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The Primary Teacher is a quarterly journal , brought out by the National Council of Educational Research and Training (NCERT), New Delhi. The journal intends to give practising teachers and concerned administrators authentic information about the educational policies being decided on and pursued at the central level. It also provides a forum for the discussion of contemporary issues in the field of education. The major features of *The Primary Teacher* are:

- Educational policies concerning Primary Education
- Questions and Answers
- States Round-up
- Illustrated material for classroom use.

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OFFICES OF THE PUBLICATION DIVISION, NCERT

NCERT Campus
Sri Aurobindo Marg
New Delhi 110 016 **Phone : 011-26562708**

108, 100 Feet Road
Hosdakere Halli Extension
Banashankari III Stage
Bangalore 560 085 **Phone : 080-26725740**

Navjivan Trust Building
P.O.Navjivan
Ahmedabad 380 014 **Phone : 079-27541446**

CWC Campus
Opp. Dhankal Bus Stop
Panihati
Kolkata 700 114 **Phone : 033-25530454**

CWC Complex
Maligaon
Guwahati 781 021 **Phone : 0361-2674869**

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Do You Know ?

According to the 86th Constitutional Amendment Act, 2002, free and compulsory education for all children in 6-14 year age group is now a Fundamental Right under Article 21-A of the Constitution.

EDUCATION IS NEITHER A PRIVILEGE NOR FAVOUR BUT A BASIC HUMAN RIGHT TO WHICH ALL GIRLS AND WOMEN ARE ENTITLED

Give Girls Their Chance !

EDITORIAL

Guidebooks at the Primary Stage!

The recent *National Curriculum Framework-2005* places the child at the centre stage and recommends a pedagogical shift from teacher centred to learner centred. To translate this vision of NCF-2005 into practice, NCERT developed child centred textbooks. NCERT textbooks are interactive and provide children opportunities to ask questions; to think; to do activities and arrive at their own conclusions. To translate this vision of NCF-2005 in to practice, teachers need to create a child centred classroom, where each child is actively engaged in learning. The challenging task for teachers is to design a variety of learning experiences/situations to meet the needs of diverse learners. A flexible curriculum requires teachers to discuss knowledge and ideas that are relevant for children even though these are not part of textbooks. For example, if children want to know and understand about Malaria and Dengue in the rainy season of July-August, then teacher must discuss these in class, even if these are not part of the textbook. Children should be able to relate school knowledge to their everyday life experiences. Let children bring knowledge that they have constructed outside (home and neighbourhood) to school and negotiate this knowledge with teachers and peers.

In spite of child centred textbooks, the teaching in schools remains teacher centred. The teacher centred practices are supplemented by guidebooks. The guidebooks translate curriculum into questions and answers. Students copy questions and answers from guidebooks in the notebooks. The learning process reduces to copying without understanding. Students then memorise these questions and answers, to pass the examinations. Use of guidebooks as learning resource by students and teachers promotes rote learning, thus distorting the aims of education.

NCERT textbooks require students to discuss, to ask questions, to narrate their experiences, to listen to others' experiences and construct their own knowledge. The questions raised in textbooks are related to students' everyday life experiences and each question can have several answers. Textbooks encourage students to solve problems in their own way, thus appreciating that a problem can be solved in many different ways. Private publishers have developed guidebooks for NCERT textbooks also. These guidebooks have in-text and practice questions of the textbooks with answers. For primary classes, there is one guidebook that has questions and answers for all the subjects – Hindi, English, Mathematics and Environmental Studies.

Visit to schools in different states reveals that guidebooks are used in schools by students and teachers both. Students copy questions and answers from guidebooks in their notebooks. Teachers also use guidebooks as support

material. Some teachers copy questions and answers from guidebooks on the blackboard. Use of guidebooks has adverse effect on students' learning. For example, a student of Class V was copying following questions and answers from the guidebook.

Q. Have you ever been to a hill station?

Ans. Yes, I went to Himachal Pradesh during summer vacations.

Q. Did you climb on the hill? How many kilometres?

Ans. I climbed five kilometres.

This was recess time, I asked this student, "have you been to Himachal Pradesh?" She said, 'no'. I asked her how much 5 km is, she pointed to a nearby shop, which is less than one km. I further asked her about her learning processes. She said all students copy questions and answers from guidebooks and memorise. Teacher marks portions to be copied from the guidebooks. Teachers do not engage children in activities, discussions and group work.

When students are not engaged in reading activities, how will they comprehend the text and enjoy reading the textbooks. Similarly, Mathematics textbooks have large number of activities such as measuring volume of textbooks, books, geometry box, lunch box, etc., measuring area and perimeter of table, room and so on. Students make devices to measure 'angle'. Students also make paper aeroplane, boat, and other toys and measure angles formed. Students learn to recognise patterns and draw generalisations from patterns. Each chapter has large number of activities, which help children in developing concepts and children enjoy learning. If students are not doing all these activities and are simply copying and memorising questions and answers, the objectives of learning mathematics cannot be achieved. This also is a reason for low learning achievement in primary classes.

Besides encouraging rote learning, guidebooks put additional financial burden on parents. With burden of guidebooks and private tuitions, education is not free for these children. The cost of a guidebook varies from ₹160 to 200, more than the cost of five NCERT textbooks. A child spends about ₹ 200-300 per month on private tuitions. Private tutors also use guidebooks as learning resource. Increasing use of guidebooks and private tuitions at primary stage suggests that teacher efforts are inadequate and students require extra tuition from private teacher and help from guidebooks.

Teachers need to reflect upon these practices and discourage the use of guidebooks in schools. Teachers not only have to cover the syllabus, they must facilitate children in achieving the objectives of learning and aims of schooling.

—Academic Editor

1

Sensibilities of the Stakeholders in RTE

Achla Kukreti*

The right to education envisages the responsibility of many in ensuring that all children of the ages 6-14 years of age receive education in schools. For this goal to be realised, the onus lies on a number of individuals and groups in the schooling chain as it exists today. The RTE for the first time has dwelt upon governance of the school system at the level of each school and defined to some extent the role and the scope of all stakeholders in the school.

This requires each individual school to evolve and develop within the wider framework of the directives from appropriate government agencies. With this kind of evolving of each school and the stakeholders' autonomy, their resultant responsibility and accountability also become greater.

The first responsibility lies with the government agencies at different levels. Increasing enrolment, ensuring retention, curbing dropouts were always part of every thought, policy and focus on elementary education. But these appeared more to be the points of focus for the decision makers, for the officialdom or the functionaries far from school, more in the consideration zone of the administrative and the higher academic discussions as in colleges of education and universities. **It is for the first time that all these activities have been brought into the actual language and terms of everyday understanding of the grassroot functionaries at the school level.**

'Compulsory education casts an obligation on the appropriate government to provide and ensure **admission, attendance and completion of elementary education.'** (RTE)

The RTE talks of the school's role in keeping a child in school till fourteen years of age. If we compare this to the earlier directives we see that this goes beyond enrolment. Retention of students and curbing dropouts is inbuilt in the Act.

* *Principal*, Navyug School, Peshwa Road, Gole Market, New Delhi

The RTE not only talks of compulsory education but also quality education, which means that the government authority will set up schools, by providing infrastructure, and also plan curriculum and its transaction by developing and enforcing standards of training of teachers and ---promoting innovations, researches, planning and capacity building. This means that students of 6 to 14 years of age are to be provided quality education by raising the quality of teacher.

The teacher has to undergo the maximum change in her sensibility. She has to understand that she is the pivot of the education system. This will come by accepting and promoting the independence of the teacher where she is not merely part of a herd but each with her own sensibility based on the unique position of her school based on its socio-economic and geo-political condition and the students placed under her charge. The administration must also treat the teacher not as a low level functionary in the government system with no say in decision making, but as a dynamic functionary capable of bringing about a change in the educational scenario of the nation.

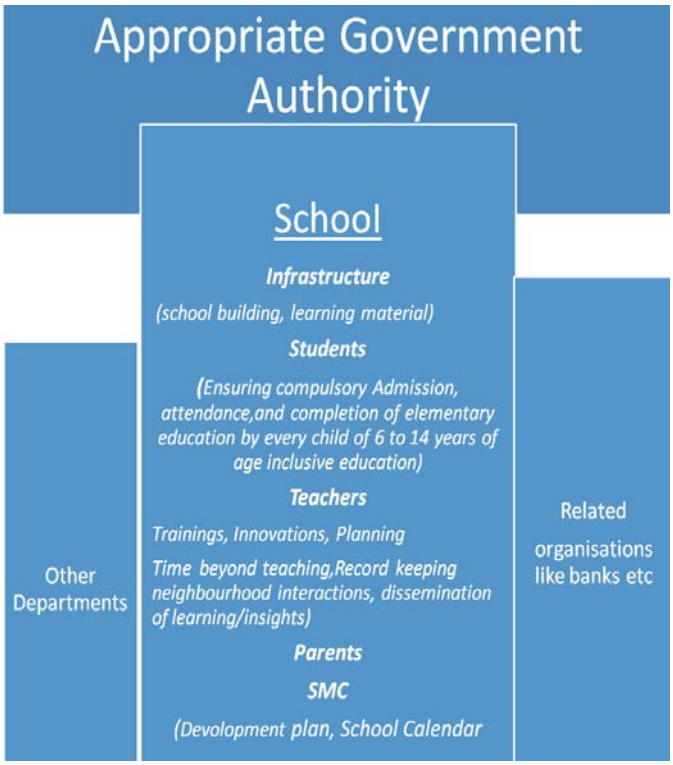
All this would mean a different approach to training of teachers whether the training in teacher training institutes as pre-service training or the in-service teacher trainings organised later after the entry of teachers in schools.. The officers and higher level functionaries in education departments must also be people who have hands on experience of working in schools and are exposed to the ground level functioning.

The hub and the stage of RTE is not the conference of academicians or the offices of departments of education of different government authorities, but every elementary school and its every functionary and every stakeholder.

It also means that other related departments like the civil engineering and electric engineering work in tandem with education department and its needs. The school building, its plan, could include the teachers and the parents in spelling out their needs and requirements and any special change that they may want. Does it require extra money to paint the doors of a building red instead of grey? No! It only requires interest and concern on part of the school stakeholders and a sensitivity to their needs on part of the other government departments.

Institutions like banks have to understand the need for opening accounts in the names of children who would be the beneficiaries of direct cash transfers under various education schemes for children under the RTE. The parents are to be helped, individuals have to be educated about use of a bank and so on.

The one stakeholder whom the earlier documents/directives had never talked about was the parent. The RTE puts the responsibility of bringing every child to school on the



parent also and it is for the first time that voluntary participation of the parents is given a thought. It is almost like some of the initiatives taken in the field of health like the efforts put in making India polio free. The parent now has a very close and active role in ensuring the vision of RTE come true. The parents have an active role in the SMCs or the School Management Committees. Parents are therefore not only responsible for bringing a child to school, but also for thinking and planning the development of schools of their children.

The idea and the objective is not only to bring a child into the school system but also to ensure that he is equipped with the necessary knowledge, skills and desirable attitudes and values by the time s/he leaves school. For all this, the duties and the responsibilities of the states, and the local bodies have been mentioned and defined.

We see that the RTE also brings in quality by talking of setting standards, in teaching , evaluation and deciding a school calendar. The School Management Committee (SMC) shall make development plans for the school. This means that the onus, the responsibility of appropriate action, the finer detailing is left to each individual school. In the government sector at least this requires a new approach, where a school has to decide its own direction, its activity and calendar. A school calendar mirrors the total school activity schedule, the vatious dimensions of school activity. This making of the calendar would make the school stakeholders focus on the curriculum, and apportioning the timetable for promoting what the school holds in value.

This means that in each school, the school stakeholders do not merely follow the directives that come from the appropriate authority but also evolve as an institution themselves depending

on their needs and requirements and vision.

For developing a better vision, the definition of teacher's working hours to include time for preparation at the elementary level has perhaps been thought of for the first time. Batches of teachers are trained every year under one scheme or the other, but in the present set up there is no time for dissemination and assimilation of new ideas within each school itself.

The record keeping of each individual student from the time of his/her entry in school up till fourteen years of age would require extensive record maintenance and all this work will take time not only in record keeping but also working on it. It means using time beyond the teaching time and may require different teachers to discuss the student performances as a group in order to give comprehensive formative and summative assessment for improvement of teaching-learning strategies in general and in individualising instruction.

For the education departments it means redefining their post fixations and requirement of teachers with an understanding of the extent of record keeping by a teacher for each individual student. With states like Delhi where funds for development are directly transferred to schools, it becomes imperative for schools to plan judicious spending of it. What the schools really need is not only funds but also an orientation to plan and develop each school as a complete unit. The vision of the teacher must not only dwell on teaching-learning but all things that help in improving teaching-learning, i.e., better infrastructure, teaching-learning aids, etc. Research and innovation by the teacher is also an area where schools have to think and work towards.

If the requirements of the RTE are to be met, we will have to think of decentralisation of recruitment of teachers, redefining of the role and the skills of a teacher, so that schools have the requisite number of teachers with a clear understanding of their work. We also have to think of not only teacher trainings, but also knowledge and skill sharing in a big way in neighbourhood schools.

As I understand it, the RTE is all about decentralised enterprise at all levels of school functioning and that requires a change in sensibilities of all stakeholders, especially, the functionaries in the government system. On the one hand it is about empowering the school level functionaries, making them realise their potential and involvement in the school at all levels in understanding and defining school vision, improving educational facility, standards and delivery and these functionaries taking responsibility of developing their own paths and missions in keeping with the national and local needs and ensuring that the demands of RTE are met.

2

Initiatives taken by NCERT Diploma Holders to Promote ECCE in the States/UTs

Reetu Chandra*

Early Childhood Care and Education (ECCE) is an important aspect of school education. It is also a vital component for achieving universal enrolment and retention in primary schools. Therefore, it is essential to provide necessary maturational and experimental readiness to the children for meeting the demands of primary education curriculum. This readiness depends on child's Early Care and Education, which includes health care, nutritional support and physical as well as psycho-social stimulation that can only be possible with the efforts of qualified and quality teachers in ECCE centres. Hence, it is important to give priority to capacity building of teachers and teacher trainers; building of resources in terms of teaching and instructional materials; provision for field experiences; funding and institutional support in the area of ECCE.

Department of Elementary Education (DEE), National Council of Educational Research and Training (NCERT) started a six-month diploma course in ECCE in 2006 with the objective of preparing a resource group of trained personnel and researchers in the area of ECCE. This course is planned keeping in view the needs of the States/ UTs in the area of ECCE, especially in the context of strengthening pre-school education component of ICDS and other ECCE programmes in the States/ UTs. State Councils of Educational Research and Training (SCERTs), State Institutes of Education (SIEs), *Sarva Shiksha Abhiyan* (SSA), District Institute of Education and Training (DIETs), *Anganwadi* Training Centres (AWTCs) under Integrated Child Development Services (ICDS) and private organisations working in the area of ECCE were target institutions for this training. The course has been designed with a focus on training with hands-on-experience and practical exposure of trainees in different ECCE settings.

* *Assistant Professor*, DEE, NCERT, New Delhi

During first three diploma courses (2006-07, 2007-08 and 2008-09) 105 personnels were trained and they are now engaged in various ECCE programmes in their respective institutions. Initiatives taken by these diploma holders to promote and strengthen ECCE in their states were studied.

A study was conducted on five institutions— RIE Ajmer; SCERT Nagaland; DIET Uttarakhand; SSA office Uttarakhand and a private pre-primary school (The Blossom Kindergarten) in Manipur, where the Institutions and ECCE diploma holders together contributed significantly and consistently doing efforts in the area of ECCE. To facilitate the study, necessary tools like Interview Schedules for Teachers and Parents, Information Schedules for various activities in ECCE, Observation Schedule for various ECCE centres and Guidelines for Focus Group Discussion with parents were developed and administered. In accordance with the nature of the study, the data was analysed qualitatively.

Here, the case studies of five institutions in the form of success stories have been discussed to enlighten other ECCE diploma holders working in various States/UTs/ Institutions.

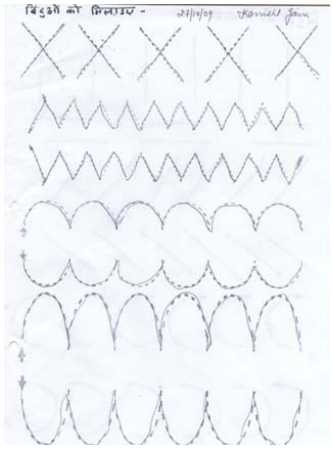
Regional Institute of Education (RIE) Ajmer

RIE Ajmer has set-up a pre-school section *Muskurata Bachapan* in DM school on 12 September 2009. The significant aspect of this pre-school is that it is attached with the primary school.

Outdoor Space

The infrastructure of pre-school includes *pucca* outdoor and indoor space. Outdoor space has a garden and a playground with plenty of outdoor play equipments like cycles, slides, swings, see-saw, merry-go-round, balance wheels, tyre swings, balance beam, swallow the ball and jungle gym etc., for the proper physical growth of the young children. A well ventilated indoor space has been divided into five activity rooms— classrooms (two), library, activity room and dining-cum-rest room. Activity room has different corners for different kinds of activities and developments such as dolls

Drawing



Stroking

Dancing

corner, science corner, music corner, puppet corner and learning corner. Children's work is being displayed in a room with the help of strings.

The pre-school runs from 9:00 am to 12:00 pm in summers and 9:30 am to 12:30 pm in winters. It has two sections A and B, having children in the age group of 4-5 years that is readiness/preparatory stage for formal schooling are admitted through lottery system. The staff consists of two well educated and Nursery Teacher Training (NTT) trained teachers and two helpers. In each section, there is one teacher and one helper. Monthly meeting of staff is conducted to discuss the progress and the problems faced by the staff in the functioning of pre-school. All the pre-school activities are based on play-way approach. The medium of instruction is Hindi and English with an essence of local dialects. Building blocks, painting, colouring, craft, clay molding, dancing, puppet shows, story telling, etc. are the main pre-school activities. Emphasis is given on stroke practice.

For the professional growth of staff, improving the quality of ECCE programme and proper functioning of pre-school, a series of workshops/orientation/training/EDUSET programmes were conducted. The first programme of this series was the induction level training programme organised from 31 August 2009 to 7 September 2009. The programme was focused on the concept of ECCE and domains of child development. Teachers have also been trained in art and craft, puppet making and drama/theatre activities. The second training programme was conducted during 21 to 24 October 2009 based on the needs of the staff regarding teaching-learning process. Realising the importance of folk media especially puppetry in education, another training programme on puppet making and handling was conducted during 7 to 9 December 2009.

Teacher Training

Teachers find these training programmes useful. One teacher said, "Yes, it is absolutely fruitful because these trainings helped us to know the concept of ECCE and motivated us to work efficiently." Another teacher said, "Yes, it was really helpful as we have clearer concept about ECCE, now we are able to understand the needs of children and can plan activities accordingly."

Christmas Celebration

Apart from these programmes for the staff, various programmes for children and parents were organised to ensure their participation in the functioning of pre-school. Monthly Parent-Teacher Meeting (PTM), puppet shows, film shows, visits to various educational places/local fare and celebration of culture-specific festivals like Christmas, Diwali, Holi, Dusherra and Janmashtami are organised to enhance participation.

Tiny Tots Journal, Daily Teacher's Diary, Reflective Journal, Multidimensional Worksheets and Progress Report Card were also developed for teachers, parents and children. The teacher maintains each child's development-wise progress report based on the daily observation of children. The year's pre-school programme has been divided into four semesters and at the end of each semester, the teachers as well as parents give their comments on child's progress for the past semester. An Academic-Monitoring Committee (AMC) was formulated for the continuous and comprehensive review of the progress of the ECCE programmes and pre-school activities through periodical meetings.

During the discussion with guardians of the children about the functioning of pre-school, most of them, especially grandparents, admitted that initially they were not satisfied with the activities conducted at the centre but by observing the progress of their children they are happy. They pointed out that their children like to go to pre-school everyday because of the centre's conducive environment and friendliness with peers. About their role in pre-school they said they come only during PTM and discuss the progress of their children. They said, they prefer pre-school centre of RIE as it is near to their residence, they have quota in the institution for the enrolment of children but the most important reason is the 'quality'. It is having good and affectionate staff, there is no burden of work on children and is different from the private schools. They suggested that the centre must arrange some real life experiences like taking children to the post office and dispensary, etc. Besides this there should be some writing work for children.

The whole programme was coordinated by Dr Usha Sharma, Associate Professor (Education), RIE Ajmer (ECCE diploma holder of 3rd batch of ECCE diploma course). Other two ECCE diploma holders (Abhishek Bhardwaj of first batch and Seeta Ram Meena of second batch) were deeply involved in the activities of pre-school at various levels.

The Head of the Institution and senior authorities involved in the ECCE programmes in RIE, Ajmer said that because of the hard work and dedication of diploma holders, pre-school section in RIE, Ajmer has been established. They were satisfied with the performance of diploma holders and pointed out that all the diploma holders are contributing to pre-school activities in various ways, as a coordinator; as a resource person; facilitator; evaluator and monitor of ECCE activities.

State Council of Educational Research and Training (SCERT), Nagaland

En route for awareness in ECCE and sensitisation to raise the need of the hour for quality ECCE, the SCERT, Nagaland has taken initiative in ECCE related activities. They roofed almost all the elements of ECCE whether it is related to teacher training, Teaching Learning Material (TLM) development, setting-up of ECCE centre or advocacy/ awareness of ECCE.

For training and equipping the pre-school teachers in the State, the SCERT is running 'six-month certificate course in ECCE' for pre-service and in-service teachers. Four courses have successfully been conducted during April to September 2008 (1st batch), September 2008 to March 2009 (2nd batch), March 2009 to August 2009 (3rd batch) and September 2009 to March 2010 (4th batch). Till now altogether 142 teachers have been trained in ECCE.

Components of ECCE, teaching-learning process, classroom

Trainees of certificate course in ECCE, Nagaland

School Headmistress and proprietor's of schools practising different methods and Health and Family Welfare Department (HFWD) discuss the issues. The mode of teaching is discussions, lectures, demonstrations, presentations, observations during visits, mock sessions and development of TLM.

management, community participation, research methodology as well as health and childhood diseases were the focus areas of the course. Medical Doctors, Child Development Project Officers (CDPOs) and also the personnel from Social Welfare Department (SWD), Directorate of School Education (DSE), Non Government Organisations (NGOs) (working for children with special needs), Medical Mission Sisters,

'Training Module' for this certificate course in ECCE has also been developed by the SCERT for pre-school teachers.

The 'Follow-up programme' is also being conducted on trained ECCE teachers. Follow-up of first batch of teachers shows attitudinal changes among ECCE personnel towards handling of young children and assessing their needs on time.

Teacher training

Training Module and Syllabus

During the discussion with trained teachers of 4th batch of certificate course in ECCE, they all said that they are really fortunate to have this kind of training programme. All the trainers of ECCE cell are so dedicated, helpful and active. They have clear understanding about ECCE. One of the teachers who runs her own day care centre in Kohima 'Kevi Day Care' expressed her experience as "I can't explain but want to say that after getting training in ECCE there is something different I started giving to my children in my day care. I think I can understand my children better now."

Recognising the importance of awareness about ECCE among stakeholders, SCERT conducted 'Community Awareness Programme' in all the Districts of the State of Nagaland during June-July 2010. Pamphlets, posters and road hordings were prepared with the help of ECCE trained teachers.

Material for community awareness

A newsletter '*Impressions*' on ECCE is being published by the ECCE cell, SCERT, Nagaland on half yearly basis. Articles for the newsletter are generally being written by the faculty of ECCE cell (ECCE diploma holders) and their trainees. Newsletter contains the progress of six month's certificate course in ECCE run by SCERT, Nagaland as well as the articles related to children, their developmental needs; roles and responsibilities of pre-school teachers, teaching-learning process, classroom management, poems and views/experiences of eminent academicians in the field of ECCE.

Newsletter 'Impressions'

Keeping in view the preparedness of pre-school children for formal learning, SCERT, Nagaland has developed a series of competency based books titled 'My Activity

My Activity Books

Books' on 'Creativity', 'Language and Writing Readiness' and 'Pre-number Concept for Pre-primary Classes'. Books contain activities related to school readiness and instructions for teachers regarding conduction of activities.

The SCERT has conducted a research on 'Numeracy level' to assess the level of numeracy of Class I children and also to compare the numeracy skills between children from government and private schools of Kohima, Dimapur and Phek districts.

Apart from that, SCERT, Nagaland had taken initiative to create linkage between pre-primary and primary schools and also to produce ECCE progammes in local context as well as monitor and evaluate ECCE activities at all levels. ECCE diploma holders are also involved in the 'development of curriculum and syllabus for government pre-primary schools in Nagaland'.

Diploma Holders with ECCE Coordinator

ECCE cell activities are well coordinated by Ms Kewepelou Kapfo (ECCE Project Coordinator). All the diploma holders (Ms Khrieseno Kikhi, Ms Veketulu Veyie and Roseline Richa of first batch and Ms Keduwe U Tsuhah of second batch) are fully devoted in the activities of ECCE cell in multi-ways.

When asked about the performance, the Head of the Institution and Head of ECCE cell/Coordinator of ECCE programmes, all used the words 'Excellent' and 'With Fullest Capacity' for their ECCE faculty (diploma holders). They were fully satisfied with the work done by them. They too suggested that though, they are running certificate course in ECCE but there is a great need to expand ECCE programmes in a way to sensitise community and parents in ECCE, we must organise seminars and advocacy campaigns for them. SCERT, Nagaland is taking initiative in this area. They pointed out that there should be a set curriculum of ECCE, NCERT and DIET must take initiative in this line.

District Institute of Education and Training (DIET), Dehradun

Realising the importance of ECCE and the linkage between the primary and pre-primary education, DIET, Dehradun has taken remarkable steps in the area of ECCE. In this string a

Orientation Workshop in DIET, Uttarakhand

series of ECCE programmes were conducted, which usually catered to the most backward and needful ECCE centre, that is *Anganwadi*.

ECCE programmes were initiated with a 'one-day orientation workshop for *Anganwadi* Workers (*AWWs*)' on 10 July 2009 in DIET, Dehradun. NCERT participation was also ensured as a resource. During the workshop findings of a research on *Anganwadi* Centres (AWCs) (done by ECCE diploma holder) were shared and an overview on pre-school education was given.

DIET, Dehradun has also conducted a series of 'in-service training in ECCE for *Anganwadi* Workers' during 13 February to 14 March, 2010. Total 122 participants were trained in three batches. Focus of the training was to introduce theme-based planning of activities, balanced activities in the AW centres and development of time schedule. ECCE diploma holders acted as a coordinator, resource person and evaluator of the progress of the participants with the help of pre-and-post test method.

When asked about the training programme *Anganwadi* Workers and Helpers of the three *Anganwadis* pointed out that as they were untrained, they found training programme very useful. During the training programme they learnt so many things like development of TLM, programme planning and activities to be conducted in AW centres.

ECCE diploma holder also preformed as a resource person and member in a 'workshop for the development of TLM and instructional manual for *Anganwadi* Workers' conducted by SSA, Uttarakhand from 16 to 22 July, 2009.

ECCE diploma holders performed as a resource person in a 'two days' In-service training in ECCE for *Anganwadi* Workers' conducted by Uttarakhand State Council for Child Welfare on 9 and 10 February 2010 covering 60 *Anganwadi* Workers of the State. When asked about the training programme, *AWW*s said, "We learnt so many things especially how to conduct activities in front of children with fullest expression."

Workshop for Development of Material for AWWs

During the observation of selected Anganwadis to which ECCE diploma holder has given training and orientation, it was found that all the Anganwadis were decorated with teacher made TLM. Before coming to the AW centres all AWWs prepare lesson plan and they conduct the activities according to the domains of development like beading, drawing, welcome song, poem, hide and seek and physical exercise, etc. They were also found very confident during story telling with the help of gestures and self prepared TLM like puppets and flash cards, etc. All the AWWs maintain teacher's diary and keep records of the progress of children based on the daily observation of each child. Keeping in mind the busy schedule of parents every week they organise Parent Teacher Association (PTA) meeting and also to ensure the mother's participation they organise monthly Mother Teacher Association (MTA).

ECCE diploma holder of third batch (Ms Deena Rana) has taken admirable initiative in the initiation and implementation of all the ECCE related activities like pre-service and in-service training programmes, development of TLM, development of training module; training package and curriculum, etc. She is assisting the activities of SSA in the State as well.

When asked, Head of the Institution and the faculties of the DIET said, "She is very hard working, after completing her diploma in ECCE from NCERT, she is working as a trainer to sensitise and train ICDS functionaries. She is a member of the State Resource Group (SRG), engaged in the development of training packages and Annual Work Plan and Budget for various ECCE related activities of the State."

They further pointed out that, 'Many ECCE related activities have been proposed but because of the lack of funds DIET is not able to organise the activities properly. For funds we depend on State Project Office (SPO) and District Project Office (DPO)'.

It was also found that inspite of DIET's dependency for funds over *SSA* and DPO there is also lack of availability of resources on time and proper infrastructure for smooth functioning of any kind of programme,

especially in the context of training programmes.

Sarva Shiksha Abhiyan (SSA), Uttarakhand

To ensure the quality ECCE at pre-primary the SSA office of the State of Uttarakhand is playing a major role in teacher training. During training under SSA scheme AWWs, helpers and primary teachers were trained together.

Workshop for the Development of Material for AWWs

To structure the training programmes for AW functionaries various activities were conducted by the SSA, Dehradun for the development of TLM, training manual as well as the training programmes at various levels during 2009-10. In its first phase, a 'planning meetings for incorporating innovativeness in the training programme for the preparation of master trainers and development of material for ECCE centres' were organised on 14 May 2007 and 5 June 2009, respectively.

For capacity building of the ECCE functionaries in the State a 'training programme to prepare master trainers' was conducted from 15 to 24 July 2008 by SSA office in collaboration with ICDS at SPO, Dehradun in which 34 teachers were trained in ECCE.

A 'workshop for the development of TLM and instructional manual for Anganwadi Workers' was conducted from 16 to 22 July 2009. The main objective of the programme was to provide comprehensive information of ECCE activities for the holistic development of the young children.

A set of activity book '*Phuhar*' was developed by the SSA, Uttarakhand which contains various kinds of activities to enhance the physical, cognitive, language and socio-emotional development of children.

Phuhar: An Activity Book

A 'Progress Card' was developed by the SSA, Uttarakhand to know the progress of the ECCE centres and for the continuous and comprehensive evaluation of pre-school children and it was distributed to all the AW centres of the State.

The ECCE diploma holder of first (Mr Vachaspati Maithani), second (Ms Usha Katiyar and Ms Santosh Chand) and third (Ms Deena Rana, Dr K.S. Rawat and Mr B. D. Andola) batches are involved in all the ECCE related activities like pre-service and in-service training programmes, development of TLM, development of training module; training package and curriculum for ECCE in collaboration with SSA.

ECCE diploma holders developing material

Inspite of the involvement of above mentioned activities conducted by SSA office, ECCE diploma holders were involved in following other activities conducted by the DIET and ICDS:

- Development of programme and planning for the training of ICDS functionaries on 6 September 2008 at ICDS, Dehradun.
- Ten days training to the 124 AWWs at DIET, Almora, Uttarakhand.
- Five days training to the 57 AW helpers at DIET, Almora, Uttarakhand.
- Create awareness about ECCE to the in-service teachers, BRC, CRC coordinators and principals of schools in June 2009 at DIET, Almora, Uttarakhand.

The above mentioned activities were targeted to the normal children as well as children with special needs.

The Blossom School, Manipur

The Blossom School is a well-known private ECCE unit at Imphal, Manipur. The school is self-financed which was started in January 2000 that deals with the pre-school and primary sections. Many local children have been enrolled in the school, especially in pre-school section called Kindergarten (KG) on first come first basis. Pre-school is divided into following three groups:

Prospectus

Baby Group (Pre-nursery) for 2½ to 3 years old children: In baby group 90 children are enrolled, therefore, whole group is divided into seven sections. In each section teacher-children ration is 1:14. The programme is designed to stimulate and enhance child's overall development through various activities, techniques and equipments. The classroom is arranged to develop language, mathematics and coordination skills as well as general knowledge of environment.

Group-I (Nursery) for 3½ to 4 years old children: In group-I almost 110 children are enrolled, therefore, whole group is divided into three sections (A, B and C). In each section the teacher-children ratio is 1:30/39 with a mother. Learning activities in this group are gradually and partially formalised while focus is still on fun and creativity.

Group-II (Kindergarten) for 4½ to 5 years old children: In group II almost 125 children are enrolled, therefore, whole group is divided into three sections (A, B and C). In each section the teacher-children ratio is 1:40/ 42 with a mother. Curriculum of the group is designed in a way to suit the prevailing system of education in the State, through experimental methods of teaching.

The teachers are well educated having graduate and post graduate degrees in Home Science and Linguistics with B. Ed. and M. Ed., etc. Teaching-learning process is play-based by using mixed philosophies like Montessori method/apparatus and Froebel's philosophy. Language of teaching is mother tongue and English. There are ample activities and materials available for special children sitting with the normal children. To provide real life experiences, the school takes children for visit to the zoo, parks, sports complex and science centre, etc. Formal meeting with the parents is being organised thrice in a year:

1. before new academic session,
2. before mid-term assessment, and
3. before final assessment.

Apart from this, the school administration has announced each Friday (after school hours) for informal parent-teacher meet. Children's progress is being assessed through daily observation and through formal half yearly and annual assessment.

School is having good infrastructure with proper light and ventilation but

Children's Activity Book

there is no open space for outdoor activities because of the busy and congested roads, therefore, it has been arranged in indoor area with tent house, slides, strings, racing pony, racing snake and a ball house for jumping activity. Indoor space is divided into dolls corner, blocks corner and painting/free expression corner. The whole classroom is equipped with Montessori equipments, teacher made material and commercial material too. School is having children's library and books corner. Children's books consist of art book, number book, alphabet book and drawing book.

After children finish their pre-schooling, school celebrates 'Kindergarten Graduation Ceremony' in which degree is being awarded to the children.

Various kinds of activities for the holistic development of children are being done in Kindergarten like flowers day, hand print day, shopping day, friendship

Kindergarten Graduation Ceremony

Children doing Solid Pouring Activity

Follow-up activity on Flowers' day

day, traditional day, casual day, formal day, teacher's day and children's day.

Almost all the parents pointed out: "they are happy because of the importance and confidence given to their children. Parents suggested that the school must come-up with more activities for children. One of the parents has given a beautiful message to the school: "I would like the school to keep-up the good work and don't be influenced by other schools where children learn by heart without understanding." When asked, why do you want to send your children to the Blossom School? Parents replied: "as compared to the other schools we are satisfied with this school because we know the Headmistress is experienced and she is confident enough to manage pre-school activities nicely." One parent said: "my child enjoys traditional dress day, flowers day and all the fun with less pressure of home work."

Participants doing Paper Craft during a Workshop

Apart from dealing with the young children, the Blossom School caters to the ECCE functionaries also. Underneath that a 'two-day professional development programme on ECCE' was conducted from 12 to 13 July 2008 in school premises in which more than fifty pre-school teachers from various schools and three AWWs participated. Regarding the productivity of the training programme teachers said: "Yes, this training was indeed a wonderful experience. It has really motivated us a lot. It helped us to foster the holistic development of children because it became now easier for us to plan out what we are going to do in the up coming week." When asked about the home work, a baby group and group of two teachers said giving home work is good, because what we are doing in school is practised at home.

A 'three days professional development programme on ECCE' was also proposed for pre-service and in-service teachers in school premises. Almost 37 teachers have already been enrolled in the programme. The focus of programme is to make teachers capable of implementing activities and knowledge of ECCE in their respective centres.

Three days 'Awareness programme on ECCE' was conducted for in-service teachers in May 2009 at (Zonal Education Offices (ZEO) Wangoi, Imphal West. The objective of the programme was to create awareness about ECCE among *Anganwadi* Workers with especial emphasis on pressure on young children and linkage between pre-primary and primary schools. The programme was conducted through lecture-cum-demonstration method and more than 100 teachers participated in the programme.

In the light of framing the ECCE curriculum and development of TLM, a day discussion on ECCE with the State Resource Group has been done at SSA office Manipur. The agenda of the discussion was effective implementation of ECCE in the State, planning of curriculum for *Anganwadi* centres, Development of TLM and Advocacy of ECCE.

All the teaching activities of Blossom Kindergarten is coordinated by the Headmistress Ms Thaja I. Leitanthem. Programmes related to teacher training, consultancy, awareness of ECCE, classroom management and transactions as well as all kinds of administrative support in the school activities is being given by Mr Rajesh Leitanthem (ECCE diploma holder).

When asked, the Head of the school mentioned that, "He (ECCE diploma holder) contributed substantially towards development and organisation of teaching-learning material during the orientation programmes for teachers. He also brought new materials, new ideas and innovations in classroom organisation as well as in designing the classroom structure. But most important is his contribution towards awareness about ECCE among teachers, parents and community." She further mentioned that the "school is trying to be updated with the latest information, research insights, etc. regarding ECCE."

Conclusion

From results obtained through the present study, it can be concluded that in almost all the ECCE programmes (inside and outside the Institution) the services of ECCE diploma holders have been utilised, where they had to act in manifolds, such as in training programme the diploma holder has to perform as a resource person but at the same time he/she is the coordinator or the evaluator of that programme. Though, the ECCE diploma holders were loaded with the tasks (other than ECCE), in most of the ECCE programmes they acted as a resource person or coordinated the programmes which were targeted especially to the teachers and children. Most of the trainees and their deputing Heads accepted that, ECCE diploma course provided by the NCERT contributed to enhance the knowledge in every aspect of ECCE by providing complete perspective of the pre-school education, curriculum and children; especially regarding their growth, development and learning

processes. They are now highly motivated and having knowledge as well as skills to perform in the area of ECCE. The course helped them to develop their aptitude in conducting various programmes in ECCE, like research, training, development, extension, advocacy, monitoring and evaluation. Their Heads were satisfied with their performance, as the diploma holders were involved in ECCE programmes run by their respective States/Institutions and they were also taking initiatives to begin the programmes. According to the Heads, diploma holders were found to be more innovative as far as the ECCE programmes are concerned. They were also satisfied with their performance. These diploma holders were found satisfied with the diploma course in ECCE run by DEE, NCERT. Finally, with a vision to streamline ECCE activities in their States/UTs/ Institutions, the following suggestions were made by the Heads and diploma holders:

- NCERT must take an initiative in terms of creating more key resource persons and opening similar courses at RIEs or State/ UT level and on-line for maximum coverage. If State authorities along with more faculty undergo the same diploma in ECCE from NCERT that would strengthen the resource power of districts and the States in particular.
- As the Institutions and ECCE diploma holders are not having the adequate and appropriate teaching-learning material like CDs and books for conducting ECCE programmes, NCERT must provide some support material.
- To equip with the current trends and issues in ECCE and for better productivity, NCERT should organise some short term orientation or refresher programmes, especially for the ECCE trained personals.
- There is no set curriculum on ECCE. NCERT must take lead in this regard.

3

Aptitude Test in the Entrance Examination of Teacher Education Programme: a Pre-requisite

Pratima Singh*
Kalpana Gupta*

Sarva Shiksha Abhiyan of the Indian government paved the way for opening countless primary schools to provide education to all children up to 10 years. This initiative has resulted into a high demand of teachers to teach in these schools. After the enforcement of recommendations of Sixth Pay Commission, salaries of teachers have improved, better salaries and better chances of placement in government jobs has pulled attention of students towards teaching profession. Therefore students' interest has increased in BTC/B.Ed. courses which open the gateway for government jobs. This is undoubtedly a matter to be pleased. But if we look at the other side of the coin we find that the students pursuing these teacher training programmes or who aspire to do B.Ed., actually do not possess the right aptitude for teaching profession. Either they enter in this profession by force or by the charm of job security and good salaries or may be due to rejection or inadequate qualification for other professional courses. Lack of correct aptitude ultimately results in their unsatisfactory performance, injustice with their students and injustice with the noble profession of teaching.

Aptitude Test

Usually the terms intelligence, ability, and aptitude are used synonymously to refer to behaviour that is used to predict future learning or performance. However, slight differences exist between these terms and therefore significant difference lies in the specific tests which are designed to measure these attributes.

Aptitude is not knowledge, understanding, learned or acquired abilities (skills) or attitude. It refers to one of many different characteristics which can be independent of each other, such as aptitude for military flight, air traffic control or computer

* *Assistant Professors*, Dayalbagh Education Institute, Agra

programming. Aptitudes may be physical or mental. An aptitude is a component of a competency to do a certain kind of work at a certain level, which can also be considered 'talent'. Aptitude is different from achievement which represents knowledge or ability that is gained or acquired.

Under the larger umbrella of psychological tests, ability tests assess what a person is capable of doing. Abilities are then further broken down into two areas:

1. **Achievements –** What has the individual learned to do in the past?
2. **Aptitudes –** What can the individual learn or develop in the future?

Like intelligence tests, aptitude tests measure a student's overall performance across a broad range of mental capabilities. Aptitude tests include items which measure more specialised abilities of an individual. Aptitude tests are tests of special abilities that are required in specific jobs, which help to predict aptitude for a particular job or type of training. Aptitude tests are often used for weighing occupational success.

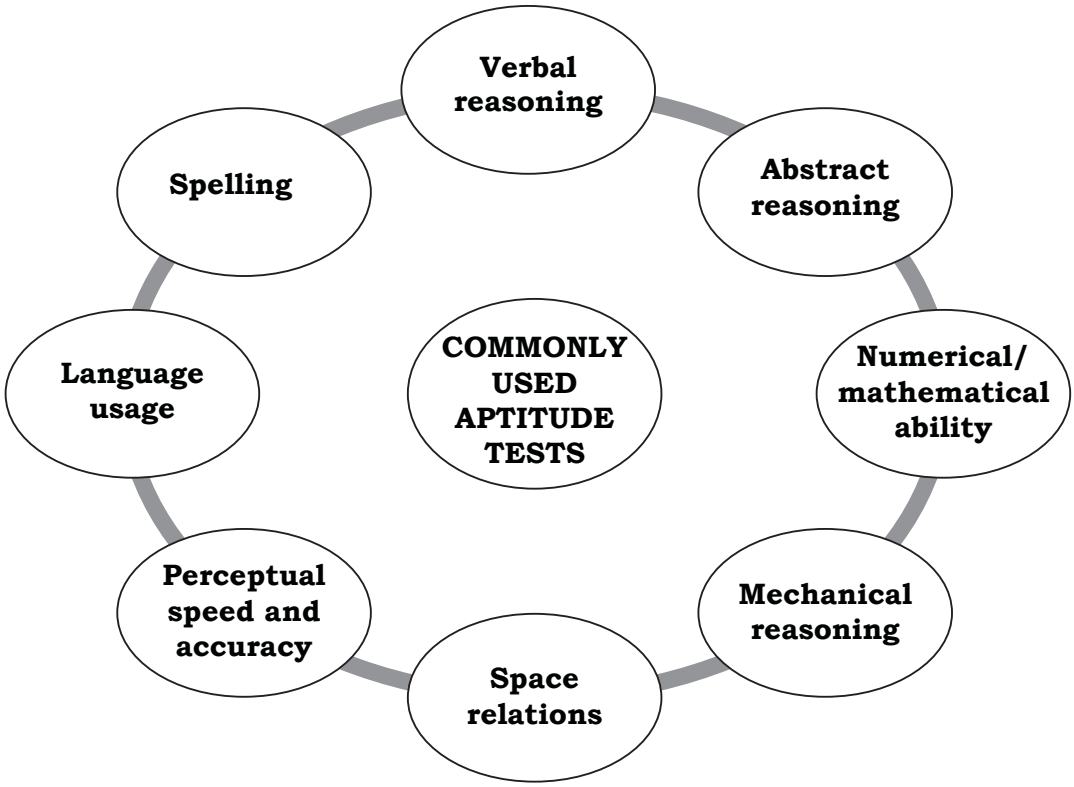
Understanding a person's development potential for the future, however, offers some exciting opportunities to find the best candidates for organisation's long-term well-being. Researchers suggest that aptitude tests are valid for virtually all jobs. In fact, it is often said that one of the most important applications of such tests is their ability to predict student achievement and future outcomes (Brown, Reynolds, and Whitaker, 1999; Weiss and Prifitera, 1995).

What is the Value of Aptitude Testing?

- They are brilliant predictors of future academic accomplishment.
- They provide ways of comparing one's performance with others in the same circumstances.
- They provide a profile of strengths and weaknesses.
- They evaluate differences among individuals.
- They help in discovering latent talents in candidates, and thus helps in improving their educational opportunities.
- They are important tools for working with children with special needs.
- They offer efficient, objective comparisons.
- They help 'screen in' aptitudes for key competency areas.
- They are easy and cost-effective.
- They help in revealing the natural talents, strengths and limitations.

Aptitude Test in Teacher Education Programme: present scenario

The prediction of scholastic achievement and future occupational accomplishment remains a common practice in education as a means for guiding decisions related to student



selection, diagnosis and placement. In present times much of our recruitment and development assessment focuses on achievement. What education does the candidate have? What skills does he/she possess? What training has he/she completed? What has he/she accomplished? What is his/her performance record?

A variety of variables have been linked to scholastic achievement; including cognitive ability, academic skills/readiness, language abilities, motor skills, behavioural–emotional functioning, achievement motivation, peer relationships and student-teacher relationships (Tramontana, Hooper, and Selzer, 1988) in the admission procedures of various higher education courses like engineering courses, medical courses, courses for armed forces. But most aptitude tests have items which measure only cognitive ability and which are easily found in intelligence tests.

As per the teaching profession is concerned, B.Ed. entrance examination is conducted by state governments at state level in some of the states whereas in many states the universities organise their entrance exam separately. There are different provisions regarding the selection criteria. A comparison of B.Ed.

entrance examination in some of the states/universities is shown in the table given below. The table also shows the component of aptitude test in their examination pattern.

From a careful perusal of the study of entrance exam pattern for the B.Ed. course in some of the states or universities, it is evident that aptitude tests are a part of examination, only in some of the states/universities, having very less weightage. Moreover it is not mandatory to pass this test. It implies that a candidate scoring very low or may be zero in teaching aptitude section, can pass the entrance examination if he/she scores well in other sections which are subject-based. And he/she gets admission in teacher training courses. As a result, candidates having no aptitude for teaching become teachers, which is sheer injustice with the future of the students and such candidates

S. No.	*Name of State/ University*	*Level of Exam*	*Components of Written Exam*	*Components of Teaching Aptitude*
1.	Uttar Pradesh	Common Entrance Examination	• General knowledge and current affairs • Subject based	--
2.	Maharashtra	Common Entrance Examination	• Mental Ability • Teacher Aptitude • General Knowledge	Teacher Aptitude
3.	Rajasthan	Pre-Teacher Education Test (PTET)	• Mental Ability • Teaching Attitude and Aptitude Test • General Awareness and Language Proficiency	Teaching Attitude and Aptitude Test
4.	Dayalbagh Educational Institute (DEI)	University level	• General knowledge • Subject Competence (any two)	--
5.	Delhi University	University level	• General Awareness • Languages and/or Science question paper	--
6.	IGNOU	University level	• General knowledge • Subject Competence (any one)	Educational Awareness Teaching-Learning and the School

themselves remain unsatisfied and uninterested in teaching profession.

The task of a teacher does not only demand mastery over the content. A teacher needs to be well conversant in the art of teaching, guiding and motivating the students for various aspects of life and imbibe humanistic values in them. Perhaps this thought needs more attention on the part of administrators and policy framers in education sector especially because teacher is said to be the nation builder. He/she holds the responsibility of educating generation after generation and a nation cannot progress in real sense unless we are not selecting competent and deserving teachers in whose hands we leave our future generations. All the other index and aspects of development remain futile and ivory towers if teachers of that nation fail to make its citizens worthy human beings.

It is important to note that any assessment of children's potential strengths and/or weaknesses should consider multiple inputs and sources. There is urgent need to select those candidates for teaching who have the right teaching aptitude. It is suggested that the first section in the written exam should be related to teaching aptitude and if a candidate qualifies it; then only the remaining sections of the written test should be evaluated. Or the aptitude test can be made a qualifying paper in the entrance procedure. In this concern NCTE can play a significant role by recommending aptitude test as a qualifying or mandatory component of entrance examination for all teacher education courses. This system may prove beneficial in the selection of worthy candidates for the world of teaching and learning.

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4

Learning Science through Inquiry Approach for Arousing the Curiosity in Children

Bharti Dogra*

Abstract

Science teaching and learning is traversing the dimensions of analysis, synthesis, inquiry and metacognition. Science teachers across the country need to be able to use these techniques in their classroom pedagogy to provide every student with optimal learning environment. Learning science through inquiry helps students in constructing knowledge through observation, analysis, interpretation, explanation and finally making broader generalisations. The inquiry approach helps in finding answers to questions through investigation where students are treated as 'scientists in making'. This paper discusses use of inquiry approach in arousing curiosity of children while transacting the science curriculum.

Introduction

Let us consider here the case of Krishna, a Class VI student of a government school.

Krishna, a student of Class VI, while playing in the playground near his house accidentally finds a female dog very affectionately clinging to her babies (puppies). Now everyday he looks for these puppies in the playground and feels excited after locating them. Everyday, he observes them with curiosity and excitement. He finds these puppies slightly bigger in size. Finally one day he observes that puppies are as big as their mother.

This process provides him enough scope to think. Krishna, now wants some elders/teachers to help him in answering questions like:

- How do other baby animals grow up?
- Do babies always resemble their parents?
- Why do some animals like hen lay eggs? Why cannot hen give birth to babies?

* *Associate Professor*, IGNOU

Children love to share their experiences with their elders/teachers. Krishna too shares his experiences with his teacher and in return receives a positive reply from her. This reinforcement from a teacher, whom he loves and respects a lot, helps him in gaining his confidence. So, in this manner the learning process of Krishna continues and for this learning the curiosity must last.

Think of a situation where unlike Krishna's teacher, a teacher scolds, ignores or discourages a learner to ask questions and as a result the student will stop asking questions in future. Therefore, role of the teacher is very important as far as nurturing students' curiosity is concerned. How teachers view science and learning of science is crucial in this case. If teachers view science as inquiry and children as constructors of knowledge, then they will use strategies, by which they can engage them in the active construction of ideas and enhance their abilities to inquire. Inquiry based lessons need a lot of preparation on the part of the teacher. Teachers need to engage them in a lot of interesting activities at times using different materials in groups where they observe, record, discuss and collaborate with each other. Teacher facilitates, monitors, provides resources and focus wherever needed. This paper discusses role of inquiry learning in teaching science as well as in nurturing curiosity among children.

Constructivism Learning and Inquiry Learning

Constructivism is based on scientific observation and research and explains how children learn. They construct their own knowledge of the world around them through reflection on their experiences. When we are faced with new knowledge, we tend to relate it to our previous experiences and either modify our ideas or discard the new information. In the process we tend to create new knowledge by asking questions, explaining and assessing what we already know. In NCF (2005), the constructivist approach and its implications for practice have been brought out in great detail. Some of the key principles are summarised below:

- In the constructivist perspective, learning is a process of construction of knowledge.
- Learners actively construct their own knowledge by connecting new ideas to existing ideas on the basis of materials/activities presented to them (experience).
- The structuring and restructuring of ideas are essential features as the learners' progress in learning.
- The engagement of learners, through relevant activities, can further facilitate in the construction of mental images of the relationships (cause-effect).
- Collaborative learning provides room for negotiation of meaning, sharing multiple views and changing the internal representative of external reality.

Therefore, according to constructivism learners construct knowledge through experience, observation, documentation, analysis and reflection. Inquiry approach focuses on finding answers to investigative questions. According to Anderson, inquiry learning is very similar to constructivist learning. When students inquire into nature of science, its related concepts and problems, then their actually make meaning of their world. In other words, students construct meaning. Opportunities are given to students to elicit their conceptions and teachers become aware of their existing knowledge, life experiences and cultural background. So, teachers start with students' previous knowledge, listen to their ideas and relate learning to their life which makes them motivated and interested in the lesson. The teachers need to develop the ability to work with, children creatively to generate new ideas, new theories, new products and new knowledge. The engagement of the learner in the construction of classroom activity requires inputs from a reflective teacher and meticulous pre-planning before a unit is transacted in the class.

Arousing Curiosity of Children about the World

According to NCF-2005, one of the most important objectives of science teaching is to arouse the curiosity of children about the world (natural environment, artifacts and people). Children are curious by nature and they observe their environment and look for explanations of various observed phenomena. Although they are born with some inherited tendencies but an environment that stimulates learning and development is necessary to ensure children reach their learning potential. How to arouse the curiosity of the children? Provide them ample opportunities to ask questions as well as to express their views. We should always encourage the learners to express their views even if these views

Children observe drying of clothes at home and ask a question, "Where has water disappeared?" Similarly, when they observe boiling of water and conversion of water into water vapours (steam), they again ask where water has disappeared. Even they observe drying of ponds during summer.

Then they find that water droplets appear on the outside walls of the glass containing cold water. They observe condensation of water on the bathroom mirror, visible breath during winter, thick fog during early morning and evening during winter.

Children need answers of all these questions. Where has water gone? How has water surfaced again?

These questions cannot be answered by just giving half-baked information. Provide ample opportunities to them to experiment and arrive at the conclusions. Wherever needed teacher/elders can act as facilitators and can help them in providing resources, removing blocks and providing required information.

are completely absurd. Do not provide them readymade answers. Parents and caretakers can nurture children's development through understanding the importance of what children experience in the world around them and providing experiences that arouse their curiosity and interest. There are many approaches and methods which are used for teaching science but inquiry learning plays a very important role in nurturing and sustaining curiosity of children.

Inquiry Approach for Science Learning

Inquiry is an approach to science teaching focusing on understanding the world by questioning, investigating, observing, and explaining the order of the world around us. When science is taught by inquiry approach, it provides a teacher with many opportunities to interact with each student, to guide and challenge them to acquire and understand a scientific view of the world, and to develop the abilities and attitudes they need to inquire on their own.

In simple words, inquiry is an approach to learning that involves exploring the world and that leads to asking questions, testing ideas, and making discoveries in the search for understanding. There are many degrees of inquiry, and it may be helpful to start with a variation that emphasises a teacher-directed approach and then gradually builds to a more student-directed approach. "Fruitful inquiries evolve from questions that are meaningful and relevant to students, but they also must be able to be answered by students' observations and scientific knowledge they obtain from reliable sources." In an inquiry classroom, the teacher plays an important role in helping students identify questions that can lead to interesting and productive investigations, questions that are accessible, manageable, and appropriate to students' developmental level. A great way to encourage questioning is to provide students with interesting objects to stimulate their curiosity. As stated by Doris Ash, "Curiosity drives the inquiry process—it generates questions and a search for answers" (1999, p. 754). Teachers can provide students interesting objects like watermelons, pumpkins, leaves, seashells, plant galls, seeds, potatoes, pinecones, plastic animal models, inexpensive plastic toys and fossils. After students have had a chance to carefully observe, to wonder, and to share their questions with others, you can use the question-sorting activity that follows as a springboard to inquiry investigations.

One of the most important skills students can develop in science is to understand which questions can be answered by investigation and which cannot. The teacher plays a critical role in guiding the kinds of questions the students pose. Students often ask why questions, which sometimes cannot be addressed by scientific investigations in school setting. For example, "Why does gravity make things fall towards

Table 1: Showing Sample Research Questions and Testable Questions

Research Questions	*Testable Questions*
Why are watermelons red?	Are there more lines on bigger watermelons than on smaller ones?
How big was the biggest watermelon ever grown?	Do larger watermelons have larger seeds than smaller watermelons?
Where do watermelons grow?	Do larger watermelons have more seeds than smaller watermelons?
How do you make watermelon pie?	How much less does a watermelon weigh after it has been carved?
	What happens to a carved pumpkin after one month? after two months?

Earth?" is a question that would be impossible to answer in the school setting. Testable questions, on the other hand, generally begin with how can, does, what if, or which and can be investigated using controlled procedures. For example, encourage students to ask questions such as "How can you slow the fall of an object?", "Which object falls faster, a marble or a basketball?" or "What materials work best for constructing a toy parachute?" guides them toward investigations that can be done in the classroom.

The Role of the Teacher in Inquiry Teaching

Teaching science through inquiry requires that the teacher takes on a different role than the traditional science teacher. "In the inquiry classroom, the teacher's role becomes less involved with direct teaching and more involved with modeling, guiding, facilitating, and continually assessing student work" (Ash and Kluger-Bell, 1999, p. 82). One way to guide students and assess their progress as they are engaged in inquiry processes is to ask thoughtful probing questions. Some suggested questions to ask students while they are involved in inquiry are:

1. What would happen if you ...?
2. What might you try instead?
3. What does this remind you of?
4. What can you do next time?
5. What do you call the things you are using?
6. How are you going to do that?
7. Is there anything else you could use or do?
8. Why did you decide to try that?
9. Why do you think that will work?
10. Where could you get more information?
11. How do you know?
12. What is your evidence?

After going through the entire exercise related to inquiry, students must share the results of their investigations with each other through a poster session. Scientists, engineers, and researchers routinely hold poster sessions to communicate their findings. Here are some suggestions for poster sessions:

1. Posters should include a title, the researchers' names, a brief description of the investigation, and a summary of the main findings.
2. Observations, data tables, and/or graphs should be included as evidence to justify conclusions.
3. The printing should be large enough that people can read it from a distance.
4. Students should have the opportunity to present their posters to the class.

Let us take the case of different types of flowers. The teacher can start a lesson by:

1. *Introduction*: Have you seen flowers? Are they of different colours? When do plants have flowers? Are they seen in a particular season? Why is blooming of flowers seen in spring? What is spring? What are different seasons? Which season comes after spring? What kind of clothes you wear during spring season?
2. *Providing different types of flowers to learners*: Divide now whole class into groups and each group consisting of two students. Each group is then provided a bunch of 10 flowers. Providing them instructions to observe the flowers, what is fascinating about flowers? How are these flowers similar and alike? What are various dissimilarities between these flowers?

Discuss your observations and record them. Teacher moves in the class and observes different groups. Children observe flowers and find that some flowers are red, some are pink and others are yellow. All the flowers have green coloured leaves like structures at the base of the flowers. They want to know why it is so. Why some flowers have long elongated structure/s in the middle of the flower? Why are flowers so brightly coloured?

3. *Guiding learners to investigate questions*: Teacher accepts their questions and guides them to investigate questions like which flowers are alike? Why are they alike? What are the dissimilarities between different types of flowers? Learners then classify flowers on the basis of their similarities and dissimilarities forming piles of similar type of flowers. In this way five piles were made. Teacher moves in the class and discusses similarities and differences of the flowers with different groups of children.
4. *Discussion in the whole class*: Teacher reminds children of the initial question, how are flowers alike and different? Children then discussed what they noticed about the flowers in different piles and what observations made them wonder. Teacher explains that these flowers were collected from five plants and flowers collected from same plant are alike i.e., they have similar colour, shape, size etc. So, children conclude that flowers from different plants have different colours, shapes and sizes.

5. The audience in a poster session should examine the evidence, ask thoughtful questions, identify faulty reasoning, and suggest alternative explanations to presenters in a polite, respectful manner.

Now let us see what are the basic features of an essential inquiry lesson.

1. A question about the natural world that could be investigated was asked.
2. Children were helped by the teacher in gathering data through observations relevant to the investigative question.
3. The observations were used as evidence for making generalisations, interpretations and explanations to answer the question.

Summing up

Children are curious by nature and love to ask questions. What if science curriculum is driven by their questions as well as natural curiosities? Inquiry approach encourages children to ask questions, gather information, conduct research and make discoveries on their own. But inquiry learning calls for more synergies in the classroom rather than mere individual participation. The teachers need to develop the ability to work with learners creatively to generate new ideas, new theories, new products and new knowledge. Inquiry approach makes use of multiple ways of knowing and taking on new perspectives when exploring issues, content and questions. In an inquiry-based classroom, learners ask questions, design investigations and seek solutions. Inquiry approach helps learners in understanding that there is no one place or one resource for answers, but that many tools are useful for exploring problems. During inquiry approach, learners are actively involved in making observations, collecting and analysing information, synthesising information, and drawing conclusions which help them in acquiring useful problem-solving skills. These skills come for their rescue in future "need to know" situations that they will encounter both at school and at work.

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5

Need of Life Skill Education for Prospective Teachers

Chiter Rekha*
Manoj Kumar**

Introduction

A skill is the knowledge and ability that enables us to do something well. We all continuously use various types of skills in our daily routine life. Sometimes we use many skills very effectively to solve the problems, taking decisions, etc. in different situations, or sometimes we display inappropriate behaviour and we do not know how to use a particular skill in an effective, proper and appropriate way in a specific situation. These types of behaviours are not harmful for one who express it and for others too. We all have two types of life skills (1) Natural life skills, and (2) learned life skills. We get natural life skills by birth from our heredity whereas skills those are learned by us from our environment or society through experiences are called learned life skills. We can learn these skills in a formal or non-formal way through our environment or through various incidents. Learning how to use them effectively and continuously will help us to deal with the situation more effectively. Knowledge regarding the life skills is essential for a teacher dealing with students. This article describes the types, importance, need and significance of life skills education for prospective teachers and discusses the various strategies and methodologies to impart life skill education among prospective teachers. This information will help to understand the need of life skills education.

Life Skills

The word life skill is made up of two words – 'Life' and 'skill'. Life means the quality that people have when they are not dead and skills means ability to do well. Thus life skills mean all the abilities that help us to live a fruitful life. In other words we can say that life skills are abilities, individuals can learn that will help them to live a fruitful life. Life skills

* *Lecturer,* Deptt. of District Resource Unit, DIET (South West), New Delhi
** *TGT,* Social Science, GBSSS Moti Bagh 1, Department of Education, New Delhi

Life Skills

Thinking skills	*Social skills*	*Emotional skills*
1. Critical thinking	5. Self awareness	9. Coping with stress
2. Creative thinking	6. Effective communication	10. Coping with emotion
3. Decision making	7. Interpersonal relation	
4. Problem solving	8. Empathy	

are individual skills/abilities that each one of us possesses and yet, need to enhance in order to meet challenges of life. Effective acquisition of life skills can influence the way one feels about oneself and others, and can enhance one's productivity, efficacy, self-esteem and self-confidence. They also provide tools and techniques to improve interpersonal relations. Life skills are needed for creating a demand and effectively utilising the existing education, health and other services.

Life skills are defined in the Targeting Life Skills (TLS) Model (Hendricks, 1996) as "Skills that help an individual be successful in living a productive and satisfying life."

Life skills are the beginning of wisdom which focuses on behaviour change or developmental approach designed to address a balance of three areas – knowledge, attitude and skills.

Life skills are essentially those abilities that help promote mental well-being and competence in young people as they face the realities of life.

Life skills enable individuals to translate knowledge, attitude and values into actual abilities, i.e., what to do and how to do it, given the scope and opportunity to do so.

The World Health Organisation (1993) has defined life skills as, "the abilities for adaptive and positive behaviour that enable individuals to deal effectively with the demands and challenges of everyday life".

UNICEF defines life skills as "a behaviour change or behaviour development approach designed to address a balance of three areas: knowledge, attitude and skills". The UNICEF definition is based on research evidence that suggests that shifts in risk behaviour are unlikely if knowledge, attitudinal and skills based competency are not addressed.

The Ten core life skills as laid down by WHO are:

1. *Critical Thinking*: Critical thinking is an ability to analyse information and experiences in an objective manner.
2. *Creative Thinking*: Creative thinking is a novel way of seeing or doing things. It has one of the four components – fluency, flexibility, originality, elaboration.
3. *Decision Making*: Decision making helps us to deal constructively with decisions about our lives.
4. *Problem Solving*: Problem solving helps us to deal constructively with problems in our lives.

5. *Self Awareness*: Self awareness is the ability to understand our strengths, weaknesses, values, outlook, character, desires and dislikes.(self-identity, self-confidence, ego identity, self-esteem).
6. *Effective Communication*: Effective communication is the ability to express, both verbally and non-verbally in ways that are culturally acceptable.
7. *Interpersonal Relationship*: Skills help us to relate in positive ways with the people we interact with.
8. *Empathy*: Ability to understand and accept others. Empathy is the ability to imagine what life is like for another person. Empathy helps us to accept others, who may be very different from ourselves.
9. *Coping with Stress*: It means recognising the sources of stress in our lives, recognising how this affects us and acting in ways that help us control our level of stress.
10. *Coping with Emotions*: It means involving, recognising emotions within us and others, being aware of how emotions influence behaviour and being able to respond to emotions appropriately.

United Nations Inter-Agency Meeting (WHO) in Geneva considered that life skills are essential for –

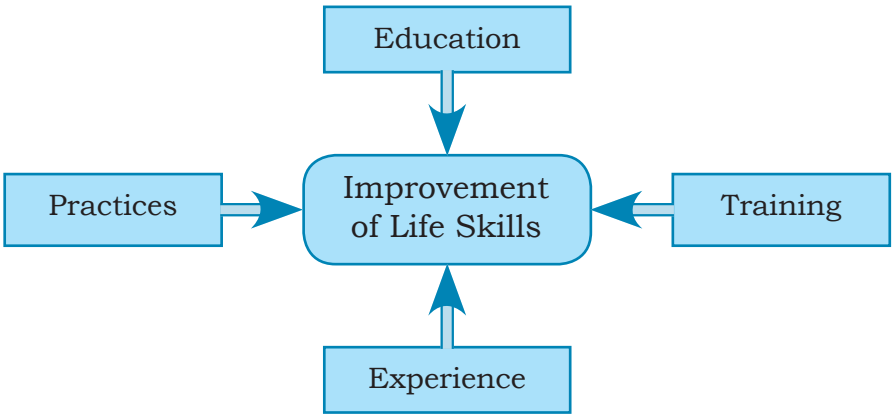
- The promotion of healthy child and adolescent development.
- Primary prevention of some key causes of child and adolescent death, disease and disability.
- Socialisation.
- Preparing young people for changing social circumstances.

Life Skill Education

Each and every person has to play various roles in their individual life so they use various life skills in different occasions and different circumstances to solve the various problems and for establishing a good relationship with others. It has been observed that majority of persons are not able to perform their role and functions effectively. Most of them have to regret on their decisions, communication skills etc. They feel unable to take decisions, solve the problems, lack of confidence. They are not able to identify their innate powers, capacity or abilities.

Education helps us to overcome these problems and plays a very important and vital role in improving the sharpness and effectiveness of life skills. Education provides us opportunities to gain the experiences through practice/training. Education helps us in shining the life skills by rehearsal. Rehearsing the use of life skills in simple situation can make it easy for us to utilise them in complex situation too.

Life Skills Education was founded in 1979 by three people who were all working with young adults in



Boston. One was an English teacher running an employment-training/ GED programme for high school dropouts; two were counsellors and the directors of a community youth office.

Life skill education is an interactive methodology, which focuses on knowledge, attitudes and skills and is specially designed to enhance efforts to positively develop and change behaviour. The focus on behaviour change as a primary objective distinguishes life skills from other 'information only' approaches.

The main objective of life skill education is to enable the learner to develop a concept of oneself as a person of worth and dignity. It should help one to understand oneself and lead to growth in personal responsibility.

Life skills education contributes to basic education; gender equality; democracy; good citizenship; child care and protection; quality and efficiency of the education system; the promotion of lifelong learning; quality of life; the promotion of peace.

Need of Life Skill Education for Teacher Trainees and Prospective Teachers

In the present scenario the role of teacher is very crucial. Today they have to face very tough and new challenges. The role of the teacher has been challenging especially at the primary and elementary level as they are expected to follow learner-centred, activity-based and problem-solving teaching-learning strategies. They have to play a vital role in the development of desirable attitudes, beliefs and values among students. The prospective teacher is therefore expected to acquire adequate knowledge, understanding about the subjects along with necessary life skills to perform work, various activities and developing positive attitude among students. Their roles are not confined to transmission of knowledge besides that they have to perform many other roles:

- In their personal life

- In the student's life such as the role of
  - A teacher
  - An organiser
  - A moderator
  - Facilitator of learning
  - Guide and counsellor
  - Promoter of social moral values
  - Modifier of human behaviour

In order to carry out different roles and responsibilities a prospective teacher needs to have a fairly good life skills.

Besides that prospective teachers have to face many social and emotional problems. Most of the young teacher trainees are not fully trained, experienced or fully matured. They are neither a fully trained experienced teacher nor a fully mature student. In other words we can say that they have lack of experiences and their maturity level is not so high. The young teacher trainees could be engaged or involved in many antisocial activities which create a lot of social problems like alcoholism, drug abuse, sexual abuse, smoking etc. These habits deteriorate their physical and intellectual capabilities and their high risk behaviour could affect society in a larger context. Major problems of the young teacher trainees are:

- They are not able to understand their own ability, strengths, weaknesses etc.
- They want to be their own identity.
- They are not able to recognising the sources of stress.
- They feel that are not able to solve the problem properly.
- They do not know how they can control the emotions in different situations.
- They feel lack of confidence and lack of experience.

To overcome these problems and to discharge their complex roles, responsibilities and functions effectively, prospective teachers own perspective skills and abilities must be fully developed. Life skill education increases the awareness among the prospective teachers about all the social and emotional problems and helps to alleviate social evils from the society. Therefore life skill education is a basic learning need for all the teacher trainees. It is the starting point for the teacher trainees to analysis their potential. It will help the trainee teachers to empower themselves in challenging situations. For this they require training and practice to perform their varied role and discharge their function and responsibilities.

Significance of Life Skill Education for Teacher Trainees

- To be able to explore alternatives.
- To provide inner power and strength to deal with life.
- To analysis their potential.
- To be able to understand self and assess their skills, abilities and areas of development which

enables them to analyse their capacity to enhance the function in a most productive way.

- Weigh pros and cons.
- Make rational decision. To be able to foresee the consequence of different decisions. No decision is also a decision.
- To be able to tolerate ambiguity and willing to change their priorities as per the requirement.
- To be able to establish productive interpersonal relationship with others.
- Lay the foundation for good health and mental well being.
- Help to prevent the psychological disturbance.
- Communicate effectively.
- Be assertive.
- To be able to take positive action to protect themselves and to promote health and meaningful social relationship.
- To be able to adjust with their environment and to solve the conflict.
- Ability to take everything in the right sense.
- To be helpful in developing 4H i.e., Head , Heart, Hand and Health.
- To prepare responsible citizens.

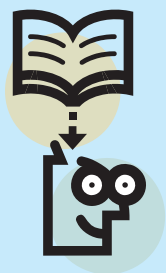
National Curriculum Framework–2005 also putsforth need of imparting life skills. According to the *National Curriculum Framework–2005*, every person should have ability of thinking and making ethical decision independently or in a group. It is essential to sensitise students regarding emotions then only they can survive in the world with satisfaction. To understand others, cooperation, social responsibility and good interpersonal relations are essential for teachers. *NCF-2005* has following expectations about preparation of teachers.

- Teacher must be co-operative, feel belongingness, respect other groups and respect democratic values.
- Teacher must realise the need to upgrade continuous knowledge.
- Teacher must have ability to communicate clearly and think logically to understand the world around him/her and to fulfil social responsibility towards National development.
- Teacher should be emotionally developed, happy and cheerful.
- Teacher should guide her/his students to think.

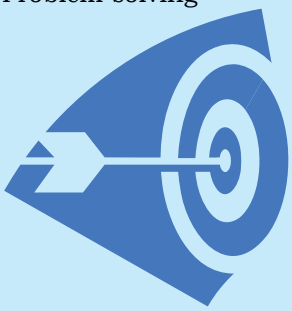
To fulfil these expectations teachers must be provided professional knowledge, skills and education of life skills too.

Various methods can be used to enhance life skills among teacher trainees/prospective teachers:

1. *Heard and said method*: Discussion, Brainstorming, Buzz session, Quiz, Debates , Story telling.
2. *Self-learning method* : Experiment, Programmed learning.
3. *Action-oriented method*: Case study, Simulation, Role play, Games.
4. *Mixed method* :Workshop, Seminar.

Methods	*Process*	*Life skills*
Discussion: A discussion is an oral exploration of a topic, object, concept or experiences	• Examines a problem/topic • Developing new ideas • Reaching the best solution	Listing skill Assertiveness Empathy Communication skill
Brainstorming: Brainstorming is a process for developing creative solution to problems 	• Actively generate a broad variety of fresh ideas about a particular topic • In a short period of time • Analyzing and Evaluating the ideas • Appropriate decision are taken or • Solved the problem	Creative thinking Critical thinking Problem solving Decision making Communication skill Interpersonal relationship
Buzz session: Buzz session is a short, small group discussion session. It is used as an effective means of achieving trainees' participation	• Problem is put before the trainees in an open session or small groups • Give them 4-5 minutes • Presentation of various aspects of problem • Solve the problem	Interpersonal relation Communication skill Thinking skill Self awareness Decision making
Role Plays	• Dramatisation of various activities • Trainees are made to experience different problems faced by different people	Empathy Communication skill Decision making Interpersonal relation ship
Games/Quiz: A quiz is a form of game or mind sport in which player (as individual or in team) attempts to answer questions correctly. Quizzes are also brief assumption used in education to measure growth in knowledge, abilities and skills.	• Games activities can be used for teaching content and for reinforcement 	Critical thinking Problem solving Decision making

Simulation	• Activities structured to feel like the real experiences 	Empathy Coping with emotions Decision making Interpersonal relationship
Situation Analysis 	• Activities allow to explore problem and dilemmas • To think • To share ideas	Problem solving Critical thinking Empathy Coping with stress Interpersonal relationship
Case studies	• Real life stories • Describe in detail • Powerful catalysts for thought and discussion	Self awareness Empathy Problem solving
Debates	• A particular problem or issue is presented • Solving the problem	Thinking skill Creative thinking Critical thinking Problem solving Communication skill
Story telling	A medium for sharing, interpreting, offering the content and meaning of a story to an audience or a story is a description of imaginary people, an event or things.	Problem solving Thinking skill

Problem solving 	• Identify the problem or issue • Collect the information • Discussion • Solving the problem	Problem solving Thinking skill Critical thinking Creative thinking
Co-curricular activities	• Activities conducted simultaneously with academic activities	Creative thinking Self awareness Empathy Communication skill Interpersonal relation
Workshop: Workshop is group based learning. Its main purpose is to acquaint trainees with complex problems and develop skills.	A workshop involves a number of activities like presentation of resource person, demonstration, group discussion, practical and evaluation. Workshop may continue for a few days involving 5-6 hours group work every day. Activities include Interaction based lecture Brainstorming Discussion	Problem solving Decision making Communication skills

The methods used during the training period should aim at right development of whatever knowledge, attitudes or life skills have to be developed in the trainees. It is very important to use various methods in the training period, which are helpful in developing the life skills in prospective teachers.

All the life skills are linked with each other

When we try to learn one life skill it means simultaneously we are using or learning more than one life skills, e.g.,

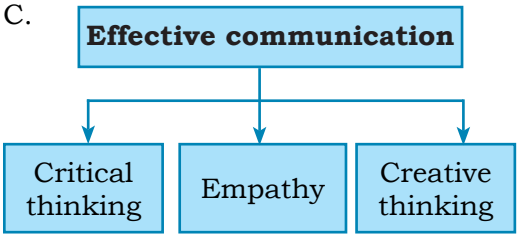
A. Getting to know you

Self Awareness+ Critical thinking

B. Working towards your goal

Self Awareness+ Critical thinking+ Creative thinking

C.



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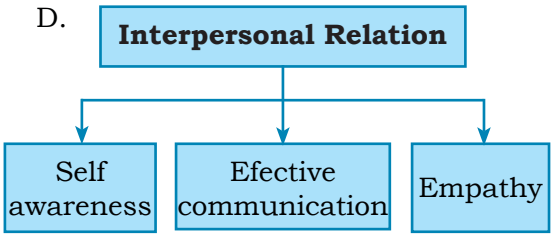

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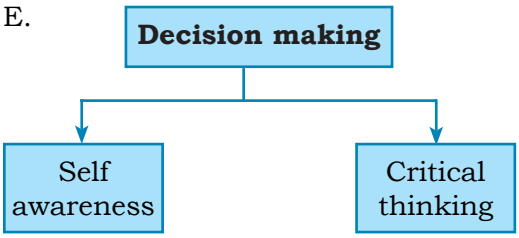

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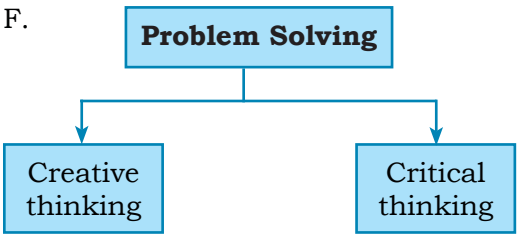

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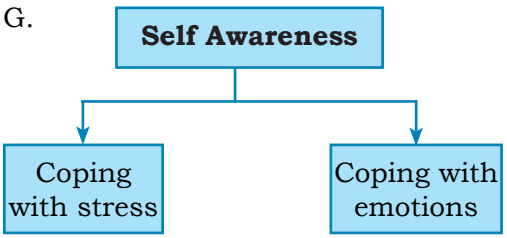

Conclusion

It is observed that life skill education is not being considered as an important issue in existing teacher education and life skills are not taught to the would be teachers/ prospective teachers. I believe that the teacher training institute is a good place to develop life skills among prospective teachers. In these institutions, besides academics, teacher trainees can also learn social and emotional skills. Most of the trainees are found in their adolescent stage and often look to the community for guidance, support and direction. For its application there is need for inclusion of life skill education in teacher education.

The programme of the teacher education should incorporate such activities that enable the prospective teacher to develop different competencies, logical thinking, physically fit, mentally fit, emotionally sound and socially effective, so that they lead healthy life and serve their home and community. During the pre-service training programme a trainee should be provided necessary life skills.

The major objective of teacher training institutes is to facilitate personality development of prospective teachers. Therefore curriculum should be designed and transacted to enable the prospective teacher to discover his/her talent, potential, develop in him/her the productive and social life skills to enable him/her to enjoy sound physical and emotional health. Therefore life skills must be the part of curriculum.

Training institutions play a crucial role in building or undermining self-esteem and sense of competence. We, therefore, believe in a comprehensive teacher-training programme in life skills education that would prepare not only better teachers but also would support children's educational and mental health requirements. Therefore we need to create life skills as the cornerstone of various teaching programmes.

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6

Role of Emotional Intelligence in Verbal Behaviour Patterns in the Classes of Primary School Teachers: a Comparative Study

Gaurang Tiwari*
Asha Pandey**

Abstract

The purpose of the study was to see role of Emotional Intelligence (EI) in verbal behaviour pattern of primary school teachers. Verbal behaviour pattern was measured by FIACs (Flanders Interaction Analysis Category System). Teachers were categorised in four groups– EHE (Extremely High EI), HE (High EI), ME (Moderate EI) and LE (Low EI) groups as per their level of EI. Various interaction ratios were computed as indices of verbal behaviour pattern. It was observed that teachers high on EI asked diversified questions in classroom teaching and ensure active participation of students as compared to teachers low on EI.

Key words: Emotional intelligence; Verbal behaviour pattern; teacher question ratio; teacher response ratio; per cent silence or confusion; per cent pupil talk; pupil initiation ratio.

1. Introduction

Emotional Intelligence (EI) implies that humans are both rational and emotional beings but they are predominently neither rational beings nor emotional beings. Hence, adaptation and coping abilities in life are dependent on the integrative functioning of both rational and emotional capacities (Salovey, Bedell, Detweiler and Mayer, 2000). Peter Salovey and John Mayer (1990) had defined EI as a mental ability that consists of "ability to monitor one's own and other's feelings and emotions, to discriminate among them and to use this information to guide one's thinking and actions" (p. 189). Goleman (1995) however has defined EI in a different way. His model of EI includes (a) knowing one's emotions, (b) managing emotions, (c) motivating oneself, (d) recognising emotions in

* *NTS-Doctoral Fellow and Research Scholar,* Banaras Hindu University, Varanasi
** *Professor,* Faculty of Education (k), Banaras Hindu University, Varanasi

others, (e) and handling relationship. Later Mayer and Salovey (1997) revised their theory a bit to emphasise the cognitive components and talked about a hierarchy of mental abilities. In contrast, Raven Bar-On (1997) defined EI as "an array of non-cognitive capabilities, competencies and skills that influence one's ability to succeed in coping with environmental demands and pressures" (p.14).

Survey of literature related to Emotional Intelligence (EI), shows paucity of researches to study role of EI in teaching behaviour. A perusal of findings revealed EI as significant predictor of social quality relationship, interpersonal relationship, teaching self-efficacy, and communication effectiveness, which portray importance of EI for teaching behaviour.

Teaching occurs in the social context. As such teacher is required to be efficient in interpersonal relationship. Here, EI of teachers seems to be important. EI is defined as one's ability to manage and monitor one's own emotions; recognise different types of emotions in others; distinguish the difference between one's emotions and those of others, and use that information to guide one's thinking and actions (Pinos, Twigg and Olson, 2006).Then, teacher high on EI is capable to perceive and understand feelings and emotions of students and consequently can guide his/her actions in consistent with feelings and emotions of students. EI is observed as significant predictor of quality of social relationship (Brackett, Mayer and Warner, 2004; Eisenberg, Fobes, Guthrie and Rieser, 2000; Lopes, Salovey and Straus, 2002). EI of teacher is likely to affect his or her interpersonal relationship with students. The way teacher relates himself or herself to students; it decides the conduciveness of social-emotional climate of classroom (Flanders, 1970).

Singh (2003) in his study revealed that teaching profession requires high EI. He further added that the teaching profession entails emotional competencies such as empathy, rapport, harmony and comfort while dealing with groups. Hence, teaches with high EI seem to exhibit open and free expression of ideas which lead them to creativity and mutual respect. Empathy is critical skill for both getting along with students of diversified backgrounds. Empathy is an "antidote" that attunes people to subtleties in body language, or allows them to hear the emotional message beneath the words and has a deep understanding of the existence and importance of cultural and ethnic differences (Goleman, 2004).

Ergur (2009) discussing attributes of an emotionally intelligent teacher has written that responding to learners is a great opportunity for the teacher to reflect his/her emotional intelligence while replying to a comment or a question of a student. If it is handled skillfully, it will help the motivation of the students, affect the emotional

environment, clarify what is an acceptable answer, show the learners that they are valued by the teacher and their teacher is listening to them attentively. Responding could be achieved on two levels – cognitive and affective. Informing about a specific topic, clarifying the situation, expanding the subject by giving details can be defined as "cognitive responding" whereas through "affective responding" the teacher pertains to the feelings of the questioner or the commander. In other words, the teacher has the potential to make the students feel respected, valued, belittled, dismissed or humiliated through the use of his/her affective responding skills.

Researches which have been conducted to study role of EI in teaching self-efficacy and in communication effectiveness showed that teacher higher on EI will tend to have positive believes about his/her teaching capabilities (self-efficacy), due to awareness about his/her strength and weakness. Teaching self-efficacy is one of the most important variables consistently related to positive teaching and student learning outcome (Penrose, Perry and Ball, 2007). Significant association between emotional intelligence and teaching self-efficacy appears to underscore validity of theory of emotional intelligence and its application for teachers.

Communication is culmination of all EI abilities. EI is defined as the capacity to reason about emotions, and of emotions to enhance thinking. It includes the abilities to accurately perceive emotions, to access and generate emotions to assist thought, to understand emotions and emotional knowledge, and to reflectively regulate emotions to promote emotional and intellectual growth (Mayer and Salovey, 1997). The high EI individual, most centrally, can better perceive emotions, use them in thought, understand their meanings, and manage emotions better than others and tends to be more open and agreeable (Mayer, Salovey and Caruso, 2004).

Each emotion conveys a unique set of identifying signals:emotional information (Mayer, Salovey and Caruso, 2004). Emotion information processing is an evolved area of communication (Mayer, Salovey, Caruso and Sitarenios, 2001). Teacher high on EI seems to be high in advantageous position in carving out conducive-social-emotional classroom climate by having capacity to reason about emotions. Teachers with EI are likely to be aware of their own feelings and those of students and are able to communicate both positive and negative emotions and internal experience when appropriate and have an impact on students' mood. Thus, possessing EI is likely to permit teacher to have a closer understanding of students and their surroundings.

Against this backdrop, it is likely to be speculated that there will be variation in interaction patterns of

teachers. Interaction patterns of teachers of high EI are likely to be different from interactions pattern of teachers of low EI. Hence, this study was conducted with purpose to study role of EI in interaction patterns of primary school teachers.

2. Objectives of the Study

The study was undertaken with the following objectives:

2.1 To compare the classroom verbal behaviour of primary school teachers having different levels of EI.

2.2 To study the verbal behaviour pattern of teachers having different levels of EI.

3. Hypothesis

In conjunction with objectives of study, research hypothesis which was framed:

H1: Teachers having higher level of EI will score higher on TQR (Teacher Question Ratio), TQR 89 (Instantaneous Teacher Question Ratio), TRR (Teacher Response Ratio) TRR 89 (Instantaneous Teacher Response Ratio) and PSC (Percent Silence or Confusion) than teachers having lower level of EI.

4. Operational Definition of Terms Used

4.1 Verbal behaviour

Verbal behaviour as it is analysed by FIACs (Flanders Interaction Analysis Category System). FIACs analyses teaching phenomenon in terms of the 10 categories that are broadly subsumed under teacher talk, pupil talk and silence (Table 1). Interaction ratios which were computed for studying teaching behaviour were:

4.1.1 Teacher Question Ratio (TQR)

This ratio, as the nomenclature indicates, points to the tendency of the teacher, to ask questions during the more content oriented part of the class discussion. It is computed by formula:

$$TQR\ (Teacher\ Question\ Ratio) = \frac{(Category\ 4) \times 100}{(Categories\ 4{+}5)}$$

4.1.2 Instantaneous Teacher Question Ratio (TQR 89)

It indicates the tendency of the teacher to respond to student talk with questions based on his/her own ideas instead of lecture. Formula for computing this interaction ratio is:

$$TQR\ 89 = \frac{Cells\ \{(8{-}4){+}(9{-}4)\}}{Cells\ \{(8{-}4){+}(8{-}5){+}(9{-}4){+}(9{-}5)\}} \times 100$$

4.1.3 Teacher Response Ratio (TRR)

It indicates the teacher's tendency to react to the ideas and feelings of the students. The ratio provides an index of the emotional climate in the classroom. Formula for computing this interaction ratio is:

$$TRR\ (Teacher\ Response\ Ratio) = \frac{(Categories\ 1{+}2{+}3) \times 100}{(Categories\ 8{+}9)}$$

4.1.4 Instantaneous Teacher Response Ratio (TRR 89)

It indicates the tendency of the teacher to praise or integrate pupil ideas and feelings into class discussion at the moment the pupils stop talking. This interaction ratio is computed by formula:

$$TRR\ 89 = \frac{Cells\ \{(8–1)+(8–2)+(8–3)+(9–1)+(9–2)+(9–3)\}}{Cells\ \left\{\begin{matrix}(8–1)+(8–2)+(8–3)+(8–6)+(8–7)+(9–1)+(9–2)\\(9–3)+(9–6)+(9–7)\end{matrix}\right\}} \times 100$$

4.1.5 Per cent Pupil Talk (PPT)

It refers to the ratio of verbal activities of the pupils in response to teacher. Formula for computing this interaction ratio is:

$$PPT\ (Per\ cent\ Pupil\ Talk) = \frac{(Categories\ 8+9)\times 100}{Total\ of\ all\ categories}$$

4.1.6 Per cent Silence or Confusion (PSC)

This interaction ratio can be computed by using formula:

$$PSC\ (Percent\ Silence\ or\ Confusion) = \frac{(Category\ 10) \times 100}{Total\ of\ all\ categories}$$

4.2 Emotional intelligence

Emotional intelligence is the ability of an individual to appropriately and successfully respond to a vast variety of stimuli being elicited from the inner self and immediate environment. Emotional intelligence constitutes three psychological dimensions– emotional competency, emotional maturity and emotional sensitivity– which motivate an individual to recognise truthfully interprets honestly and handles tactfully the dynamics of human behaviour.

Each dimension contains four skills which are as follows:

(A) Emotional Competency

(a) Tackling emotional upsets

(b) High self-esteem

(c) Tactful response to emotional stimuli

(d) Handling egoism

Table 1 : Flanders Analysis Category System.

(a)	Teacher Talk	
	Indirect Influence	1. Accepts feelings
		2. Praises or encourages
		3. Accepts or uses pupil ideas
		4. Asks questions
	Direct Influence	5. Lecturing
		6. Giving Directions
		7. Criticising or justifying authority
(b)	Pupil Talk	
	Response	8. Pupil talk response
	Initiation	9. Pupil talk initiation
(c)	Silence/Confusion	10. Silence or confusion

(B) Emotional Maturity

(a) Self-awareness

(b) Developing others

(c) Delaying gratification

(d) Adaptability and flexibility

(C) Emotional Sensitivity

(a) Understanding threshold of emotional arousal

(b) Empathy

(c) Improving interpersonal relation

(d) Communicability of emotions

5. Methodology

Descriptive research method was used in this study.

6. Population and Sampling Technique

All the primary school teachers of Government, Government aided and private schools constituted the population of the study, 'Multi-stage random sampling technique' was employed for selection of sample. 91 primary school teachers were randomly drawn for this study.

7. Tools used

7.1 Flanders Interaction Analysis Category System (FIACS)

Flanders Interaction Analysis Category System (FIACs) (1970) was used to observe the classes. For ensuring reliability of data on FIACs inter-observer and intra-observer reliability were established by using Scott's coefficient. Inter-observer reliability was obtained to be 0.78 and intra-observer reliability was found to be 0.86. As pointed out by Ober and others an r of 0.60 is frequently established as an acceptable level (Pandey, 1981).

7.2 The EQ Test

The EQ Test (developed by Professor N. K. Chadha and Dr Dalip Singh) was adapted in Hindi by the investigator for the measurement of EI of primary school teachers. Reliability of the tool has been established by 'test-retest method' and 'internal consistency method'. Stability coefficient was found to be 0.89. Cronbach-alpha coefficient (α) was computed for each dimension of EI-emotional sensitivity, emotional maturity and emotional competency, which were obtained to be 0.76, 0.69 and 0.74, respectively.

Content validity was established with expert judgements and for ensuring empirical validity of the tool, it was correlated with 'Bhattacharya Instrument of EI' (BEIS-In).The validity was found to be 0.58, which indicates that the present test is valid.

8. Data Collection and Analyses

Procedure of data collection and categorisation of teachers in different groups as per their level of EI:

8.1 Phase 1

8.1.1 Observer Training

Prior to observation of each sampled teacher by FIACs, the investigator received comprehensive training in observing teachers in classroom situations. The categories (FIACs) were memorised thoroughly. By the end of the training period the inter-observer reliability, using Scott's coefficient correlation was consistently near about 0.78.

8.1.2 Procedure of observation and data collection

Each teacher was observed once, for 35 minutes by using FIACs.

8.2 Phase 2: Categorisation of teachers in different groups

On the basis of scores on 'EI Test', teachers were classified into four groups; as per established norms of the test,

- Teachers who scored 285 or above were grouped as EHE (teachers having extremely high EI);
- Teachers who scored in the range of '250-284' were grouped as 'HE' (teachers having high EI);
- Teachers who scored in the range of '200-249' were grouped as 'ME' (teachers having moderate EI);
- Teachers who scored in the range of '150-199' were grouped as 'LE' (teachers having low EI).

Out of 91 primary school teachers, 14 teachers were identified as having extremely high emotional intelligence (EHE), 16 teachers were identified as having high emotional intelligence (HE), 32 teachers were identified as having moderate emotional intelligence (ME) and 19 teachers were identified as having low emotional intelligence (LE). Group-wise distribution of teachers is given in Table 2.

Table 2: Groups of teachers

Serial No.	*Groups*	*No. of teachers*	*Range of scores*
1.	EHE	14	285 or above
2.	HE	16	250-284
3.	ME	32	200-249
4.	LE	19	150-199

8.3 Phase 3: Treatment with data obtained by observation of each teacher by FIACs tabulating interaction analysis matrices

After observing each sampled teachers, 10×10 matrices were complied. After classifying teachers in four groups according to their level of EI, master matrix was compiled for each group of teachers. Four master 10×10 matrices were compiled. Later on, the cell frequencies of these four master 10×10 matrices were converted into percentages to get the percentage matrices.

9. Results and Discussion

For studying classroom verbal behaviour of primary school teachers *vis-à-vis* their level of EI, performance of teachers grouped on the basis of

their level of EI is given in this section. For meaningfulness of interaction ratios, performance of each group of teachers is compared with established norms on these interaction ratios for Indian classroom context and American classroom context.

9.1 Interaction Ratio: TQR (Teacher Question Ratio) and TQR 89 (Instantaneous Teacher Question Ratio)

From perusal of Figure 1, it appeared that teachers of EHE group got highest value on TQR and LE group teachers got lowest remaining groups tended to lie in between these two groups. Regarding percentage values on TQR (Teacher Question Ratio) scenario which emerged depicts following ranking of groups: EHE group > HE group > ME group > LE group. When percentage value on TQR of each group is compared with norm (16.32) set for Indian classroom setting, EHE and HE groups succeeded to cross this norm and for remaining groups their percentage values are observed to fall short of this norm. While comparing each percentage value on TQR with norm (26) set for American classroom setting, scenario which emerged showed that no group of teachers succeeded to exceed this norm.

When each group of teachers was compared to one another pertaining to percentage value on TQR 89 (Instantaneous Teacher Question Ratio), emerged results, figured out same rankings of group of teachers:

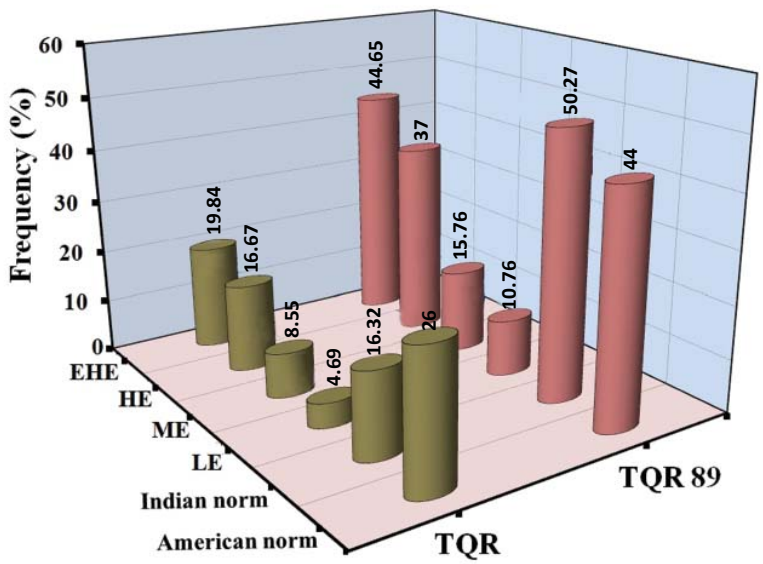

Figure 1: Performance of teachers on TQR and TQR 89 interaction ratios

EHE group > HE group > ME group> LE group. It means performance of all groups of teachers on TQR replicated itself on TQR 89. For meaningfulness of each percentage value on TQR 89, it was compared with established norm in Indian setting and American classroom setting, results which were obtained, revealed that percentage value of teachers of EHE group surpassed norm (44) set for American classroom setting. Remaining percentage values of teachers of HE, ME and LE groups fell short of this norm. Percentage value of HE group on TQR 89 appeared to fall short of either Indian norm or American norm. However, they managed to create huge difference in leaving teachers of ME and LE groups behind pertaining to performance on TQR 89.

When all obtained values on TQR and TQR 89, teachers of EHE, HE, ME and LE groups were deliberated in conjunction with their levels of EI, emerging picture denotes if teachers are higher in their level of EI, their observed percentage values on these interaction ratios tended to be higher in magnitude than teachers whose level of EI is observed to be comparatively lower. So, it appears that there exists association between TQR, TQR 89 and level of emotional intelligence of teachers.

Kernel based on the foregoing discussion is that EI appears to be paramount in "Asking Questions". Emotionally intelligent teachers appeared to cut edge over their counterparts pertaining to asking questions. It means higher performance on these two interaction ratios is likely to be preceded by higher level of EI. Here, it is likely to be said that higher EI seems one coherent antecedent pertaining to higher performance on

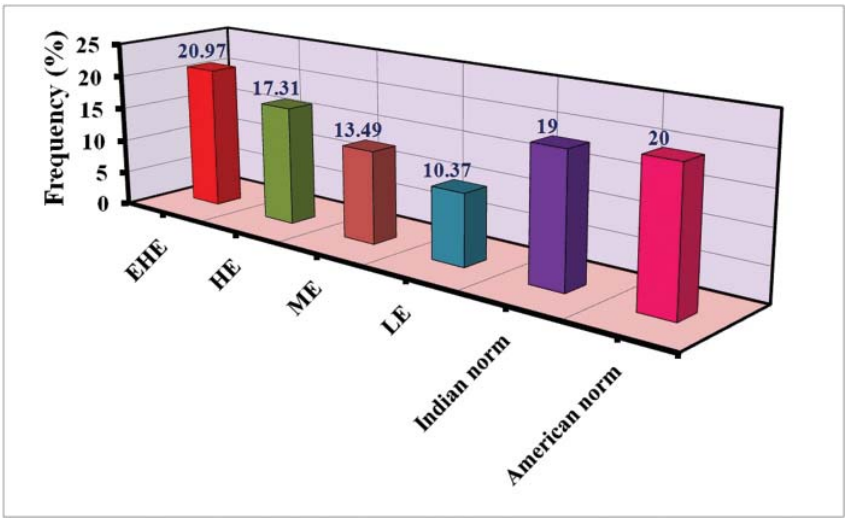

Figure 2 : Performance of teachers on PPT interaction ratio

these two norms. There is a much professional consensus that teacher questions have a major impact on the quality and quantity of student achievement. Indeed, in an earlier review of the research on teacher questions, Gall (1970) labeled this belief a truism (as cited in Winne, 1979). Asking questions implies that teacher intends to ensure active participation of students, over and above, asking questions following students' response or ideas shows teacher's concern about the expanding thinking horizon of the students.

From Figure 2, it is revealed that percentage values on PPT (Per cent Pupil Talk) for teachers of EHE, HE, ME and LE groups are obtained to be 20.97, 17.31, 13.49, and 10.37, respectively.

Percentage values on PIR (Pupil Initiation Ratio) are obtained to be 20.26, 15.15, 5.95 and 6.54, respectively (Figure 3). For drawing meaningful inference, it needs to see performance on these interaction ratios in conjunction with performance of these groups of teachers on TQR and TQR 89. One having logical mind will see that teachers higher in their relative performance on TQR and TQR 89 tended to secure higher magnitude on PPT and PIR. It implies that TQR and TQR 89 contribute in active participation of students which is confirmed by higher magnitude of PIR and PPT.

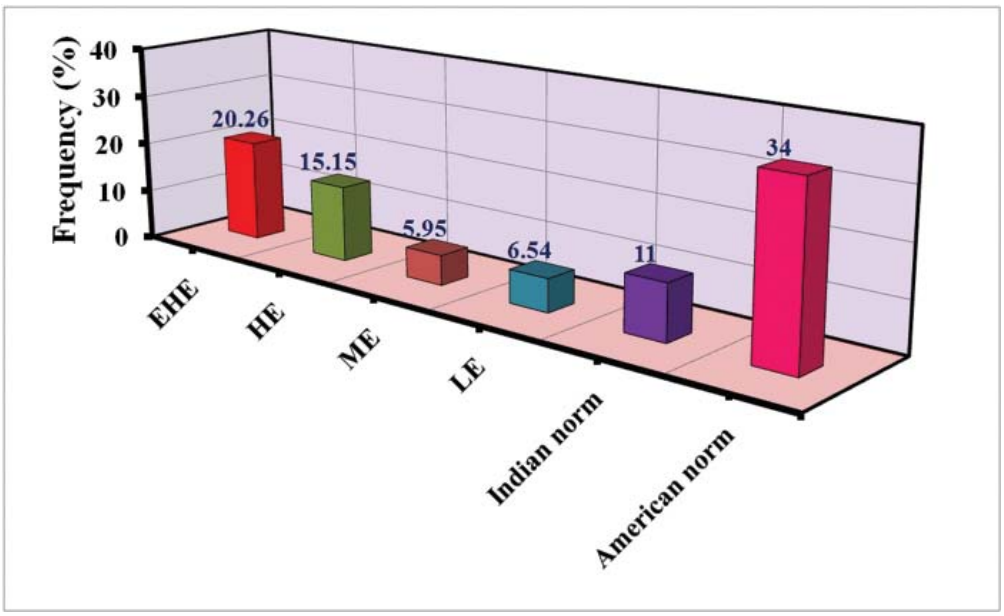

Figure 3 : Display of performance of teachers on interaction variable 'PIR' having different levels of emotional intelligence

Higher values on PPT and PIR are likely to occur when higher percentage of teacher-pupil talk fall in category 8 (Pupil responding following closed-ended questions or narrow questions) and 9 (Pupil initiation following open-ended questions or divergent or thought-provoking questions) of FIACs. Questions can be classified in four categories according to cognitive level as per model of Newcomb-Trefz (1987), which are — remembering (knowledge level of Bloom's Taxonomy of cognitive domain), processing (comprehension, application and analysis levels of Bloom's Taxonomy of cognitive domain), creating (synthesis level of Bloom's Taxonomy of cognitive domain) and evaluating (evaluation level of Bloom's Taxonomy of cognitive domain) (Ewing and Whittington, 2007). Lower cognitive level questions require students to recall information learned in the past, whereas higher cognitive level questions require students to process and potentially evaluate the subject matter. Higher PIR in the classes of teachers of EHE and HE groups is likely to be due to thought-provoking questions or higher cognitive level questions. When teacher asks higher cognitive level questions, as such, students need to be required to think critically about the subject by creating their own responses and evaluating criteria pertinent to the questions being asked by teachers. The use of various levels of questions is recommended during class sessions for greater development of cognitive skills.

Teachers who use multiple types of questions during class sessions are allowing students to become engaged in the content. Blosser (2000) contends that, a higher potential for engagement occurs if the teacher is sensitive and is aware of and understands the types of questions being asked during class sessions. Teacher's attempt to bolster and strengthen the students' abilities by asking questions of different cognitive levels, is result of sensitivity of teachers towards their students. Emotional sensitivity is one dimension of EI (Singh, 2003). An emotionally intelligent teacher senses the right juncture in the process of teaching, when to ask questions of lower cognitive levels and when to ask questions of higher cognitive levels (Sengupta and Bhattacharya, 2007). Hence, emotionally intelligent teachers who are sensitive towards their current use of question types and cognitive levels of questions, have greater potential making changes that enhance student learning during class sessions (Ewing and Whittington, 2007).

9.2 Interaction Ratio: TRR (Teacher Response Ratio) and TRR 89 (Instantaneous Teacher Response Ratio)

TRR indicates the teacher's tendency to react to the ideas and feeling of the students. This ratio is an index of the emotional climate in the classroom (Mangal, 2011) and TRR 89 is an index of teachers' tendency to praise

or integrate pupil ideas and feeling into the class discussion when pupil stops talking (Mangal, 2011).

Figure 4 displays percentage values pertaining to TRR and TRR 89 of teachers of EHE, HE, ME and LE groups. Sequence of groups of teachers which emerged on the basis of their performance on TRR interaction ratio is like EHE > HE > ME > LE groups. Highest value on this interaction ratio is secured by EHE group and lowest value on this interaction ratio is secured by LE group, percentage values secured by HE and LE groups fall in between these two extremes. Percentage value on TRR of EHE group is observed to exceed norm (42) set for American classroom set by Flanders, but, could not succeed to cross norm (55.42) set for Indian classroom. Others TRR values of HE, ME and LE groups could not cross both norms either norm (42) set for American classroom or norm (55.42) set for Indian classroom.TRR of HE group is found to be slightly below than American norm and it is considerably higher than TRRs of ME group and LE group.

TRR is the proportion of positive and affective categories 1 (accepting and clarifying the feeling tone of students in non-threatening

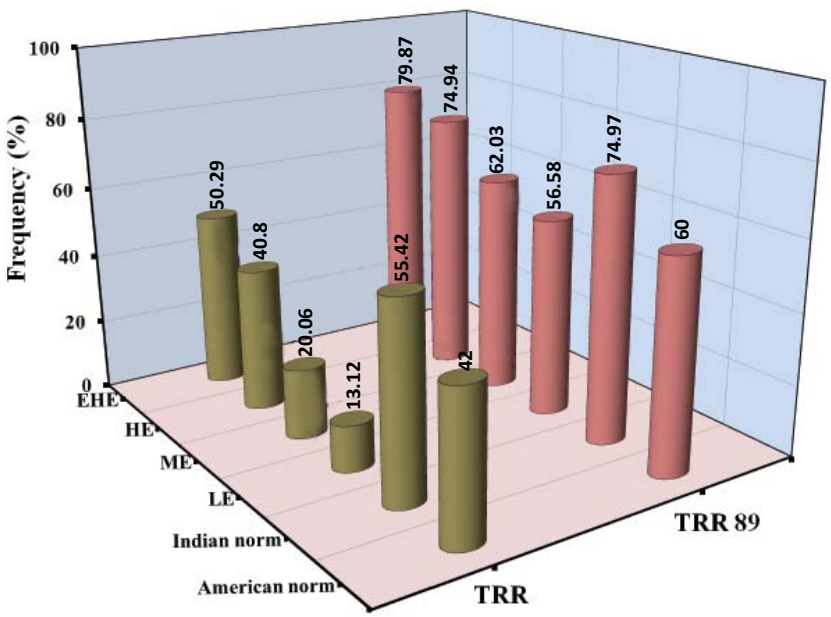

Figure 4 : Performance of teachers on TRR and TRR 89 interaction ratios

manner), 2 (encouraging and appreciating viewpoints of students) and 3 (integrating pupil express in explanation) of FIACs to total of categories 1, 2, 3 including 6 (giving direction) and 7 (criticising behaviour and viewpoints of students and justifying authority) which are restrictive categories (Flanders, 1970).

Category 1 of FIACs implies abilities of the teacher to be sensitive toward the feeling of the students and consequently to communicate showing due importance of students' feeling (the whole process entailing being sensitive and communicating his/her sensitivity is called empathy) (Bhattacharya and Sengupta, 2007), the more occurrence of this category might be attributed to the 'empathy' sub-component of the social skill cluster of the emotional intelligence, because foregoing abilities are identified to be embedded in this subcomponent (Bhattacharya and Sengupta, 2007). Category 2 refers the ability of the teacher to appreciate the feeling, viewpoints and ideas of the students. Appreciating the feeling, perspective and viewpoints of the students require on the part of the teacher 'ability to empathise', which is grounded in the emotional intelligence of the teacher (Bhattacharya and Sengupta, 2007). Category 3 of the FIACs refers developing or building on the ideas expressed by the students, for these foregoing activities; teacher is required to be a good listener, to increase empathy and sensitivity to others' feelings and to understand others' perspectives, points of view and feelings. These foregoing abilities are identified to be deep-rooted in the EI of the teacher (Bhattacharya and Sengupta, 2007).

If the TRR (Teacher response ratio) tends to be low for any teacher, it will be due to increasing frequencies of categories 6 and 7 inter alia decreasing frequencies of categories 1, 2 and 3. Categories 6 and 7 refer exercising extreme self-reference or own authorities, discouraging students or neglecting feeling of students. Utilities of these two categories lie in the modifications of students' behaviour from acceptable to non-acceptable, but extreme uses switch over to poison emotional climate of the classroom (Pandey, 1997).Occurrence of higher frequencies of these categories, conversely, confirmed the lack of emotional intelligence abilities on part of the teacher.

Figure 4 depicted that highest percentage value on TRR 89 (Instantaneous Teacher Question Ratio) was secured by teachers of EHE group. Whereas, lowest percentage value on TRR 89 was secured by teachers of LE group. TRR 89 of teachers of HE group and ME group fall in between these two extremes. TRR 89 of EHE group tended to be greater than both norms either Indian norm (74.97) or American Norm (60). TRR 89 of HE group crossed American norm, but, could not succeed to cross Indian norm. Due to less magnitude, TRR 89 of ME group and LE group could not cross both norms either

Indian norm (74.97) or American Norm (60). Here, it appears that size of TRR 89 is tended to be synchronised with level of EI of teachers. If teacher tended to be higher in his level of EI, his percentage value on TRR 89 tended to be higher, it implies that there exist association between level of EI and magnitude of TRR 89.

TRR 89 is "the tendency of the teacher to praise or integrate pupil ideas and feeling into the class discussion, at the moment the pupils stop talking" (Flanders, 1970). The high ratio of TRR 89 is due to considerable use of praise statement (obvious from cells 8-2 and 9-2) and low critical statements (obvious from cells 8-6, 9-6, 8-7 and 9-7). As per Table 3, it appears that in the classes of teachers of EHE and HE groups, 3.05 and 2.45 percentage values of frequencies respectively occur in cell "8-2" (praising following pupil responding), 1.89 and 0.58 percentage values of frequencies respectively occur in cell "8-3" (integrating pupil express in explanation). Higher percentage frequencies in these cells tended to increase TRR 89 in the classes of these teachers, moreover, negligible percentage frequencies in cell "8-6" (giving direction following pupil responding) and "8-7" (criticising pupil responding) also contributed in higher TRR 89 in classes of these teachers. From Table 4, it appeared that percentage values of frequencies occur in cell "9-2" (praising pupil initiation) and "9-3" (integrating pupil express in explanation) are not higher in magnitude in the classes of teachers of EHE and HE groups but these values are greater than values of ME and LE groups, which tended to contribute in higher magnitude of TRR 89 for teachers of EHE and HE groups. Negligible percentage of frequencies occur in cell "9-6" (giving direction following pupil initiation) and "9-7" (criticising pupil initiation) in the classes of EHE and HE groups also contributed in higher TRR 89 in classes of these teachers. Lower TRR 89 in classes of teachers of ME and LE groups might be due to low percentage of frequencies in cells "8-2", "8-3", "9-2" and "9-3" as compared to teachers of EHE and HE groups.

On the basis of foregoing discussion, it is likely to be deduced that teachers of EHE and HE groups possess abilities to encourage students

Table 3 : Percentage of frequencies in cells related to category 8 of FIACs in the classes of Teachers of EHE, HE, ME, and LE groups

Cells in Category 8 of FIACs	*8-1*	*8-2*	*8-3*	*8-4*	*8-5*	*8-6*	*8-7*
EHE	0	3.05	1.89	1.84	3.21	0.57	0.71
HE	0	2.45	0.58	1.33	1.52	0.38	0.64
ME	0	1.47	0.42	1.11	4.86	0.78	0.35
LE	0	0.57	0.07	0.46	3.69	0.2	0.31

(category 2 of FIACs), to appreciate their view-points (category 3 of FIACs), to be sensitive towards students' feeling tone and attitude (category 1 of FIACs). Sensitivity towards feeling tone of students requires abilities on the part of teachers to perceive emotions of students, to use emotions to guide their actions and to manage emotions reflectively (Mayer and Salovey, 1997).

Only sensitive teacher takes interest in students and consequently encourage their students, appreciates pupil express and integrates pupil express in his/her explanation. Communication of this sensitivity is called empathy. Empathy competence comes under social competency of emotional intelligence (Sengupta and Bhattacharya, 2007). Hence, TRR and TRR 89 of teachers are likely to be affected by level of EI of teachers.

(40.92) and for EHE group, it is found to be lowest (10.88). If these values are compared to the norm value set for Indian classroom (13) and American classroom (11), one can say that except for EHE group all the groups crossed the Indian and American norm. Here, productivity or non-productivity of PSC can be analysed with the help of TQR (Teacher Question Ratio) and TQR 89 (Instantaneous Teacher Question Ratio).

From Table 5, it appears that magnitude of TQR and TQR 89 is higher in classes of teachers of EHE group, but, magnitude of PSC in their classroom is obtained to be lowest (10.88) among all groups of teachers. On contrary to it, magnitude of TQR and TQR 89 are found to be lowest in classes of teachers having

Table 4 : Percentage of frequencies in cells related to category 9 of FIACs in the classes of Teachers of EHE, HE, ME, and LE groups

Cells in Category 9 of FIACs	*9-1*	*9-2*	*9-3*	*9-4*	*9-5*	*9-6*	*9-7*
EHE	0	0.28	0.09	0.06	0.39	0.03	0.03
HE	0	0.23	0.09	0.03	0.17	0.03	0.06
ME	0	0.04	0.07	0.04	0.31	0	0.03
LE	0	0.02	0.01	0.02	0.29	0	0.01

9.3 Interaction Ratio: PSC (Per cent Silence or Confusion)

Figure 5 depicts that teachers belonging to LE group excel their counterparts in performance on this interaction ratio. The value of PSC for LE group is found to be highest

low emotional intelligence (LE), but, magnitude of PSC is higher most of all groups of teachers. Here, one question arises, "What does it denotes if TQR, TQR 89 and PSC of any group of teachers are deliberated as a whole, not in fragmented manner?"

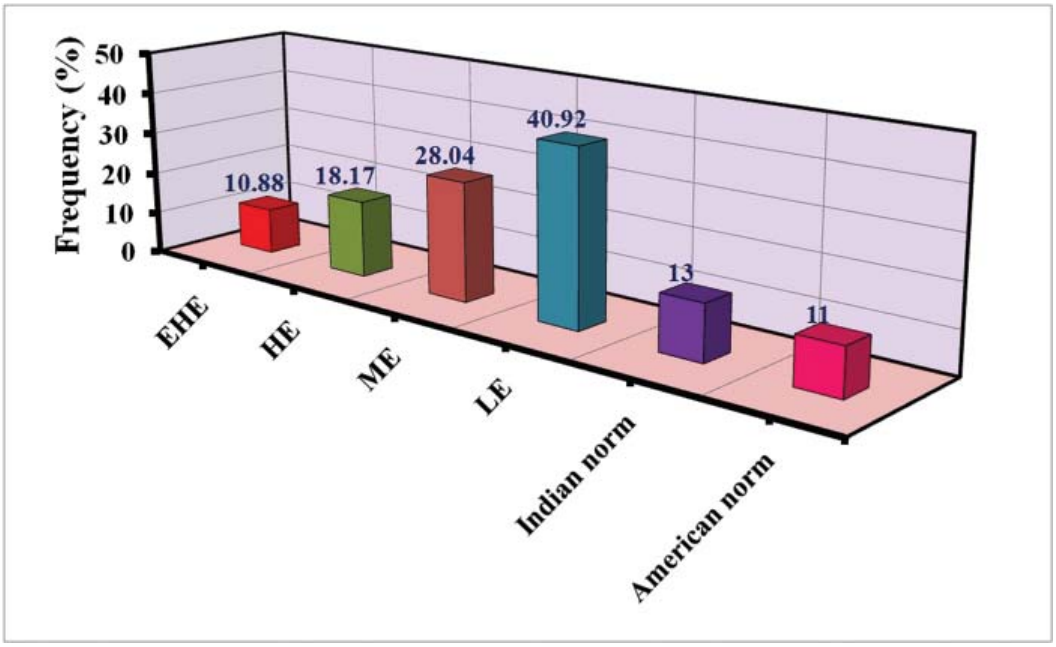

Figure 5 : Performance of teachers on PSC interaction ratios

Table 5 : TQR (Teacher Question Ratio) and TQR 89 (Instantaneous Teacher Question Ratio) of teachers of EHE, HE, ME and LE groups

Interaction Ratio	*EHE*	*HE*	*ME*	*LE*
TQR	19.84	16.67	8.55	4.69
TQR 89	44.65	37	15.76	10.76

Least magnitude of TQR and TQR 89 and highest magnitude of PSC in classroom of LE group do not seem to be plausible. Here, it appears that highest magnitude of PSC is due to lack of command over classroom activities by teachers and pervasive mismanagement in classroom. Hence, highest PSC in classes of teachers of LE group is an indicative of unproductive use of time duration meant for teaching, which seems to be a matter of concern. In classes of teachers of EHE, HE and ME groups there seems association between magnitude of TQR and TQR 89 on one side and magnitude of PSC on other side. Magnitude of PSC in their classes seems consistent with magnitude of TQR and TQR 89. Silence in classes of teachers of EHE, HE and ME groups is likely to due to quality of questions asked. TQR indicates attempt of teacher to ask questions related to

subject matter being taught to deepen understanding of students and TQR 89 denotes attempt of teachers to ask questions following pupil responding and pupil initiation so that their thinking can be broadened properly. Hence, silence in classes of teachers of EHE, HE and ME groups seems to be due to low cognitive level and higher cognitive level questions being asked by teachers.

10. Conclusion

On the basis of performance of teachers on interaction ratios TQR, TQR 89, TRR, TRR 89, PPT and PSC, it is likely to be deduced that performance of teachers on these interaction ratios are in consistent with level of EI. Teachers of EHE and HE groups asked diversified questions. Here, diversified questions refer right balance of thought provoking or critical questions and narrow questions. For intellectual development of primary school students, it is essential that teachers should ask diversifies questions. If the questions asked are unto the task, creative, thought-provoking, critical and contextually correct, they assist the process of knowledge construction. It is desirable to have more number of higher order questions trying to probe the deep understanding. EHE and HE groups teachers allow students to actively participate in their learning versus the traditional idea of passively receiving information. Instead of giving lectures and expecting students to regurgitate what has been lectured, teachers show students how to listen to others and question ideas when they are unknown. Classroom discourse is socially meaningful activity because it creates a situation in which all students are encouraged to participate. Students' participation during classroom discourse allows students to practice problem-solving and decision-making skills. At the same time it helps to build the students' self-confidence to voice their own view and be able to justify their ideas to the class.

Teachers of EHE and HE groups accept and use of students' ideas or opinions, ask diversified pattern of questions (blend of narrow and thought-provoking questions), encourage active participation of students, appreciate students' responding and initiation, deal feelings and emotions in friendly manner and promote flexibility of teachers influence in the classroom interaction pattern than their counterparts of teachers of ME and LE groups.

Constructivist compatible elements are observed to be embedded in verbal behaviour patterns of teachers of EHE and HE groups. Like constructivist teachers, these teachers ensure active participation of students and ask diversified questions (low cognitive level questions and higher cognitive level questions or open ended-question or thought-provoking questions). Asking diversified questions disturb stage of equilibration (balance between assimilation and accommodation), which is likely to result into intellectual

development of child through modification of existing cognitive structure or creation of new cognitive structure.

Initiations of students are found to be higher in classes of teachers of EHE and HE groups than that of their counterparts of teachers of ME and LE groups. Students' initiation refers social constructivism embedded in teaching styles of teachers of EHE and HE groups. Due to this, teachers promote active participation of students in learning. Asking questions based on students' answers refers attempt of teachers of EHE and HE groups to broaden students' thinking. This attempt of teachers implies scaffolding (under concept of zone of proximal development). When teachers of EHE and HE groups try to ask higher cognitive level questions, this refers to their role of cognitive apprenticeship in classroom teaching, through which these teachers try their best to cultivate critical thinking in students' related to the subject-matter being taught.

In various studies, these teaching patterns are found to be positively related to pupil achievement in different content areas, as well as to a number of other variables like attitude, independence and self-direction, verbal recall, creativity, manipulative skills, etc.

11. Educational Implications of the study

The conclusions based on the findings of the present study lead to some educational implications for teacher educators and for curriculum developers of teacher training programme. They are:

- Social skills of classroom interaction as per FIACs (1970) are found to be very frequent in the classes of emotionally intelligent teachers; these skills are ingredients for stimulation of intellectual development of students. So, training of EI of teachers is likely to facilitate reflection of these skills in classroom interaction.
- Findings of the study stamp validity and importance of theory of emotional intelligence for teachers, EI is likely to enrich armory of skills and facilitate social cognition required to be better in socio-cultural matrix of classroom interaction.

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7

Effect of Activity-based Teaching-learning Strategy on Students' Achievement in Mathematics

Brajesh Kumar Sharma*
U.L. Narayana**
K.B. Subramaniam***

Abstract

Pupils tend to learn mathematics through a meaningful approach to mathematics rather than by mechanical process. Therefore, for teachers as well as students of mathematics subject, learning methods are very important. Method is nothing but a scientific way of presenting the subject, keeping in mind the psychological and physical requirements of the children. For effective learning of mathematics the method has to be as good as the content. There are various methods used in mathematics teaching-learning. But, activity-based teaching-learning strategy is very useful in mathematics teaching-learning. Therefore, in this paper, the researchers had made an attempt to study the effect of activity-based teaching-learning strategy on students' achievement in mathematics.

When the children involve in learning with full interest through activities, learning stands last fully and qualitatively in the mind of the children (Meera, 2005). In this connection, National Policy on Education (1986) recommended that a warm, welcoming and encouraging approach, in which all concerned share a solicitude for the needs of the child, is the best motivation for the child to attend school and learn. A child-centred and activity-based process of learning should be adopted at the primary stage. Whereas Rama (1998) stated that instructors must adopt active-learning approaches that view students as 'empty vessels' to be filled with academic content. Therefore, activity-based teaching-learning strategy provides right environment to create educational

* *Consultant* (Early Literacy Programme), RIE, NCERT, Bhopal
** *Professor of Education,* RIE, NCERT, Mysore
*** *Professor of Mathematics* and *Principal (Retd.),* RIE, NCERT, Bhopal

settings where the students work together and learn by doing, learn by playing, learn by enjoying, learn by co-operation, learn by activity and learn without tension.

Procedure

The main objective of the study was to find out the effect of activity-based teaching-learning strategy on students' achievement in mathematics. Activity-based teaching-learning strategy is designed to teach the units on geometry. The researcher planned various activities under different concepts, such as, point, line segment, line, plane, angle etc. For this, the researcher analysed the related studies/ literature. On the basis of experience and feedback in try out the activity-based teaching-learning strategies are modified and these modified activities are implemented in experimental group. An example of activity as follows:

Example

Activity : Concept of a point

Obejctives : Students should be able to

- Make a mark on a sheet of paper with the help of any pointed object.
- Plot a point on a sheet of paper with help of a pencil.
- Plot a specific number of points on a sheet of paper with the help of a pencil.

Time : 15 minutes

Materials

- Polyhedron having quite sharp edges and vertices
- Sheets of papers
- Pencil

Procedure

1. The researcher distributes a sheet of paper to each student.
2. He calls the students one by one and asks them to make a mark on the paper with any one of the vertices of the solid (polyhedron) on the table. Students are allowed to take the sheets back to their seats.
3. He asks them, "What is marked on your sheet ?" They might all say, 'Vertex'. He may tell them that the vertex is still with the solid only. He can then tell them that whatever is marked on their sheets is called a point.
4. He then asks them to look at their pencil and points out the vertex. Having ensured that all of them point at the tip of the pencil, asks them to mark a point on their sheet.
5. He asks them to make a specific number of points on their sheets.
6. He asks a few of them to make a point on the chalkboard with the help of a chalk piece.

Researcher's Say

Usually, the idea of point is given as something having no length, breadth and width. This is totally illogical. The attempt to define a point is futile. As a matter of fact point is an undefined term. We should only try to give a feel of it and enable the children to plot a point.

The sample of the study constituted 80 students of Class VI of Government Sardar Patel and Old Champion Middle Schools. These schools are Hindi Medium, following Madhya Pradesh State Board Syllabus and located in the similar geographical area. Data were collected with the help of mathematics achievement test. The Mathematics Achievement Test is prepared by the researchers.

Results and Discussion

Table 1 : Significance of 't' between experimental group and control group on pre-test and post-test in respect of achievement in mathematics

Test	*Group*	*AM*	*SD*	*N*	*df*	*t*	*Sig.*
Pre	Experimental	49.04	8.80	40	78	.86	.39
	Control	50.96	11.10	40			
Post	Experimental	57.27	6.77	40	78	9.48	.00
	Control	42.73	6.96	40			

(Since V Class mathematics achievement scores are considered as mathematics achievement pre-test scores whereas mathematics achievement post-test is prepared by the researcher. Therefore, maximum scores are differed. In order to compare the mathematics achievement of students in pre-test and post-test, significance of difference of means is computed. And in order to make pre-test and post-test comparable they are converted in standard scores.)

It is observed that the value of 't', between experimental and control groups in pre-test on achievement in mathematics, is not found to be significant. This shows that the two groups are matched in terms of achievement in mathematics prior to experimentation and found that the students of both groups are similar in respect of their achievement in mathematics before commencement of the experiment.

Further, it is observed that the value of 't', between experimental and control groups in post-test on achievement in mathematics, is found to be significant at 0.01 level of significance and hence the hypothesis is rejected. This shows that students of experimental group do differ from their counterparts in control group in respect of achievement in mathematics. On comparison of means, it is found that students of experimental group (AM = 57.27) are ahead of their counterparts in control group (AM = 42.73) in achievement in mathematics. This indicates that the students of experimental group have better achievement in mathematics when compared to students of control group. From this it may be inferred that activity-based teaching-learning strategy helped students of experimental group to have better achievement in mathematics. The effect of activity-based teaching-learning strategy on achievement in mathematics is evident. This finding is in the line of various other results

of activity-based teaching studies e.g., Jain (1994), Mishra (1996), Panda (1996), Sharda (1998), Rao (1999) and Sujatha (2005). Jain (1994) found that it was more effective than the traditional method. Mishra (1996) showed a significant effect in achieving the gain scores on teacher-made test than that of traditional practice teaching. Panda (1996) found that the experimental group performed better than the control group in every unit as well as overall performance and it was found a better method as compared to the traditional method in developing mathematical concepts. Sharda (1998) found that it motivated children to concentrate on expected competencies and hence to achieve them at mastery level. Rao (1999) found that the activity-packs used had shown as very effective in achieving target performance. Sujatha (2005) found that it were very much suitable for slow learners. The children engaged well in all the activities.

Similar results are also given in some other interventional studies, e.g., Bussama (1993), Reddy and Ramar (1995), Mishra (1996), Manay and Rani (1998), Chaudhari, Vaidya, Navalakha and Mahapatra (1999), Gupta, Hooda and Kumar (2001), Vaughan (2002) and Sakhiya (2005). Bussama (1993) found that the simulation technique was better in learning mathematical topics than the traditional method. Reddy and Ramar (1995) studied the effectiveness of multimedia based modular approach in teaching mathematics to low achievers. Findings revealed that the experimental group performed significantly better than the control group on the post-test. Mishra (1996) found that pupils taught through competency-based teaching exhibited significant gains, which showed their change of behaviour in the learning outcomes and competency-based teaching strategy was proved to be best for classroom transaction. Manay and Rani (1998) had taken up a study on effect of puzzle programme in the development of cognitive and creative abilities among pre-school children. The results reveal that the experimental group performed significantly better than control group. Chaudhari, Vaidya, Navalakha and Mahapatra (1999) found that the gaming strategy and synectics model treatment was superior to the traditional method on achievement scores. Gupta, Hooda and Kumar (2001) had taken up a study to find out the effect of quiz-gaming on learning of science at elementary level. Thus we can conclude that the students who were taught science by using quiz-gaming exercise had shown significant improvement in their achievement as compared to the control group where science was taught through lecture method. Hence, quiz-gaming plays a vital role in improving the achievement of the students. Vaughan (2002) conducted a study on the effects of co-operative learning on the achievement in and attitudes towards mathematics of a group of 5th grade students of colours in a culture different from the

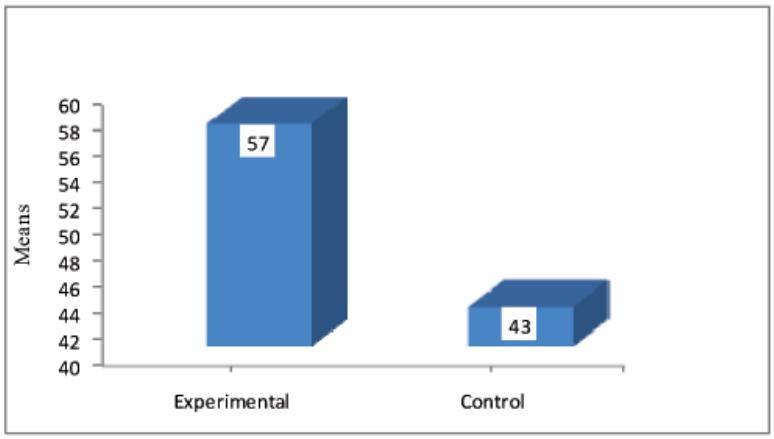

Figure: Graphical representation of the post-test comparison of means of experimental group and control group on achievement in mathematics

United States (i.e. Bermuda). Results suggest that there were positive gains in attitudes and achievement. Sakhiya (2005) found that Co-operative Language Learning (CLL) is more effective than traditional method in English language teaching. From these earlier studies and the present study it is evident that interventional inputs help the students to increase the level of achievement in mathematics. A graphical representation of the post-test comparison of means of experimental group and control group on achievement in mathematics is given in figure.

In order to compare the achievement in mathematics of students in pre-test and post-test, significance of difference of means is computed separately for experimental and control groups. The results are presented in table 2.

As the values of 't' shows, the students of both experimental and control group do differ in pre-test and post-test in respect of their achievement in mathematics. Though the 't' values between pre-test and post-test for both experimental and control groups in respect of their achievement in mathematics, are found to be significant at 0.01 level of significance,

Table 2 : Values of 't' between pre-test and post-test in respect of achievement in mathematics

Group	*Test*	*AM*	*SD*	*N*	*df*	*t*	*Sig.*
Experimental	Pre	49.04	8.80	40	39	5.94	.00
	Post	57.27	6.77	40			
Control	Pre	50.96	11.10	40	39	4.55	.00
	Post	42.73	6.96	40			

experimental group gained a better achievement in mathematics than their counterparts. On comparing the means, it is interesting to notice that the mean values of experimental group increased from pre-test (49.04) to post-test (57.27), whereas in control group the mean values are decreased from pre-test (50.96) to post-test (42.73). Though the entry level of achievement in mathematics among control group is ahead of experimental group, due to activity-based teaching-learning strategy the students of experimental group seem to have gained much. It shows that the activity-based teaching-learning strategy worked positively towards increasing the level of achievement in mathematics among students.

Major Findings of the Study

The students of experimental group do differ significantly from their counterparts in control group in respect of achievement in mathematics on post-test. But the students of experimental group do not differ significantly from their counterparts in control group in respect of achievement in mathematics on pre-test. The mean values of experimental group increased from pre-test (49.04) to post-test (57.27), whereas in control group the mean values are decreased from pre-test (50.96) to post-test (42.73). The students of control group are superior to experimental group on pre-test of achievement in mathematics whereas they are found inferior to experimental group in post-test. Therefore, it is indicated that activity-based teaching-learning strategy helped students of experimental group to improve their achievement in mathematics.

Implications of the Study

Normally, most of the children feel mathematics learning a burden. So, they do not take interest in mathematics learning. To arouse and maintain the students' interest in mathematics activity-based teaching-learning strategy plays a very important role. The teacher knows very well that loss of interest is the major cause of students' failure. If the student has to be taught properly, the natural curiosity would create interest in them and would develop their attention towards the subject. Activity-based teaching-learning strategy helps students to improve their achievement in mathematics. Results imply that activity-based teaching-learning strategy helps students to improve their achievement in mathematics. During experiment students learn more and effectively. So, this approach can give very good results for elementary classes. Therefore, in schools mainly in elementary classes this approach should be involved necessarily for improving the achievement of students not only in mathematics to other subjects also.

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8

Assessment of the Three R Skills among Primary School Students

Sanjeev Kumar Jha*

Abstract

Reading, wRiting and aRithmetic are the three fundamental learning tools. The present research was an attempt to study the development of the three R Skills. For this purpose researcher developed a three R Skills test. The test was administered on the 200 students selected with systematic sampling technique from four schools. The data was analysed by using statistical techniques like mean, standard deviation and t-ratio. Research concluded that development of reading and writing skills of girls is higher than boys whereas arithmetic skill of girls and boys is equally developed. The three R skills of rural and urban students are equally developed.

Education is a process of teaching, training and learning especially in school to improve knowledge and develop skills. Primary education is the root of whole education system. At this level development of some basic skills take place. As only a strong foundation can be the base for a marvellous building. So, it is necessary to have good foundation for better development of students.

Primary education has always remained a subject of great concern. Large numbers of programmes and schemes have been initiated by the Government to realise the goal of universalisation of Primary Education. Consequently a large number of schools open with emphasis on universal enrolment and retention with focus on quality of education. Curriculum renewal and preparation of good books have been a continuous process. A large number of teacher training programmes, improvement in infrastructural facilities, upgradation of schools and recruitment of teachers have been made in the last few decades.

The Concept

Reading, writing and arithmetic are three fundamental learning tools. One

* *Project Junior Consultant,* Department of School and Non-Formal Education, National University of Educational Planning and Administration, New Delhi

of the main aims of primary education is to develop adequate mastery over these learning tools. Reading, wRiting and aRithmetic (3Rs) are the three leading skills without which learning of any subject at any level is not possible. So, development of an individual neither in subjects nor in daily life aspect is possible without the proper development of 3R skills.

The three Rs (as in the letter R) refer to the foundations of a basic skills-orientated education programme within schools: reading, writing and arithmetic. It first appeared in print as a space-filler in "The Lady's Magazine" in 1818, it is widely quoted as arising from a phrase coined in a toast given by Sir William Curtis MP in around 1825 (wikipedia.org).

Universalisation of Elementary Education (UEE) has five parameters, (a) Universal Access, (b) Universal Enrolment, (c) Universal Retention, (d) Universal Goal Achievement (i.e., if a student gets proper education then one should get one's goal), and (e) Equity, but UEE is not achieved yet in according to these parameter. One of the major reasons of non-achievement of universalisation may be that the emphasis has been on the mass expansion rather than on the quality of education which has considerably deteriorated.

Ravi (2004) found that (1) there was an inter-relationship between the receptive variables such as reading and listening in Tamil and English language, and (2) it was indicated that the growth and development was indicative of receptive skills such as intelligence, aptitude and scholastic achievement of the primary school children. ASER (2005) found that the levels of learning in Class I and Class II undoubtedly determine the learning at higher standards. In Kerala, by Class V 81.4% children can read Class II level texts while in Orissa, by Class V only about 56.5% could read at that level. However, in order to sustain this level of reading and arithmetic, it is now important to strengthen the base of learning in Class I and Class II. The report procured from the Orissa Child Census (OCC) and from the Child Tracking System (CTS) is also interesting. There are children out of school at a higher extent which shows towards the weak base of the children and need to stabilise and strengthen. Singh (2008) found that here is no significant difference in mathematic achievement between boys and girls as well as no significant difference between achievement of rural and urban students at the end of Class V in Language, Mathematics and Environmental Studies.

Need of the Study

Numerous initiatives have been taken for universalisation of primary education; the enrolment in primary schools has risen approximately ten times. However, the quality of education seems to have suffered. Research studies conducted at both national and state levels point out low levels of learning in schools. Poor achievement at primary stage is a

major factor resulting in drop-outs from schools. In the fifth Class, more than 47% students are not able to read the books even of second class. They are not able to solve simple multiplication and division problems (ASER). It is the status of the students even after four years of primary education.

It is supposed that mastery over learning tools, i.e. 3R skills must take place at this level. If the students are not able to develop these skills at primary level then they are not able to achieve necessities of the life through education. Consequently, she/he will fail to get further education. It seems that all efforts are being made only for mass expansion rather than excellent quality of education. Although drop-out is managed low at this level with some measures but educational status of the students is still under criticism. The eleventh Five Year Plan places the highest priority on education as a central instrument for achieving rapid and inclusive growth.

The mass failure has definitely something wrong at the core. It leads the researcher to study the level of mastery over the fundamental tool, i.e., 3R skills of the students at primary level. On the basis of findings appropriate measure for development of the three R can be taken.

Objectives of the Study

1. To assess the three R skills of Class V students of Municipal Corporation schools of Delhi.
2. To compare the level of three R skills, i.e., reading, writing and arithmetic of the students in relation to gender.
3. To compare the level of three R skills, i.e., reading, writing and arithmetic of the students in relation to locality.

Methodology

Survey method was employed to collect data.

Sample

The sample comprised 100 students from four schools of Municipal Corporation, Delhi. Out of four schools, two schools each were selected from rural and urban areas. One each of boys and girls from the chosen schools. Class V was chosen for the study because up to Class V, four years schooling has taken place.

The students were selected through systematic sampling technique. Systematic sampling technique was justified and defined. List of all students from the attendance register can be used for the study.

Table 1 : Sample

Sample	*Boys*	*Girls*	*Total*
Rural	25	25	50
Urban	25	25	50
Total	50	50	100

Tools used

With the help of primary level text-books of NCERT and a teacher who

is teaching at Class V in MCD School, a self developed Question Paper-cum-Answer Sheet was developed for Hindi medium along with 15 flash cards.

Question Paper-cum-Answer Sheet

It consists of three sections A, B and C. Section A deals with Reading (for reading skill 15 flash cards were also used). Section B deals Writing and section C deals with Arithmetic. Question Paper-cum-Answer Sheet was developed in Hindi.

Section A: Reading Section

Paragraph:

A paragraph (in Hindi) consisted of approximately 100 words with five questions based on the paragraph. As well as 15 flash cards were prepared for the purpose of reading skills.

Section B: Writing Section

There was a question to write 10 sentences on the topic "My School" (in Hindi).

Section C: Arithmetic Section

Two questions each based on Addition, Subtraction, Multiplication, Division and word problems. Total 10 questions were developed.

Scoring Procedure

Scoring of Paragraph: Questions related to paragraph consist of two marks each. One mark was awarded in case of correct answer but inappropriate language and two marks in case of correct answer with correct language. One mark for each correct word reading and zero mark for incorrect reading from flash card.

Writing: Two marks for each correct sentence if sentence is about school and language is correct and one mark if sentence is about school but language is inappropriate. In other cases zero mark was awarded.

Arithmetic: Two marks for a correct answer and one mark for partially correct answer. Partially correct means ideas about concept are correct but calculation may be wrong. Similarly if students collect idea from word problem one mark, if s/he could solve correctly then two marks.

So, the range of the score is 0-65.

Table 2: Maximum Score of Each Section

S. No.	*Skill*	*Maximum Score*
1.	Reading	25
2.	Writing	20
3.	Arithmetic	20
Total		65

Administrating Tools

The tool was administered in three sessions in each of the schools. In the first session, paragraphs and writing related question was asked to the students to answer. It was about a 40minute session. The second session was for flash cards reading. It was 15 minutes session, one minute for each flash card. Third session was for arithmetic, it had 4 minutes for each question, so 40 minutes for this session. But time was not strictly

followed. Sufficient amount of time was given to students as required by them.

Statistical Techniques Used

For the proper analysis and interpretation the statistical techniques like mean, standard deviation and t-ratio were used.

Analysis and Interpretation

Assessment of the three R skills

Table 3: Mean Scores the three R Skills

Skill	*Sample*	*Maximum Marks*	*Mean*	*SD*	*Percentage*
Reading	100	25	17.17	3.2	68.68
Writing	100	20	10.46	4.7	52.30
Arithmetic	100	20	13.16	3.5	65.80
Total	100	65	40.79	5.9	62.75

Interpretation

Overall 3R skills mean score is 62.75 per cent. So, healthy development of 3R skills has taken place at Class V level. Writing skill is least developed among three R skills. Reading skill development is highest followed by arithmetic skill.

Analysis of the three R Skills development of the students in relation to sex of the students

Interpretation

There is significant difference in mean scores of reading skill of boy and girl students (Table 4). The null hypothesis is that there is no significant difference between mean scores of reading skill development of boy and girl students is rejected. So, the reading skill of girls is significantly higher developed than that of the boys students (Table 4 and Figure 1).

There is significant difference in mean scores of writing skill of boys and girls students (Table 4). The null

Table 4: Three R Skills in relation to the gender of the students at the Primary Level

Skill	*Gender*	*Number*	*Mean*	*SD*	SE_M	*t-value*	*p*	*Significance*
Reading	Boy	50	16.36	3.5	.50	2.58	.001	**
	Girl	50	17.98	2.6	.37			
Writing	Boy	50	9.94	5.3	.76	1.09	.05	*
	Girl	50	10.98	4.0	.57			
Arithmetic	Boy	50	12.60	3.4	.48	1.59	.483	NS
	Girl	50	13.72	3.6	.51			
Total	Boy	50	38.90	6.9	.97	3.32	.001	**
	Girl	50	42.68	4.1	.58			

* if p<.05, ** if p<.01 and NS if not significant

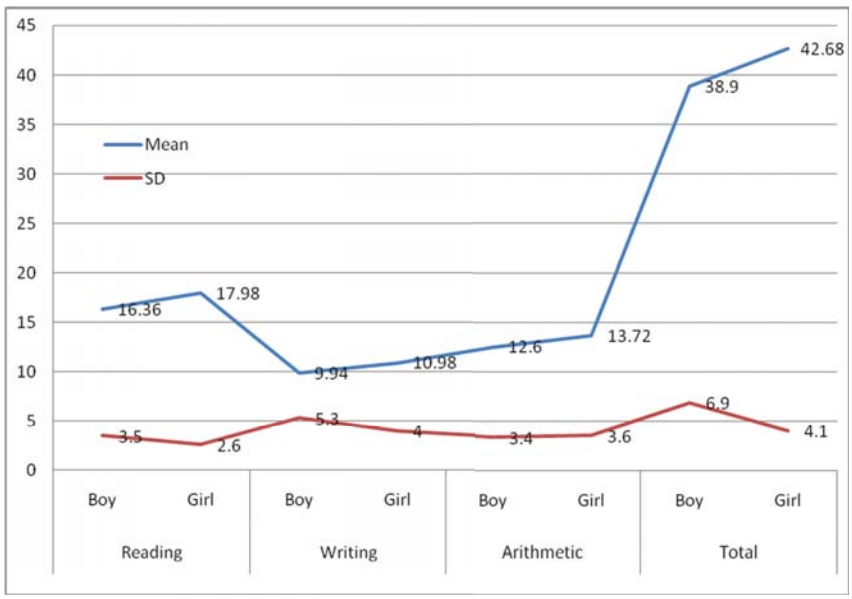

Figure 1 : 3R Skills Scores of Primary School Students in relation to gender of the Primary Level students

hypothesis that there is no significant difference between mean scores of writing skill development of boy and girl students is rejected. So, the writing skill of girls is significantly higher developed than the boys students (Table 4 and Figure 1).

There is no significant difference in mean scores of arithmetic skill of boys and girls students (Table 4). The null hypothesis that there is no significant difference between mean scores of arithmetic skill development of boys and girls students is accepted.

Table 5: 3R Skills Score in relation to locality of the students at Primary Level

Skill	*Locality*	*Number*	*Mean*	*SD*	SE_M	*t-value*	*p*	*Significance*
Reading	Rural	50	16.94	3.3	.47	0.713	.690	NS
	Urban	50	17.40	3.1	.43			
Writing	Rural	50	10.58	5.2	.74	0.250	.189	NS
	Urban	50	10.34	4.2	.60			
Arithmetic	Rural	50	12.90	3.5	.50	0.732	.828	NS
	Urban	50	13.42	3.5	.49			
Total	Rural	50	40.42	6.3	.90	.785	.360	NS
	Urban	50	42.68	5.4	.78			

* if p<.05, ** if p<.01 and NS if not significant

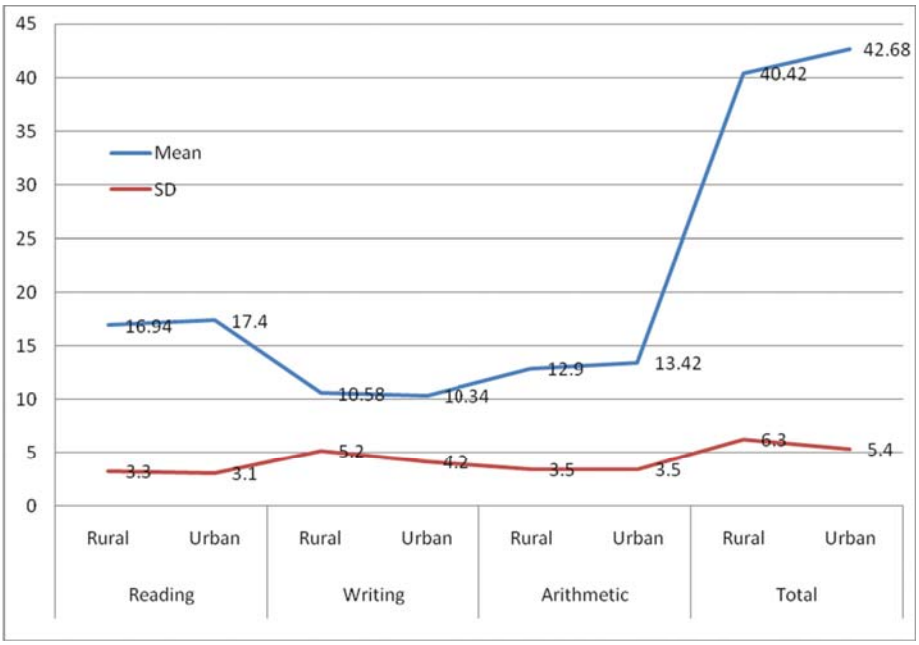

Figure 2: 3R Skills Scores in relation to locality of the students at Primary Level

So, the arithmetic skill of girl and boy students is equally developed (Table 4 and Figure 1).

Interpretation

There is no significant difference in mean scores of reading, writing and arithmetic skills of rural and urban students (Table 5). The null hypotheses 'there is no significant difference between mean scores of reading skill development of rural and urban students', 'there is no significant difference between mean scores of writing skill development of rural and urban students' and there is no significant difference between mean scores of arithmetic skill development of rural and urban students as accepted. So, the reading, writing and arithmetic skills of rural and urban students are equally developed (Table 5 and Figure 2).

Conclusion

The study concluded that a healthy development of the three R skills among primary school students as mean score was 62.75. Reading and writing skill of girls and boys students are equally developed whereas arithmetic skill of girl students is significantly higher developed than the boys. There is no significant difference in the three R skills development among rural and urban students. The finding is also supported by the survey (NCERT. 2008).

But the two R skills (reading and arithmetic) is approximately

60 per cent on the other hand writing skill is just 50 per cent, so, there is a need to focus on writing skill for proper development of three R skills although some concern should also be given for other two R skills. It is necessary to develop necessary mastery over learning tools as only a strong foundation can hold a beautiful and long lasting building.

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A Study of Learning Environment in Mathematics Classroom at the Primary Level

Kusum Bhatia*

Abstract

The Right of Children to Free and Compulsory Education Act is in force since April, 2010. It has generated a series of huge challenges on one hand and provided enormous opportunities for the country on the other. As states think about how to admit children currently out of school into the age-appropriate grade, it is imperative to think about how to help the thousands of children who are already in school achieve the levels of learning appropriate to their grade. The time is right to think about what our schools can do to ensure not just schooling, but guaranteed learning to every child. This is the Right to Education 2009 (RTE) Act, in its true spirit. Parents all over the country are pinning their hopes on education as the cornerstone to a better life for their children. However, this sort of rethinking requires a realistic assessment of the state of affairs and going beyond an evaluation of the inputs that are provided to our children in schools in terms of classrooms, teachers, teaching-learning process and learning environment. There is a need to study the ways in which these inputs are organised and used by schools vis-a-vis what has been suggested in National Curriculum Framework-2005.

Introduction

Mathematics is an essential component of school learning and a basic building block without which desired schooling outcomes, however defined, cannot be achieved. Despite massive investment in primary education, many children lack even basic abilities in arithmetic. The Annual Status of Education Report (ASER), presented annually since 2005 shows that in 2010, only 36 per cent of Class V children in rural India could divide a three-digit number by one digit. Nationally, this situation has hardly changed over the six-year period for which ASER data is available.

Other data on learning achievements, such as that produced by the Education Initiatives and the Government of India's own assessments, use different

* *Sr. Lecturer,* DIET, Pitampura, New Delhi

methodologies and indicators, also shows that learning outcomes at the primary stage are far from satisfactory.

The present study titled, 'Study of Learning Environment in Mathematics Classroom at the Primary Level', was undertaken with the aim of studying the learning environment being provided in the Municipal Corporation of Delhi (MCD) primary schools of North West district of Delhi.

Conducting an in-depth study of learning environment in all the five subjects (Mathematics, Hindi, Science, English and Social Science) taught in Class IV, was not feasible. So, for this purpose one subject, i.e. Mathematics was selected.

Operational Definition

Learning Environment: The term 'learning environment' in a mathematics classroom involves physical and social environment of the class, teaching- learning material available in the class, participation and engagement of children, a feel of success and contextual learning being offered to children, different approaches of teaching and evaluation being used without giving a feeling of fear in children and arousing their interest in mathematics by transacting child-centred and joyful learning. Opportunities are given for pupil-pupil and pupil-teacher interaction in the class.

Objective of the Study

To study a learning environment provided in the mathematics classroom in the primary school.

Delimitations of the Study

- Sample comprised students of Class IV in MCD Primary Schools of North West District of Delhi.
- Selection of school sample was based on random sampling technique.
- Tools used in the study were validated using content validity by the experts of the field.
- Classroom selected for conducting Classroom Observation Schedule was observed three times.
- Learning environment was studied in mathematics classroom only.
- Gender and socio-economic backgrounds were not treated as significant variables in the present study.

Research Design

Research Method: Descriptive Survey method was used for studying learning environment being provided to children in mathematics classroom in MC Primary Schools of North West District of Delhi. It involves collection of both types of data i.e., quantitative as well as qualitative.

Sampling

Population: Children studying in Class IV in MCD Primary Schools in Delhi comprised the population of the study.

Sample: North West district of Delhi comes under the jurisdiction of DIET, Pitampura, so the sample was selected from the schools of North West district of Delhi.

Procedure Adopted for the Selection of the Sample

- Ten schools were selected randomly from the MCD primary schools of North West District of Delhi.
- In most of these sample schools, there were two sections of Class IV, so, both the sections were selected for carrying out the study. Three children were selected randomly from each classroom.
- For classroom observation, five schools were selected randomly from the ten sample schools already selected.

Tools Used in the Study

Keeping in view the objective of the study, two tools developed by the researcher were used for the present study.

1. *Learning Environment Scale (LES)*: To take views of the children about the learning environment being provided to them in mathematics classroom.
2. *Classroom Observation Schedule (COS)*: To observe the learning environment being provided in mathematics classroom in actual situations.

Description and Development of Tools

The first draft of both the tools was developed. Two days workshop was organised and a team of eminent professors of the field were invited for the content validity of the tools. Each tool was discussed item-wise. Valuable suggestions given by the experts were incorporated and tools were finalised.

(A) Learning Environment Scale (LES)

LES was developed in Hindi language as it was to be administered on children, studying in Class IV in MCD primary school. LES was developed by taking the following parameters of mathematics classroom into consideration:

- Physical environment including sitting arrangement of the students, visibility of the blackboard work, TLM available and charts displayed in the class.
- Social environment including freedom to students for questioning regarding concepts not understood, teachers' response, teacher listening to learners' experiences and uses them while teaching, Learners are praised on correct responses and teachers' reaction if students give incorrect response.
- Activities carried out in the classroom, Teaching Learning Material (TLM) used/available in the classroom, opportunities provided for learning by doing, applying mathematical knowledge in day-to-day life and use of TLM, even in absence of teacher.
- Transactional methodology including method of teaching, engaging learners and providing opportunities for pupil-pupil and pupil-teacher interaction.

- Identification and remediation of learning difficulties in mathematics and continuous and comprehensive evaluation.
- Enrichment/Project work including mathematical concepts are enriched through project work and homework.

There were thirty items in all. Three options were given to the learners for each item. The three options were: no, sometimes and yes. Three items in the tool had negative statements. Maximum and minimum score one could get in this tool are eighty four and thirty six. The score range and the category of learning environment in mathematics classroom were classified as follows:

- 36-52 Traditional teacher- centred classroom environment
- 53-68 Transforming learning environment
- 69-84 Child-friendly learning environment

(i) Traditional teacher-centred classroom environment

Traditional teacher-centred classroom environment in mathematics are dominated by:

- An objective view of the mathematical knowledge.
- Interests that view the curriculum as a product to be delivered.
- The methods of teaching are limited to blackboard writing, reading from the book and teachers' talk in the classroom.
- Children's role of passive listeners in the class.
- Children's difficulties are neither identified nor remedied through Continuous and Comprehensive Evaluation.

(ii) Child-friendly learning environment

Child-friendly learning environment as emphasised by *NCF-2005* is one in which:

- Children learn by doing activities with concrete objects and exploring something on their own using teaching-learning material.
- All the children of the class participate in learning.
- Children discuss their experiences with teachers as well as with peers.
- Children ask their doubts or difficulties to teachers without any fear and hesitation.
- Children make mathematics relevant to their world outside the school.
- Children work joyfully and fearlessly in small groups or individually.
- Teacher engages every child of the class in learning.
- Children learn mathematical operations contextually.
- Teachers offer a sense of success to every child of the class through Continuous and Comprehensive Evaluation.

(iii) Transforming Learning Environment

The transforming learning environment is one which involves

the partial coexistence of both types of learning environment, i.e. the learning environment of the classroom is teachers dominated but the teaching methods are not limited to blackboard writing, reading from the book or teachers talk in the classroom. Teachers try to involve children in the teaching through activities and use teaching-learning material to certain extent. Teachers motivate children to ask questions and discuss their doubts.

(B) Classroom Observation Schedule (COS)

For the genuineness and verification of the results obtained through LES it was necessary to develop and administer a tool for classroom observation (COS) of learning environment being provided in MCD primary schools.

COS helps to examine how the curriculum content is actually transacted in the classroom. Major policy documents such as the *NCF–2005* and the National Curriculum Framework for Teacher Education – 2009 emphasise the fact that learning outcomes depend fundamentally on what happens inside the classroom.

Quantitative Analysis of Learning Environment Scale (LES)

LES was administered in all the ten sample schools selected for the study. The analysis reveals:

- The learning environment of sixty per cent schools in the sample has Traditional Teacher Centered Learning Environment.
- The learning environment of forty per cent schools in the sample has Transforming Learning Environment. Score of fifty per cent of such schools is fifty four, which is the lowest range of second category. Thus twenty per cent of the sample schools are at the margin of the second category. In case some inputs are provided in such schools in the form of motivation, awareness and encouragement to teachers for transforming the learning environment of their classroom no doubt better results may be achieved.
- Child Friendly Learning Environment was not found in any of the classroom of the sample schools.

The scores of the sample schools in LES (in ascending order) are as follows:

S.No.	*School*	*Scores*	*Category Name*
1	A	45	Traditional teacher-centred Learning Environment
2	B	46	Traditional teacher-centred Learning Environment
3	C	47	Traditional teacher-centred Learning Environment
4	D	51	Traditional teacher-centred Learning Environment
5	E	52	Traditional teacher-centred Learning Environment
6	F	52	Traditional teacher-centred Learning Environment

7	G	54	Transforming Learning Environment
8	H	54	Transforming Learning Environment
9	I	62	Transforming Learning Environment
10	J	64	Transforming Learning Environment

Qualitative Analysis of Learning Environment Scale (LES)

Physical environment: Children were using desks for sitting in all the sample schools. Seating facility was adequate. Classes were organised in well-built rooms. Adequate space was available in the room for organising activities. Ventilation, light facility and number of fans were adequate in the classrooms. Blackboard was visible to all the children sitting in the classroom. As far as the physical facilities of the classroom were concerned, there were no problems either for teacher or for children in sitting, teaching and organising activities.

Average pupil-teacher ratio in all the classrooms observed was 34, which was the right number to carry out activities individual as well as in groups. Out of ten classrooms observed in the study, one classroom had 44 children and in rest of the classrooms had children ranging from 29 to 38. The pupil-teacher ratio was adequate and reasonably good to carry out activities (individual as well as group) in the classroom. Teaching learning material other than charts was not available in the classrooms.

Social environment: It was observed that children were not asking any questions or raising any query about the concept being taught. They were just busy copying from the blackboard. Whenever some questions were asked by the teacher, only a few children raised their hand to answer and other children were ignored. Children who answered correctly were praised by the teacher. In one of the classroom, on giving incorrect answer the teacher told the child to slap himself on the cheek.

Teachers were rarely found sharing learning experiences of children and using such experiences for constructing new knowledge.

Teaching-learning material: There was a large gap between teachers' saying and the actual practicing of using concrete material for teaching mathematics in the classroom. Teachers were rarely using any material or activities for teaching. They were using '*chalk and talk method'* for teaching mathematics. This might be one of the reasons for fifty per cent children having mathematics phobia at the primary level. Children did not find anything interesting and joyful in learning mathematics. Children were not given opportunities to explore mathematical concepts on their own using concrete material or by solving puzzles, riddles and mathematical games etc.

Transactional methodology: Transactional methodology adopted by teachers for teaching mathematics at the primary level in selected schools was neither made joyful nor interesting. Activity-based teaching was not adopted and children were not engaged in learning.

Continuous and Comprehensive Evaluation (CCE): Teachers were not found practising strategies of continuous and comprehensive evaluation. Children were not given opportunities to interact with peer and explore mathematical concepts.

Enrichment work in mathematics: Work done in mathematics classroom was neither enriched by assigning project work nor by any practical exercises to the children. Opportunities of solving mathematical problems by the children themselves were neither given in the classroom nor at home.

Child-friendly learning environment

- Children were not learning by doing activities with concrete objects or by exploring something on their own using teaching-learning material, in most of the classrooms observed under study. In two classrooms, teacher used a rope and a scale for teaching measurement of length. But that too was neither planned nor involved children's participation.
- All the children of the class were not participating in learning. In the name of interaction with children, teacher was asking certain questions to a few children of her class (say 15% to 20%), rest of the children were neither raising their hands for giving answer nor teacher gave them opportunity to answer. It was observed in almost all classrooms. In two classrooms more than fifty per cent children were involved in learning.
- Children were not observed, discussing their experiences with teachers as well as with peers in any of the classroom. A lot of examples are given in the textbook of mathematics for Class IV, in which children are involved in teaching-learning process by asking them their experiences of using mathematics outside the classroom.
- Children were not observed, asking their doubts or difficulties to teachers related to topic being done in the class. Lack of such an environment was felt in the classroom in which children don't hesitate to ask what they did not understand.
- Children were not given opportunities to make mathematics relevant to their world outside the school. This is an essential activity of mathematics classroom, without which teaching of meaningful mathematics is not possible.
- Children were not observed working joyfully and fearlessly in small groups or individually in any of the classroom. This might be the

reason why teacher was unable to engage every child of the class in learning.

- Children were rarely provided opportunities to learn mathematical operations contextually.
- Teachers offering a sense of success to every child of the class through CCE was found missing in mathematics classrooms. This requires a lot of planning on the part of teachers, but due to other responsibilities they are not able to do justice with the teaching and assessing what children have learnt and what need remediation.

Activities in the Class were Teacher/Children-driven

The learning environment of the classrooms was found to be teacher-driven as children were not involved in either planning or executing teaching plan. Teaching methods adopted by teachers were limited to blackboard writing, reading from the book or teachers talk in the classroom with an objective view of the mathematical knowledge. Teachers' interests view the curriculum as a product to be delivered without planning and adopting activities which create and sustain children's interest in learning. Children's role was perceived as passive listeners in the class. Rarely were they involved in the talk or interaction of learning experience of any kind regarding the mathematical concepts to be taught in the class. They were not in habit of raising their doubts on the concepts being taught. Children work or portfolios were not displayed in the classrooms.

Child-friendly Learning Environment was not found in any of the classroom of the sample schools. Traditional Teacher Centered Learning Environment was found in more than half of the classroom observed. Learning environment in one-fifth of the sample classrooms was at the lowest margin of Transforming Learning Environment. Twenty per cent sample classrooms were having Transforming Learning Environment.

Conclusion

The present study is an attempt to study the learning environment in mathematics classroom at the primary level to know how far it fulfils the expectations of learning environment as recommended in *NCF-2005* in actual mathematics classrooms at the primary level.

The findings of the study are not very encouraging as after passing seven years of *NCF-2005*, the child-friendly environment was not found in any of the classrooms of the sample schools. Traditional Teacher Centered Learning Environment was found in sixty per cent of the classrooms observed. Transforming Learning Environment was observed in rest forty per cent of the classroom. Out of which fifty per cent classrooms had learning environment at the lowest ebb of Transforming Learning Environment. Twenty per cent sample

classrooms were having Transforming Learning Environment.

The infrastructure of the classroom in terms of availability of desks, blackboard, light, ventilation and fans was satisfactory qualitatively as well as quantitatively. The average pupil-teacher ratio was 34 in the sample schools, which was close to the pupil-teacher ratio recommended in *NCF*. Resource material was not available in the classrooms. The only teaching-learning material available in the classroom was charts hanging on the walls.

Almost all the teachers accepted that teaching of mathematics at the primary level must involve use of concrete material and activities which helps children in learning mathematical concepts joyfully without any fear. Some teachers knew the concrete material and activities through pre-service training and in-service trainings they are attending time to time. But they were not making use of them in classroom teaching.

Teachers did not pay much attention to share experiences of the children to construct new knowledge. Pedagogy adopted by teachers was '*chalk and talk method'* and writing on the blackboard. Activity method of teaching was rarely adopted. Group, paired and individual activities were not planned. Teachers adopting strategies for making teaching of mathematics joyful for children was hardly seen. Teaching strategies like visualisation guess and verify, estimation and approximation, use of patterns were not used in the teaching process. It was also observed that no teacher was offering multiplicity of approaches, procedures and solutions in any class.

Corporal punishment was not given to the children. No discrimination of any type on the basis of gender, caste, religion and disability was observed in any of the class.

Children participation was seen rarely in the classroom. The only activity done by teachers to elicit participation of children was asking questions to them. These questions were generally mechanical in nature and the element of challenge was missing. Engaging all the children in learning and providing a feel of success to every child were missing activities in mathematics classroom.

Traditional and monotonous methods of evaluation were adopted. Teachers were not clear about strategies of continuous and comprehensive evaluation.

Work done in mathematics classroom was neither enriched by assigning project work nor by any practical exercises to the children. Opportunities of solving mathematical problems by the children themselves were neither given in the classroom nor at home.

The vision enlightened in *NCF-2005* was not practised in the classroom.

Finally the researcher concludes that there is an ultimate challenge of translating innovative, meaningful and child-friendly methodologies, pedagogies and successful experiments of teaching mathematics in the primary classes to the level of children and bringing about change in classroom practices by providing the appropriate learning environment to the children in the classroom.

Implications of the Study

- The findings of the study reveal that there is a dearth of resource material in the classroom. In-service training programmes must be organised in workshop mode where teachers may be given training to develop need, based resource material and some exemplar resource material may be provided to them for use in the classroom. Teaching strategies involving child participation, sharing learning experiences of the learners, providing opportunities for pupil-pupil and pupil-teacher interaction in the classroom may be added in the course design of in service trainings organised for primary teachers in teaching of mathematics.
- Teachers may be given training of 5E's (Engage, Explore, Explain, Elaborate and Evaluate): an instructional model based on the constructivist approach to learning, which says that learners build or construct new learning on the top of their old learning. Demonstration lessons, videos, exemplar material etc., on child-centred learning and learning environment in mathematics classroom at the primary level may be provided to the teachers.
- One of the findings of the study reveal that there is a need of acquainting the teachers with the concept of CCE, its importance and different strategies used to evaluate children at the primary level, e.g., displaying their portfolio in the classroom, i.e. keeping and displaying the best work of every child in a folder in the classroom. This can be shown to her parents during parents-teacher meeting. Other children may also observe and follow. The child herself can reflect her work and improve upon.
- It was perceived from the Classroom Observation Schedule that the spirit of enquiry in children is missing. No child was raising any doubt or enquiry in the concepts being taught in mathematics class. There is a need of introspecting the existing teacher education programmes and equip the prospective elementary school teachers to enable them to teach in such a way that their children imbibe a spirit of enquiry. The same applies to programmes offered by university departments of education. A related aspect is the hierarchical nature of student-teacher relationship which renders

the teacher as the controller and chief disseminator of all knowledge, rather than the facilitator of sharing experiences and fostering an environment of enquiry in the classroom.

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Elementary Education in Himachal Pradesh

General Information about the State

Number of Districts	:	12	
Number of Blocks	:	124	
Number of Clusters	:	2102	
Number of Villages/Wards	:	20,188	
Total population	:	68,56,509	
Literacy Rate	:	83.78%	
Child Population	(a)	6-10 years	: 5,61,587
	(b)	11-14 years	: 3,56,938

Educational Indicators

Enrolment I-V			*Enrolment VI – VIII*			*Enrolment I – VIII*		
Boys	*Girls*	*Total*	*Boys*	*Girls*	*Total*	*Boys*	*Girls*	*Total*
313994	285077	599071	195663	174361	370024	509657	459438	969095

Source: DISE 2013-14

	GER			*NER*			*Dropout rate*		
	Boys	*Girls*	*Total*	*Boys*	*Girls*	*Total*	*Boys*	*Girls*	*Total*
Primary	106.78	106.56	106.67	99.60	99.59	99.59	0.51	0.39	0.45
Upper Primary	103.52	103.83	103.67	99.84	99.80	99.82	0.52	0.49	0.51

	Retention rate I-V			*Retention rate I – VIII*		
	Boys	*Girls*	*Total*	*Boys*	*Girls*	*Total*
Primary	99.54	99.25	99.40	97.39	95.01	96.27

Source: DISE Data 2013-14

	Completion rate (%)			Transition rate (Class V to VI) (%)		
	Boys	Girls	Total	Boys	Girls	Total
Primary	100	100	100	97.82	98.02	97.92
Upper Primary	100	98.83	99.75	99.74	99.57	99.66

Source: DISE Data 2013-14

Out of School Children

6-11 years			11-14 years			6-14 years		
Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
1155	1088	2243	273	1424	609	1428	424	2852

Source: HHS 2013

1. Quality Issues and Challenges

Teacher Issues

i. Unqualified Teachers: More than 16 per cent teachers do not have the required minimum qualification of Higher Secondary/Senior Secondary.

Qualification of teachers

Qualification	Middle	Secondary	Higher or Senior Secondary	Graduation	Post Graduation
% of Teachers	7.7	8.6	35.6	21.6	26.6

(The minimum qualification required for primary teacher is Class XII Certificate as per RTE norms.)

ii. Untrained Teachers

Number of untrained teachers as on March 2013	Target for training of untrained teachers in 2013-14
127	127

iii. Employment Status of Teachers

Status	Regular full time	Against leave vacancy	Temporary	Para teacher	Other
% of Teachers	85.1	0.5	1.9	6.5	6

The State has 85.1 per cent regular teachers, 6.5 per cent para teachers. RTE requirement is qualified trained teachers in all the schools.

iv. Teachers in Position (as on March end 2013)

	Sanctioned Post	*In Position*	*Vacancies*
Primary School Teachers	25630	25186	444
Primary School Head teachers	2102	2102	0
Upper Primary School Teachers	21497	20521	976
Upper Primary School Head Teachers	2161	2011	151
Total	51390	49820	1571

Teachers in Position (as on March end 2014)

	Sanctioned Post	*In Position*	*Vacancies*
Primary School Teachers	25630	25186	444
Primary School Head teachers	2102	2102	0
Upper Primary School Teachers	21497	20521	976
Upper Primary School Head Teachers	2161	2011	151
Total	51390	49820	1571

v. Pupil Teacher Ratio (PTR) in Government Schools

Schools with adverse PTR

	Primary					*Upper Primary*				
Year	*Total Schools*	*Total Primary Schools with adverse PTR*	*% of Schools with adverse PTR*	*Surplus Teachers*	*Schools with Surplus Teachers*	*Totals schools*	*Total No. of UP Schools with adverse PTR*	*% of Schools with adverse PTR*	*Surplus Teachers*	*Schools with surplus teachers*
2013-14	10650	594	5.58			4512	36	0.80		
2012-13	10619	1351	12.72	2573	1955	4492	423	9.42	4163	1708

District wise PTR in the State

District	*Primary*	*Upper Primary*
Bilaspur	13	16
Chamba	16	20
Hamirpur	13	18
Kangra	13	20
Kinnuar	10	11

Kullu	15	21
Lahul and Spiti	5	5
Mandi	14	18
Shimla	12	14
Sirmaur	17	22
Solan	17	20
Una	19	21
State	14	18

- The State has very comfortable PTR 14 in primary and 18 upper primary for government schools. Still there are 12 per cent schools at primary level and 9 per cent at upper primary level with adverse PTR.
- There are only 34 per cent schools where the subject teachers are available as per RTE.
- As per DISE 2012-13 there are more than 6500 surplus teachers in the state and this number could be more because of the decline in enrolment both at Primary and Upper Primary level. This requires redeployment of existing teachers.
- In order to balance the PTR in every school, the state should do the rationalisation and remove the excess teachers from the over-served schools and put them in the deprived ones. All this could be done by the school level analysis using the latest DISE data.
- The number of single teacher schools has increased as of last year, there are 26000 (4.23 per cent) children enrolled in single teacher school, state needs to redeploy teachers urgently.

Single teacher schools and schools with PTR >40

Category	*Number of schools in respect of PTR*								
	Single teachers schools	*>40*	*>50*	*>60*	*>70*	*>80*	*>90*	*>100*	*State PTR*
Primary	1252	81	27	15	5	1	0	0	1431
Upper Primary	113	17	6	3	1	0	0	0	1341
Overall	1365								
Which district have higher PTR		0	0	0	0	0	0	0	

vii. Attendance of Teacher

The teacher attendance is 87.3 in the state.

viii. Teacher Support

Information about Block Resource Centres

Total No. of Blocks	*BRCs sanctioned*	*BRCs functional*	*BRPs sanctioned*	*BRPs recruited*	*% Effectiveness of BRCs*
77 CD Block 124 ED Blocks	77 CD Block	124	429	429	100%

Information about Cluster Resource Centres

Total No. of Blocks	*CRCs sanctioned*	*CRCs functional*	*CRPs sanctioned*	*CRPs recruited*	*% Effectiveness of BRCs*
77 CD Block 124 ED Blocks	2102	2102	615	615	100%

ix. Teacher Eligibility Test (TET) for primary schools

Exams	*Month and Year*	*No. of candidates appeared in exam*	*No. of candidates passed in exam*
TET 1	August, 2012	3793	1760

Source: AWP&B 2014-15

2. Learning Achievement

Performance Class III (Language)

- Class III children in Himachal Pradesh were able to answer 65 per cent of language items correctly (National Average is 64 per cent).
- Average score of State for Class III is 256 (National Average 257 on 0 to 500 scale)
- Average score of rural children is 256 and Average score of urban children is 257 respectively (256 and 260 National Average respectively)
- The score of children on word recognition is 89 and score on reading comprehension is 58 (National average for word recognition is 86 and for reading comprehension is 59 on 0 to 100 scale)

(Source: National Achievement Survey*)*

Performance Class V (Language)

- The average score of Himachal Pradesh on reading comprehension is 241 on 0 to 500 scale (National average is 247)

(*Source*: National Achievement Survey)

Performance Class III (Mathematics)

- Class III children in Himachal Pradesh were able to answer 69 per cent items of Mathematics correctly (National Average is 66 per cent).

- Average score of State for Class III is 258 (National Average 252 on 0 to 500 scale)
- Average score of rural children is 259 and Average score of urban children is 243 respectively (252 and 253 National Average, respectively)
- The score of children abilities to perform Addition is 75 (National average is 69), Subtraction is 70 (National average is 65), Multiplication is 68 (National average is 63), Division is 59 (National average is 57) and Place Value is 69 (National average is 59).

(*Source*: National Achievement Survey)

Performance Class V (Mathematics)

- The average score of Himachal Pradesh on Mathematics is 243 on 0 to 500 scale (National average is 251)

(*Source*: National Achievement Survey)

3. Enrolment, Retention and Other Issues

Indicators	*Status*	
	2012-13	*2013-14*
Primary schools (Govt.+Aided)	10619	10651
Upper Primary schools (Govt.+Aided)	4493	4512
Total Primary Enrolment (In Lakh)	6.10	5.99
Total Upper Primary Enrolment (In Lakh)	3.75	3.70
Total Elementary Enrolment (In Lakh)	9.85	9.69
GER Primary	105	107
NER Primary	87	99
GER Upper Primary	98	104
NER Upper Primary	75	99
Teachers of Govt. Schools	45712	44128
Out of School Children	3562	5210

- Enrolment at primary level in Government schools has declined by 6.7 per cent and about 6.3 per cent at upper primary level in one year.
- ***Gender Parity Index*** at primary level is 0.91 and upper primary level is 0.89. This indicates lesser transition of girls from primary to upper primary level. GPI at upper primary level is observed to be lowest in districts of Una (0.83) and Solan (0.84).

i. Enrolment trend in Government and Aided Schools

	Primary			*Upper Primary*		
Year	*Enrolment*	*Decrease*	*%*	*Enrolment*	*Decrease*	*%*
2009-10	441580	-25023	-5.36	327321	-9734	-2.89
2010-11	423217	-18363	-4.16	312010	-15311	-4.68
2011-12	410606	-12611	-2.98	289835	-22175	-7.11
2012-13	387357	-23249	-5.66	270343	-19492	-6.73
Total	3691431	-157211	-40.59	2574238	-83666	-30.95

ii. Schools by size

Academic Year	*Total Schools*			*Schools with enrolment <50*			
	Rural	*Urban*	*Total*	*Rural*	*Urban*	*Total*	*%*
2009-10	14677	375	15052	9278	115	9393	62.40
2010-11	14729	393	15122	9640	131	9771	64.61
2011-12	14575	424	14999	9942	168	10110	67.40
2012-13	14701	409	15110	10502	172	10674	70.64

iii. Schools with less than 15 children

Academic Year	*Total Schools*			*Schools with enrolment <50*			
	Rural	*Urban*	*Total*	*Rural*	*Urban*	*Total*	*%*
2009-10	14677	375	15052	1570	8	1578	10.48
2010-11	14729	393	15122	1778	6	1784	11.80
2011-12	14575	424	14999	1831	18	1849	12.33
2012-13	14701	409	15110	2155	15	2170	14.36

iv. Flow rates of primary level (2012-13)

Grades	*Promotion rate*			*Repetition rate*			*Dropout rate*		
	Boys	*Girls*	*Overall*	*Boys*	*Girls*	*Overall*	*Boys*	*Girls*	*Overall*
Grade I	97.92	98.83	98.35	0.31	0.28	0.29	1.77	0.90	1.36
Grade II	98.86	99.45	99.14	0.28	0.24	0.26	0.85	0.31	0.59
Grade III	99.10	99.13	99.11	0.22	0.22	0.22	0.68	0.65	0.67
Grade IV	99.61	99.37	99.49	0.29	0.25	0.27	0.10	0.38	0.24
Grade V	105.37	106.64	105.97	0.26	0.19	0.23	0.00	0.00	0.00

Grade VI	98.86	99.04	98.95	0.29	0.38	0.33	0.86	0.58	0.73
Grade VII	99.67	99.74	99.70	0.22	0.30	0.26	0.11	0.00	0.04

v. Attendance of Students

	Boys	*Girls*	*Total*
Primary	96.2	96.4	96.30
Upper Primary	95.1	93.6	94.40

II. Quality Enhancement Initiatives by the State

i. Continuous and Comprehensive Evaluation (CCE) Implementation

Initiatives for the implementation of CCE were taken in 2002 where CCE was launched up to Class III. In 2006-07 it was piloted in 13 blocks of the State. In 2007-08, this was up scaled in 25 blocks and in 2008-09 it was implemented in all the government primary schools up to Class V. Class V board exams were abolished. In 2009-10 Class VIII board exams were also abolished.

ii. Early Literacy and Mathematics Programme (Class I and II)

Baseline data shows that:

- 50 per cent students enter Class II without actually acquiring class level competencies. They can only recognise alphabets and numbers.
- 20 to 20 per cent students enter Class II without actually learning anything in Class I in languages.
- 40 per cent students enter Class-II with appropriate learning experiences in mathematics. They were very clear on number concept.
- 30 per cent students have no understanding numbers.
- There are about 30 to 70 per cent students who enter next higher level without acquiring adequate skills and consequently not able to keep pace with the learning and fall apart. They are unable to recognise, read, write or comprehend. They have wide learning gaps.

Early Literacy and Mathematics programme has been initiated with the objective of:

– Improving learning levels by 5 per cent to 10 per cent in all standards/grades.

– Improving basic language and mathematics skills of primary level children specially Class I and Class II.

– Enhancing teachers' skills and abilities in teaching of languages and mathematics in early primary grades.

To achieve the above stated objectives, the state has developed Material for Early Literacy and Numeracy.

- Work books have been prepared as per curricular objectives and

were piloted in 200 schools. These workbooks will be used in Class I and Class II with slight modification as per feedback received from teachers.

- Learning resources for joyful learning have been listed in consultation with NCERT. These resources of children would give platform/opportunity for creative reading writing and oral communication.
- Teachers' manuals have been developed to make teachers understand the process of early reading, writing and numeracy.
- State has proposed to implement early reading programme in Classes I and II.

iii. Support for Art Integrated Activities

As suggested in NCF-2005 and RTE Act 2009, the holistic development of children is the aim of education. Apart from Language, Mathematics and Environmental Science, Art subjects (Rainbow subjects – drawing, singing, dancing, puppetry, card making, clay modelling and physical exercise) are also taught in Himachal Pradesh. For these activities materials such as papers, sketch pens, crayon colors, pencils, gum, match box, colourful clay and gypsum colours are required. Schools provide these materials to children.

iv. State Learning Achievement Survey (SLAS)

State has been conducting learning achievement surveys covering every school and every child in the state. In future the state will draw a sample of schools for SLAS. That will save time, money and efforts.

Sources

1. DISE, 2013-14
2. *National Achievement Survey Class III*, NCERT, 2014
3. *National Achievement Survey Class V*, NCERT, 2012
4. *Annual Works Plan and Budget, 2014-15*, SSA, H.P

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IIT Nursery School – an Experimental School of NCERT

The school was set up in 1968 as a collaborative venture between NCERT and IIT with the following objectives:

(i) To provide preschool education of a good quality at subsidised rates to the children of NCERT and IIT employees.

(ii) To serve as a model/ experimental preschool for NCERT for its research, training and development activities in the area of preschool education.

It is situated in the campus of the Indian Institute of Technology (IIT), Hauz Khas, New Delhi. It caters to the educational needs of young children in the age group of 2½ to 5 years. Admissions in the school are done for Play Group, Nursery and K.G. Classes. In the school there is one section is of Play Group, two sections of Nursery Class and three sections of K.G. Class. The number of children in each class is restricted to 25. The school mainly serves the children of National Council of Educational Research and Training (NCERT) and IIT employees. If seats are vacant, admissions are also given to children from neighbourhood area.

The school provides preschool education in a healthy and child-friendly environment and prepares children for primary education.

Medium of Instruction

The medium of Instruction is Hindi and English.

Teachers

Preschool education in the Nursery School is provided by qualified, trained and experienced teachers. Helpers in each class assist teachers in the conducting of activities. There is one teacher and one helper for each section of classes. The Pupil Teacher Ratio (PTR) is maintained at 25:1 for Nursery and K.G. classes; for the play group it is maintained at 20:1.

Uniform

There is no prescribed uniform for children in the school. Children can come to school in comfortable clothes.

Duration of Preschool Programme

For play group the duration of the programme is two hours and for nursery and K.G., the programme organised is for four hours.

Attendance

Children in the school are encouraged to attend school regularly. It is essential for all the children to attend the morning assembly. In case of illness or other reasons for absence, the information is required to be sent in writing to the school.

Curriculum

The curriculum of the school follows a theme-based approach and includes age and developmentally appropriate activities for all domains of child development. It provides a school readiness programme to children and lays the foundation for the development of reading, writing and number work. It also helps children develop other abilities, like getting along with other children, learning to sit and concentrate on an activity for a short period of time increasing their attention span, etc., preparing them for formal education. Assessment in all aspects of child development takes place informally throughout the year.

Creative activities (like paper folding, painting, paper tearing, cutting and pasting, clay work, etc.) are organised regularly in the school to develop fine motor skills of children. Children play with toys, blocks, dolls, etc., inside the classroom and outside the classroom, they enjoy playing on swings, in the sandpit; they roll tyres and push trolleys.

Children are taken for excursions to rail museum, zoo, India Gate, children's park, etc., which provides them ample opportunities for fun, enjoyment, developing observation skills, listening skills, socio-emotional and communication skills under close supervision of teachers and helpers.

Bal-Mela is organised every year in the School compound where multiple activities for children and parents are organised. If parents have some special interest and talent they are also invited to participate as resource persons in school related activities such as poem recitation, storytelling, preparation of puppets, making of low cost fun toys, preparing simple nutritious recipes, etc.

School cultural programme, celebration of all festivals, children's day celebrations, etc., are some of the other major events of the school.

Birthday of all children is celebrated with great joy.

There is a small library maintained for young readers in the school. Children enjoy visiting the reading there with their teachers; they pick up books of their own choice, browse and look at pictures and interpret in their own language. Teachers also read out stories and rhymes to them. This arouses their interest in books and provides an opportunity for initiating reading readiness.

Children are provided supplementary nutrition twice a week which includes seasonal fruits, ready to eat healthy food items, *kheer*, *halwa*, *pulao*, etc.

Parent Teacher Meetings (PTMs) are organised quarterly to discuss the child's growth, development and progress in learning. Height and weight of children are recorded quarterly and made known to parents. If there is any special need of the child then the teacher talks to the parents and provides all possible support.

First Aid facility is available in the school. But, in case of emergency children are taken to the dispensary available in the campus.

Admission Procedure

- The process of admission in Play Group*, Nursery and K.G. classes starts every year from 1 February.
- Application form is available in the school office and may be collected free of cost.
- The filled-in form is required to be submitted in the school office before 1 March along with four passport size photographs of the child and supporting documents such as date of birth certificate, immunization card and residence proof.
- The list of selected children for admission to various classes is put on the notice board by second week of March.
- School fee is submitted to the respective class teacher in the last week of March for the new academic session.
- The new session begins from the first week of April.

Age for Admission

- For Play Group the child should have completed 2½ years on 31st March of the admission year.
- For Nursery Class the child must have completed three years of age on 31st March of the admission year.
- For K.G. Class the child must have completed four years of age on 31st March of the admission year.

Role of Parents

All round development of the child is the responsibility to be shared equally by the school and the parents. Therefore, parents are encouraged to participate in organising and managing of school activities. Parents are requested to:

- visit the school regularly and attend Parent Teacher Meetings (PTMs) to discuss their child's progress and performance.
- inform the school regarding any change in address or telephone number so as to update the school records.
- Send their children to school regularly and punctually.
- Send their children to school in comfortable clothing and shoes.
- ensure that children carry clean drinking water and nutritious food items in a tiffin.
- cooperate in the management of school activities.

Contact Address of the School —
Headmistress, IIT Nursery School
IIT Campus, Sri Aurobindo Marg
New Delhi-110016
Phone No. 011- 26591546.

*Special provision for the children of NCERT and IIT employees only.

To the Contributors

The Primary Teacher invites you to write articles, field notes and reports for publication. We want your honest deliberations on issues that impact elementary education. You may like to focus on issues that bother you and concerns that you are sensitive to and which you feel should be shared with other teachers working at the grassroot levels.

- Use simple and non-technical language.
- Write in a friendly and communicative tone.
- Each article should be about 1500 to 3000 words.
- Keeping the clientele in mind, which is the teacher, please include information pieces that the teacher may not have access to in her/his place of location. You may include field notes and your own perceptions about issues in research, development and training in the area of elementary education.
- Send two copies of the piece along with the soft copy.
- Each article should also have a short abstract in about 150 words.
- Try to write in a magazine/story/narrative format to make the piece user-friendly and interesting to read.
- Please send photographs and even illustrations prepared by you, if you so desire, to be incorporated in your article.

MY PAGE...

This column would contain your letters and feedback where you can put forward your responses, suggestions and expectations from the articles, papers and columns presented in *The Primary Teacher*. You may have issues, concerns and doubts related to teaching-learning processes, classroom practices, syllabus, textbooks, evaluation patterns, research pursuits, etc. These could also reflect the concerns of many others working in this area. Please feel free to raise these issues in this column. You could also ask specific questions that would have baffled you.

You may write to us at the following address/email.

Professor Santosh Sharma
Academic Editor
The Primary Teacher
G. B. Pant Building, NCERT
Sri Aurobindo Marg
New Delhi – 110016
Email: primaryteacher.ncert@gmail.com

विद्यया ऽ मृतमश्नुते

राष्ट्रीय शैक्षिक अनुसंधान और प्रशिक्षण परिषद्

NATIONAL COUNCIL OF EDUCATIONAL RESEARCH AND TRAINING

Sri Aurobindo Marg, New Delhi – 110 016

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(शैक्षिक अनुसंधान प्रभाग)

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विद्यालय शिक्षा एवं संबंधित विषयों में एन.सी.ई.आर.टी. सीनियर रिसर्च एसोसिएट के पद के लिए भर्ती हेतु आवेदन आमंत्रित किये जाते हैं। पात्रता की योग्यता संबंधित जानकारी हेतु एन.सी.ई.आर.टी. की वेबसाईट www.ncert.nic.in पर देखें। पूर्ण आवेदन अध्यक्ष, शैक्षिक अनुसंधान प्रभाग, एन.सी.ई.आर.टी., नई दिल्ली - 110 016 को भेजे जा सकते हैं। आवेदनों पर वर्ष में दो बार विचार किया जाएगा (31 मई तथा 30 नवंबर अंतिम तिथियाँ होंगी)।

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