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EDITOR'S NOTE

The review of National Curriculum Framework initiated in November 2004 makes an attempt to find the due place for areas such as physical education, art and craft, which have been considered as co-curricular or extra curricular. The review takes a stock of all areas and aspects of learning, national concerns and systematic reforms. The position papers of the twenty one National Focus Groups would serve as a base knowledge for getting insights into each area and to understand and reflect on the issues, problems and concerns of each area. Bringing in changes in educational system and the way teaching learning is perceived is no easy job. It needs intensive concerted efforts and time. This review believes that it is doable. We have reasons to believe that it is doable as every exercise shows the way for collaborative efforts involving a galaxy of people to have a say and debate on schooling and learning. Nationwide discussions and debates that go into making of the NCF clearly reveals that the much awaited change is possible.

Papers in this issue also make sincere attempt to address the serious issues raised by the NCF review exercise. P.D. Sharma's paper on physical education does some 'awakening' attempt to make physical education find its place in schooling. S.K. Yadav's argues that quality of education really depends on quality of teachers, so the need to invest in teachers' learning. Harjeet Kaur Bhatia puts forward the challenge of enabling teachers to be technology competent. Swati Patra emphasises the importance of mental health to enable children to be harmonious beings to learn and act. The need for orienting prospective teachers on environmental education is dealt with in their paper by Seema Dhawan, L. Rawat and Veena Sharma while R.S. Sindhu and Alok Sharma bring in the experiences of in-service teachers and what would be learnt from the reflections and reactions of teachers. Neetu Chawla and Rekha Agrawal bring out the influence of cooperative learning on the learning of children. Rajesh Tailor analyses the infrastructure and other facilities for schooling in the State of Bihar.

One can sincerely hope that the vision and ideas of the *National Curriculum Framework – 2005* will be realised to give children back childhood they have been robbed of and young adults their dreams to live a life of their own and to be contributing citizens.

Academic Editor

Changing Trends in Indian Physical Education

P.D. SHARMA*

Abstract

Today is an age of growth, change, and complexity, and society has been challenged to meet the needs created by these mutating agents. The process of education especially must respond to the necessity of times and enable children to learn to cope with society's expectations. Along with the explosion of population and material culture, there has been an accompanying surfeit of information and meanings. This is especially true in physical education, with its body of knowledge concerning human movement in its biological setting and its psychological and sociological contexts as well.

During the last two decades, Physical Education in India has taken a giant stride. With the opening up of a number of Physical Education Colleges and University Departments, with more emphasis on post graduate studies, a new phase has begun which is indicative of a sort of 'awakening' within the profession. It now seems certain that our educationists, planners and policy makers as well as political masters are convinced of the efficacy of this discipline.

Key Words: physical education, sports

Physical Education—a Fundamental Human Right

Today physical education is considered an international discipline and its importance as a fundamental Human Right has already been recognised by the United Nations Organisation. The International Charter of Physical Education and Sports, adopted on 21

November 1978, by the United Nations Educational Scientific and Cultural Organisation (UNESCO) clearly reflects the great importance attached by the international body to physical education and sports as an integral part of general education. The Charter further stresses that promotion of physical education and sports from pre-school age to old age

* *Principal*, S.S. Patel College of Physical Education, Vallabh Vidyanagar 388 120 (Gujarat)

should be treated as one of the fundamental human rights by national governments.

Modern Concept of Physical Education

Modern physical education does not confine its interest to man's organic development nor does it emphasise social or intellectual values to the exclusion of all else. It sees man as an entity and recognises its responsibility for his total development. In this age of sedentary living, a physical education programme must include such activities which would foster judgment in discriminating thinking, in the selection of social values, and in the manifestation of the highest possible quality of personality. Like the biological sciences, physical education helps the student to understand himself as an organism living in a not wholly favourable environment. Like the humanities, it provides a wide range for the expression of creative imagination and seeks to conduct its affairs at the highest ethical and moral level. Physical education is, therefore, more readily classified, academically as a 'life' science (or art) than anything else (Oberteuffer & Ulrich, 1962). Further, physical education serves as a medium for man's total education, intellectual, emotional, developmental, using experiences centred in movement. Through it, the teacher has an opportunity to nurture health, happiness, character and the democratic spirit and thus enrich the lives of children. In other words, physical education, when well taught, can contribute more to achieving the goals of general education than any other school subject (Votmer & Esslinger, 1958).

Physical Education and Sport

If the proper study of mankind is man, the proper study of physical education is sport, Physical education has a special responsibility to educate in order to accomplish the objectives of education. So, many times it is said that 'play is nature's hand on the back of the child, pushing him to educate himself' or 'to move is to learn and to learn is to move', and so forth (Miller & Russell, 1971)

Games are a popular pastime for the young and the old, for boys and girls and for men and women. They offer an opportunity for all to exercise and have fun and relaxation, They are one of the main components of any physical education programme; therefore, the physical educator must be familiar with all. He should know the essential features of the various games, rules, methods of organisation, values received from participation, equipment and facilities needed, and ways of motivating the participants (Sharma, 1983). Sport is also one of the factors which strengthens national integration and develops national character, which are the most urgent needs of the present day Indian society.

Physical Education and Human Movement

The word movement has created a new dimension in physical education in recent years. It not only implies motor performance but also motor learning. The child learns to move while he moves to learn. Thus in short, a physical education movement is of primary concern because it is educating the physical while using the physical to educate (Barrow, 1977).

Today, physical education is based on scientific facts and principles. Modern physical education aims to develop youth into good citizens who have the capacity to enjoy a happy and vigorous life. To accomplish this task, it is necessary to know all about the individual, how his body functions, how he learns, why he acts like this, and his relation to the group, society, and world of which he is a part (Bucher, 1960).

Today, physical education is also considered as the 'Study of Human Movements'. Human movement is a complex and a composite phenomenon. To understand different human movements, one has to understand the structure of the body systems and their interrelationships as each plays its role in its functioning. In short, human movement is a synthesis of the complex interaction of the skeletal, muscular, and nervous systems. Further, human movement is also mechanical, because it also depends on the universal laws of force, gravity and motion.

Thus, we can easily say that human movement is indeed a multifaceted process of interacting. These interacting forces are nothing but sports sciences. Hence to understand the various motor skills of different games, we have to understand as well as analyse the different human movements involved in these skills. In the process of understanding, teaching and analysing the motor skills, the knowledge of sports sciences like sports medicine, sports psychology, sports sociology, exercise physiology, kinesiology and biomechanics, helps the physical educator to do his job efficiently and accurately. Thus, it is very essential that during the training for this

profession, a student is given complete theoretical and practical training in various sports sciences, which are directly or indirectly related to human movement of various types.

Physical Education in Modern Indian Education System

Today, in our country physical education is a well established profession and we have the facility for various professional training courses from certificate level to D.Litt. level. Now physical education teachers are no longer called 'drill masters' or 'skill masters' but are treated at par with other professionals (Sharma, 1986). But, it is a pity that even today more emphasis is put on the adjective 'physical' than on the noun 'education'. And thus, physical education is treated as an education of the physical state only. No doubt, physical education has gained international status, but, various misconceptions are still prevailing about physical education in our Indian Education System. Some of them are:

- (1) Physical education is a rest period between academic periods.
- (2) Physical education periods are designed to give other teachers a free period.
- (3) Physical education periods are free play periods.
- (4) Physical education classes are 'entertainment' classes and no real learning takes place.
- (5) Physical education teachers are below average in intelligence.
- (6) There is no knowledge factor related to physical education and hence it contributes nothing to general education.

- (7) The goals of education cannot be found in a physical education class.
- (8) No class preparation is needed on the part of the physical education teacher.
- (9) Children can play outside the school; therefore physical education is not needed in the curriculum.
- (10) There is no scientific basis for the field of physical education.
- (11) Credit should not be given to physical education, because it holds no academic value.
- (3) There is an urgent need to gear up the district level sports bodies, so that they work more efficiently and help in searching and developing new sports talents in their areas. Similarly tribal and rural areas should be explored to search for sports talents (Draft National Sports Policy, 1980).
- (4) Physical education is the base on which is built the pyramid of sports activity, Unless physical education is broad based and becomes a way of life for Indian society, achievements in sports at international level will remain a distant dream only.

What needs to be done?

The country needs to have sound persons both in body and mind to lead her to coming generations. Sports and physical education will need to be an integral part of schooling to produce such people.

Following are some of the suggestions to promote and improve the standard of Physical Education and Sports in our country:

- (1) There is a need to set-up a National Council of Physical Education by the Ministry of Human Resources, Government of India to frame policies and programmes at the national level as well as advise State Governments and Universities on matters relating to physical education.
- (2) Physical Education and Sports programmes should be considered as separate items for the Planning Commission agenda and should not be treated as an appendix to or an insignificant part of education, as is done at present.
- (5) There is a great need for assimilation of Sports and Physical Education in the daily life of the citizens of our country. For this, programmes like 'Run for Health' and 'Sports for All' should be popularised, so as to develop sports and health consciousness in the common man.
- (6) The Films Division of the Information and Broadcasting Ministry which produces documentary films on various subjects of national interest should earmark about 10 to 15 per cent of its funds for producing films and documentaries on sports and physical education.
- (7) As a part of the public awareness campaign to develop love for physical education and sports, Central and State Governments should bring out independent sports periodicals.
- (8) There is an urgent need to develop more cooperation, collaboration and

- coordination between agencies promoting sports and physical education in the country.
- (9) To have a comparative view of the performance of Indian sportsmen with the sportsmen of other countries, there is a great need to build up sports statistics and data information centres collecting data of Olympic Games, Commonwealth Games, Asian Games, World Cups and similar other important international meets and events.
- (10) The reservation of seats for sportsmen and women in private and public sectors should be further increased.
- (11) We notice that gradually competitive sports are replacing physical education programmes in our schools. Hence, there is a great need to emphasise and popularise the educative, recreative, demonstrative and socio-cultural values of physical education.

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Investing in Teachers for Improving Quality of EFA

S.K. YADAV*

Abstract

This paper looks into the problem of teachers and their professional development and welfare to bring out an improvement in the quality of education in school. Pre-service and in-service training of teachers, proper welfare measures and extending basic facilities to schools are some of the issues the article addresses to improve the quality of education for all.

Key Words: Education for All (EFA)/ *Sarva Shiksha Abiyan* (SSA), professional development of teachers.

Efforts for providing elementary education to all the children have been made since Independence. The Constitution of India has made a commitment to provide free and compulsory education to all children upto the age of 14 and now is placed under the fundamental right. This task gained greater momentum after National Policy on Education (NPE), 1986 (revised, 1992). The World Declaration on Education for All adopted in Jomtien, 1990, gave further filip to the national commitment to basic education to all. India considered basic education as key to sustainable socio-economic development, peace and

stability within and among countries a categorical statement within Dakar Framework for Action. Since early 1990, the country has been making concerted efforts to attain the Education for All (EFA) goals, and accordingly has reiterated its commitment, to provide basic education to all by 2015, in the World Education Forum, Dakar, Senegal in April 2000.

Since then, efforts have been made to improve the quality of basic education in terms of access enrolment, retention and achievement. The Government of India has pursued multi-pronged strategies to improve the quality of school

* *Professor*, Department of Teacher Education and Extension (DTEE), NCERT, New Delhi 110 016.

education. A number of programmes and schemes have been initiated by both the Central and State governments, like District Primary Education Programme (DPEP), Bihar Education Project, Lok Jumbish and the recently launched Sarva Shiksha Abhiyan. But the quality of all these programmes and schemes for achieving education for all depends on teachers. So the investment in teachers requires a sizeable teacher force, better recruitment policies, attention to teachers' capacity building, proper appraisal and feedback and proper remuneration which in turn will improve the quality of EFA.

Size of Teacher Force

There has been an increase in the number of teachers in our country since Independence. The number of primary school teachers increased from 5.38 lakh in 1950-51 to 19.19 lakh in 1999-2000, an increase of more than 3.6 times and upper primary teachers from 86,000 to 12.97 lakh i.e. 15 times increase during this period. The policy of the Government of India under Operation Blackboard (OB) Scheme is to provide at least two teachers to every primary school initially and ultimately one teacher for every class or section. In the upper primary school, the teachers are provided on the basis of subjects and teaching workload.

The O.B. Scheme of 1988 also provided for increased participation of women teachers. Every alternate teacher appointed after 1988 had to be a woman. The proportion of women teachers at primary level has increased from 15.24% in 1950-51 to 35.62% in 1999-2000. Similarly, the relative

proportion of female teachers at the upper primary stage also increased from 15.12% to 34.14% during the same period.

If the goal of Education for All is to be achieved by 2010, an additional 8.4 million boys and 10.96 million girls over and above the enrolment in 1999-2000 will have to be enrolled as targeted in Tenth Five Year Plan. To provide quality education to these children more number of teachers will be required.

Teacher Professionalism

The quality of education to a large extent depends upon the quality of teacher education programme. Therefore, from time to time, these programmes are needed to develop professionalism among teachers. The National Policy of Education (NPE, 1986, revised 1992) rightly observed that teacher education is a continuous process and its pre-service and in service components are inseparable. As a first step, the system of teacher education needs to be overhauled.

In the light of the recommendations of NPE, a centrally sponsored scheme for restructuring and reorganisation of teacher education was taken up in 1987 to create a viable institutional infrastructure, academic and technical resource base for continuous upgradation of knowledge, competence and pedagogical skills in school teachers by organising orientation and training programmes. The scheme proposed the setting up of one District Institute of Education and Training (DIET) in each district, 250 Colleges of Teacher Education (CTEs) and 50 Institutes of

Advanced Studies in Education (IASEs) in the country. All these institutes have to organise both pre-service and in-service education programmes for teachers. Implementation of the scheme has helped in the creation of training network in the country. The network has been filtered downward to the block and cluster levels. At the national level; institutions like National Council of Educational Research and Training (NCERT), National Council of Teacher Education (NCTE), National Institute of Educational Planning and Administration (NIEPA) etc. have the mandate to provide academic resource support to the institutions comprising the training network at the state and district levels. Similarly, State Councils of Educational Research and Training (SCERTs)/State Institutes of Education (SIEs) also have the mandate to serve the school education from pre-primary to senior secondary stages.

At present more than 1300 elementary teacher education institutions including 498 DIETs and about 1200 secondary teacher education institutions including 38 IASEs and 87 CTEs are functioning in the country. There are nearly 50.00 lakh teachers and 35,000 teacher educators working in various schools and teacher training institutions.

Keeping in view the existing institutional infrastructure and the large teaching community, teacher education programmes need to be reviewed and strengthened. The Tenth Five Year Plan also emphasised the need to continue central support to the revised centrally sponsored scheme of teacher education for improving the quality of schooling

across the country. The critical issues and suggested action points relating to the quality improvement of teacher education including both pre-service and in-service education have been discussed below:

Pre-service Teacher Education (PSTE) Programme

There is a system of teacher preparation before joining the teaching profession at various levels in our country. The existing PSTE programme structure is given below:

Pre-service teacher education provides the teachers with initial professional competence in terms of content and process for effective transaction of curriculum. Efforts are being made to match teacher education to meet the demand of school system. Keeping this in view, the teacher education curriculum has been revised by NCTE, UGC, NCERT, etc. from time to time.

In order to bring professionalism in teacher education, an integrated teacher education programme may be introduced both at the elementary and secondary level. The relevance of teacher education curriculum to the demands of school education can be ensured by offering an integrated course for teacher education of a longer duration which is the existing pattern in many developed countries. Some such attempts have been made in our country also. IASE, Delhi introduced a four year integrated programme of Bachelor of Elementary Education (B.El.Ed.) in six colleges of Delhi. The duration of diploma in education at elementary stage has increased from one year to two years. The NCERT has been

implementing Four Years Integrated programme at its four Regional Institutes of Education (RIEs). Two Year B.Ed. programme is also being implemented in RIEs on an experimental basis. Such innovations may be adapted or practiced by other institutions/universities for improving the quality of EFA.

In-service Education Programme

Professional development of a teacher needs continuous updating of their knowledge and new skills through in-service education programme. As a part of the centrally sponsored scheme for restructuring and reorganisation of teacher education, Programme of Mass Orientation of School Teachers (PMOST) was implemented by the Government of India for catering to the needs of teachers. The focus of this programme was to sensitise them to the various policy perspectives and also to develop to some extent expertise in various pedagogical methods and content areas. During 1986-1990, as many as 17.00 lakh teachers were provided training under this scheme. On the basis of this experience, another programme named Special Orientation of Primary Teachers (SOPT) was launched in 1993-94. This programme aims at imparting training to teachers in the use of minimum levels of learning (MLL), child centred approach and operation blackboard materials. More than 20.00 lakh teachers have undergone in-service training under the scheme till now. Distance mode including teleconferencing may be used to minimise the loss of training and also for larger coverage. Networking and coordination of various institutions working in the area of teacher education at national,

state, district and sub district levels should be strengthened and action plan of each institution in terms of training details be prepared at various levels.

There is also an urgent need to evolve a long term training policy for teachers to make them updated and professionally competent continuously. The policy should define the broad parameters of teachers' professional growth such as dimensions of staff development, the nature, periodicity, context and methodology of in-service training.

Teacher Educators

The quality of teacher preparation is closely related to the quality of teacher educators. So, there is a constant need for specialised professional development courses in terms of content, process, research and evaluation in relation to both school and teacher education. For example, M.Ed. (Elementary) programme is being run by NCERT. Such courses should be adapted by other institutions also so that competent and qualified teacher educators are prepared.

Professional Development of Para Teachers

A large number of para teachers are appointed and working in both formal and non-formal system of education. They are mostly untrained and unqualified. For such teachers, Sarva Shiksha Abhiyan (SSA) has suggested to provide 20 days training in a year, 60 days refresher course for untrained teachers and 30 days orientation for freshly trained recruits. A comprehensive plan needs to be

developed. Both cascade and distance mode may be followed in developing the mechanism of training for them.

School Climate

The school and classroom climate significantly affects the teaching which in turn affect academic achievement of students. It improves considerably in terms of child friendly activity based pedagogical inputs, facilitating teaching and learning process. For promoting congenial atmosphere in schools and other institutions, training programmes on school climates are organised for teachers and headmasters by national and state level institutions on a continuous basis. The grants are provided to the school and teacher every year under SSA project for making school and classroom environment congenial and attractive. Teacher training according to the standards is to be provided by the National Council of Teacher Education (NCTE). Such congenial atmosphere will help in improving the quality of EFA.

Recruitment

The standard of recruitment of teachers varies across the country. The qualification prescribed for teachers is one of the reasons for this variation. While in some states, the elementary teachers are recruited with twelve years of schooling with a two years diploma in teaching, in other states ten years schooling with one/two year diploma in teaching. Teachers are also recruited with ten or twelve years schooling without diploma in teaching in some states. The recruitment procedure is practically centralised in most of the states. In a few

places, it is done at district/regional level. In order to attract better teachers many states are recruiting teachers on the basis of written tests, interviews and focused group discussion. However, this centralised procedure created a lot of problems. Therefore, efforts are being made to make recruitment with the involvement of the local administration, NGO's, Panchayats and local Bodies.

Remuneration

For commitment and devotion, economic security is very important. Teachers are low paid in most of the developing countries. It is true of India also. The Kothari Commission had recommended a uniform national scale of pay for elementary teachers in India. This has not been possible to implement because of various reasons including differentials in supply of qualified and trained teachers belonging to both general and reserved categories. The World Bank report on primary education (1997) gave an update on the entry level salaries of teachers and other government employees with comparable education. In many parts of the country, teachers receive lower salaries than upper division clerks, revenue inspectors, trained nurses, and pharmacists. Better remuneration helps in attracting better teachers.

Keeping this in view, salaries of teachers are revised periodically (every ten years) along with those of other state government employees. Such revision is generally preceded by revisions of salary scales of central government employees. The latest revision took place in 1997.

Promotion Opportunities

To retain better teachers and for motivation, promotion opportunities are essential. The promotion opportunities of teachers are very limited. There is no separate cadre and recruitment provision for primary teachers. Some of the teachers may hope to become head teachers of primary schools on the basis of seniority of experience. Only a few get promotion as inspectors of schools because of limited number of positions. However, in some states, posts of educational assistants to assist block level education officers have been created and teachers at these posts are paid salaries higher than that of a headteacher of a primary school. But the posts are again quite limited in number. At any point of time, promotional opportunities for elementary teachers may be limited to 25 per cent of the teachers who enter the profession. In 75 per cent of cases, teachers retire at the same status at which they had joined but with higher salaries commensurate with their length of service in the profession.

Welfare Benefits

A National Foundation for Teachers' Welfare (NFTW) was set up in 1962 at New Delhi under the Charitable Endowments Act 1890. The objective of the NFTW is to provide relief to teachers. Every year 5 September is celebrated in India as 'Teacher's Day' in the memory of Sarvepalli Radhakrishnan who rose to the position of President of India from a university teacher. The NFTW collects donations on Teacher's Day through the sale of a 1 inch colourful flag. The

Central Social Welfare Board of India, the All India Women's Conference, the National Council for Women's Education, universities, colleges, schools, and other organisations and prominent citizens help the NFTW collect donations in this way. The NFTW allows states/UTs to retain 80 per cent of the collections with them and the remaining 20 per cent is transferred to the corpus fund of the NFTW.

Some states in India are quite vibrant and involved in the facilitation of the welfare of teachers. Such activities need to be strengthened for promoting teachers.

Transfer Policy

In some states the policy is to transfer teachers after 3-6 years. In other states teachers are transferred on request and administrative grounds only. The policy of periodic transfer seems to be a legacy of the civil service where incumbents are transferred after three years so that they do not develop vested interest. In a school, if teachers are effective, one does not find any justification for transfer after three to five years. It is usually resorted to for the displacement of teachers to adjust some others for purposes other than school performance. The transfer policy needs review and rationalisation to promote motivation and better performance in the context of EFA.

Service Conditions

The service conditions include allowances, housing facilities, study leave, pension, gratuity benefits, etc. In order to motivate teachers to work in rural and hilly areas service conditions

need to be improved. For example, in some states house rent is paid in urban locations only. The problem is not addressed to rural and remote areas. All states provide pension, gratuity, group insurance and medical facilities. Leave encashment is also allowed in all states except in Assam and Maharashtra. There is no provision of study leave except in Orissa and for B.Ed. in Haryana. All states have grievance removal machinery but it needs to be made more effective.

Working Conditions

Teacher's responsibilities and working conditions should be commensurate with

the requirement of the job. Congenial working conditions enhance job satisfaction which in turn increase their work efficiency. Performance linked incentives to teachers may be given with a view to improving the quality of instruction and reducing the drop-out rate. Teachers should be given professional development opportunities and incentives so that they can consistently improve their teaching.

All these conditions play an important role in strengthening the teachers. So, investing in these aspects has been recognised as a major strategy for achieving the objective of Education for All.

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Preparing Technology-Competent Teachers for Classrooms

A Teacher Education Challenge

HARJEET KAUR BHATIA*

Abstract

Use of technology in the classroom for enhancing the learning experiences of children is aimed by teacher-educators and curriculum personnel at all levels. This paper explores the ways in which teachers can be equipped to use technology in the classroom.

Key words: technology-competent teacher, teacher education.

Improving education is a goal shared round the world. To be ready for the 21st century challenges, today's young people need specialised training and skills. Knowledge drives our global economy, and that means students should know more than ever. They must be prepared to think and reason at a higher level. They need confidence to contribute their ideas to team efforts. They must know how to harness technology to solve complex problems. To make sure that our students flourish in this knowledge based economy, we must help them acquire 21st century skills today.

Currently, teacher education is being reshaped by the synergy of parental expectations, political initiatives, changing demographics, and emerging technologies. Schools, teachers, and teacher educators are being asked to be more accountable for what happens in classrooms and to ensure that all students meet the ever higher learning standards. At the same time, emerging technologies raise questions and provide alternatives about how best to educate students, prepare educators, and provide continuing professional education for practicing professionals.

* *Lecturer*, (Education), Institute of Advanced Studies in Education (IASE), Jamia Millia Islamia, New Delhi.

This confluence of forces is calling teacher educators to think differently about their role in the preparation of educators and how best they can position themselves in what is becoming a highly competitive educational environment. For those interested in both teacher education and technology, these events also suggest that to view technology as just another education reform effort may be shortsighted.

Broadly speaking, educators, policy makers and researchers all seem to agree on the potential of ICT (Information Communication Technology) to have a significant and positive impact on education. What is still being debated, however, is the precise role ICT should play in education reform and how best to ensure that potential is fulfilled. Technology integration means a lot of things to different people. When teachers are asked if and how they integrate technology into their curricula, many answers appear. For example:

- “I use the computer in my class as a reinforcement of topics we have covered.”
- “Students use the Internet to find information for their reports.”
- “My students must turn in their homework in word processed form.”
- “I use ‘Power Point’ to make all presentations to my class.”

Are these examples of technology integration? One might reasonably argue that each of these examples integrates technology. But the real issue is not if technology is used in the classroom, it is whether or not technology is enhancing the learning process.

Technologies do not guarantee

effective learning. Yet inappropriate uses of technology can make learning more difficult. This is the case, for example, when students spend most of their time selecting fonts and colours for reports instead of planning, writing, and revising their ideas. Although technology integration is talked about a lot in education, very few educators have a clear vision or philosophy of what technology integration is all about. Moreover, if you ask educators how to integrate technology into the curriculum, very few will know how to go about doing it in a meaningful and purposeful way.

When it comes to using educational technology in the classroom, I think it is important to ask the right questions. If our vision is one that seeks to promote higher level thinking, problem solving, and better communication skills for all students, it may be more appropriate to ask if technology is effective in meeting these goals. Some of the more interesting questions we might explore include:

- Is technology helping students generate, test, and explore hypotheses and conjectures?
- Does it make it possible to make abstract concepts more understandable?
- Does it allow students to gain understanding of concepts and principles through exploratory interactions with representations such as diagrams and dynamic displays?
- Does it require students to use complex tools in ways appropriate to the field?
- Does it encourage students to solve unstructured problems,

communicate about complex processes, and navigate and evaluate and use information effectively?

- Does it encourage them to learn independently as well as work collaboratively?
- Does technology provide an entry point to content areas and inquiries that might otherwise be inaccessible until much later in an academic career?
- Does technology extend and enhance what students are able to produce?
- Does the use of technology enhance creativity, improve design skills and the ability to present information well and in multiple formats?
- What effect does technology use have on student motivation?
- Does it have an impact on teachers that will be long term in terms of supporting new forms of teaching built around reform goals?

But the problem is that we have wanted technology to be a magic bullet or a wand that we could wave over children to make them perfect test scores. Of course, nothing is that easy. We have to ask some difficult questions:

- What do we know about appropriate ways to enhance student learning with technology?
- How can technology change the nature of teaching and learning?

To use educational technology effectively, teachers must create the vehicle that will encourage students to think about what they need to learn and to ask their own questions. This sounds like such an easy thing to change, but it

is really very difficult. Technology lends itself to exploration. But before we can use it effectively, we need to value exploration as real teaching and real learning. We need to recognise that if students are writing about what they are learning, if they are investigating and asking questions, if they are doing it in an authentic context, then clearly they are learning how to read and write and think. The biggest difference, the one that might scare us, is that when students explore there is no one right answer.

Now, that does not mean that we all just run around doing what we want and end up who knows where. Activities must be carefully guided and structured, but having the technology available in a ubiquitous manner makes the difference. By that I mean that technology is the means not the end. Technology merely provides the tools to be used for authentic learning.

One of the things that we do know is that when students have technology available, they tend to move faster than we expect them to. To use technology for authentic learning, we have to educate teachers, both in-service and pre service. We must start with pre-service teacher education programmes and encourage those people to come into teaching who like the ambiguity, or at least can live with it. Teachers for the day need to be creative, only then they will promote creativity in their students. Prospective teachers need to be helped to recognise that their jobs are not to pour content knowledge and dates and facts and figures into students' heads.

Professional development for practitioners need to model the ideal of life long learning. When teachers

recognise that they will never stop learning, they will live that ideal, and they will model it for their students. It is not enough to bring in technology either top down or bottom up, enthusiasm has to come from both directions. There is need to have teachers who are eager and interested and administrators who value learning about technology as an important piece of what teachers do. All parties must recognise teachers' accomplishments in the use of technology and accept even their mistakes as an important part of the learning process. For this, teacher educators have a very important role to play. They have to guide and motivate pre-service and in-service teachers in the implementation of Technology Aided Learning (TAL), by providing various platforms to help them share their knowledge and experiences, and to showcase and reward exemplary implementation of TAL.

It has become clear that educational technology is not a passing fad. Its potential is overwhelming, and we need to do it right.

To bring the change we have to change ourselves. For preparing pre-service and in-service teachers for integrating technology in the classroom, teacher educators need to:

- Model professional teaching practices that demonstrate knowledge, skills, and attitudes reflecting the best available practices in teacher education.
- Inquire into and contribute to one or more areas of scholarly activity that are related to teaching, learning, and/or teacher education.
- Inquire systematically into, and reflect on, their own practice and demonstrate commitment to lifelong professional development.
- Provide leadership in developing, implementing, and evaluating programmes for educating teachers that embrace diversity, and are rigorous, relevant, and grounded in accepted theory, research, and best practice.
- Collaborate regularly and in significant ways with representatives of schools, universities, state education agencies, professional associations, and communities to improve teaching, learning, and teacher education.
- Serve as informed, constructively critical advocates for high quality education for all students, public understanding of educational issues, and excellence and diversity in the teaching and teacher education professions.
- Contribute to improving the teacher education profession.

Teacher educators have to come forward and accept the challenge of preparing technology competent teachers by being role models themselves. Only then can future classrooms be reshaped.

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Mental Health of School Children

SWATI PATRA*

Abstract

Health has been defined by World Health Organisation as physical, mental and social wellbeing. But mostly, it is the physical aspect of health that is emphasised and discussed while mental and emotional health is not recognised at all. However, whether a child learns to read, spell or understand, depends on whether he 'wants' to learn or feels a 'need' to learn. The emotional needs of children should be met before effective learning can take place. Teachers have a great role to play in meeting the emotional needs and thereby fostering mental health among children. This is 'over and above teaching'. The teacher can help children find socially acceptable ways of 'expressing' their emotions and teach them various life skills to deal with the demands and challenges of life. School based intervention programmes can be very effective in this regard. They can promote a philosophy of caring for children in the school.

Key words: mental health, well-being

Education should aim at giving each child the opportunity to bring out the best. According to the World Health Organisation (WHO), health refers to physical, mental and social well being. But mostly, it is the physical aspect of health that is emphasised and discussed about while mental and emotional health is not recognised at all. People don't even have an idea that there is a need for mental health just as there is a need for physical health. A child needs to have sound physical health for proper

physical development. Sound mental health is also essential for proper physical development. It is said that a sound body is required for a sound mind. But a sound mind is also essential for a sound body. If one's mental health is not proper, it can have an adverse effect on physical health.

Mental health has a lot of influence on children's learning. It is usually thought that education is entirely an intellectual experience, that emotions have no place in the classroom, but it is

* Lecturer, Regional Institute of Education, (NCERT), Bhopal, M.P.

not true. Whether a child learns to read, spell or understand, e.g., the causes of failure, will depend on whether he 'wants' to learn, whether he feels a 'need' to learn. A child will not learn as long as he does not want to learn and sees no sense in learning. All children have emotional needs which should be met. In addition to it, some children have special emotional needs. There are certain children in the classroom whose emotional needs cannot be met in the usual way. These children show behaviour deviant enough to cause real concern to the teacher and parents. The deviant behaviour has such symptoms as resistance to learning, extreme dependence on the teacher or classmates, resistance to classroom routine, tantrums, quarrelling, fighting, stealing, lying, bragging, crying, teasing, destructiveness, aggression, bullying, withdrawal, truancy, stuttering and school phobia.

All normal children occasionally show some of these symptoms in a mild form. However, children showing these symptoms in the extreme show emotional disturbance and problems of interpersonal adjustment. They do not feel right about themselves and their relationship with others is poor. These are children who feel rejected, dominated by others, deprived, jealous, or resentful, who have been over-indulged, who have physical defects, or who have suffered prolonged illnesses.

Such emotional disturbance needs immediate attention for two reasons. One, it is disturbing to the classroom and hinders the smooth and effective functioning of the classroom. Second, it

connotes severe disturbance within the child that can lead to neurotic behaviour patterns or delinquency. Teachers have a crucial role to play in such a situation as their understanding and help can be very effective. By taking care of the emotional needs of the child, he can help the child function effectively. Even if the teacher cannot be effective in his help, at least he can have the satisfaction of knowing that he did not push the child into further unhappiness because of his lack of understanding.

Teachers are the makers of the future citizens of the country. They have a great role to play in meeting the emotional needs of children and fostering mental health among them. A good and effective teacher considers emotional aspects of learning. He tries to understand the psychological state of the child. This is 'over and above teaching' or 'more than teaching' (D'Evelyn, 1957). For this, the teacher has to develop a high level of empathy or sensitivity for the feelings and attitudes of children. The teacher who meets the emotional needs of his or her students is aware of the relationship between emotions and learning, between emotions and mental health. Meeting the emotional needs of children does not imply that the teacher knows about and conducts therapies. Without proper training, the teacher should not give therapy in the classroom. However, the teacher can promote mental health of children by playing a therapeutic role. If the teacher maintains an atmosphere conducive to good mental health, the classroom can have a therapeutic effect on the child. The teacher has a very real function to perform in meeting the

emotional needs of children, and this function should not be confused with or impaired by misdirected attempts at therapy.

True, in some cases the teacher can't be of much help as such emotional disturbances may involve parental attitude and practices and home environment and interaction. Still the teacher can do a lot. There are two aspects in developing a more mature behaviour along emotional lines: control and expression. Most of our efforts are directed at helping children establish emotional control than helping them to find socially acceptable ways of 'expressing' their emotions. The two are interrelated. The child needs to learn how to control or hold back some of the feelings that he would like to express, because if he were to act the way he feels on any and every occasion, he would injure or offend others, destroy property and interfere with group activities etc. At the same time, it is equally important to find ways of expressing feelings and emotions. The child who does not have an outlet for his emotions, who can't tell others how he feels, is the child who will create difficulties for himself and others around him. Such emotional disturbance leads to poor mental health.

An important part of growing up is learning how to deal, how to cope with the things that are troublesome, rather than pretending they do not exist which leads to emotional and behavioural problems. Thus, teachers should be sensitised to the emotional needs and mental health problems of children so that they can identify those who need help and refer them to appropriate agencies. In some cases we find that it is

the school which gives rise to behavioural problems and maladjustment in the child. At the same time, however, it is only the school which can do a lot in fulfilling the various needs of children and help them to achieve sound mental health. In cases where factors relating to parents and home are responsible for emotional disturbances, the teacher can at least make the school hours enjoyable for the child.

Thus, what is required on the part of the teachers is a philosophy of caring for children and trying to fulfill the emotional needs of the children. Schooling today has become increasingly burdensome and stressful with heavy syllabus and entrance examinations starting from nursery classes. Added to it, is the parental anxiety and expectation that the child should top in everything and become a doctor or an engineer only. The child is burdened with examination stress and the competitive nature of the job market. The outcome is that with six hours of schooling and four to six hours of homework and tuitions, there is no time for play, peer interaction, reading for pleasure or creative pursuits and hobbies which lay the foundation for a healthy psychosocial development.

The mental health and well-being of children require our attention. We adults think that children are less troubled by stresses and strains of life compared to us adults. But, all young children today face significant stresses in their lives. Parental pressure and expectation, teacher's expectations, lack of understanding of the child's situation, peer pressure and general competitive nature of society builds up the stress level in the child. In addition, the child

himself has the unrealistic expectation to live up to all these things which naturally leads to poor performance, low self esteem and psychological breakdown. In today's society, the child thinks that everything has to be right: he should choose right subjects, get the right marks, go to the right college and find a right career. This is fine. But there is no one to tell him that if something does not turn out right or as expected or if nothing turns out right, then also it is all right. Life is still worth living. This lack of life skills in children leads to many tragic consequences.

Children today have no time to stand and stare – to enjoy the beautiful nature, to appreciate the good things in life, to grasp the essence of life. They do not respond, but react to situations. Lack of patience and tolerance leads to reacting which results in picking up fights over petty issues and instances of 'road rage'. Hence life skills – skills that help one to deal with various ups and downs of life effectively, are very important. Life skills refer to the ability to maintain the state of mental and physical well-being while interacting with others within the local culture and environment. NCERT (2000) has mentioned about core life skills in National Curriculum Framework for School Education (NCFSE). These are self awareness, empathy, problem solving, decision making, creative thinking, critical thinking, communication, interpersonal skills, coping with emotion and stress.

Self-awareness or awareness of self should be coupled with empathy, i.e., awareness of others, their different thinking, feelings, desires and wishes. These skills are very important which

will help the young know and understand themselves as well as others. Training in critical thinking and creative thinking is rare in formal as well as non-formal classrooms. However, in today's world where there is a deluge of information, the young should be trained to listen critically, ask the right questions, think rationally and logically. Creative thinking requires patience and persistence which involves divergent thinking and going off the track. Decision making and problem solving skills are also much needed skills for youngsters today. Coping with emotion and stress requires admitting of emotions and stress first, and then dealing with them. Most of our problems arise because of denying our emotions, or totally giving in to emotions. Effective communication and interpersonal relations skills are important to young people in order to maintain both their independence and their friendships. Effective communication in the family leads to avoidance of many unnecessary problems.

Life skills thus promote adaptive and positive behaviour in the individual that enable them to deal effectively with the demands and challenges of everyday life. It teaches students how to manage stress, how to take decisions and how to communicate better. In short, these are practical skills aimed at preparing a teenager for real life. Real life aptitude is more important than scholastic aptitude. It may be noted here that education should not be limited to acquisition of academic expertise only. Education ideally must prepare students to face the challenges of life. It is through these life skills that students can fight the challenges of drug addiction, violence,

teenage pregnancy, AIDS and many other health related problems. Many young children, despite facing hardship and stress, make it through their youth without major problems; but some face emotional and behavioural disorders such as depression, suicidal thoughts, serious attention problems, hyperactivity, drug and alcohol abuse, delinquency etc. The cost of these problems to individuals, families and communities is extremely high. Children who come to school from backgrounds of poverty, violence and hopelessness and mental illness in their families, may present disruptive behaviour in schools. Children who are neglected, over protected, abused, underestimated or have poor health are unlikely to do well in school or subsequently, later in life. Further, with the distance between aspirations and accomplishments getting wider, the inability to cope with adversity creates feelings of intense hopelessness in the students. In order to prepare them for real life situations, where failures do exist, there is a need for making life skills education a part of the curriculum. UNESCO report (2001) has linked curriculum with different life skills. It suggests breaking down of each life skill into a set of sub-skills. Teachers especially need sub-skills so that they can integrate them with the curriculum. Sub-skills will also suggest activities with which to present the particular life skill to the students and point to the subject areas where to anchor the life skill. Thus, the report has linked life skills to subject areas and topics and pointed out related teaching learning activities.

Schools have an important role here. Today's young children are a confused

lot caught between high achievement goals and the complexities of life. Various types of intervention programmes can be done in the school for this. The aim of school based intervention is to provide an experience that will strengthen children's coping abilities to counter the environmental stresses and disadvantages encountered in their growing years. The intervention programme can have different components like health education, mental health education, life skills education, psychosocial interventions etc. The World Health Organisation (WHO) in a document entitled 'Mental Health Programmes in Schools' (Hendren et al. 1994) makes a strong case for school mental health programmes to be initiated all over the world. It strongly recommends that school is the strongest institution in the child's life and schools have unprecedented opportunities to improve the lives of children. The intervention model proposed by the document is at four levels.

The document describes the structure of a model framework for a school mental health programme.

Schools are the most suitable place to develop mental health programmes for children because (Kapur, 1997):

- Schools are often the strongest social and educational institutions available for intervention.
- Schools have a profound influence on children, their families and the community.
- Almost all children attend school at some point of time during their lives.
- Schools can act as a 'safety net', protecting children from hazards

Level of Intervention

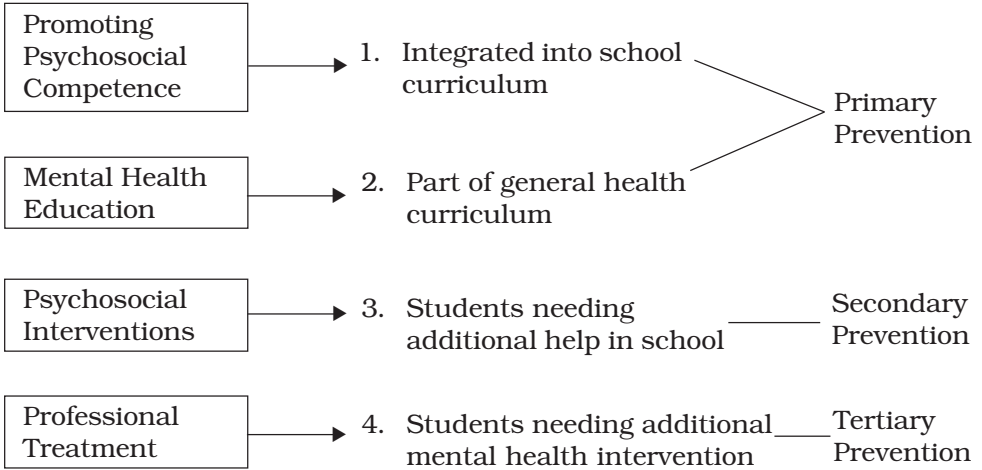


Fig.1: Comprehensive School Mental Health Programme

Psychological Issues in Schools Who is Involved

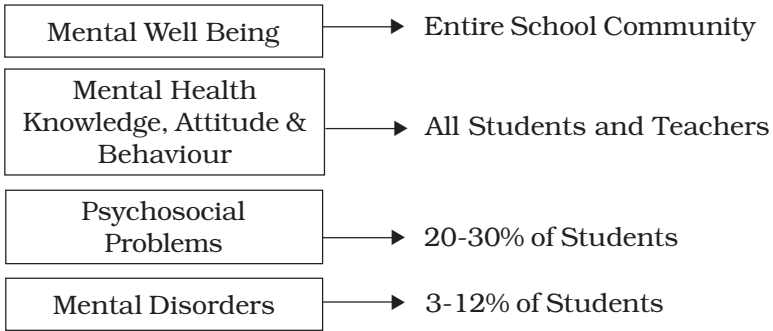


Fig.2: Framework for School Mental Health Programme

- which affect their learning, development and psychological well being.
- Young people’s ability and motivation to stay in school, to learn and utilise what they learn, is affected by their mental well being.
- In addition to family, schools are crucial in building or undermining self-esteem and a sense of competence.

- School mental health programmes are effective in improving learning and well being, and in treating psychological disorders.

Thus, schools can make positive contributions towards the mental health of children. The mental health of any person depends, in part, on his ability to develop sound relationships to and with other people. And the school provides opportunities to develop the necessary skills for 'group living' (Lindgren, 1962). The school offers a variety of opportunities for children to learn satisfying ways of working and playing together. Children can learn to express their feelings without injury to themselves and others. Some children express themselves through problem behaviour because they have not learned more acceptable ways of self-expression.

Teachers have a great role to play in providing mental health education to children. Lindgren (1962) points out that schools provide a climate of stability and predictability – qualities which help to foster emotional security. Its hours are regular, its demands and expectations are well defined, and it is governed by rules and regulations. For many children, schools provide the only stable,

secure and predictable experience in their lives. It is important for children to have experiences with a well-organised, controlled and stable environment, just as it is important for them to have experiences which permit freedom of thought, expression and action. Schools play a crucial role in the spheres of cognitive, language, emotional, social and moral development of children. Since schools have a formative influence on children, early identification and intervention may prevent serious problems later on. Teachers and schools can go a long way in fostering mental health among the children.

As Edelman (2000) points out, "I do not want a new generation of children with high intelligent quotients and low caring quotients; with sharp competitive edges and dull cooperative instincts; with highly developed computer skills but poorly developed consciences; with gigantic commitment to the big 'I', but little sense of responsibility to the bigger 'we'. The emphasis today has to be on preparing a preventive mental health strategy rather than looking only to provide cures. Teaching young students how to cope long term would be a much better strategy.

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Environmental Education in Pre-service Teacher Education

SEEMA DHAWAN*
L. RAWAT**
VEENA SHARMA***

Abstract

“Mātā Bhumih Putrham Prthivyāh” means earth is the mother and we are her children. Education is an effective means for social reconstruction. Teacher education, an integral component of the educational system is intimately connected with society and conditioned by the ethos, culture and character of a nation. ‘Environmental education is the study of developing a code of human behaviour i.e. environmental values to protect and improve our Environment.’ It has been recognised all over the world as a viable tool for creating environmental awareness in people and motivating them to act for the environment. The Supreme Court of India has directed the states to include environmental education from primary level up to degree level from the session starting 2004. The introduction of effective programme of environmental education requires the involvement and participation of teachers. So, our teachers themselves should possess enough environmental awareness, positive environmental attitude and skills of achieving objectives in relation to their students. For this purpose, it is also needed to have adequate environmental education curriculum for pupil teacher in their training course. Environmental education is included as an elective paper in Garhwal University from the session 2003-04 and it was found that approximately only seven per cent of the pupil teachers opt for this course while realising its importance, it should be made compulsory for all. The present paper deals with the results obtained after studying the environmental knowledge, awareness and attitude of pupil teachers of Garhwal University before and after the B.Ed. training.

Key words: environmental education, knowledge, awareness, attitude, pupil teachers training.

* Lecturer, ** Ex Principal, *** Reader, D.W.T.P.G. College, Garhwal University, Dehradun

Environment

According to the Indian philosophy, all that exists in the universe, whether organic or inorganic, has five constituent elements, i.e. Air, Water, Fire, Earth and Space. Everything comes from varying combinations of these five elements, and ultimately returns to these, which together create nature. This relationship is explained by the Atharva Rishi to his disciples stating that earth is the mother and we are her children.

Environment etymologically means surroundings. It means, all that is found around an individual. It includes interaction and relationship among the natural elements living, non-living and man made. It is the sum total of external factors, substances and conditions which influence organisms without their intrinsic part. The environment though invisible has no geographical and ideological frontiers, and it is common to all living organisms – man, animals and plants.

‘Environment is the sum of all external conditions and influences affecting the organism. Environment may be divided into abiotic (non-living) and biotic (living) components. The environmental components act as a whole’ (Essential learning’s, CEE).

‘Environment includes a complex of natural, built and social components in the life of humanity and that the social components constitute a set of cultural, moral, personal values and interrelations’ (Tbilisi 1997).

According to Section 2(a) of the Environmental Protection Act, 1986, ‘Environment’ includes water, air and

land, the interrelationship which exists among and between water, air and land, and human beings, other living creatures, plants, micro organisms and property.

Environmental Problems

During the last three four decades, environment has been a major concern for humanity as a whole. Pressure from rapid population growth, uncontrolled and lavish consumption, urbanisation, industrial expansion and advances in science and technology have caused serious problems associated with environment. It has been realised that the impact of human activities on environment has become more accelerated and pronounced. Impact of human activities causes disequilibria in the environmental set up resulting in various problems for today as well as for future.

In the changing modern social scenario there is a crisis of environmental awareness leading to a negative code of behaviour towards the environment. This is not a problem at the local level, but is a great threat to the whole world. Alarming degradation and deterioration of environment endangers nature and its many habitats. A few environmental problems are pollution, biomagnifications, greenhouse effect and global warming, ozone depletion, deforestation, desertification, depletion of natural resources, natural degradation etc. The major challenge facing present day society is the need for developing environmental values to protect our environment.

Education

“All education springs from images of the future and all education creates images of the future. Significant part of education must be seen as the process by which we enlarge, enrich and improve the individual’s image of the future.” (Alvin Toffer)

It is universally acknowledged that education is an effective means for social reconstruction. It has to be relevant to the needs and aspirations of the people living in a fast changing society. Education is a potential tool for creating environmental awareness in people enabling them to act for safeguarding the environment.

Environmental Education

If intentional education means transformation of learners towards well-defined goals, environmental education (EE) means that learners achieve goals for dealing specially with environmental aspects. Such goals can be seen in three categories namely, cognitive, affective and psychometric. Environmental education is the process, which covers the objectives to develop knowledge, awareness, attitude, values, skills, participation and commitment among the individuals and social groups about the total environment, environmental problems and their adequate solutions.

The goal of environmental education is to improve all ecological relationship including the relationship of humanity with nature and people with their surrounding. Thus, it may include conservation of energy and soil, protection of air, water and atmosphere from pollution, effective utilisation of

locally available resources, creation of conducive atmosphere for living through social and civic consciousness and harnessing natural resources without any ecological imbalance.

According to the Belgrade Charter, the aim of environmental education is ‘to develop a citizenry which is aware of and concerned about the total environment and its associated problems and that has the knowledge, attitudes, motivation, commitment and the skills to work individually and collectively towards solutions of current problems and prevention of new ones’. The Tbilisi Conference 1977 summarises environmental education as an integral part of the educational process. “Environmental education should be centred on practical problems and be of an interdisciplinary character. It should aim at building a sense of values, contribute to public well being and concern itself with the survival of the human species. Its force should reside mainly in the initiative of the learners and their involvement in action and it should be guided by both the immediate and future subjects of concern” (Tbilisi, 1977).

There are three concepts of environmental education

- about the environment,
- from the environment and
- for the environment.

Education about environment is to acquire an understanding of the total environment. When environment is used as a vehicle for gathering concepts, knowledge and skills related to specific academic disciplines, it is learning from the environment. And finally, the development of attitudes, skills and

evaluation abilities for the proper use and the development of environment is education for the environment.

Environmental education is a learning process that increases people's knowledge and awareness about the environment and associated challenges, develops the necessary skills and expertise to address the challenges and fosters attitude, motivation, and commitment to make informed decisions and take responsible action. It enhances critical thinking, problem solving and effective decision making skills and teaches individuals to weigh various sides of an environmental issue to make decisions accordingly.

Need of Environmental Education

"I am I plus my surroundings; and if I do not preserve the later, I do not preserve myself". (Jose Ortegay Gasset, 1914).

Environmental education has been recognised all over the world as a viable tool for creating environmental awareness in people and motivating them to act for the environment. With the acceptance of Tewari Committee Report in 1960, the country realised the need of environmental education. It is needed in order to meet the demand of every day life and maintain a mental equilibrium for the fulfillment of the needs and wants of every citizen on earth, and for balance and harmony between humanity and environment. It helps in developing new knowledge, skills and values in a drive towards better quality of environment and higher quality of life. It is needed for biomedical awareness and solution to health problems, for improvement and

understanding of environmental condition and ecosystem as well as for widening knowledge of environmental problems to identify the same and to arrive at a more effective way of solving them. A properly guided awareness is necessary to instill and enlighten the mind of Indians. Awareness leads to action. Without proper educational efforts the awareness analysis action chain does not move smoothly and effectively. The National Policy on Education, 1986 states, "There is a paramount need to create a consciousness of the Environment. It must permeate all ages and all sections of society, beginning with the child. Environmental consciousness should involve teaching in schools and colleges. This aspect will be integrated in the entire educational process".

Environmental Education and Technical Education

In the words of Sri Aurobindo, "The past is our foundation, the present our material, the future our aim and summit. Each must have its due and natural place in a national system of education."

Teacher education is an integral component of the educational system. Teacher education is intimately connected with society and is conditioned by the ethos, culture and character of a nation. The introduction of environmental education programme requires the involvement and participation of teachers, students and administrators. It offers teachers a rich and diverse array of activities and opportunities to enrich their classroom teaching and help children develop

positive attitudes and behaviour towards environment.

Since teachers play a major role in the education of children, their own education becomes a matter of vital concern. Teacher education must, therefore, create necessary awareness among teachers about, for and through the environment. The environmental education at training colleges should not only create environmental awareness but should also develop basic knowledge and skills required to impart these among the pupils.

Agenda 21 considers training as 'one of the most important tools to develop human resources and facilitate the transition to a more sustainable world.' It should be aimed at filling the gaps in knowledge and skills that will help individuals and find employment and be involved in environmental work.

The teacher has to play an important role in national development and social change. The effectiveness of environmental education relies heavily on the knowledge, skills and attitudes of the educator. Efforts have been made for integration of environmental education into teacher's training curriculum but how effectively it is being done is an issue of great importance. The present research was taken in hand with the main objective of knowing about the environmental knowledge, awareness and attitude of pupil teachers before and after the training. For the effective programme of environmental education, our teachers themselves should possess enough environmental awareness, positive environmental attitude and skills of achieving objectives in relation to their students. For this purpose, it is also

needed to have adequate environmental education programme for pupil teacher in their training course. In order to impart effective teacher training in this field, an understanding of the aims and objectives of environmental education, its contents and approaches, efforts made in the field and the skills required for imparting the values to the students, future builders of the nation became a fundamental pre-requisite.

Research on Environment Education

After the deliberations at Fourax in 1971 and at Stockholm in 1972, an international workshop was held on environmental education – 'The Belgrade Charter' at Belgrade in 1975 organised by UNESCO and later an Inter Governmental Conference on environmental education (UNESCO, UNEP) at Tibilisi, USSR in 1977. Belgrade workshop formulated the guiding principals to achieve the objectives of Stockholm conference, whereas Tibilisi Conference followed closely the footsteps of Belgrade workshop. Thus, environmental education has emerged with international introspection and through the formal approval of the entire community as an essential tool to protect not only the present environment, which is facing a number of serious threats but also the survival of the human life itself.

From the review of related literature, it was found that very scanty work (Saxena, 1986; Rajput, 1988; Rane, 1989; Shahnawaj, 1990) has been done on the environmental education. Praharaj (1991) worked on the level of environmental knowledge, attitude and its perception among pre-service and

in-service secondary schools teachers. It is worthy to mention that various educationists and environmentalists have emphasised the need to frame a suitable curriculum for teacher education course (Bhattacharya, 2003; Sagar and Sagar, 2003; Srivastava and Srivastava, 2003). A curriculum for B.Ed. has been developed in Karnataka State (Ravindranath, 2002). According to the *Fifth Survey of Educational Research* 'In the international context as well as in the context of scientific information generated on ecology and environment in India, the researches on environmental education teaching are very inadequate and need outright promotion at all levels and regions' (Buch, 2000).

NCERT (2000) has recommended environmental education as a separate discipline at elementary level. On 21 January 2003, the United Nations Environment Programme (UNEP) launched state of the environment reports for South Asia, one targeting policy makers and the other written by youth. The South Asia State of the Environment Report identifies five key environmental issues: livelihood security, environmental disasters, industrialisation, urbanisation and biodiversity loss. The major recommendation of the International Conference on Eco Restoration (14-21 Oct. 2003) held at Dehradun and New Delhi was to express great concern at the rapid degradation of both terrestrial and aquatic ecosystems throughout the world that has caused loss of biodiversity and various goods and services of the natural ecosystems, and therefore, to incorporate tools of environmental evaluation and to

ensure community participation.

Sagar and Sagar (2003) found that teacher's participation in school on environmental studies was very much affected by the attitude of the head of the school. Newly appointed young teachers are more aware about the planning and various other activities related to EVS. They are enthusiastic to do creative work through interaction with children. Further, the attitude/perception developed by teachers during their training programme for EVS is depicted in their future teaching in the classroom. After sighting the related literature, it was concluded that environmental knowledge of teachers play a very important role in developing the environmental values in their students. Therefore, to study the effectiveness of B.Ed. training in the discussed area of Garhwal University, the present research work was taken up.

Present Scenario

The environmental scenario of India is very wide. Ours is a country which is highly diverse climatically, geologically, geographically, edaphically floristically, faunistically, socially and economically. It is a country where flora and fauna have been worshipped since time immemorial, for example the protection of 'black bucks' by Bisnoi community of Rajasthan. India is one of the very few countries in the world where a commitment to environmental protection and improvement is enshrined in the constitution. In India environmental education is introduced at various levels of education with a goal to improve the quality of environment to create an awareness among the people on

environmental problems and conservation, to develop skills to solve the environmental problems, to create the necessary atmosphere to make it possible for the citizens to participate in the decision making and to develop the capabilities to evaluate the developmental programmes and awareness of the economic, political and ecological interdependence.

With the thrust given to environmental education in the new policy of education (1986) and the direction of Supreme Court (1991), efforts have been made to include environmental education in the school curriculum and recognise the content and methodologies of teaching at the school level. The scheme of eco clubs has been evolved by Government of India to extend nonformal proactive system of imparting environmental education to school children by involving them in various environmental activities. The Supreme Court has directed all the states of India to incorporate it as a compulsory subject from the session 2004-2005 and NCERT has been directed to prepare a curriculum for environmental education and submit to the court by April 2004 (Amar Ujala, 20 December 2003).

To meet successfully the present dangerous environmental situation it is essential that everyone makes a contribution, which will emerge from proper training in environmental education to pupil teachers i.e. 'Work of each for the welfare of all'. A comparison of the above attempts in environmental education with the wide spectrum of pressing environmental issues makes it amply evident that the study of

environment by researchers in education is quite a late phenomenon in the history of Indian education and we have not even made a worthwhile beginning, and we have a long way to go. Unfortunately, time is a big constraint and unless educational efforts are identified and tackled urgently, we will be the victims of environmental hazards largely due to our own ignorance and inaction. There is a paramount need to create a consciousness about environment. As most of the Indians are unaware about environmental decay and about the results of their present life style, it is the need of the hour to make them aware and this can be done only by formal education by introducing various programmes and including the proper content in their study subjects.

The teacher has an important role in national development and social change. The teacher is the principal means for implementing the programmes of environmental education. According to Dubey and Dubey (2003) environmental education should have an important place in pre-service teacher training school and the teacher educational institutions have to share this responsibility. There is an urgent need to frame a suitable curriculum for teacher education course (Bhattacharya, 2003). Pre-service education for preparing teachers should be given support as it will enable their pupils to appreciate the concern of sustainable development and influence their life style (Maheshwari). Realising the need and importance of environmental education, Mahatma Gandhi Gramodaya Vishwavidyalaya, Chitrakut, (M.P. in 1991) Jabalpur

Vishwavidyalaya, Jeevajee Vishwavidyalaya and Gwalior Vishwavidyalaya (M.P. in 1995) have already included this programme in their B.Ed. curriculum.

Uttanchal, best known as *Deo Bhumi* is extremely rich in flora and fauna, which has immense conservation as well as economic value. The state ranks sixth amongst states in terms of percentage of recorded forest area. Since the state is hilly, it is more susceptible to environmental crisis. The state's mountains are geographically young and ecologically very fragile. Rapid growth of human population and over exploitation of natural resources have led to local extinction of endangered species, degradation and fragmentation of natural habitats, habitat loss and people wildlife conflicts. Further, increasing demand for land exerts more pressure on forest land for developmental activities. As deforestation opens a Pandora's box for various environmental implications, it is almost necessary, that people should be made environment conscious. This can be easily done through developing adequate awareness towards the environment. This awareness can be developed or inculcated in the school children or college students through their teachers, who can acquire this skill through their training programme. Again, the objective of integral development of personality cannot be fulfilled without teachers developing their own integral personality. It is worthwhile mentioning, that eminent educationists and environmentalists and even psychologists have recommended the utmost need for providing environmental education at pre-service

level for teachers. This present study has been conducted with the following objectives.

- To compare the environmental knowledge, awareness and attitude of B.Ed. students of Garhwal University before and after the training.
- To investigate the effectiveness of syllabus of environmental education in the B.Ed. course of Garhwal University.

For the comparison of environmental knowledge, awareness and attitudes of pupil teachers of Garhwal University before and after the training, normative survey method was used. The pupil teachers of the colleges of Garhwal University B.Ed. course were treated as sample. For collection of the required data, three environmental tools were developed. The tools were Environmental Knowledge Scale for Teachers (EKST), Environmental Awareness Test for Teachers (EATT) and Environmental Attitude Scale for Teachers (EAST). These were tested for their reliability and validity and were found highly reliable and valid for the evaluation of environmental knowledge, awareness and attitude of pupil teachers. The pupil teachers of all the concerned colleges were told about the purpose of tests and were asked to read the instruction carefully and fill up the personal data prescribed on the first page and answer all the items in the tests.

The tests were administered before and after the training to study the effectiveness of environmental education aspect of B.Ed. course. Almost all the pupil teachers showed enthusiasm in

providing the necessary information to carry out the study. Collected questionnaires were scored carefully on the basis of respective scoring keys.

Some questions of high discriminating value were included in tests for easy discrimination in the environmental knowledge and awareness of student teachers. These questions were 15 in number. The scores of these questions of the students before and after the training were calculated for discriminating the pupil teachers according to their environmental knowledge and awareness.

For statistical analysis of the collected data, mean value, standard deviation (SD), and percentage of the raw scores were computed. T-tests were carried out to see the level of significance of the differences obtained in all and in selected questions. To see the relationship between environmental knowledge, awareness and attitude of pupil teachers correlation between the three categories, were applied.

Table No. 1 depicts the environmental knowledge, awareness and attitude of pupil teachers before and after the B.Ed. training. A total of 919 pupil teachers

were studied. Out of them 491 were studied before and 428 after the training. The mean values of environmental knowledge, awareness and attitudes of pupil teachers before the training were found to be 71.2, 60.02 and 50.6 and after the training 73.5, 64.9 and 50.8 respectively. The standard deviations before the training were found to be 10.16, 11.5 and 8.96 and after the training were 9.91, 7.8 and 9.9 in the same order.

The results obtained revealed that pupil teachers before the B.Ed. course had less environmental knowledge, awareness and attitudes as compared to the environmental knowledge, awareness and attitudes of pupil teachers after the B.Ed. course (Fig. 1). A negligible 0.2% difference was obtained in the attitude.

Table 2 shows the results pertaining to the correlations observed between the environmental knowledge, awareness and attitudes of pupil teachers before and after the training. The correlation between the environmental knowledge and awareness before and after the training were recorded as 0.63 and 0.55 and between environmental knowledge

TABLE 1
Showing Comparison of Environmental Knowledge, Awareness and Attitude of Pupil Teachers

	<i>Total</i>	<i>Environmental Education</i>					
		<i>Before Training</i>			<i>After Training</i>		
		<i>Env. Know.</i>	<i>Env. Aware.</i>	<i>Env. Attitude</i>	<i>Env. Know.</i>	<i>Env. Aware.</i>	<i>Env. Attitude</i>
N	919	491	491	491	428	428	428
Mean	62.3	71.2	60.02	50.6	73.5	64.9	50.8
S.D.	10.3	10.16	11.5	8.96	9.91	7.8	9.9

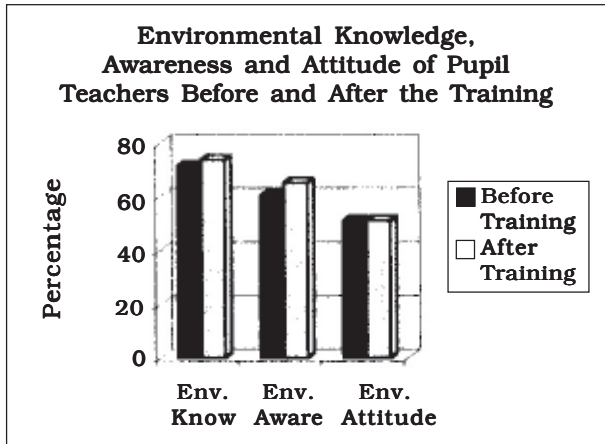


Fig. 1: Comparison of Environmental Knowledge, Awareness and Attitudes of Pupil Teachers Before and After the Training

and attitude before and after the training were found to be 0.13 and 0.17 in the same order. The environmental awareness and attitude show 0.02 and 0.17 correlation between them before and after the training respectively.

The results obtained reveal that significant positive correlation exist between the environmental knowledge and awareness of pupil teachers before as well as after the training. Though, positive correlation was observed

between the environmental knowledge and attitude of pupil teachers before and after the B.Ed. course, yet they were not found to be significant. Similarly, no significant correlation was computed between the environmental awareness and attitude of pupil teachers before and after the training.

Findings

- Pupil teachers before the training have less environmental knowledge,

TABLE 2
Showing correlation for Environmental Knowledge, Awareness and Attitude of Pupil Teachers Before and After the Training

Correlation Matrix for Before and After the Training			
			(Before *)
Categories	EK	EAw	EAtt
Environmental Knowledge (EK)	-	0.63 **	0.13
Environmental Awareness (Eaw)	0.55**	-	0.02
Environmental Attitude (Eatt)	0.17	0.17	-
** Significant at 1 per cent		(After i)	

awareness and attitude as compared to the after training.

- Significant positive correlation was observed between the environmental knowledge and awareness of pupil teachers before the training.
- The environmental knowledge and awareness of pupil teachers after the training show significant positive correlation.
- There was moderate correlation between environmental knowledge and environmental attitude before as well as after the training.
- The environmental awareness and attitude of pupil teachers before the training show very low positive correlation.
- There exists a moderate correlation between the environmental awareness and attitude of pupil teachers after the B.Ed. course.

Discussion

Pupil teachers after the training have better environmental knowledge and awareness than before the training. Similar results were found by Praharaj, (1991), who has reported that both the groups differ significantly in their level of environmental knowledge and the in-service group had a higher level. However, both the groups do not differ in their attitude related to environment. Shahnawaj (1990) has also recorded that trained and untrained secondary and higher secondary school teachers did not differ in their environmental attitude.

It is revealed that environmental education aspect of B.Ed. course is

sufficient for developing cognitive objectives but is insufficient to touch the affective and psychometric level or develop the positive attitudes, skills and values towards environment. Actually, environmental education is essential to develop insight and skills needed to influence not only environmental attitudes and behaviour in the students but also to stimulate their reorientation of values regarding the importance of environmental education. The development of environmental attitude is the key factor for pupil teachers to become an environmental facilitator. The finding is in support with Sushila Devi (1990) who concluded that the environmental studies curriculum of Andhra Pradesh did not cater to the essential needs of the learners for whom they were meant and the prescribed curricula did not adequately reflect the stated curriculum objectives. Praharaj, (1991) explored the level of environmental knowledge, attitude and its perception among pre-service and inservice secondary schools teachers in Puri district and observed that the pre-service teachers distinctly had poor knowledge regarding environment while in-service teachers moderately knew about it.

Most of the pupil teachers have good knowledge with average awareness and attitude towards environment but none of them have very good understanding, awareness and attitude relating to environment. There is a significant positive relationship between the environmental knowledge and awareness of pupil teachers and not significant relationship between environmental knowledge and attitude as well as between environmental

awareness and environmental attitude of pupil teachers. Praharaj (1991) has reported correlation between environmental knowledge and attitude.

From the result, it can be inferred that the pupil teachers having good knowledge reflect better awareness towards environment, but inspite of good knowledge they do not show positive attitude towards environment. Positive attitude is not reflected through their behaviour by the pupil teachers having better sensitivity for environment. The study is supported by the findings of Mohansundaram and Kumaram, (2002) who concluded that there is a significant relationship between the cognitive process and personality including different aspects of behaviour of prospective teachers.

Education has to be relevant to the needs and aspirations of the people living in the present fast changing society. During last three or four decades, environment has been a major concern for the whole of humanity. But the study of environment has so far not received adequate attention in our academic programmes. Genuine endeavour is required to minimise the gaps by intellectuals and material inputs. Alarming degradation and deterioration of environment and ecology endanger nature and its many habitats, and threatens the survival of the wisest species of the globe. This position is not an exaggerated one, but based on scientific analysis and calculations. This position compels intellectuals, scientists, scholars, academicians, administrators and even leaders to draw their attention towards this serious problem. This can not only solve the problem, but there is

also a need to create public opinion worldwide, in order to save our environment and sweet home 'Earth'. And for this very purpose, environmental education is needed.

Recognising this, the Supreme Court has directed the UGC to introduce a basic course on environment at every level of college education. Accordingly, the matter was considered by UGC and it was decided that a six months compulsory core model course in environmental studies might be prepared and compulsorily implemented in all the universities and colleges in India. The success of this course will depend on the initiative and drive of the teachers and the receptive students.

Teaching is the only profession entrusted with the task of nurturing human skills and capacities that will enable society to survive. Whatever the problems and difficulties that may arise in designing the strategy for implementing environmental education, to the students, the foremost need is to prepare the teachers. The irony of fate is that teachers themselves are not aware of the latest environmental efforts. According to Mike Connolly, a British Council expert "Of all the professions, teaching perhaps is the most complex and also the most difficult to practice." Our future on the earth depends upon how wisely we act today and how judiciously we use the earth's resources and embark on the path of sustainable socio-economic development.

The present syllabus of Uttaranchal for pupil teachers is not enough to break the ice therefore, an effective environmental education programme is needed for teachers necessary for

inculcating proper environmental values among the builders of the nation. School children must be made aware of the threat to their life and that of other species, because of the environmental degradation, caused by the attitude and conduct of their elders.

The next step will be to design suitable curricula for teacher education courses for preparing teachers as per the identified profiles. The logical implication of such a bold step on teacher education will be that curricula of teacher education programmes will now be determined by the requirement of the changed concerns of schooling. Teacher education will have to be given support for reorienting pre-service education for preparing such teachers as will be able to make their pupils appreciate the concern of sustainable development and influence their lifestyle.

The key to any change in the formal educational system is the teacher, who has to internalise a change in his/her role from one of 'giver of knowledge' to one of 'facilitator in the learning process'. If teachers are to be effective facilitators in bringing environmental education into teaching and learning, their capacities in understanding and internalising the characteristics of environmental education and skills in transacting these, need to be built and strengthened. One way to do this is through preservice and inservice orientation and training (Dhawan, 2003).

UGC has now introduced environmental education, as one of the compulsory papers at the higher level, which is an encouraging step to face this challenge. This course covers a total of 50 lectures and is graded for 100 marks.

Garhwal University however has introduced environmental education as an optional paper for the session 2003-04 for B.Ed. programme. The course content includes basic concepts and processes of environment and ecology, various types of pollution, biodiversity, role of school in environmental conservation etc. Practicals and assignments are also part of the course. But as it is an optional course, it was observed that only a small percentage of the pupil teachers go for environmental education as an optional paper. In the session 2003-04 it was found that of the total approximately only 7% pupil teachers opt for environmental education, whereas it must be made compulsory at this stage of education to meet the challenges facing our society. In order to impart effective teacher training in environmental education, an understanding of the aims and objectives of environmental education, its contents and approaches, efforts made in the field and the skills required for effective transmission etc., become a fundamental pre-requisite.

It is very essential to develop environmental resource efficiency among teachers so, environmental education should be made interdisciplinary, preparing people for global citizenship, and training them to be flexible, yet competent, analysts and decision takers. The prospective teachers will have difficult tasks to carry out in schools if they are not taught accordingly. Environmental consciousness can be developed among teachers by introducing the course of environmental education in teacher education programmes as well as in their teaching

subjects. In an attempt to narrow down and solidify the focus on what teacher should know in order to be an effective environmental facilitator, 'utilisation and not exploitation' should be the motto. In the process of continuously changing social and technological landscape, environmental education must always stay relevant to the needs and interests of the community.

"Environmental education is the study of developing a code of human behaviour i.e. environmental values to protect and improve our environment" (Dhawan, 2003). From the birth of the child to his last breath, it is the behaviour, which shapes the whole personality of the individual and teacher is the craftsman, who shapes the behaviour of the child.

Limitations of Teacher Education for Environmental Education

- (i) There is lack of adequate pre-service training in environmental education.
- (ii) There is also a lack of consensus on what should be the scope and content of environmental education at various levels of pre-service training programmes.
- (iii) While 'Environment' as a subject has been incorporated in school curricula, training in environmental education has not yet been infused in the curricula of teacher training courses. Thus teachers are not well equipped to deal with the new subject area.
- (iv) Equal status has not been given to environmental education in teacher's training courses, as

educational technology, multimedia education, computer education, etc.

- (v) 'Non-science' students who fear that they may not be able to grasp it do not generally choose environmental education as an optional paper.
- (vi) Pre-service training is usually a one time training module. This may help in orienting teachers, and perhaps motivate them in initiating environmental education. But this may be inadequate to sustain these efforts over a period of time.
- (vii) There is a need to provide some system through which teachers can receive ongoing support both through formal training programmes and through continued networking.
- (viii) There is a great need for relevant resource materials for teachers.
- (ix) There is a lack of trained personnel for effective implementation of environmental education.
- (x) There is a lack of funds for the effective implementation of environmental education programmes.

Teachers need to be prepared to become Environmental Education facilitators, who will proactively adopt the activity-oriented approach to teaching and learning through, about and for the environment. The effectiveness of environmental education relies heavily on the knowledge, skills and attitudes of the educator. Environmental education is not only a change in 'what' is being taught (the content), but also a new perspective on 'why' (the objectives and goals) and 'how' (the approaches and attitude).

'We ought to preserve the environment of which we are a part.'

To protect the environment, personal commitment and action is essential. All of us can take responsible action to protect the environment by reducing pollution and avoiding wasteful use of natural resources, to respect and protect plants and animals, to make our neighbourhood a healthier place to live in. Healthy environment is the base of healthier life. Our present President, Honorable A.P.J. Abdul Kalam in his public address on 26 January 2004, emphasised on environmental conservation and motivated children through taking oath for planting at least 10 trees for the sake of mother nature.

Recommendations

- i) Policy makers are required to make a policy for implementation of the reorientation of the curriculum of B.Ed. course especially in the field of environmental education.
- ii) They are also recommended to provide adequate weightage to environmental education in the course.
- iii) The administrators are recommended to regularly organise in-service training programmes in environmental education for teachers as well as for teacher educators.

Conclusion

From the results obtained, and the above discussion it is obvious that the knowledge, awareness and attitude towards environment including the

teaching skills for better transmission by teachers, play a crucial role in the development of a child's personality, which can be achieved by providing adequate environmental education to them, during their training programme. Though pupil teachers of Garhwal University have environmental knowledge, the awareness is less and they lack an attitude in the discussed matter. Environmental education portion of B.Ed. course of Garhwal University is sufficient for developing cognitive and affective objectives but is insufficient to touch the psychometric level or develop positive attitudes, skills and values towards environment, which is the core factor of environmental education. Therefore, keeping in view the present situation of Uttranchal, a well-planned and thoroughly scanned syllabus is needed to break the ice.

In a vast country like India, teacher education till very recently had remained unregulated. In order to appreciate the role of teachers in reorienting education towards sustainable development, it is necessary to appraise the existing B.Ed education programme about the place given to environmental education in its curriculum, the competencies focused, training materials and methods adopted. So, an effective syllabus must be developed for the pupil teachers including the concept of environmental education, work done in the area, content, various methods and skills needed for effective transmission of the matter and an evaluation technique should be developed for the pupil teachers to make them environmental facilitators.

Thus, it can be assured that if the training programme at all levels is reoriented in the direction of emphasising environmental education

concept, the next generation (taught by them) is sure to dwell in an eco friendly environment and lead a healthy and progressive life.

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In-service Training Programme for Chemistry Post Graduate Teachers

Learning from Feedback and Evaluation

R.S. SINDHU*
ALOK SHARMA**

Abstract

A 21 days in-service training programme for Chemistry Post Graduate Teachers was organised in the Regional Institute of Education (NCERT), Bhopal. The efficacy of the programme was tested by studying the performance of the participants on the basis of a pre-test and post-test. It was found that performance of the participants increased from 49.85% to 86.90%. The opinion of the teachers on different aspects of the training programme and a feedback were sought through a questionnaire. One of the suggestions was that the types of input in respect of contents; chemistry theory; chemistry practical; education should be 60:10:10 for 80 sessions assigned for the programme.

Key words: In-service training, methodology.

There are different variables which affect the outcome of the students in the classroom. One of the most important is the effect of the academic behaviour of the teacher (Shymansky and Matthews, 1974; Penick, 1976). This, in turn, brings to the fore the need of the teacher training for inculcating appropriate teaching behaviours.

In the pre-service teacher education, adequate emphasis on the content knowledge, integration of methods of teaching with the content and evaluation strategies, is made. However, continuing education of the in-service teachers is necessitated because of gaps and limitation of pre-service training, continuous changes in curriculum,

* Reader, Regional Institute of Education (NCERT), Shymala Hills, Bhopal

* Lecturer, V.N.S. College of Education, Bhopal

methodology, techniques, innovations and other developments in the education of different subjects as they take place from time to time. In the case of chemistry, a rapid expansion in knowledge and its application in technology is taking place. This advanced content is to be understood and assimilated by the teachers so that they are able to do justice in transaction of the content which calls for periodical in-service programmes. Various agencies and institutions such as colleges of education, DIETs, SCERTs, NCERT, Tribal Welfare Department are involved in the in-service training of the chemistry teachers. Different trends are taking place in chemistry teacher's training programmes. Kornhauser et al. (1980) have identified four main trends: (i) the move towards the training of teachers to make chemistry more relevant, more accountable and more involved with technology and society; (ii) the move towards making teachers more conversant and enable them to appreciate the potential of new teaching aids and techniques, in particular video equipments and computers; (iii) the move towards the use of variety of assessment techniques, especially those related to continuous assessment of psychomotor and affective skills; and (iv) the move towards making teachers more aware of how children learn science subjects and their learning problems in chemistry, as well as, alternative frameworks for the conceptualisation of ideas. Lately, there have been significant changes in the training programmes (Allsop and Benson, 1997; DfFE, 2000; Thair and Treagust, 1999). Use of information and communication technologies has also

increased enormously in the learning of all sciences and technology.

Keeping in view, the current trends in the training programmes, a 21 days in-service training programme for Chemistry Post Graduate Teachers was organised. Different inputs such as knowledge in chemistry content, practical skills, use of different models and methods of teaching, evaluation techniques, professional competence, learning through excursion were given. The efficacy of the programme was evaluated by administering a pre-test and a post-test. Opinions of the teachers and feedback were sought through questionnaires.

Process of the Study

Programme Format: The in-service training programme for Chemistry Post Graduate Teachers (PGTs) was organised in the Institute for 21 days. Twenty two participants attended the programme. Each day of the programme was divided into four sessions. Two sessions of the programme on the first day were devoted to registration and inauguration and the last two sessions of the last day were for feedback and report presentation, thus, leaving 80 actual sessions for inputs. Three sessions of one day were assigned for excursion.

Programme Inputs: In all sessions meant for inputs, deliberations on the areas; chemistry content enrichment (giving more emphasis on hand spots and new topics), clarifications related to some practical exercises in laboratory, models and methods of teaching, evaluation techniques, professional competence, teaching aids, learning through

excursions were made. For this task, the faculty of the Institute and some outside resource persons were involved. In one session, analysis of two question papers were made by the participants in workshop mode. Eleven participants analysed one paper and rest 11 another paper.

Evaluation of the Programme: The achievements of the participants were evaluated by holding a pre-test and a post-test. Evaluation of both the tests was made by a team of resource persons. The evaluation analysis of the question papers done by the participants was made by one of the authors. The rating of different inputs on a five point scale; outstanding, very good, good, satisfactory and poor was made by the participants through a questionnaire prepared for the purpose.

Feedback from the Participants: A questionnaire to get the feedback on different aspects of the programme was given to the participants. Feedback was sought about the contents of the inputs, the ratio of inputs about broad content areas; chemistry (theory and practical) and education, duration of the programme, learning through excursion and facilities.

Learning from the Evaluation and Feedback

The achievements of the participants in the pre-test and the post-test are given in Table 1 and 2 respectively. A perusal of the Tables indicate that the overall average percentage in the pre-test was 49.85 and in the post-test 86.90%. This is a significant improvement in the performance of the participants. This

learning outcome was expected as the participants were receptive and mature. One more reason for high achievement can be due to holding of a post-test immediately after the programme reducing the chances of retention loss due to a passage of time.

The analysis of questionnaire, meant for giving observations on quality of inputs given in class and lab showed that the participants had rated as outstanding the lectures on bonding in coordination compounds, grading system, solid state, digestion, thermodynamics, transition metals, solution chemistry, diagnostic testing and remedial measures and photosynthesis. They rated 'very good' the inputs on guidance and counselling, chemical kinetics, continuous and comprehensive evaluation, biomolecules and isomerism in organic compounds.

Some lectures were rated as 'good' and some 'satisfactory' and none 'poor'. In case of practicals, they opined that chromatography was 'outstanding' and mixture analysis 'very good'.

A perusal of their reporting on the input in class and laboratory indicate that the teachers had appreciated those inputs in which better strategies for teaching were used and new topics were discussed as their learning in those areas had enhanced. Research in developmental and cognitive psychology theories of constructivism supports the idea that information embedded within meaningful contexts (Brooks and Brooks, 1993) and teaching practices that arouse interest, can increase learning (Sandoval, 1995).

The opinion of the participants was sought through a questionnaire for the

ratio of inputs in terms of chemistry theory, practical and education for 80 sessions. The combination for chemistry theory: chemistry practical: education were: (i) 56:8:16, (ii) 50:10:20, (iii) 60:10:10, (iv) 60:15:5, (v) any other. Majority of participants were in favour of chemistry theory - 60, chemistry practical - 10, education - 10. An analysis of the two question papers set by the two groups of teachers (one question paper by 11 teachers and another by rest 11 teachers) was done by one of the authors. The evaluation showed that the participants had acquired mastery in identifying knowledge type questions but in one question paper, two test items were reported as application type questions in place of understanding while in the second paper there was a mistake in reporting a knowledge question as understanding and an application as understanding.

The participants also suggested that at least two excursions should be organised for studying the application of chemistry in different fields.

The workshop mode of question paper analysis was favoured by the trainees. UNESCO (1985) also has appreciated the workshop mode of training. It reports that the participants

are active; both mentally and physically. The messages that are conveyed are not transmitted by direct testing but through active involvement. Understanding is achieved by each participant from within rather than from outside; it comes through reflecting on direct experiences and on new ideas which may be presented for discussion.

The feedback also suggests that the duration of in-service programme should be 15 days as the short period maintains the seriousness and retains interest and absorption in the programme.

Conclusion

The in-service training for teachers represents an important area of concern that is no less significant than that of their initial training as knowledge explosion in all disciplines, more so in case of chemistry, is taking place at a fast pace. New learning techniques have entered the field of education. Experts estimate that, at present, the quantity of ideas, information and concepts which a teacher has to assimilate, doubles during his studies and increases eightfold in the course of his working life. Therefore, in-service training programmes should be organised frequently.

TABLE 1
Pre-test: Achievements of Chemistry Post Graduate Teachers (N=22)

<i>S.No. of the Teacher</i>	<i>Inorganic</i> 30	<i>Organic</i> 30	<i>Physical</i> 30	<i>Total Chemistry</i> 90	<i>Practical & Education</i> 10	<i>Total achievement</i> 100
1.	12	14	15	41	5	46
2.	14	7	14	35	8	43
3.	19	21	10	50	5	55
4.	22	11	9	42	4	46
5.	25	10	12	47	2	49
6.	19	10	12	41	6	47
7.	23	11	18	52	5	57
8.	29	23	13	65	5	70
9.	19	4	00	23	3	26
10.	22	11	14	47	4	51
11.	28	20	15	63	4	67
12.	18	13	15	46	6	52
13.	25	12	16	53	00	53
14.	18	8	11	37	6	43
15.	12	9	8	29	2	31
16.	22	22	21	65	2	67
17.	17	13	14	44	3	47
18.	19	15	14	48	.5	53
19.	26	20	14	60	4	64
20.	18	12	9	39	4	43
21.	18	10	8	36	1	37
22.	Did not appear					
Average percentage	-	-	-	-	-	149.85%

TABLE 2
Post-test: Achievement of Chemistry Post Graduate Teachers (N = 22)

<i>S.No. of the Teacher</i>	<i>Inorganic</i> 30	<i>Organic</i> 30	<i>Physical</i> 30	<i>Total Chemistry</i> 90	<i>Practical & Education</i> 10	<i>Total achievement</i> 100
1.	12	1				
1.	23	26	25	74	9	83
2.	28	24	24	76	9	85
3.	26	29	26	81	7	88
4.	26	23	26	75	7	82
5.	30	24	25	79	8	87
6.	30	26	27	83	8	87
7.	30	26	27	83	8	91
8.	28	24	26	78	10	88
9.	28	24	25	77	9 .	86
10.	26	24	24	74	9	83
11.	28	30	27	85	8	93
12.	30	27	27	84	10	94
13.	29	25	29	83	8	91
14.	23	25	28	76	8	84
15.	24	25	24	73	8	81
16.	27	30	28	85	10	95
17.	25	30	28	83	8	91
18.	20	27	26	73	8	81
19.	30	26	24	80	10	90
20.	25	23	26	74	8	82
21.	27	24	24	75	8	83
22.*	27	24	25	76	10	86
Average percentage	-	-	-	-	-	86.90%

* Did not appear in Pre-test. Therefore, this performance has not been considered.

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Influence of Cooperative Learning on Academic Achievement

REKHA AGRAWAL*

NEETU CHAWLA**

Abstract

The aim of the present study was to prepare a Cooperative Learning Strategy Based Instructional Material (CLSBIM) and to see its effectiveness in terms of academic achievement of students at elementary level. CLSBIM consisted of 20 lesson plans based on Cooperative Learning strategies, having various experiments, activities and thought provoking questions in which children were actively involved. A single group pre-test and post-test design was used to collect data before and after the CLSBIM treatment. The performance of the students was recorded in terms of scores. The data were statistically analysed using t-test and it was concluded that CLSBIM was significantly effective in enhancing the level of academic achievement.

Key words: cooperative learning strategy, academic achievement

Children, the citizens of tomorrow, are the future builders of the nation. Therefore, it becomes essential to develop a child's logical and creative thinking optimally. But these days thinking process and academic achievement of students have been suppressed by competitive environment of our schools. How students perceive each other and interact with one another is a neglected

aspect of instruction. There are three basic ways in which students can interact with each other as they learn.

They can compete to see who is "best", they can work individualistically towards a goal without paying attention to other students or they can work cooperatively with a vested interest in each other's learning as well as their own. Of the three interaction patterns,

* Reader, P.G. Dept. Of Education, V.M.L.G.College, Ghaziabad

** Lecturer, Dept. Of Education, Ideal College of Education, Ghaziabad

competition is presently most dominant. Researches indicate that a vast majority of students view school as a competitive enterprise where one tries to do better than other students.

This competitive expectation is already widespread when students enter school and grows stronger as they progress through schools. In competition, there is a negative interdependence among goal achievements. It has been seen that this cutthroat competition is ruining the environment. Student's thoughts are leading towards negative processes; they are not using their brains for creative thinking or to retain something permanently. This competitive environment is suppressing the academic achievement of students. Johnson & Johnson and Slavin (1991) claim that group techniques such as Cooperative Learning and Peer Tutoring may solve these problems if applied systematically.

The term "cooperative learning" refers to an instruction method in which students at various performance levels work together in small groups towards a common goal. The students are responsible for one another's learning as well as their own. Thus, the success of one student helps other students to be successful.

Over 122 studies conducted between 1924 and 1981 provide clear evidence that cooperative learning experiences promote higher achievement than their competitive or individualistic counterparts. Cooperative activities also tend to promote the development of higher-order levels of thinking, essential communication skills, improved motivation, positive self-esteem, social awareness, and tolerance for individual

differences. Specifically, recent research links regular cooperative experience in the classroom with gains in the areas of student achievement, critical and creative thinking, positive attitudes towards subject and school, group interaction and social skills. Cooperative learning helps students feel successful at every academic level. In cooperative learning teams, low-achieving students can make contributions to a group and experience success, and all students can increase their understanding of ideas by explaining them to others (Featherstone, 1986). Cooperative learning has also been shown to improve relationships among students from different ethnic backgrounds. Slavin (1980) notes: "Cooperative learning methods [sanctioned by the school] embody the requirements of cooperative, equal status interaction between students of different ethnic backgrounds..." For older students, teaching has traditionally stressed competition and individual learning. When students are given cooperative tasks, however, learning is assessed individually, and rewards are given on the basis of the group's performance (Featherstone, 1986). When children are taught the skills needed for group participation when they first enter a structured setting, the foundation is laid for later school success. Cooperative learning (CL) is an instructional paradigm in which teams of students work on structured tasks (e.g., homework assignments, laboratory experiments, or design projects) under conditions that meet five criteria: positive interdependence, individual accountability, face-to-face interaction, appropriate use of collaborative skills,

and regular self-assessment of team functioning. Many studies have shown that when correctly implemented, cooperative learning improves information acquisition and retention, higher-level thinking skills, interpersonal and communication skills, and self-confidence (Johnson, Johnson, and Smith, 1998). The present view of small group cooperative learning is embedded in Piaget and Vygotsky's view that group interaction encourages cognitive development (Noddings, 1989). As a result, cooperative learning groups are usually child-centered with an emphasis on group processes, problem solving, attitudes and social development. From the research conducted through the Center for Research in Social Behavior, University of Missouri, Columbia, it is evident that an increase in interest and use of small group instruction prevails in American classrooms. Good, Reys, Grouws and Mulryan (1988) report some of the advantages of small group cooperative learning as follows:

- Students become actively involved in their own learning and therefore have control over it;
- Interaction increases group communication skills;
- Working together towards a common goal leads to significant gains in academic achievement, self confidence as a learner and social relationship; and
- Cooperative learning leads to the enhancement of higher order thinking skills.

Research studies overwhelmingly favour cooperative learning (CL) as the

most effective form of learning (Johnson & Johnson 1984). Yet, despite all the studies and anecdotal experiences reported by teachers and researchers, the paradigm remains largely unused. *The study tried to show the benefits of cooperative learning environment on the academic achievement.*

The term achievement in academic subjects generally refers to the gains in instructional objectives. Achievement is defined as an outcome measure for some type of performance.

Objective

1. To prepare cooperative learning strategy based instructional material for the development of creative thinking.
2. To find out the effectiveness of CLSBIM in terms of development of creative thinking.

Hypothesis

To find the gain in academic achievement of Class V students using Cooperative Learning Strategy Based Instructional Material (CLSBIM) treatment, a hypothesis was framed and tested:

The prepared Cooperative Learning Strategy Based Instructional Material does not influence significantly the academic learning out comes of the students at elementary level.

The Study

Present study entitled as "Influence of Cooperative Learning on Academic Achievement among 5th graders" involve two variables out of which Cooperative

Learning is independent variable and Academic Achievement is dependent variable. The present study intends to experiment the effect of independent variable on the dependent variables. The fundamental aim is to find out the effectiveness of Cooperative learning environment on Academic Achievement among 5th Graders. A pre-test has been given to the sample of 40 students of class V, then the two units containing seven chapters are taught following the lesson plans developed in the form of instruction material based on cooperative learning strategies. After completion of every chapter, self-assessment by student, team assessment by team leader, and by the teacher was done. After completion of teaching the post-test has been given to the same group. Thus obtained data has been statistically analysed.

Treatment and Data Gathering Instrument

Cooperative Learning Strategy Bases Instructional Material (CLSBIM)

The CLSBIM has been developed on the basis of 'Cooperative Learning strategies' to incorporate Cooperative Learning environment. Two units have been selected for the study that means instructional material has been developed on these two units. The units have been selected from the course book of V Class (NCERT published). 20 lesson plans based on cooperative learning strategies have been prepared from these two units.

The CLSBIM developed for class V has been implemented in the class during regular periods. Each period has been

divided in two sessions.

1. Cooperative Learning strategy based Activity session
2. Assignment based Problem session

In the Cooperative Learning Strategy-based Activity Session

The first task had been to clearly specify the academic task. Next the Cooperative learning structure has been explained to students. After that Groups have been formed using random selection method. There have been 40 students in the Cooperative Learning treatment group. Thus there have been ten groups of four. After that an instruction sheet that pointed out the key elements of the cooperative process has been distributed. As part of the instructions, students have been encouraged to discuss 'why' they thought as they did regarding solutions to the problems. They have also been instructed to listen carefully to comments of each member of the group and be willing to reconsider their own judgment and opinions. It insisted upon that every group member must be given an opportunity to contribute his/her ideas. After that the group would arrive at a solution.

Strategies Employed by the Investigator in CLSBIM Treatment

- Lesson Plan 1. – Learning Together
- Lesson Plan 2. – Group Investigation
- Lesson Plan 3. – Think-pair-share
- Lesson Plan 4. – Numbered Heads Together
- Lesson Plan 5 - Team Word Webbing
- Lesson Plan 6 – STAD
- Lesson Plan 7 – Round-Robin Brain Storming

- Lesson Plan 8 - Match Mine
- Lesson Plan 9 - Pairs Check
- Lesson Plan 10 - Co-op cards
- Lesson Plan 11 - TGT
- Lesson Plan 12 - Pose a question
- Lesson Plan 13 - Learning Together
- Lesson Plan 14 - Inside-outside Circle
- Lesson Plan 15 - Learning Together
- Lesson Plan 16 - Jigsaw
- Lesson Plan 17 - Group Investigation
- Lesson Plan 18 - Group Investigation
- Lesson Plan 19 - Brain Storming
- Lesson Plan 20 - STAD

In the Problem Session

A problem has been placed in front of the students to check each and every student individual accountability so that it could be analysed how each and every student is performing in this type of environment and how much they retain. The teacher has tried to involve the whole class in the problem session to make it successful.

Team members have been assigned roles that rotated from assignment to assignment. The coordinator has organised working sessions and made sure that all team members understood their responsibilities. The recorder has been asked to present the final solution set. A checker has been asked to proofread the final solution set, verify that all team members have understood both the solutions and the problem solving strategies used to obtain them, and has been given primary responsibility for submitting the solution set on its due date.

The teams have been periodically asked to submit assessments of how well they are functioning. So many

Cooperative learning strategies like Jigsaw, Group Investigation, Round Robin, Think-pair-share etc. have been applied on students while teaching content.

Academic Achievement Test

Time required to solve the achievement test has been one hour. Maximum marks allotted for the assignment have been 60. The above considerations have been taken into account while preparing the E.V.S. achievement test for the present study. A questionnaire has been prepared to test the academic learning outcomes of the children. For each test item one score has been given for each right answer.

Test for Assessment of Cooperative Learning

For Cooperative Learning to be effective, the instructor must view teaching as a process of developing and enhancing the student's ability to learn. With Cooperative Learning instructional strategies, it is important that students be given an opportunity to develop assessment criteria to evaluate an activity. This gives the student ownership of the assessment tool/criteria. When cooperative learning is used in instruction and assessment, there are three levels of assessment and evaluation - the assessment by individual, by the group and by the teacher. Keeping above considerations in mind the investigator constructed a questionnaire to test Cooperative Learning quantitatively. In this study three cooperative learning tools are developed: Children report on

cooperative Learning and team report on cooperative learning and teacher's report on cooperative learning.

Instructions for administering and scoring procedure have been finalised. Assistance has been offered so that they could follow the instructions properly. The students have been encouraged to answer each item honestly by assuring that their replies would be kept confidential. It has been emphasised that that there is nothing right or wrong about the items and no item should be omitted. No time limit has been assigned. Four response categories have been provided for the expression of their agreement to each statement. For each test item, scoring has been given based on teacher decided criteria. Criteria have been based on fulfillment of various dimensions of cooperative learning. Selected 20 items for children's report on cooperative learning and 10 items for team's report on cooperative learning constructed the final form of the inventory. Summing up of all the scores obtained on each dimension has yielded the total score of cooperative learning assessment.

Research Design

First of all, the pre-test of achievement test and cooperative learning test has been administered on students prior to giving treatment. The Pre-test has been helpful in assessing students' prior knowledge & cooperative learning behavior. A Post-test has been administered to measure treatment effects. The total Treatment has lasted for 30 days.

Results Related to the Academic Learning outcomes of Class V Students

The aim of the study has been to test whether the CLSBIM treatment has significant effect or not on Academic learning outcomes, the pre-test and post-test have been administered before and after the treatment respectively. Mean of pre-test is 20.0 and the mean of post-test is 32.5. The mean difference is 12.5. The S.D. for both the pre-test and post-test scores is 8.17 and 7.7 respectively. Correlation in both pre-test and post-test scores have been calculated and the value drawn is 0.72. The S.E. of mean difference is 0.73. The t-value so obtained is 19.5. The level of significance given in the D-table at 0.01 levels is 2.66 and the significance level at 0.05 levels is 2.00. This shows that the t-value of test is significant at both the levels; means CLSBIM treatment is significantly effective.

The result of the study stated that the prepared instruction material is significantly effective for the gain in 'Academic learning outcomes' of the students at elementary level.

Discussion of the Findings

The results and findings related to these hypothesis shows that prepared instructional material is significantly effective for improving the 'Academic learning outcomes' of the students at elementary level.

In the present study, the cooperative learning medium provided students with opportunities to analyse, synthesise, and evaluate ideas cooperatively. The

informal setting facilitated discussion and interaction. This group interaction helped students to learn from each other's scholarship, skills, and experiences. The students had to go beyond mere statements of opinion by giving reasons for their judgments and reflecting upon the criteria employed in making these judgments. Thus, each opinion was subject to careful scrutiny. The ability to admit that one's initial opinion may have been incorrect or partially flawed was valued.

Implications

Cooperation is a valuable commodity and works best when it is freely given and indirectly encouraged. It promotes goodwill toward men and women, and is a gift that is always appropriate.

For Cooperative Learning to be effective, the instructor must view

teaching as a process of developing and enhancing student's ability to learn. The instructor's role is not to transmit information, but to serve as a facilitator for learning. This involves creating and managing meaningful learning experiences and stimulating students' thinking through real world problems. Future research studies need to investigate the effect of different variables in the cooperative learning process. Group composition: heterogeneous versus homogenous, group selection and size, structure of cooperative learning, amount of teacher intervention in the group learning process, differences in preference for cooperative learning associated with gender and ethnicity, and differences in preference and possibly effectiveness due to different learning styles, all merit investigation.

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Primary Education Facilities in Bihar: An Analysis

RAJESH TAILOR*

Abstract

This paper presents statistical analysis of primary education facilities in Bihar focusing on access to school, school building, girls enrolment and teachers. Some important indicators as Percentage of Female Teachers, Gross Enrolment Ratio (GER) and Pupil-Teacher Ratio (PTR) have been computed for analysis. It has been found that in rural areas 88.92% habitations have primary stage schooling facilities within a distance of one kilometer. Girls enrolment is 43.17% and PTR is 83. Correlation coefficient shows positive relationship between Gross Enrolment Ratio for girls and Female teachers percentage. Similarly Gross Enrolment Ratio for girls and percentage of Pucca Building has positive correlation coefficient. This relationship indicates the need for improvement in percentage of female teachers and pucca building.

Key words: primary education, habitations, Sarva Shiksha Abhiyan (SSA), gross enrolment ratio, pupil-teacher ratio and correlation coefficient.

Article 45 of our constitution says that state should strive to provide free and compulsory education for children upto age of 14. Report of the Education Commission 1964[1] mentioned that this was to have been achieved by 1960. Thereafter, National Policy on Education 1986 (with modifications undertaken in 1992) [2] has emphasised on achieving the goals of universal elementary education. Many programmes have been

launched by the government e.g. Operation Black Board, Teacher Education, Mahila Samakhya and District Primary Education Programme (DPEP). Unfortunately this objective has not been achieved so far. Now, *Sarva Shiksha Abhiyan (SSA)*[3] was launched in 2000. One of the goals of SSA is that all children should complete primary education by 2007 and elementary education by 2010. Evaluation of the

* Department of Educational Surveys and Data Processing, NCERT, New Delhi 110 016

work done under SSA is also a part of It. The present study is a step towards the ground reality of primary education in Bihar. All India education surveys conducted by NCERT have been useful sources of data in educational planning and formulation of policies. Recently NCERT has released a report “Provisional Statistics” of “Seventh All India Education Survey” (as on September 30, 2002) [4]. This report and the website <<http://7thsurvey.ncert.nic.in>> are main sources of data for the present study.

Bihar is located in the east part of India. This state has 37 districts. It is surrounded by Uttar Pradesh, Jharkhand and West Bengal. The area of Bihar is 94,16,300 square kilometers. Bihar has a total population 8,28,78,796 (Census 2001). Its male-female ratio is 1000 : 933. Education has always been important but perhaps ever more so in man’s history than today. In a science based world, education and research are crucial to the entire development of the country. In the post independence period a major concern of the government of India and of the states has been to give increasing attention to education as a factor to national progress and security.

Access to School

As per SSA norms there should be primary education facilities within one kilometer of every habitation. In rural

areas, Bihar has 73,030 habitations. Out of these 88.92% habitations have primary stage schooling facilities within a distance of one km. i.e. there are still 11.08% habitations without primary stage education facilities. Maximum percentage of habitations having primary stage facilities within one kilometer is 97.87% in Patna district and minimum is 76.16% in Kishangang district. Distribution of habitations having primary stage facilities within one kilometer is given in the Table No.2.1.

Lot of efforts are being made for education of all but unless and until children get access to school, other efforts would not be very effective. Therefore, hard work is needed in the field of accessibility i.e. habitations without primary stage facility should be identified and in each habitation atleast primary stage facilities up to one kilometer must be available, without this it would be very difficult to achieve the target of *Education for all*.

Primary Schools

In Bihar there are 40,511 primary schools. Out of these 38,428 schools are in rural areas and remaining 2,083 in urban areas. In comparison to Sixth Survey (1993) the growth of primary schools is 10.75% in rural area, 4.67% in urban area and overall growth is 10.42%. The maximum schools are in Patna district i.e. 2,583 whereas, the

TABLE 1
Habitations Having Primary Stage Schooling Facilities within 1 Km.

Percentage	75-80	80-85	85-90	90-95	95-100	Total
No. of Districts	2	6	8	12	9	37

minimum 220 schools in Sheohar district. The Distribution of primary schools is given in the Table 3.1.

Let us compare the growth of primary schools in Bihar with neighbouring states Jharkhand, Uttar Pradesh and West Bengal.

It is observed from the Table 3.2 that primary schools growth in Bihar is satisfactory in comparison to the neighbouring states.

School Building

In Bihar 78.69% primary school buildings are *Pucca* and 11.68% buildings are Partly *Pucca*. But 9.63% primary schools are still running in Kuchcha building/ Tent/ Open space. In twelve districts namely Banka, Buxar, Gopalganj, Jaumi, Lakhisarai, Munger, Pashchim champaran, Patna, Purnia, Saharsa, Sheohar and Vaishali 10% to 23% primary schools in rural areas as well as in total area are running in Kuchcha building/ Tent/ Open space.

Madhubani district has minimum 3.62% primary schools with Kuchcha Building/ Tent/ Open Space whereas Vaishali district is having maximum 22.40%. The average percentage of the state is 9.63. It is to be pointed out that in Patna district 22.38 % primary schools are running in Kuchcha building / Tent/ Open space. Table 4.1 presents district - wise position of school building.

Enrolment

Total enrolment in primary schools is 65,00,986. Out of this 28,06,159 are girls and 36,94,827 are boys i.e. 43.17% girls and 56.83% boys. Girls enrolment percentage for India is 47.39%, hence for Bihar it is less by 4.22%.

An indicator, which indicates children participation in schools, is Gross Enrolment Ratio. *GER for primary stage* shows enrolment at primary stage out of 100 children of age group 6-11. GER for Total (Boys+ Girls) in Bihar is 72 i.e. out of 100 children only 72

TABLE 2
Distribution of schools

Number of Schools	0-500	500-1000	1000-1500	1500-2000	2000-2500	Total
Districts	3	14	14	3	3	37

TABLE 3
Growth of Primary Schools in Bihar and Neighbouring States

State	Growth (in percentage)		
	Rural	Urban	Total
Bihar	10.75	4.67	10.42
Jharkhand	6.39	-5.09	5.72
Uttar Pradesh	48.23	48.82	48.32
West Bengal	3.49	- 1.43	2.66

TABLE 4
District-wise Position of School Buildings

S. No.	<i>District</i>	<i>Pucca Building (in %)</i>	<i>Partly Pucca Building (in %)</i>	<i>Kuchcha Building/Tent/Open Space (in %)</i>
1	2	3	4	5
1	Araria	78.27	12.21	9.52
2	Aurangabad	86.88	5.23	7.89
3	Banka	86.31	2.74	10.95
4	Begusarai	71.06	22.87	6.07
5	Bhagalpur	84.51	6.62	8.86
6	Bhojpur	82.57	9.79	7.65
7	Buxar	80.79	7.16	12.04
8	Darbhanga	80.43	9.70	9.87
9	Gaya	82.87	9.67	7.46
10	Gopalganj	80.62	8.65	10.74
11	Jamui	84.46	3.98	11.55
12	Jehanabad	79.61	13.67	6.72
13	Kaimur (bhabua)	91.85	2.76	5.39
14	Katihar	88.48	5.34	6.1
15	Khagaria	74.53	13.67	11.80
16	Kishanganj	87.82	3.09	9.09
17	Lakhisarai	78.40	3.34	18.26
18	Madhepura	89.29	3.73	6.99
19	Madhubani	94.11	2.27	3.62
20	Munger	81.68	6.53	11.79
21	Muzaffarpur	81.02	12.05	6.93
22	Nalanda	74.98	16.20	8.82
23	Nawada	87.64	7.94	4.42
24	Pashchim Champaran	78.36	9.67	11.97
25	Patna	64.69	12.93	22.38
26	Purba Champaran	75.51	13.66	10.84
27	Purnia	74.09	11.79	14.11
28	Rohtas	81.66	12.04	6.30
29	Saharsa	81.01	8.57	10.43
30	Samastipur	66.49	28.52	4.99
31	Saran	65.97	26.23	7.79
32	Sheikhpura	88.33	6.61	5.06
33	Sheohar	77.73	10.91	11.36
34	Sitamarhi	80.23	14.49	5.28
35	Siwan	88.42	6.17	5.42
36	Supaul	76.45	15.48	8.08
37	Vaishali	38.36	39.24	22.40
	Bihar	78.69	11.68	9.63

children of age-group 6-11 are coming to primary schools and remaining are out of the system. GER for girls is 64 in Bihar, which is having 34th rank in India. Districts namely Araria, Begusarai, Darbhanga, Kaithar, Lakhisarai, Nalanda, Nawada, Patna, Purba Champaran, Rohatas, Saharsa, Sheikhpura and Sheohar have girls GER less than 64. In rural areas GER for girls is 65 and for Total (Rural + Urban) 74, that indicates higher participation of girls in rural area as compared to Total. District Kaimur (Bhabua) has maximum GER 91 and 88 for total and girls respectively. District Araria has minimum GER 49 for total and 38 for girls. If GER of Bihar is compared with that of neighbouring states, we get the following picture.

It is observed from the above table that Bihar has minimum GER in

comparison to neighbouring states. West Bengal is better than Bihar, Jharkhand and Uttar Pradesh.

Table 5.2 shows positive relationship between GER for girls and Female Teacher Percentage. Correlation between GER for girls and percentage of Pucca Building is also positive.

Teachers in Primary Schools

Teacher is a key factor for an education system, without which it is not possible to educate the children. There are 76,143 teachers working in primary schools. Out of these 13,703 are female teachers. 2,061 Para-teachers and 701 Part-time-teachers are also working in primary schools. Female teachers percentage in Bihar, Jharkhand, Uttar Pradesh and West Bengal is given in Table 6.1.

Table 6.1 exhibits female teachers participation in teaching in primary

TABLE 5
Gross Enrolment Ratio of Bihar, Jharkhand, Uttar Pradesh and West Bengal

State	GER					
	Rural			Total		
	Boys	Girls	Total	Boys	Girls	Total
Bihar	81	65	74	79	64	72
Jharkhand	84	68	76	79	67	73
Uttar Pradesh	89	87	88	90	87	88
West Bengal	104	104	104	100	101	101

TABLE 6
Correlation Coefficient

Factor	Correlation coefficient
Female Teacher percentage and GER for girls	0.259
Pucca Building percentage and GER for girls	0.149

TABLE 7
Percentage of Female Teachers in Bihar and Neighbouring States

<i>State</i>	<i>Rural</i>	<i>Urban</i>	<i>Total</i>
Bihar	15.40	60.32	18.20
Jharkhand	17.66	61.49	20.85
Uttar Pradesh	26.49	55.40	33.23
West Bengal	18.40	50.81	24.98

schools. It clearly shows that females are not contributing much in Bihar, only 15.40% in the rural areas which is very low. This indicates status of women education and their empowerment in the state. But in urban areas the percentage of female teachers is 60.32, which is better than Uttar Pradesh and West Bengal. The overall female teacher percentage in Bihar is lowest in India.

Number of schools is increasing in Bihar but teachers are decreasing. In comparison to Sixth Survey (1993) growth of primary schools in rural area is 10.75% but number of teachers is decreased by 5.58% (Excluding Para-teachers). Similarly, in urban areas growth of primary schools is 4.67% whereas the number of teachers has been reduced by 14.95 percent. This opposite trend is not good for the health of education system. Bihar has 35th rank in female teachers percentage in the country.

Quality Aspects of Primary Education

From all angles primary education in Bihar ised by the information that 3.56% primary schools are without teachers. The districts in which more than 8% schools are without teachers are Begusarai, Bhagalpur, Jamui and

Munger. In Munger district 15.06 percent primary schools have no teacher. SSA clearly states that there should be atleast two teachers in a primary school, but still 23.72% primary schools have only one teacher. Out of 37 districts, 20 districts have more than 20% schools which are run by one teacher. Maximum 41.03% and minimum 7.49% primary schools in Jamui and Begusarai districts respectively are in the hands of only one teacher. If we look at female participation in teaching, only 18.20% female teachers are working in Bihar which is lowest in the country. 15 districts have less than 15% female teachers. Munger districts with 39.66% and Kishanganj with 3.85% female teachers are on top and bottom positions respectively. Patna district has only 25.33% female teachers. Another indicator to asses the quality of education is PTR, which gives the information about the number of pupils per teacher. For Bihar PTR is 83 that is very high, through which it is very difficult to produce the quality teaching. SSA has a concept of one teacher for forty students, but in Bihar it is more than double of this criterion. Unfortunately not a single district fulfills this criterion in the state. All the districts have 60 or more PTR. Maximum PTR is

in Gaya district, which is 103 and Nalanda district has minimum 60. Thirty-four districts have PTR 70 or more than that.

Findings

- (i) From Table 2.1, it is observed that the number of districts below 85% habitations having primary stage education facilities within one km. is 8. These districts are Madhepura, Samastipur, Gopalganj, Banka, Kaithar, Araria, Jamui and Kishanganj. It may be improved by opening new primary schools in the mentioned districts.
- (ii) Growth of primary schools is larger for rural as well as total in comparison to the surrounding states except Uttar Pradesh. It is necessary to improve the growth of schools in urban areas.
- (iii) It is found that 9.63% primary schools are running in Kuchcha building/ Tent/ Open space. It is to be noted that in Vaishali district 22.40% schools are running in Kuchcha building/ Tent/ Open space. Therefore, efforts should be made to convert the kuchcha school buildings into pucca buildings.
- (iv) Gross enrolment ratio for girls and percentage of pucca building has positive correlation i.e. if percentage of pucca building is increased, it will also improve the GER for girls.
- (v) Rank of Bihar in GER is 34, which is last but one in country. For improving GER, attention should be paid towards mid-day-meal scheme, merit scholarship, school infrastructure and female teachers.
- (vi) Bihar has lowest percentage of female teachers in India, which is 18.20%. Positive correlation between GER for girls and percentage of female teachers indicates that female teachers participation can bring children to school.
- (vii) Pupil -teacher ratio in Bihar is 83, which is highest in the country. It must be reduced as per SSA norms. One of the reasons behind this high Pupil-teacher ratio is negative growth of teachers, which may be due to retirement of the teachers. Therefore, new teachers should be recruited to reduce this ratio and to improve the teaching quality.

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Book Reviews

Language Disadvantage: The Learning Challenge in Primary Education. Dhir Jingran, APH Publishing Corporation, 5 Ansari Road, Darya Ganj, New Delhi 110 002. Price Rs. 394/-, pp. 193.

In pluralistic Indian society, use and development of language in education context is riddled with complexities. Often a classroom includes children from multilingual background. Many a time children are not able to understand the language the teacher uses for teaching. This not only affects children's cognitive development but also the social and affective development leading to low levels of self-confidence and self-esteem. Criticising this methodology of teaching through unfamiliar language i.e. *monolingual submersion*, this book of a research study reflects on the learning problems of children emerging due to this in the light of data collected from four states viz, Assam, Gujarat, Orissa, and Madhya Pradesh. This work includes identification of linguistic diversity and the types of school situations based on the first language of the child, the teacher's language proficiencies and the mediums of instruction in each state and one identified district and block in each of these states. In addition, detailed classroom studies were undertaken in eight primary schools in these states. A district profile has also been developed for one district each in the states of Chattisgarh and West Bengal.

In the introduction, the book presents a classroom scene of primary

school in a remote tribal area in Chhindwara district of Madhya Pradesh as: *The children seemed totally disinterested in the teacher's monologue. They stared vacantly at the teacher and sometimes at the blackboard where some alphabets had been written. Clearly aware that the children could not understand what he was saying, the teacher proceeded to provide even more details and realizing that the young children were completely lost, he asked them to start copying the alphabets from the blackboard.*

With this the author makes a ground to discuss learning problems of tribal children due to their non-comprehension of classroom instruction, which is generally in a language different from their own language that they use to communicate. The book indicates that almost 25 per cent of all primary school going children face a moderate to severe and about 10 – 12 per cent face a severe learning disadvantage owing to their language background. The book consists of seven chapters followed by appendices outlining fieldworks, references and index. First chapter is an elaborated overview of the linguistic diversity in our country by highlighting results from the census, some other surveys carried out in the past decade and the field work undertaken for this report. It brings out the complexity of the socio-linguistic situation in the country in terms of variations in dialects, language used at home and outside, attitude and preferences of the community towards its own and other language, prevalence of link or contact languages, the extent of

bilingualism, case of Urdu and increasing demand of English, etc. It also mentions implications for the medium of instruction at the primary stage of schooling.

The second chapter attempts to categorise the diverse language situation of teaching in the primary school in our country. Thus several school / classroom situation types have been delineated based on the dimensions of a first language of the children, which is very similar to standard language used at school, first language of the children is different from the medium of instruction, classroom includes bilingual/multilingual children etc. It also discusses learning problems of children in these situations who are at double disadvantage of having to try and learn an unfamiliar language and to simultaneously attempt to understand new information and concepts being thrown at them in this unfamiliar language. The third chapter provides an analysis of the methodology in classrooms and the performance of children of grades one and five in two schools each in the four states of Madhya Pradesh, Orissa, Gujarat and Assam. This is based on intensive fieldwork in one block and two schools in each of the states. The analysis brings out disadvantages faced by children whose first language is very different from the language in use for teaching at school.

Chapter four outlines some of the theoretical perspectives and research findings relating to acquisition of first and second language, the advantages of mother tongue education at primary stage and the relationship between language, thought and cognition. It also

attempts to compare the situation in Indian primary school classroom with the appropriate strategies suggested in these theoretical perspectives and research findings. Chapter five presents a review of education programmes in different parts of the world for children whose first language is not the official language of the region. These programmes are categorised on the basis of characteristics like their philosophy or assumption about the use of children's first language and the methodology of introducing the second language. Some educational programmes that have been implemented in situations similar to those in India have been outlined very briefly. The chapter also suggests an appropriate strategy for bridging or transition to the second language. Chapter six presents an overview of some of the initiatives in our country that address the issue of the learning disadvantage faced by such children. It includes only the significant interventions under government programmes. The limitations of these strategies have also been discussed. The next chapter identifies various factors that should be considered while identifying appropriate educational strategies have also been provided. The chapter also identifies certain basic prerequisites for successful implementation of interventions for such children. There is also an attempt to identify certain issues that must be addressed in the conceptualisation, planning and implementation of appropriate educational strategies.

The study necessitates advocacy among political leaders, education policy makers, planners and administrators,

activists, linguists, educational researchers and national, state and district level institutions initiating and working for quality basic education in elementary education to mobilise opinion and action for handling the serious situation where children of minority languages are being deprived of an equal opportunity to learn. The book in principle is able to show a path to implement some of the recommendations of Kothari Commission (1964 - 66) and Acharya Ramamurti Report (1990) on the language issue by presenting relevant research findings and outlining successful strategies that have been tried out in India or abroad for addressing the needs of children whose first language is very different from the major regional languages. The author also suggests some educational strategies that can be used in various kinds of schools to improve learning of children which otherwise is hampered due to their own language proficiency.

Focusing strongly on language instruction issues at primary level, however, this comprehensive documentation could not give proper space to the controversy related to three-language formula, which is nonetheless interwoven with the language education net.

The book has been produced well in moderate quality paper. The tables are presented with rich source of data (p. 12). Boxes wherever given supplement the text with context. However few typographical errors have been noticed and also misplacement of text (e.g. p. 12 abstract of chapter three was placed under chapter four and vice versa) which could be redefined in reprint.

On the whole, the research team deserves high appreciation for carrying out a work, which really is an input for ongoing efforts in the field of school education. The book needs wider dissemination for use by teachers, linguists, educationists, researchers and above all policy planners to provide quality primary education.

RANJANA ARORA

Curriculum Group, NCERT
New Delhi 110 016

Early Childhood Education: The Challenge and the Opportunity, Mohanty, S.K., Gagandeep Publications, 212-Krishna Street No.2, Maujpur, Delhi 110 053, 2005, pp. 164, Price Rs. 350.

The early years especially the first six years of life are considered to be crucial for a child. Rate of growth and development is much more rapid at this stage and development of intelligence, personality and social behaviour takes place very fast. Considering the importance of this stage, education system is designed in such a way that all round development and manifestation of the potentialities of the child is realised. For this purpose early childhood education structures have been created. The area has attracted attention of the parents, teachers, community and researchers. The researches conducted so far cover wide areas and the present book is one of them, which adds meaningfully to the body knowledge.

A doctoral research work contains seven chapters including the summary. The book covers development of early childhood education, early childhood

development and policy framework, effectiveness of ECE programme, educational implications and suggestions and summary. The book also contains a list of abbreviations, bibliography and index.

The chapter dealing with development of early childhood education provides a historical perspective of the area covering the Western and Indian context (Pre- and Post-Independence period as well). Besides, tracing the on-going ECE Programmes and its salient features in the country, the chapter also presents in detail the ICDS scheme, one of the world's biggest programmes of ECCE, providing non-formal pre-school education to children in the age group of 3-6 years.

The chapter on Early Childhood Development and Policy framework briefly discusses the supportive policies and regulatory frameworks developed by the Govt. of India and United Nations agencies. While providing rationale for the research work, research efforts in the area of early childhood education with primary education is attempted in the next chapter to review the researches conducted in India and abroad highlighting the effect of ECE on language and cognitive development and further retention and achievement of children in primary classes.

Effectiveness of ECE programme is vividly present in one chapter along with the plan and procedure adopted for the study including methodology, sample, tools used, statistical techniques and procedure followed for collection of data.

The data obtained has been analysed and discussed in another chapter. This

has been done in four sections. Section I deals with background of sample villages, section II analyses the impact of ECE on enrolment and retention of rural primary school children, section-III has been devoted to analysing the impact of ECE on scholastic achievement of rural primary school children. In the phase-I of section-IV analysis and interpretation of data pertaining to the impact of ECE on enrolment, retention and scholastic achievement of rural primary school children in relation to their sex has been provided. The phase-II of section-IV, analyses data related to the impact of ECE on enrolment, retention and scholastic achievement of beneficiary and non-beneficiary rural primary school children in relation to their caste. The chapter concludes that ECE programmes seem to be an essential input and strong factor contributing to promoting enrolment, retention and scholastic achievement that may also lead to holistic development of the young child.

The book, though makes a very serious attempt to touch upon many essential aspects of ECE, lacks in discussing the recent developments in the area. Some of them could be:

- Development related to constitution of a CIBE subcommittee on "Education as Fundamental Right" and issues related to non-inclusion of children of the age group 0 to 6 years in the fold should have been mentioned and discussed in the second chapter dealing with early childhood development and policy framework, which has been touched in a cursory manner.

- The minimum specification for pre-schools: A guideline developed by NCERT a decade ago should have found its place and discussed in chapter two.
- As part of the review of National Curriculum Framework initiated in November 2004, NCERT constituted 21 National Focus Groups.
- Of these, National Focus Group on Early Childhood Education is one of them. After a series of deliberations the group has come out with a position paper highlighting various aspects of ECE along with the suggestions for implementation of the ideas. The present book finds no mention these developments.

The author's efforts in bringing out this book are highly commendable. It will

further spread the concept, importance and impact of ECE. The book is worth reading, not only to enhance one's own intellectual horizon but to also stimulate researchers for working in the area of early childhood education. This will prove to be a useful instrument in the hands of researches, teacher educators, curriculum framers, planners, administrators and teachers in the area of pre-school education/early childhood education. In spite of few typographical errors, the book maintains good publication ethics and the illustration on cover page, quality of printing and the paper used add to the overall quality of the book.

AMARENDRA PRASAD BEHERA

Curriculum Group, NCERT

New Delhi 110 016

Email: amar_b2000@yahoo.com