of finding a balance between providing the needs of the present and future human society and protecting the environment. According to our common future 1987 "Sustainable development is using,

conserving and enhancing the community's resources so that ecological processes on which life depends are maintained and the total quality of life, now and in future, can be increased." For this social, ecological as well as economic factors of all resources (living as well as non living) and their short and long-term advantages as well disadvantages must be taken into account. Thus, environment and development problems are complex and need a multidisciplinary approach to their solutions which requires a complete understanding and analysis of the problems/issues from all angles so as to protect the environment along with taking care of the needs of all living beings especially humans. To check the problem, there needs to be not only aware but action oriented people who keep rational thinking and the skill of problem solving.

Education is a crucial agent for achieving sustainable development and creating an environmentally literate society- a society motivated and equipped to influence decision making (Orr; UNESCO- UEP' 1976, 1978, 1992, 1995). To communicate the idea deep into the minds of the individuals, school education is an important medium and a paradigm shift can be provided to it through Environmental Education.

Environmental Education — The Background

Out of the initiatives at the global level, the intergovernmental conference on Environmental Education, held at Tbilisi in 1977, has a special significance as it aimed at nurturing the following in individuals:

- An awareness and sensitivity towards environment and its problems;
- Basic knowledge and understanding of the environment and its relationship with man;
- Social values and attitudes and concern for the environment which are in harmony with the environmental quality;
- Skills to solve environmental problems;
- Ability to evaluate environmental measures and education programmes;
- A sense of responsibility and urgency towards the environment so as to ensure appropriate actions to solve environmental problems.

In India, the concept of EE has its existence since ancient period, however, if we look at the preindependence period where the Basic Education Movement launched by Mahatma Gandhi, in 1937 was a serious endeavour to develop linkage between school education and local environmental needs. Later the report of Education Commission (1964-1966) incorporated these ideas and recommended that education be related to the real life around to develop proper understanding of each curricular area. However, the implementation process could be initiated only in 1977 through The Curriculum for Ten-Year School: A Framework (1975) developed by the NCERT. Based on NPE 1986(modified in 1992) 'Protection of Environment' is stated as a common core around which the subsequent curriculum frameworks were woven. In other words EE has always been a priority area, in all curriculum development programmes.

Status of Environmental Education at different stages of School Education

At the primary level, EE has been introduced through a subject Environmental Studies (EVS). Before implementation of National Curriculum Framework for School Education (NCFSE)- 2000, it was considered to be disciplinary in nature and was being introduced in two parts i.e. EVS-I and EVS-II in Classes III-V. However, in Classes I and II, it was introduced in integrated form through the use of Teachers' handbook. Integrated approach for EVS curriculum at the entire primary stage was adopted by NCFSE-2000, wherein, it recommended that in Classes III-V, children would be introduced to the environment in its totality with no clear-cut distinction between natural and social environment. In Classes I and II, it was not kept as a curricular area and environmental concerns were addressed through language, mathematics and Art of Healthy and Productive Living. The content at that stage has to be drawn from the immediate environment of the child and it would be integrated with language and mathematics. *NCF-2005* while supporting the continuation and further strengthening of the integrated approach for Environmental Studies during the primary years, envisages integrating children's experiences of the world around them with the school knowledge.

For the stages higher than primary, EE was introduced through infusion approach. At the upper primary and secondary level EE is transacted through

infusion of environmental concerns and issues through textbooks mainly science, social science and languages having small projects and activities on environmental issues. At the higher secondary level majority of concepts related to EE are found in the textbooks of biology, chemistry, physics, geography, economics, sociology and political science. However, since at the higher secondary stage students can opt for different electives, a project based compulsory environmental education is recommended. The challenge lies in choosing the suitable objectives of teaching EE in school education, so as to translate these appropriately into syllabus and finally into the textbooks and various within/out of the classroom activities/processes in order to emphasise emotional and attitudinal aspects of the learners' personality along with the requisite cognitive component.

Right from the pre-primary stage at the school level children should be exposed to a variety of situations through the process of teaching-learning so as to enable them develop their minds towards sensing the problem, analysing it from different angles, taking rational decisions and developing appropriate strategies to solve these problems. This establishes the fact that EE should be regarded as a process rather than a subject (NCF-2005).

Issues, Dimensions and Scope of Environmental Education in School Education

Keeping in view its aims and objectives and the fact that EE should be regarded as a process rather than a subject the

strategies for its effective implementation need a critical review.

However, one cannot be oblivious about the ground realities where, large teacher-pupil ratio, lack of resources and a number of such other constraints causing hindrance in its effective transaction. These can be addressed with the passage of time but more importantly in addition to these, the teaching learning process needs a drastic change which is highly teacher centered having rigid evaluation system which forces students to cram and reproduce the gained information in examination and get indulged in malpractices like buying readymade projects to score more and more marks.

The National Focus Group on Habitat and Learning (NCERT 2006) also recommends to bring a massive improvement in our system of education which till now had been going more or less in the traditional way of treating knowledge as a piece of information and making the students acquire it only for the sake of passing examination. Further, it says to achieve this, a curriculum based on the principles of learning of, for and through the environment should be designed which facilitates a meaningful learning of EE to promote the pursuit of sustainable development and fulfill the objectives of EE through a variety of pedagogical means. Being a multidisciplinary area of study its scope is broad based and includes natural, social and cultural dimensions, which are very closely, related influencing one another. One of the issues is to take up EE in the context of school curriculum through a suitable approach.

Keeping in view the holistic nature of EE and also the fact that an environmental issue cannot be dissected into different streams of different subjects, one of the ways of learning EE is through an integrated approach wherein environmental issues are integrated with basic disciplines. Indeed a thorough understanding of science, social studies and mathematics is required to completely understand/comprehend different environmental issues. The students must be exposed to the tasks wherein they are able to connect various aspects of an issue through the knowledge in their basic disciplines. For example, the recent decision of the Delhi government to cut the trees for developing sports complexes for the Commonwealth Games 2010, could be a problem before the students and they must be able to rationalise it from different dimensions such as; the extent of the loss of the bio-diversity that can be assessed through a thorough understanding of the biological as well as geographical concepts. To carry out various estimations, they need the mathematical skills. Besides that they could also analyse the economic aspects of holding the games such as financial implications in terms of generating revenue, more jobs, loss of flora and fauna. Similarly, mining in the Aravalli Hills and the Supreme Court order to stop it (Hindustan Times, dated 9 May, 2009) could be taken another issue and to analyse this problem, one needs to understand the chemical, geological, mathematical, economic and political aspects of the problem to arrive at some sound conclusion.

Hence, being holistic in nature, EE includes everything around us, thus involves a complete understanding of different processes happening, how different systems function in the world and interdependency of things on one another. Therefore, through integrated approach the teaching learning of EE requires to draw the basic knowledge of each discipline and integrate it suitably in the context of EE so as to address the issues/problems. Looking at this, it becomes obvious that such an approach could be followed only when students acquire the necessary minimum knowledge in each curricular area so as to develop a cross curricular linkage.

For the last several years, in India, the approach of infusion was being followed not only at school but also at higher levels of education as well. This issue was taken up seriously after the Supreme Court order in 2003. It was limited to an extent so as to introduce a paragraph or a chapter in the textbooks in order to make them as green. However, every teacher will teach the particular concept with a different concern and it becomes difficult for children to comprehend and integrate from more than one discipline on their own so as to understand and address a particular issue at their level. For example, in one of the chapters of a Hindi textbook (Class VII, NCERT), a poem 'Hum Panchii Unmukt Gagan Ke' offers questions such as 'How caging of birds affects environment?', 'What problems can arise in a world without birds?' Now, only a competent teacher, aware about the ecological and biological aspects of the problems can deal with such questions

effectively which could be a rare case. The same issue might be dealt differently by a language and a science teacher (especially, biology). Moreover, if the language teacher is unaware then she may leave the questions as being irrelevant or let children explore the answers.

Having an additional subject on EE is another approach. However, EE being multidisciplinary in nature would require drawing of content from all disciplines and teaching it with a different context. To be more precise, EE is having a concern about the environment so as to observe, identify, analyse an issue through critical thinking, and address the issues and concerns by the skill of problem solving. One can even say that EE is not a discipline in itself but it is about the issues and concerns pertaining to the environment and addressing those using a holistic and thorough knowledge of all other disciplines. Moreover, treating EE in a compartmentalised form or as a separate segment of study will not help addressing the issue but will lead to burdening children with an additional subject. It will further lead to creation of another period in the school timetable and another tool to make children cram the factual information and teachers assess it through oral/written tests, thus, defeating the purpose of EE. This will also require trained teachers in EE exclusively for which we are already struggling as there is not only a dearth of teacher training institutes in the country. But also only a few universities/institutes are offering a course in Environmental Studies and Environmental Sciences. Hence, it will

be difficult to address the issue in the present circumstances.

It may be concluded that objectives of learning EE cannot be achieved if we restrict its learning only up to the textbook at the classroom level.

Till now environmental education has been more or less a kind of nature education focusing on issues related nature appreciation, revival of depleting bio-diversity and protecting endangered species etc. and thus, ignoring the social and environmental issues affecting the poor and underprivileged. Many issues such as poverty, educational and social equity and environmental justice are very closely connected to their day-to-day survival.

For example, in an effort to cut down the greenhouse gases emission, the use of bio-diesel has been encouraged in many countries. Many of the developing countries have started to plant crops like *Jatropha*. This led to profit for a class but affected a number of people who were dependent for their livelihood on the forests. In addition to this, it led to loss of soil fertility, loss of biodiversity and loss of the forests which were otherwise a good sink for the greenhouse gases and thus lifeline of the living organisms including humans. Also, the issues related to mass suicides by the farmers in Andhra Pradesh require an attention to be paid towards many environmental factors such as deforestation, water scarcity, water logging, and reduced fertility of the soil and misuse of power by a class to exploit the natural resources and many other social issues. Malnourishment is an important issue prevailing in almost all the developing countries. It is also very closely related

to various environmental issues as well as social issues.

Thus, it is obvious that environmental education fails to address the issues in a way that how environmental problems arise or what is their origin. The picture cannot become crystal clear without being honest with industrial capitalism, colonial exploitation, issues related to poverty, superstitious customs/beliefs. An environmental educator should create opportunities where students can have a direct experience with what is for many of them, a separate reality. Through the process of environmental education students will develop a critical mind to analyse the problem/issue from all dimensions in order to identify its origin. They need to recognise the wider connections between environmental concerns, social and economic justice. In order to make the environmental education curriculum relevant it should be inclusive of the issues related to global justice, social justice and environmental justice to enable children to be efficient in the skill of decision-making and problem solving.

Another important issue in the multicultural context like India is the issue of diversity. Diversity is critical to strong and healthy environment. Just as diverse ecosystems are healthier, diversity in teaching learning of EE will help in better understanding of the related issues and concerns. Diversity in various aspects e.g. in terms of local specificity, giving learning opportunities to the children and also in terms of textbooks and teaching learning material needs to be addressed. Especially at the primary level children should be exposed to the environment /the world they live

in. They should be allowed to interact with their surroundings giving them opportunities within as well out of the classroom giving emphasis on various processes of observation, classification, interpretation and draw inferences. Even the textual material that is provided to them should contain the content, examples, activities and illustrations with which they are already familiar from their surroundings.

Traditionally, it was believed that making them more aware about their environment and concerns related to it could change people's behaviour towards environment. The approach was based largely on the 'Hines' model of responsible behaviour. It was thought that increased knowledge leads to favourable attitudes which in turn lead to action promoting better environmental quality (Ramsey and Rickson, 1977). The situation is comparable to case of a medical practitioner being aware about the disease yet is unable to treat it till she is equipped with the skills to diagnose the disease, its origin, choosing a suitable method to treat it and applying the method successfully. In addition to skills equally important is the attitude towards it. The problem of the menace of pollution arising from the crackers during the festival of Diwali in Delhi could only be addressed by sensitising children through school education. Our efforts till now focused a lot on the awareness part instead an equal focus should be to expose students to the actual world they live in so as to familiarise and sensitise them against the environment related issues and problems. The need of the hour is not only to create awareness but also develop the favourable attitudes and skills of

rationalising and problem solving. Children must be sensitised towards the environmental problems and concerns and equipped with skills to enable them analyse, evaluate, draw inferences and resolve them.

There is a need to introduce environmental education through problem solving action oriented approach in order to empower children to take an action on issues, which directly affect them. This would not only increase their awareness about environmental issues but also it would let them acquire a variety of tools that they could use to effect change. Thereby, it could be one of the powerful means to bring an effective change through them in a positive manner. Working on this approach the multidisciplinary and interdisciplinary nature of environmental education will automatically become apparent.

Considering the above-mentioned aspects, NCERT (2006), has tried to address these issues and promote the pursuit of positive environmental actions towards sustainable development through school education. A new paradigm for the process of teaching and learning has been proposed to bring about the desired change. It lays emphasis on:

- Learning rather than teaching
- Building capacity for critical thinking and problem solving.
- Locale specificity in the context of global vision
- Multidisciplinary Approach
- Participatory with broad involvement of peers and other community members

- Life long and continuous in character
- Sensitivity to diversity, equity and gender
- Knowledge generation
- Empowerment rather than indoctrination.

Emphasis has been given on a process/skill based education at all levels. At the primary level, emphasis on providing an enabling environment for children that is rich in stimulation and experiences and allows children to explore experiment and freely express themselves. Considering the holistic nature of learning, environmental studies has its syllabus based on integrated aspects of natural, social and cultural environment. The content has been chosen for not only creating awareness but also on sensitisation of the young minds towards exploitation of natural resources, social inequalities and cultural diversities through diverse learning opportunities involving processes of EE. For example, the theme 'water' includes the concepts related to its availability, quality, contamination, purification, discrimination on its distribution, conservation, as an energy resource and other aspects related to health and hygiene have been incorporated. Further, the physical, chemical and mathematical aspects related to its state and properties have been thoroughly dealt with. Learning opportunities where children are not only trained in different skills of EE but also exposed and sensitised towards the real life problems pertaining in their surroundings have been selected. At the upper primary, secondary and senior

secondary level the environmental component is being taken care through different subjects (mainly through science and social science). Problem solving approach is central to all curricular areas with emphasis on skills through a variety of means. Lot of projects, activities has been suggested by which children will be trained in skills to make them action oriented.

However, revising the curriculum, syllabi and textbooks needs to be accompanied by the capacity building programmes for teachers, who need updating not only in the content, pedagogical and evaluation practices so as to strengthen the emotional and attitudinal aspects of children in addition to the awareness and skills of EE. A mutual interaction between teachers teaching different stages and disciplines is very essential so that the integrated or infused concepts of EE could be effectively taken up by them in

their respective subject areas.

Above all, if we really wish to practice environment education and inculcate a favourable attitude and the desired skills among the learners, we must practice the sustainable behaviours in a true sense. Sustainable concepts being taught quite often conflict with unsustainable behaviours that schools model to their students. Inconsistency between teaching and practice has confused the students (Berryman and Breighner, 1994). Though a lot is talked about on incorporating greening and sustainability into the school curriculum yet a little is done when one could adopt and demonstrate sustainability through the entire school system and its community. The gulf between what we preach and what we practice should be narrowed. In other words, practicing or modelling sustainability can help a lot in achieving the desired objectives of EE.

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Engineering in Mathematics Education

Mathematical Engineering

PRAVEEN KUMAR CHAURASIA*

Abstract

We all have our own experiences of Mathematics since our very early childhood. Most of us have developed our own understanding of learning of mathematics. Through this article, the author appeals for a self-analysis of our understanding of learning and teaching Mathematics. The focus of this article is largely devoted to supporting the improvement of mathematics teaching and learning and ultimately the performance of students on measures of mathematics achievement. This article is written with the hope that it will help the reader understand how research-based strategies can support the engineering of positive change to the structures supporting the teaching and learning of mathematics in educational settings. Basically, main emphasis will be on the engineering set up in mathematics education. The entire findings are based on discussion on mathematics of concept of "fraction".

"Mathematics—I want to say—teaches you, not just the answer to a question, but a whole language-game with questions and answers".

—Ludwig Wittgenstein

If someone were to write about "How chemists can contribute to chemical engineering", that person would be considered a crank for wasting ink on a non-issue. Chemical engineering is a well defined discipline and chemical engineers are perfectly capable of doing what they are entrusted to do. They know that chemistry need for their work. Therefore, what we are going to discuss of "How mathematicians can contribute to Higher Secondary School Mathematics education in terms of above objectives."

In other words, we will discuss how mathematicians will perform their role in engineering set up in mathematics education and will elaborate "Mathematical Engineering". We will discuss this matter with the presentation of "fraction" concept. It is an attempt to put in perspective the detailed description of the basic skills and concepts in learning and teaching of mathematics through the illustration of fractions. However, an entirely analogous discussion of customisation can be given

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to any aspect of mathematics education.

“Knowledge and productivity are like compound interest. Given two people of approximately the same ability and one person who work 10% more than the other, the former will more than twice out produce the later. The more you know, the more you learn; the more you learn, the more you can do; the more you can do, the more the opportunity — it is very much like compound interest. I don’t want to give you a rate, but it is a very high rate. Given two people with exactly the same ability, the one person who manages day in and day out to get in one more hour of thinking will be tremendously more productive over a lifetime.” — Richard Hamming

How can mathematics educators be more productive teachers? How do we accelerate students’ learning of school mathematics? These are difficult questions. The teaching and learning process is embedded in a complex web of schools, communities, and state governance systems that each play a role in expanding students’ opportunity to learn and think about mathematics.

The National Council of Educational Research and Training (NCERT) have developed *National Curriculum Framework (NCF)* — 2005. In NCF-2005, the two goals ‘narrow aim’ and ‘higher aim’ of mathematics education have been characterised. By higher aim, we mean to develop the child’s inner resource to think and reason mathematically, logical conclusion and handle abstraction. While by narrow aim, we mean that child would have very good algorithmic practices by just remembering the formulas. We are ambitious in the sense that our learning mathematics should achieve this higher aim rather than only

the narrow aim.

This distinction of ‘narrow aim’ and ‘higher aim’ was first made by George Polyà — a great mathematician as well as a great mathematics educator; he wrote, more generally, that the aim of education should be to develop the inner resources of the child. Here are some quotes of Polyà’s:

“Mathematics is a good school of thinking. But what is thinking? The thinking that you can learn in mathematics is, for instance, to handle abstractions. Mathematics is about numbers. Numbers are an abstraction. When we solve a practical problem, then from this practical problem we must first make an abstract problem. Mathematics applies directly to abstractions. Some mathematics should enable a child at least to handle abstractions, to handle abstract structures.”

But I think there is one point which is even more important. Mathematics, you see, is not a spectator sport. To understand mathematics means to be able to do mathematics. And what does it mean doing mathematics? In the first place it means to be able to solve mathematical problems. For the higher aims, about which I am now talking are some general tactics of problems — to have the right attitude for problems and to be able to attack all kinds of problems, not only very simple problems, which can be solved with the skills of the primary school but more complicated problems of engineering, physics and so on, which will be further developed in the higher classes. But the foundations should be started in the primary school. So, I think

an essential point in the primary school is to introduce the children to the tactics of problem solving. Not to solve this or that kind of problem, not to make just long divisions or some such thing, but to develop a general attitude for the solution of problems.

“There are as many good ways of teaching as there are good teachers. But let me tell you what my idea of teaching is. Perhaps the first point, which is widely accepted, is that teaching must be active, or rather active learning. That is the better expression.”

“You cannot learn just by reading. You cannot learn just by listening to lectures. You cannot learn just by looking at movies. You must add from the action of your own mind in order to learn something. You can call this the Socratic method, since Socrates expressed it two thousand years ago very colorfully. He said that the idea should be born in the student’s mind and the teacher should just act as a midwife. The idea should be born in the student’s mind naturally and the midwife shouldn’t interfere too much, too early. But if the labor of birth is too long, the midwife must intervene. This is a very old principle and there is a modern name for it — discovery method. The student learns by his own action. The most important action of learning is to discover it by yourself. This will be the most important part in teaching such that what you discover by yourself will last longer and be better understood.”

“This is the general aim of mathematics teaching — to develop in each student as much as possible the good mental habits of tackling any kind of problem.”

“You should develop the whole personality of the student and mathematics teaching should especially develop thinking. Mathematics teaching could also develop clarity and staying power. It could also develop character to some extent but most important is the development of thinking.”

My point of view is that the most important part of thinking that is developed in mathematics is the right attitude in tackling problems and in treating problems. We faced problems in everyday life like science, politics etc. The right attitude to thinking is maybe slightly different from one domain to another, but we have only one head, and therefore, it is natural that in the end there should be just one method to tackling all kinds of problems. My personal opinion is that the main point in mathematics teaching is to develop the tactics of problem solving.

In these few quotes, Polya has said something of great significance to mathematics educators.

In fact, the twin concerns of the mathematics education are to engage the mind of every student and also to strengthen the student’s resources. I definitely believe that while teaching and learning, whenever you got the actual sense of some tedious concept you might have felt a pleasure and confidence. In our mind, there is a model of learning

that informs us and affect whatever we plan in our lesson. Let us see following example of communication in class:

- Some teacher may believe that children enjoy repeating over and over again and being told the correct procedure to be followed.
- Another person may believe that children must know the answer to all the different exercises and must also know the best and shortest method to solve certain problems.
- Yet another mathematics teacher may believe that it is important to allow children the opportunity to solve problems and talk about how they have solved them.

Thus, there are several ways of looking at learning.

NCF-2005 has recommended shifting the focus of Mathematics learning from achieving 'narrow' goals to 'higher' goals. The content areas of Mathematics addressed in our schools do offer a solid foundation. The major challenge which is in front of us is related to Mathematical Process. That is, we have to emphasis the beauty of Mathematics as problem solving, Mathematics as communication, Mathematics as reasoning, Mathematical connections, Use of Patterns, Visualisation, Estimation and approximation.

Giving importance to these processes constitutes the difference between mathematisation of thinking and memorising formulas, between trivial mathematics and important mathematics, between working towards the narrow aims and addressing the higher aims.

To maintain the above mentioned original essence and power of learning mathematics. Mathematicians like H.Wu. (2006), Bass (2005) have made a vision on Mathematics Education as Mathematical Engineering.

The engineer as a metaphor representing a change agent requires a brief explanation. To some, the engineer may appear to be synonymous with the scientist. The distinction between a scientist and engineer is partially clarified by examining two activities related to the preparation of each professional-analysis and design. In science classes, students are required to answer problems, observe phenomena in laboratory settings, record observations, and perform calculations. This process is the essence of analysis. In engineering classes, the instruction often stresses the importance of design. The difference between analysis and design can be described in the following way: If only one solution to a problem exists, and discovering it merely entails putting together pieces of discrete information, the activity is probably analysis (Horenstein, 2002). In comparison, if more than one solution exists and if determining a reasonable path demands being creative, making choices, performing tests, iterating, and evaluating, then the activity is design. Design often includes analysis however; it also must involve at least one of these latter components.

Mathematics education is mathematical engineering. It is not an analogy. It is not used 'engineering' as a metaphor. Rather, a precise description of what mathematics education really is as follows:

One meaning of the word 'engineering' is the art or science of customising scientific theory to meet human needs. Thus, chemical engineering is the science of customising chemistry to solve human problems, or electrical engineering is the science of customising electromagnetic theory to design all the nice gadgets that we have come to consider indispensable. For example, Chemical engineering put chemistry for the plexi-glass tanks in aquariums, the gas we use in our car, shampoo, Lysol, etc. Electrical engineering put electromagnetism in computers, power point, iPod, lighting, motors, etc.

Striking Example of Electrical Engineering

In 1956, IBM launched the first computer with a hard disc drive. The hard drive weighed over a ton and stored 5MB of data. Today's hard drives weigh only a few ounces and hold 100,000 times as much data. These hard drives are built on the same scientific principles. But 50 years of continuous engineering have created refinements that make them enormously better adapted to the needs of consumers.

It will put forth the contention that mathematics education is mathematical engineering, in the sense that it is the customisation of basic mathematical principles to meet the needs of teachers and students. In next section, we see another model for the understanding of mathematics education before proceeding to a discussion of how mathematicians can contribute to Higher Secondary School Mathematics Education.

Regarding the nature of mathematics education, Bass (2005) made a similar suggestion that it should be considered a branch of applied mathematics. As mathematical engineering, we emphasise the aspect of engineering to customise scientific principles as per the needs of humanity in contrast with the scientific-application aspect of applied mathematics. Thus, when H. Hertz demonstrated the possibility of broadcasting and receiving electromagnetic waves, he made a breakthrough in science by making a scientific application of Maxwell's theory. But when G. Marconi makes use of Hertz's discovery to create a radio, Marconi was making a fundamental contribution in electrical engineering, because he had taken the extra step of harnessing an abstract phenomenon to fill human needs. In this sense, what separates mathematics education as mathematical engineering from mathematics education as applied mathematics is the crucial step of customising the mathematics, rather than simply applying it in a straightforward manner to the specific needs of the classroom.

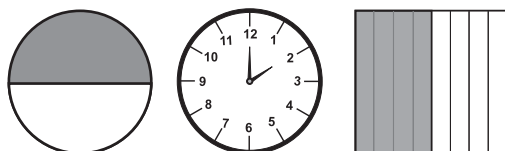
Coming back to mathematics let us see following a practical experience on fraction concepts:

Through this one example of fractions, we get a glimpse of how the principles of mathematical engineering govern the design of a curriculum. The teaching of fractions is spread roughly over classes 2-7. In the early classes, classes 2-4 more or less, students' learning is mainly on **acquiring the vocabulary of fractions** and using it for descriptive purposes. It is only in Classes 6 and up that serious learning of the

mathematics of fractions takes place. In those years, students begin to put the isolated bits of information they have acquired into a mathematical framework and learn how to compute extensively with fractions. Fraction concepts develop slowly in some students. **A conceptual understanding** is essential before students become involved in operations with fractions. This time we will see that the **area model of fractions** gives one kind of understanding whereas the **set model offers** another. We will perform an activity to develop both of these important perspectives.

The most basic way of visualising a fraction is part of a whole; this interpretation also is the typical way of introducing fractions to young children.

One person may **“see”** the fraction **“one-half” as a picture of a circle with half shaded.**



This is an example of a **continuous model of a fraction based on area**. The **area model** for fractions seems to be the easiest embodiment for students to understand. A critical feature of the area model is that **all the parts into which the whole is divided must have equal area**.

Another individual may **“see”** the fraction **“one-half” as a bag of toffee in which half the pieces are chocolate**. The set model for fractions is more difficult conceptually than the area model (Pyane, Towsley and Huinker

1990). It requires identifying the unit and eliminates the requirement that the pieces be of the same size. Accordingly, it is generally introduced in later grades. This embodiment identifies what fraction of a set has a specific characteristic, such as colour. For example,

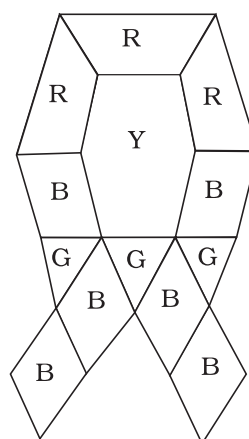
- What fractions of the plants have red flowers?
- What fraction of the people in the room wears glasses?

In this model, the pieces or members of the set do not need to share any attribute other than membership in the set; they do not need the same shape or same area.

It is important to recognise that fractions have different meanings in different contexts.

Through the following activity I shall try to explore the understanding of the area and set models for fractions using pattern blocks and I shall also recommend some strategies that how student should be handled in such type of activities.

Look at the following collection:



Now the question is "What fraction is blue (B)?"

We have responses of several students and teachers as follows:

Responses

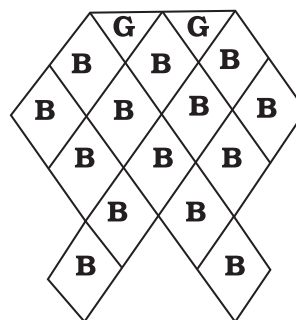
1. I think it's 6/13. I think 6/13 is right because there are 13 pieces and 6 of them are blue.
 - a. This is the most common response by students.
 - b. They seem to think of a fraction as being part of a set, so they count the number of pieces and find that six of the thirteen pieces are blue.
2. I think it's 1/3.
 - a. This response is very rare and given by those students seeking additional possible interpretations of the question.
 - b. They had simply found the largest piece, the yellow (Y) hexagon block and then had decided that what fraction of the biggest piece is the blue parallelogram piece.



- c. Since three blue parallelogram pieces make up one yellow hexagon block, the blue block must be 1/3 of the largest piece.
 - d. This person is using an area model for fractions but is not considering the entire design.
3. It's 1/6
 - a. This response is also relatively

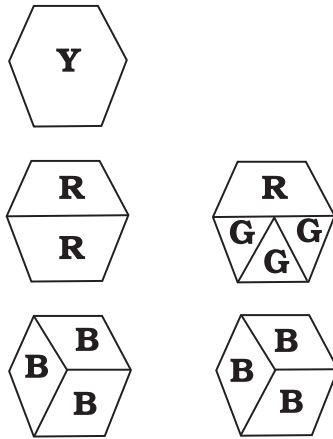
uncommon but tends to appear more frequently than the previous one.

- b. Here the person has explained that "Design has six blue pieces in all, so one blue piece is one-sixth of the blue pieces."
- c. This student is answering the question "What fraction of the blue pieces is one blue piece?"
- d. Without further explanation, it is unclear whether the underlying model being used is one involving area or sets.



4. I think that 6/15 or 2/5 is blue. I think that because I covered completely with 15 blue pieces, 6 of those were really supposed to be blue.
 - a. Here student explains that in work with fractions, all the pieces must be of the same size.
 - b. Student has usually divided the entire design into pieces of the same size as the blue pattern block. Total blue parallelogram pieces used is fifteen and six of them are really blue.
 - c. This one is using an area model, thinking of the fraction of the area that is blue.

5. $2/5$
- a. Because if I take all the pieces and move them around so that like colors are together, then how many hexagons will I have?
- (i) One yellow hexagon
 - (ii) Two of the red trapezoid pieces
 - (iii) One red and three green triangles
 - (iv) Two hexagons will be made by six blue parallelograms.



- b. So, I have five hexagons and two of them are blue.
- c. Thus fraction of the design that's blue is $2/5$.
- d. For many students/teachers, the $2/5$ answer occurs only after they have been encouraged to explore the situation further.

So, finally we felt that all students/teachers seemed to like the idea that different answers could all be correct if each was adequately justified.

Investigating these or similar types of situations can involve students for quite some time. This type of activities is quite helpful to have students write about the activity at two points.

- a. By writing before sharing and discussion
- b. By writing after discussion, describing what they have learned from the discussion.

For each exploration, students should again have opportunities to communicate about the situation, about their strategies in solving the problem and about their answers. So that students become more aware of their own thinking. The communication aspect of these activities helps teacher to assess each student's reasoning about fractions.

In the primary grades, it is not a serious problem if students' knowledge of fractions is imprecise and informal, so that a fraction can be simultaneously parts-of-a-whole, a ratio, a division, an operator, and a number.

Children at that age are probably not given to doubts about the improbability of an object having so many wondrous attributes. At some stage of their mathematical development however, they will have to make sense of these different 'personalities' of a fraction. It is the transition from intuitive knowledge to a more formal and abstract kind of mathematical knowledge that causes the most learning problems.

This transition usually takes place in grades 5-7. There is by now copious mathematics education research on how to facilitate children's learning of the fraction concept at this critical juncture in order to optimise their ability to use fractions efficiently. At present, what most children get from their classroom instruction on fractions is a fragmented picture of a fraction with all these different 'personalities' lurking around and coming forward seemingly randomly.

What a large part of this research does is to address this fragmentation by emphasising the cognitive connections between these 'personalities'. It does so by helping children construct their intuitive knowledge of the different 'personalities' of a fraction through the use of problems, hands-on activities, and contextual presentations.

This is a good first step, and yet, if we think through students' mathematical needs beyond grade 7, then we may come to the conclusion that establishing cognitive connections does not go far enough. What students need is an unambiguous definition of a fraction which tells them what a fraction really is. They also need to be exposed to direct, mathematical, connections between this definition and the other 'personalities' of a fraction. They have to learn that mathematics is simple and understandable, in the sense that if they can hold onto one clear meaning of a fraction and can reason for themselves, then they can learn all about fractions without ever being surprised by any of these other 'personalities'.

Thus, a coherent mathematical presentation of fractions that provides a logical framework to accommodate all these personalities as part of the mathematical structure is needed. It is hoped that education community will accept the fact that one cannot promote the learning of fractions by addressing only the pedagogical, cognitive or some other learning issues because above all else the mathematical development of the subject must be given careful attention.

From a mathematician's perspective, this scenario of having to develop a

concept with multiple interpretations is all too familiar. In college courses, one approaches rational numbers (both positive and negative fractions) either abstractly as the prime field of characteristic zero, or as the field of quotients of the integers. The problem is that neither is suitable for use with sixth class. This fact is recognised by mathematics education researchers, as is the fact that from such a precise and abstract definition of rational numbers, one can prove all the assorted 'personalities' of rational numbers. Since at this stage, we are not able to offer proofs once we are forced to operate without an abstract definition, and that is why we opt for establishing cognitive, rather than mathematical connections among the 'personalities' of rational numbers. The needs of the classroom would seem to be in conflict with the mathematics. At this point, engineering enters. It turns out that, by changing the mathematical landscape entirely and leaving quotient fields and ordered pairs behind, it is possible to teach fractions as mathematics in elementary school, by finding an alternate mathematical route around these abstractions that would be suitable for consumption by children in Classes V-VII.

As of year 2008, the idea is still a novelty in mathematics education that school mathematics can be taught with due attention to the need of precision, the support by logical reasoning for every assertion, the need of clear-cut definition for each concept introduced, and a coherent presentation of concept and skills in the overall context of mathematics.

Of course, there is the old skill-versus-understanding dichotomy, but we also know that such a dichotomy is not what mathematics is about. The conception of a mathematical presentation of fractions is far beyond of partitioning a given geometric figure into parts of equal size only. The need of presenting fractions as a precisely defined concept and explaining each skill logically is not part of these pedagogical picture, lots of story-telling and lots of activities for students to engage in, so that through them students gain experimental and informal knowledge of fractions only. In this way of teaching, informal knowledge replaces mathematical knowledge. A caution of proper balancing is needed. With fractions precise skill with proper intuitive understanding has to be developed. This is an important point that has been traditionally overlooked in education research. One of the main reasons of this lacking is separation of Mathematicians and Educators. Mathematicians generally know mathematics, and educators generally know education. So does it mean that we do not have ample number of 'Mathematical Engineers'?

Let us look, how a mathematical engineer should proceed?

Engineering must mediate between two extremes:

- (1) inviolable scientific principles.
- (2) user-friendliness of the final product.

What are the inviolable scientific principles in mathematical engineering?

Precision: Mathematical statements are clear and unambiguous. At any moment,

it is clear what is known and what is not known.

Definitions: Bedrock of the mathematical structure (no definitions, no mathematics).

Reasoning: Lifeblood of mathematics; core of problem solving.

Coherence: Every concept and skill builds on previous knowledge and is part of an unfolding story.

Purposefulness: Mathematics is goal-oriented. It solves specific problems.

What mathematical engineers (i.e., mathematics educators) bring into the school classroom must respect these five basic characteristics of mathematics.

There is no better illustration of this idea of customisation than the teaching of fractions in primary and upper primary classes, we now see, why?

Fractions

No definition. The statement "fractions have multiple representations" is meaningless.

No reasoning. No definition, therefore, no reasoning. E.g. WHY is $\frac{a}{b} \times \frac{c}{d} = \frac{ac}{bd}$?

No coherence. "Fractions are such different numbers from whole numbers!"

Poor engineering

Students' failure to learn fractions is well-known. Initially, we get a fraction as parts of a whole, i.e., pieces of a pizza, and this is the most basic conception of a fraction for most elementary students. However, when fractions are applied to everyday situations, then it is clear that there is more to fractions than parts-of-

a-whole, e.g., if there are 15 boys and 18 girls in a classroom, then the ratio of boys to girls is the fraction $\frac{15}{18}$, which has nothing to do with cutting up a pizza into 18 equal parts and taking 15.

Thus, a proper engineering for the fraction concept is needed.

The reasons that mathematical engineering is intrinsically bound to both mathematics and education as follows:

1. The customisation of mathematics begins with knowing the classroom needs at each grade level. This requires knowledge of the school mathematics curriculum.

For example, what third graders need to know about area is different from what tenth graders need to know about the same concept. In addition, even third graders need to know the concept of length before taking up area and they also need to know that the concept of area requires the designation of a unit area.

2. The varied nature of the needs requires the ability to devise more than one correct approach to a given topic. This requires solid content knowledge.

For example, the meaning of reflection in the plane can be:

- (a) taught by folding papers, or
 - (b) defined by using perpendicular bisector of a segment, or
 - (c) defined by use of coordinates.
 - (d) is appropriate for 5th graders, but not for 10th graders.
3. The nature of the need dictates the choice of the best approach among

the alternatives. This requires a deep knowledge of both pedagogy and mathematics: how to reach out to students on their own terms without sacrificing the basic characteristics of mathematics.

It is all too tempting to push aside these basic characteristics in the name of reaching out to students, i.e., it is easy to do defective engineering.

Example: Define $\frac{2}{3} \frac{5}{8}$ to be " $\frac{2}{3}$ of $\frac{5}{8}$ kilograms of sugar", without making precise what it means (what does 'of' mean, and what does sugar have to do with fractions?). This violates precision.

No chemical engineer can function without knowing the fundamental principles of chemistry. No electrical engineer can function without knowing the fundamental principles of electromagnetism. No mathematical engineer can function without knowing the basic characteristics of mathematics.

The idea of customising mathematics "without sacrificing mathematical integrity" is central to mathematical engineering.

The only way to minimise such engineering errors is to have both mathematicians and educators oversee each curricular design. In fact, if we believe in the concept of mathematics education as mathematical engineering, the two communities must work together in all phases of mathematics education. Any education project in mathematics must begin with a sound conception of the mathematics involved and these has to be a clear understanding of what the educational goal is before one can talk

about the customisation. In this process, there is little that is purely mathematical or purely educational; almost every step is a mixture of both. Mathematics and education are completely intertwined in mathematical engineering.

Mathematicians cannot contribute to school mathematics education if they are treated as outsiders. They have to work alongside the educators on equal footing in the planning, implementation and evaluation of each project.

There may be some general consequences of a philosophical nature due to isolation. The first one is that the isolation of the education community from mathematicians causes educational discussions to over focus on the purely educational aspect of mathematics education while seemingly always leaving the mathematics untouched. The result is the emergence of a subtle mathematics avoidance syndrome in the educational community. Given the central position of mathematics in mathematical engineering would vanish this syndrome from all discussions in mathematics education?

One other consequence can best be understood as when a system is isolated and allowed to evolve of its own accord; it will inevitably mutate and deviate from

the norm. Thus, when school mathematics education will be isolated from mathematicians, so is school mathematics itself, and, sure enough, the latter evolves into something that in large part no longer bears any resemblance to mathematics.

The lack of collaboration between mathematicians and mathematics education may affect professional development as well. The issue of teacher quality is now openly acknowledged and serious discussion of the problem is being to be accepted in mathematics education.

Now as final remarks, it would be mentioned that the concept of mathematics education as mathematical engineering does not suggest the creation of any new tools of solution of the ongoing educational problem. What does it to provide a usable intellectual framework for mathematics education as a discipline, one that clarifies the relationship between the mathematics and the education components, as well as the role of mathematicians in mathematics education? We look forward to a future where mathematics education will act as mathematical engineering, which is a joint effort of mathematicians and educators.

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Motivation and Stress Management

Essential Skills for Parents, Teachers and Students

JASIM AHMAD

Abstract

Nowadays it is frequently heard that people of different age including students commit suicide due to several reasons. It is generally found that individuals commit suicide either due to non-achievement of the desired goals or due to the firm faith in failure. The author has the opinion that it is solely because of the mismanagement of motivation and stress. In this article an attempt is made to elaborate the role of motivation and stress in an individual's life and the management of the same.

Introduction

Presently, problems related to motivation and stress has become a common phenomenon in our society. Motivation is the key to success. Without motivation, we cannot do anything, cannot achieve anything in our life. But, it is required to be controlled and regulated. The level of motivation has to be maintained as per the capability of the individual. If it is not managed well, it causes stress. Motivation and stress are interrelated. Right level of motivation generates positive tension, which is necessary to achieve a particular goal. If the level of motivation is not as per the capability of the individual, it causes negative tension, which is commonly called *stress* due to

which people become psychologically ill, head to take wrong steps and even commit suicide.

What is Motivation?

Motivation is an inferred internal process that activates guides and maintains an individual's behaviour. Motivation is the process of arousing, sustaining and regulating an activity. Motivation is the stimulation of actions towards a particular objective where previously there was a little or no attraction to that goal. Motivation is more formally a psychological or internal process initiated by some needs which lead to an activity which will satisfy that particular need. It also directs an individual's behaviour.

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It may be intrinsic or extrinsic, when motivation is due to internal factors; it is called the *internal* or *intrinsic* motivation. If the motivation is due to any external factor, it is called the *external* or *extrinsic* motivation. The extrinsic motivation if used properly, finally results into the development of internal or intrinsic motivation. At the initial stage, children do tasks to get chocolates, toys, a cycle or any other item that their parents have promised to give, after completion of a certain assignment. This process goes on and finally, the children develop intrinsic motivation to study and get position in the class. We drink water to quench our thirst because it is internal motivation. The more we are thirsty, the more immediate will be the drive to drink water and the amount of intake also will be much. In other words, we can say that we are highly motivated to drink water. All good or bad deeds performed by people are because of motivation. It is necessary to channelise, direct and regulate the motivation of the children for a better cause. Figure 1 shows the mechanism of motivation in setting and achieving the goals in a human life.

What is Stress?

Stress is a multifaceted process, that occurs in relation to events or situations in our environment termed as *stressors*, i.e., the activators of stress. It is our response to events that disrupt or threaten to disrupt our physical or psychological functioning (Lazarus & Folkman, 1984). *Stressor* may be a positive or a negative event but normally we think it as a negative one. Wide range of stimuli potentially produces stress.

Wide ranges of stimuli/stressors have some common characteristics. They are generally as follows:

- (i) Intense in nature
- (ii) Produce overload
- (iii) Individuals no longer adopt to them (If adaptable, no stress is developed)
- (iv) Evoke incompatible tendencies, such as to approach or avoid some object, person or activity.

Evidences suggest that when people can predict, control, or terminate an aversive event or situation; they perceive it to be less stressful than when they feel less in its control (Karasek and Theorell, 1990; Rodin and Salovey, 1989).

Unfortunately, stress is a common part of life in the last two decades – something which few of us can avoid altogether. For the same event different people have different levels of stress and/or enjoyment. The following paragraphs elaborate different aspects of stress and in Figure 1 it has been depicted that how an individual come into the grip of stress and how it can be avoided.

Physiological Responses to Stress

The sympathetic nervous system of our body prepares it for immediate actions. Usually these responses are brief, and the body soon returns to normal level. When we experience any stressor at random our blood pressure soars, pulse races, and we may even begin to sweat. In some cases when the stress is too high, the individual may commit suicide or even heart failure or any cardiovascular disease is possible to occur. These are parts of general pattern or reactions referred to as the *fight-or-flight*

syndrome, a process controlled through the SNS (Sympathetic Nervous System). Generally these responses are brief and a person soon returns to the normal level.

When we are exposed to chronic sources of stress then the sequence of responses are given by our body to adapt to the stressor. Selye, 1976 termed this sequence as the General Adaptation Syndrome (GAS), which consists of three stages:

- (i) **Alarm Stage:** The body prepares itself for immediate action; arousal of the SNS releases hormones that help to prepare our body to meet threats or dangers (Selye, 1976). If stress is prolonged then second stage begins.
- (ii) **Resistance Stage:** Arousal is lower than the alarm stage, but our bodies continue to draw on resources at an above-normal rate in order to cope effectively with the stressor. If exposure to the same stressor or additional stressors continued for longer duration, this drains the body of its resources and leads to the third stage.
- (iii) **Exhaustion Stage:** During this stage our capacity to resist is depleted, and our susceptibility to illness increases. In severe case of prolonged physical stress, the result may be suicide or death.

Cognitive Appraisal of our Stress

It is observed that when confronted with the same potentially stress-inducting situation, some persons experience stress, whereas others do not. Why? One reason involves *individuals' cognitive*

appraisals. In simple terms, stress occurs only when the particular person perceives the situation as threatening to his important goals (often described as *primary appraisal*) and that he will be unable to cope with these dangers or demands (often described as *secondary appraisal*) (Croyle, 1992; Lazarus & Folkman, 1984).

The amount of stress we experience depends on our cognitive appraisal of the event or situation, the extent to which we perceive it as threatening and our inability to cope with it (Hingson et. al., 1990).

Some Major Causes of Stress

Stressful Life Events: Death in the family, injury to self or children or any other in the family, war, failure in school or at work, or unexpected problems, etc.

The Hassles of Daily Life: Daily life is filled with countless minor sources of stress that seem to make up for their relatively low intensity by their much higher frequency. It includes wide range of everyday events, such as having too many things to do at once, shopping, unwanted guests, domestic problems, and concerns over money.

Environmental Sources of Stress: Many environmental sources like flood, earthquake, famine, heavy rains, epidemic or endemic and natural disasters also cause stress in an individual. Man made disasters, such as Chernobyl accident through nuclear reactor, Bhopal gas tragedy, bomb dropping at Hiroshima and Nagasaki and many other problems like the same nature can cause stress in an individual.

Work-related Stress: Jobs and careers are central source of stress. Some of the factors producing stress in work setting are obvious; such as sexual harassment, discrimination, extreme overload of work and unsatisfactory working conditions. Interestingly, being asked to do too little can also cause stress. Such under load produces intense feelings of boredom and these in turn can be very stressful.

Career Related Stress: Every individual or student in the age group of 14-18 and onwards usually have a career option in their mind. If it seems to be unachievable due to several reasons, it causes stress. The students of Class X and XII boards usually have an aim to achieve certain levels or marks say, 90 per cent or 95 per cent, with the thought in mind that they are going to pursue engineering or medical or some other careers or take admission in a particular college or stream. If these aspirations seem to be broken, they develop stress and many of them commit suicide.

Stress and Health

The relation between stress and personal health is strong indeed (Kiecolt-Glaser & Glaser, 1992). According to Frese (1985) some authorities estimate that stress plays some role in 50 to 70 per cent of all physical illnesses. Among these some are most serious and life threatening like heart disease, high blood pressure, hardening of the arteries, ulcers and even diabetes. Stress can influence our physical and psychological well being, our performance on different tasks and even the ultimate course of our careers. Prolonged exposure to stress may disrupt our biological and immune system.

Continuous encounter with stressors over time causes burnout in the individual.

Figure 1 depicts the process through which an individual passes from the state of zero motivation to the state of highest level of motivation. It also depicts how an individual gets stressed and how stressful situation may be avoided. Needs are the starting point from where the action of individual begins to fulfill that need. If there is no need, there is no action. If there is an intense need there will be an intense action. If the need felt is not much intense or of a volatile nature, then the action taken by an individual to fulfill that need will also be not intense or will be volatile in nature. It is essential at this juncture that the teachers and the parents help students to understand and feel their needs, but the needs should be such which may be fulfilled with certain degree of physical, mental and economic investment which is possible to be invested by the individual and by the parents.

These help students to set their goals which are achievable by them commonly called *realistic goals*. If an individual achieve this goal, he is satisfied and the next need appears before him and he strives to achieve this goal. As the needs have no ends, so this cyclic process goes on. On the other hand, if an individual could not achieve the desired goal, he becomes dissatisfied. Two opposite conditions are observed in the individual either he is still confidence or losses his confidence. In the first condition, the individual analyses his courses of actions, develop new plan of action and enforce it. This time either he succeeds or again fails and remains dissatisfied.

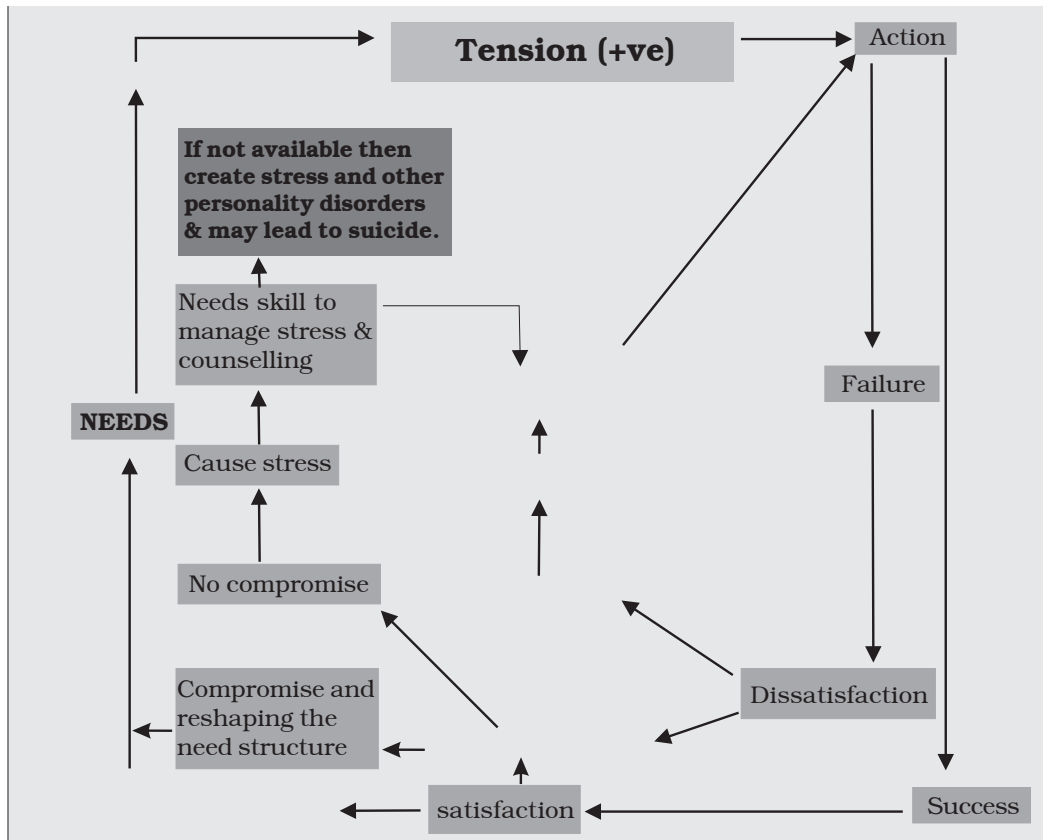


Fig. 1 : Motivation and stress Management

If he is still confident, then follows the previous path and if he is losing his confidence then again two diverse situations are observed. Either the individual compromises and reshapes his need structure or he does not compromise. If he compromises, it is well and good and with the help of parents, teachers, friends and well wishers analyses his potential and sets the goal he can achieve. It is a wise decision. On the contrary, if he is in no mood of compromise, then the situation begins worsening. He is neither

achieving nor compromising with his set goal.

This develops a kind of stress in the individual which deepens day by day. At this juncture the individual needs proper counselling and skill to manage stress. If it is available to the individual then either he reshapes his needs' structure or develop new plan of action and try to achieve the set goal. On the other hand, if proper counselling is not available to the individual then it creates personality disorder or it may lead the individual to suicide which is very common nowadays.

Educational Implications

As explained above with the help of flow chart (Figure-1), motivation and stress are very important to lead a successful life but needs to be controlled and well regulated. It is level which makes them useful or harmful. Following steps may be taken by parents, teachers and students to avoid stress and if stress arises then to de-stress.

- Help students/children to set realistic goals by helping them identifying their real potentialities or capabilities.
- Parents or teachers should not set the goals of their students/children. In other way parents or teachers should not thrust their goals on them.
- Parents should not set high level of expectations from their children which they are not capable. Expectations should be well calculated and should be well regulated to pose a satisfactory level of challenge to the children.

How to identify whether you are having stress or not?

Stress is difficult to measure but a stressful individual or student can be identified by the observation of his behaviour patterns. A person can identify himself or herself whether he or she is under stress? The general identifying characteristic of stress is the deviation of an individual from daily life routine. Some people thrive on a busy lifestyle and are able to cope well with life crises. Other people feel tensed or stressed by the slightest deviation from

their set daily routine. Levels of stress may increase or decrease depending upon varying changes in the environment of the individual. Following are the indications of a stress among the students:

- Not being able to sleep properly due to worries going through your mind.
- Showing impatient or irritable at minor day-to-day problems.
- Not being able to concentrate at study due to many things going through your mind.
- Being unable to make decisions like what to study, when to study, how to study, how to face test?
- Drinking or smoking more.
- Not enjoying food so much. Reduced daily diet.
- Loss of appetite.
- Being unable to relax and always feeling that something needs to be done.
- Feeling tense. Sometimes this includes a 'knot' in the stomach or feeling sweaty with a dry mouth or a thumping heart.
- Low out put of study as compared to the previous level of achievement.
- You want to keep calm, quite and do not want to interact more with others even with your family members.

How stress can be avoided?

Following is a list of suggestions that may be useful to avoid and combat stress:

Try to Create Stress list

You should try creating a 'stress list'. Try keeping a note book over a few weeks or so, and list the times, places, situations

and people that make you worried, add to your anxiety and aggravate your stress levels. In this process a pattern may emerge. Once you have identified any typical or regular causes of stress, following two things may be done help yourself.

- If you discuss this with a close friend or family member, it may help them and you to be aware of the reasons why you are feeling stressed. Simply talking it through may help.
- Secondly, these situations can be used as 'cues' to relax. You can use simple relaxation techniques (see below) when a stressful situation occurs or is anticipated.

Try simple relaxation techniques

- **Deep breathing.** This means taking a long, slow breath in and very slowly breathes out. If you do this a few times on regular basis, and concentrate fully on breathing, you may find it quite relaxing.
- **Muscular tensing and stretching.** Try twisting your neck around each way as far as it is comfortable and then relax. Try fully tensing your shoulder and back muscles for several seconds and then relax completely.

Try practicing these simple techniques when you are relaxed and then use them routinely when you come across any stressful situation.

Positive Relaxation

Set specific times aside to positively relax. Don't just let relaxation happen or not

happen, at the mercy of study, work, family, teacher, etc. Plan it and look forward to do it. This may vary from people to people. Some prefer to take long bath, some a quiet stroll, some sitting and just listening to a piece of music, etc. You can do anything which make you relaxed, happy and energised you for further study. These times are not wasteful and you should not feel guilty about not 'getting on with things'. They can be times of reflection and putting life back in perspective. You may set time aside for a relaxation programmed such as meditation or muscular exercises. You can also buy relaxation tapes to help you learn to relax.

Time out

- Try to allow several times a day to 'stop' and take some time out. For example, getting up 15-20 minutes earlier than you need to be a good start. You can use this time to think about and plan the coming day and to prepare for the day's events unrushed. You should take regular break in study. After one hour of continuous study one should relax at least for 5 to 10 minutes.
- Take a regular and proper lunch break, preferably away from study room. Don't study over lunch; instead enjoy food and people around you.
- Once or twice a week, try to plan some time just to be alone and 'unobtainable'. For example, a gentle stroll or a sit in the park often helps to break out of life's hustle and bustle.

Exercise

It has been experienced by people that regular exercise reduces their level of stress. (It also keeps you fit and healthy and helps to prevent cardiovascular diseases.) Any exercise is good but try to plan at least 30 minutes of exercise on at least 5 days a week. A brisk morning walk on most days is a good start if you are not used to exercise. It also improves sleepinglessness.

Drugs Stimulators, Smoking and Alcohol

Never try these things. They may reduce your stress for a while, but they are silent killers. They are more dangerous than the stress itself.

Hobbies

Many people find that a hobby which has no deadlines, no pressures, and which can be picked up or left easily takes the mind off stresses. For example: sports, knitting, music, model-making, puzzles, and reading for pleasure. Try to develop good hobbies.

Treatment

If it seems that the level of stress or anxiety has become severe or it is difficult to cope with, see a doctor. Further treatments such as anxiety management counselling, other therapies or medication may be appropriate.

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