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ISSN 0972-561X

HALF-YEARLY JOURNAL OF EDUCATIONAL RESEARCH
INDIAN EDUCATIONAL REVIEW

Volume 50

Number 1

January 2012

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EDITORIAL

As we are progressing towards building a knowledge society, newer challenges are being faced by those involved in educational planning and delivery. The pressures of knowledge creation have increased the demand for education and the expectations of the people from education are on rise. They are more aware and conscious of quality, which is also critical to keep the knowledge created relevant for achieving the national developmental goals. Research supported reforms in education, teacher preparation, classroom processes and teaching learning systems have become more necessary than ever to meet the mandate of reaching all with quality education. No less important is sharing of the experiences and insights gained through systematic, critical enquiry and review. The prestigious journals and conferences, symposia, etc. offering such opportunities are considered to be of immense importance by the intelligentsia. In this context, we are pleased to bring to our readers this latest issue of the Indian Educational Review, which is a biannual referred journal of the NCERT.

The issue begins with the study focusing on the status of implementation of pre-service teacher education curriculum — at elementary stage in various states and union territories in India. The main objective was to ascertain the weightage given to different curricular and co-curricular areas and derive implications for action to improve the quality of pre-service teacher education at elementary stage. Next paper on 'Effectiveness of outdoor Environment Education Programme' attempts to find the effect of such a programme on behaviour of young children and has tried to establish that outdoor environment programme exhibits better environmental behaviour among students. The paper has also reflected upon the differential effect of environment education programme on different categories of students. Third paper is an outcome of a programme on different categories of students. It is an outcome of a programme of State Resource Centre, Tripura, wherein, the team of the programme reinforces the importance of attendance for the performance of the students of elementary classes. The next paper assesses the level of knowledge of computers among the prospective teachers as influenced by various selected factors. The fifth paper highlights the importance of teacher and compares the teacher with a therapist. The paper has established the role of the teacher in facilitating emotional stability among the students. Diagnosis and treatment have been the tools according to the author to bring stability. The sixth paper has addressed the issue of life skills among the adolescent students. The

paper has attempted to assess the need for life skills among the adolescents of secondary school and concludes that there is a strong need to relate education to the sensible aspect of life, where the student can be skillfully made responsible for his/her own behaviour. The paper on status of suicidal ideation among students contained in the present issue raises alarm on the prevalence of high frequency of suicidal ideation and on communication of suicidal thoughts. The last paper of the issue has investigated gender differences in environmental sensitivity among primary school students.

In addition, this issue also carries an abstract of a recently completed study with the financial support by the Educational Research and Innovation Committee (ERIC), NCERT. It relates to the work values among high school students of Uttar Pradesh. The present issue also contains a review of a book entitled — Vibrant Children's Library in the Digital Era.

We look forward to receive your valuable comments and suggestions to enhance the quality of this journal.

POONAM AGRAWAL
Academic Editor

Indian Educational Review

Indian Educational Review aims to enhance the theory and practice of research in education. It is a journal of opinion and research in the field of education. Contributions may comprise scholarly discussion of new issues, reports of research, reviews of researches in particular field, reports of developments, and debate on educational research generally or on specific issues. Contributions are also invited reporting all kinds of empirical research in education, whether sociological, psychological, economic or organisational. The journal is intended to cover a wide range, including interdisciplinary studies.

In addition, the purpose of this journal is to provide a medium for dissemination of educational research and exchange of experiences among research workers, scholars, teacher educators, teachers and others interested in educational research and related fields and professions.

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**Pre-service Elementary Teacher Education
Curriculum in different States in India
A Status Study**

S.K. YADAV*

ABSTRACT

The study focused on status of implementation of pre-service teacher education curriculum at elementary stage in various states and union territories in India. The major objective was to ascertain the weightage given to different curricular and co-curricular areas and derive implications for action to improve the quality of pre-service teacher education at elementary stage. This study consists of data from 25 states and union territories. The data were collected through mailing questionnaires and personal visits. The descriptive statistical technique was used for analysis of the data. A lot of variations were found in terms of weightage given to different curricular and co-curricular areas.

Introduction

India, a union of states, is a sovereign, socialist, secular, democratic, republic country governed by its Constitution. It comprises 28 states and seven union territories. In the Constitution, lot of emphasis has been laid down on education. National Policy on Education (NPE), 1986, (revised 1992) called for overhauling the teacher education system. In the light of the recommendation, a centrally sponsored scheme was formulated by the Government of India to improve the quality of teacher education. District Institute of Education and Training (DIET) was one of the components of the scheme. It was recommended to establish DIETs in all the districts of the country. One of the major responsibilities of DIET was to run the Pre-service Teacher Education (PSTE) course and prepare teacher for elementary

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stage. At present there are about 560 DIETs in the country. Besides these, there are about 1200 Elementary Teacher Education Institutions (ETEIs), which are also preparing teachers and running PSTE course at the stage. However, the quality of education depends to a large extent on the quality of teachers. But the quality of the teachers depends chiefly on the curriculum of Pre-service Teacher Education Programme of the institution at the elementary stage. Therefore, Pre-service Elementary Teacher Education Curriculum needs to be in conformity with changing educational and social realities of a given society. In the past few decades, we have witnessed some sporadic attempts to modernise its curriculum at the elementary stage in order to attune it to the demands of the socio-politico realities. It would be in the fitness of things to trace the historical antecedents of the present Pre-service Teacher Elementary Education Curriculum to understand the base for the modifications that have been attempted.

The Basic Education movement led by Mahatma Gandhi, *The Father of the Nation*, during late thirties brought about an important change in school curriculum when the emphasis on bookish learning was replaced by education, geared to meet the needs and demands of life. The syllabi for teacher training also changed considerably to enable teachers to play their role in accordance with the changes in the schools. The courses emphasised craft-work and instruction relating to the methods of correlating school subjects to the main craft. Another milestone in the history of teacher training in India was the publication of Sargent Report on 'Post War Educational Reconstruction' in 1944. It recommended that the elementary teacher training course should essentially be practical in nature and specially related to the needs of the school. It also recommended provision of refresher course and research facilities for the teachers.

The Education Commission (1964-66) emphasised the development of teacher education curriculum. It observed that a sound programme of professional education for teacher was essential for the qualitative improvement in education for which it recommended (a) re-orientation of subject knowledge; (b) integrated courses of general and professional education; (c) vitalising professional studies and basing them on Indian conditions through the development of educational research; (d) improved methods of teaching and evaluation, which include self-study and discussion and continuous internal assessment and sessional work; and (e) developing special courses and programmes at all levels of teacher education to meet the requirements of the national system of education.

Yashpal Committee (1993) recommended that the process of curriculum framing and preparation of textbooks should be decentralised so as to increase teacher's involvement in these tasks. It further noted that inadequate programme of teacher preparation leads to unsatisfactory quality of learning in school. Therefore, the Bachelor of Education (B.Ed.) programme should offer the possibility of specialisation in elementary education. The duration of the programme should either be one year after graduation or four years after higher secondary. The contents of the programme should be restructured to ensure its relevance to the changing needs of education. The emphasis in these programmes should be on enabling the trainees to acquire the ability for self-learning and independent thinking. The teacher education programme being a professional course has to be rigorous, thorough and intensive.

In our country, the National Council of Teacher Education (NCTE) as a statutory body was established by the Government of India in 1993 to maintain the standard and quality of teacher education. However, it was already functioning as a non-statutory body since 1973. NCTE develops National Curriculum Framework for teacher education. For the first time the Teacher Education Curriculum Framework was brought out in 1978 by NCTE and recommended time allocation to different areas like pedagogical theory, working with community, content-cum-methodology and teacher practice including related practical work. Subsequently, the Teacher Education Curriculum Framework was brought out in 1988, 1998 and 2004 and the latest changes and technological developments were also incorporated from time to time. During 2006, a draft, Curriculum Framework for Teacher Education was brought out in collaboration with NCTE and NCERT.

Since education is in the concurrent list, the responsibility of developing the curriculum for elementary teacher education rests with state governments. The different states and union territories are developing their teacher education curriculum at elementary stage according to their own needs and requirements. The State Council of Educational Research and Training (SCERT) and Board of School Education of respective states and union territories are mainly responsible for construction of the curriculum of Pre-service Elementary Teacher Education. Therefore, there are ample variations in terms of weightage given to different areas of Pre-service Elementary Teacher Education Curriculum and even national guidelines are not followed by many states and union territories. Several research studies also supported this point of view and have reported variations in

terms of weightage given to different curricular and co-curricular areas of elementary teacher education curriculum (Arora et al., 2000; Behari, 1998; Behera et al., 2005; Gupta, 1993; Gafoor, 1998; NIEPA, 2002; Pandey, 2000, Sandhir, 2000; Singh & Malhotra, 1991; Yadav, 2000, 2002, 2003, 2006). In the present research work, an attempt has been made to study the status of implementation of pre-service teacher education curriculum at elementary stage in different states and union territories in the country.

Objective of the Study

The specific objectives of the study are as follows:

- To study the status in implementation of pre-service elementary teacher education curriculum in terms of structure, agency for curriculum construction, subject nomenclature, transactional approaches of various subjects, etc. in different states in the country.
- To ascertain the weightage given to different components of pre-service elementary teacher education curriculum.
- To derive implications for action to improve the quality of pre-service teacher education curriculum at elementary stage in different states/UTs in the country.

Design of the Study

It is essential to follow a scientific research design to obtain dependable, accurate, reliable and valid results from a study. The design of the present study consists of sample selected, tool used, procedure adopted for data collection and analysis of data.

Sampling

The Pre-service Teacher Education (PSTE) Programme at elementary stage is being run by the District Institutes of Education and Training (DIETs) and Elementary Teacher Education Institutions (ETEIs) in different states and union territories. But the curriculum is constructed by the respective SCERTs and Boards of School Education. Efforts were made to collect data from DIETs and ETEIs from all the 35 states and union territories during 2005–06. However, the data could be collected from 25 states/union territories, namely, A & N Islands, Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Chandigarh, Chhattisgarh, Delhi, Goa, Gujarat, Haryana, Himachal Pradesh, Karnataka, Kerala, Maharashtra, Madhya Pradesh, Meghalaya, Mizoram, Nagaland, Odisha, Puducherry, Rajasthan, Tamil Nadu, Tripura and Uttar Pradesh. Therefore, sample of the study consists of 25 SCERTs, 10 Boards of School Education, 243

DIETs, 237 ETEIs of 25 states and union territories from where the data were collected.

Tool Used

To obtain necessary information from the states, the following tools were used for data collection :

- **Questionnaire** was developed and finalised with the help of experts. It had six sections. Section 1 was related to general information about the number of DIETs and ETEIs, including name of the institution, duration of the course, admission criteria, minimum eligibility for admission, details of the academic session, weekly and daily schedule, guidelines for curriculum revision and agency involved in revision. Section 2 of the questionnaire sought information about the scheme of the studies related to the number of subjects, periods, weightage given to each curricular and co-curricular area including compulsory, optional/special, practice teaching, pre- and post-internship programme, practical activities, mode of curriculum transaction and use of teaching aids. Section 3 sought information regarding practice teaching including total duration of steps for preparing pupil teachers, details of norms of subjects, minimum number of lessons prescribed for each subject, lesson supervised by cooperative teachers and assessment procedure, etc. Section 4 consisted of practical and co-curricular activities. Section 5 sought information about assessment and evaluation of Pre-service Elementary Teacher Education Curriculum. The last section i.e., Section 6 included suggestions for improving the Pre-service Elementary Teacher Education Curriculum.
- **Focus Group Discussion (FGD)** was conducted in few institutions where data were collected personally. The issues in FGD were the same as mentioned in the above questionnaire.
- **Field notes** were taken during the visit of elementary teacher education institutions.

Data Collection

The data were collected by mailing the questionnaire to all DIETs and elementary teacher education institutes in all the states and union territories of the country responsible for preparing teachers at elementary stage. The data were also collected from State Councils of Educational Research and Training (SCERTs) and Boards of School Education, which develop curriculum and syllabus for elementary

teacher education. The efforts were made to get the filled-in questionnaires from all the states. However, the filled-in questionnaires were received from 25 states/UTs. Besides this, the curriculum and syllabus of elementary teacher education from these states were collected and analysed. Some institutions were also visited for verifying the validity and reliability of the data.

Analysis of Data

The data were scrutinised, classified, compiled and analysed variable-wise. Wherever necessary, descriptive analysis of data was carried out. The syllabus and curriculum of elementary teacher education institutions of these states were analysed to validate the information provided by the institutions.

Major Findings

The major findings of the study are as follows:

- The nomenclature of Pre-service Teacher Education (PSTE) at elementary stage was different in different states and union territories in the country. It was named Diploma of Education (D.Ed.) in Andhra Pradesh, Arunachal Pradesh, Goa, Haryana, Karnataka, Madhya Pradesh and Maharashtra, Elementary Teacher Training in Chandigarh, Meghalaya and, Odisha and M.P. Basic School Teachers Certificate (BSTC) in Rajasthan.
- The duration of PSTE course was two years in most of the states. However, it is still one year in Bihar, Meghalaya, Tripura and West Bengal. The Delhi University had a four year duration Bachelor of Elementary Education Programme.
- Admission criteria for PSTE course was based on merit basis in about 50 per cent of the states. But entrance test was conducted for admission in Bihar, Delhi, Haryana, Himachal Pradesh, Nagaland and Punjab. Both interview and entrance test were conducted in Odisha and Puducherry for admission in PSTE course.
- In most of the states, 10+2/intermediate was the eligibility qualification for admission whereas it was graduation in Haryana, Chandigarh, Goa and Uttar Pradesh.
- Fresh students were eligible for admission in most of the states, while in-service untrained teachers were eligible in Andhra Pradesh, Goa, Himachal Pradesh, Meghalaya, Mizoram, Rajasthan and Maharashtra only.
- The medium of instruction of PSTE course was English in one-third of the states, whereas, equal number of states were providing this course in Hindi and regional languages.

- In majority of the states, the instructional days varied from 180 to 220. But the instructional days were more than 220 in Karnataka, Madhya Pradesh, Andaman and Nicobar Islands, Odisha and Bihar.
- Most of the states observed 201 to 240 days as working days in a year while Chandigarh worked for 269 days.
- The periods allotted were from 41–50 per week for teaching different subjects in most of the states. The minimum 25 periods in Kerala and maximum 54 periods in Himachal Pradesh were allotted per week for teaching different subjects.
- The PSTE curriculum was not revised in Bihar, Madhya Pradesh and Goa during the last more than fifteen years. During last five years, the curriculum was revised in Arunachal Pradesh, Gujarat, Karnataka, Andaman and Nicobar Islands, Haryana, Assam, Kerala, Maharashtra, Rajasthan and Uttar Pradesh states.
- The State Board of Education and SCERTs/SIEs were following the NCERT and NCTE guidelines for revision of PSTE curriculum.
- Teachers, Teacher Educators and Experts from DIETs, Colleges of Teacher Education (CTEs), Institutes of Advanced Studies in Education (IASEs), University Departments of Education and Non-government Organisations (NGOs) were involved in curriculum renewal process of PSTE curriculum.
- Minimum of 20 students were admitted in Arunachal Pradesh during the first year of PSTE course, whereas, maximum of 150 students were admitted in Delhi, Gujarat and Uttar Pradesh. Fifty students were admitted in Karnataka, Meghalaya and Madhya Pradesh.
- Different names are given for the compulsory papers of PSTE curriculum of different states/UTs. But these are mostly covered under the discipline of philosophy, psychology and sociology. The remaining subjects were related to teacher's functions and elementary education, ICT, art and creative education.
- The optional papers like pre-primary education, multigrade teaching, education for all, girl's education, population education, etc. were prescribed in PSTE curriculum by different states/UTs.
- All the subjects of elementary stage like english, science, mathematics, regional languages, work education, art education, health and physical education were prescribed for content-cum-methodology subjects.
- The strategies like lecture method, demonstration, discussion, seminar, group work, quiz, project work, assignment and field trip were used for transacting the curriculum in almost all the states/UTs.

- Teaching aids like blackboard, charts, models, OHP, computer, slides, maps, math-kit, science-kit, LCD projector were used in most of the states and union territories.
- In most of the states, steps like model lessons by expert, simulated teaching role-play, micro-teaching and activity-based approach were undertaken for preparing pupil teachers for practice teaching.
- Maximum 120 days were allotted for practice teaching in Andhra Pradesh state, whereas, minimum 40 days were allotted in Meghalaya. About 100 days were provided by most of the states for practice teaching.
- The maximum number of 200 lessons of different subjects was supervised in Andaman and Nicobar Islands during both the years, whereas, minimum 18 lessons are supervised in Assam. However, in other states the lessons supervised were 180 in Chandigarh and Tamil Nadu, 168 in Uttar Pradesh, 160 in Mizoram and Puducherry and 150 in Delhi.
- There were lot of variations in different states in terms of supervision of lessons of pupil teachers by cooperative teachers, supervisors and internal faculty. In case of Kerala, maximum possible lessons were supervised by three faculties, whereas, 50 per cent of lessons delivered by pupil teachers were supervised by supervisors, cooperative teachers and internal faculty. But in Assam, minimum two lessons by supervisor and 6 lessons by internal faculty were supervised.
- The pupil teachers were assessed internally in practice teaching in Delhi, Goa and Odisha, whereas, both external and internal examinations were conducted in most of the states. One or two lessons were observed and assessed by the external examiners in practice teaching.
- The work experience, health and physical education, educational technology, community work, music and clay modelling were given in practical work in most of the states. The practical work was assessed internally in most of the states.
- Co-curricular activities like drama, dance, educational tours, exhibition, blood donation, sports and games, debate, health check-up were organised in most of the states.
- The semester system was followed in Arunachal Pradesh, Assam, Chandigarh and Uttar Pradesh for evaluation of student teachers. But annual examination pattern was followed in most of the states. Grades were given in Goa and Kerala but most of the states were allotted both marks and grades.

- The theory papers, practice teaching and practical work were assessed separately in about 50 per cent of the states but these papers were evaluated/assessed jointly in equal number of states.
- The SCERTs/SIEs and State Board of Education were the main agencies for awarding certificate to the student teachers of elementary teacher education programme.
- The Inclusive Education, Environmental Education, Education for Disadvantaged groups, Human Rights, Information Technology, Value Education, Adolescent Education, Peace Education, HIV/AIDS Education were found to be the major and emerging concerns to be included in the elementary teacher education curriculum in most of the states.

Implications of the Study

In this section, the results are discussed and the following implications for action have been derived from the findings of the study.

1. The nomenclature of elementary teacher education programme is not common in the country. Most of the states have named it as Diploma in Education (D.Ed.) in the light of DIET guidelines evolved by MHRD. The remaining states should also change the nomenclature so that uniformity as per DIET guidelines can be established and confusion can be removed. The meeting of policy planners can be organised to resolve this issue.
2. The admission of students in D.Ed. course varies from state to state. The quality of training declines for admitting more number of students in the PSTE course. Fifty students to be admitted as recommended by DIET guidelines. Besides this, students are to be admitted on the basis of entrance test and interview.
3. In most of the states, English was followed as medium of instructions in D.Ed. course. It create problems for the students. Therefore, the regional language of different states/UTs is to be followed in D.Ed. course.
4. The study revealed that the duration of D.Ed. course varied from one year to four years in different states and union territories. The duration of D.Ed. course should be at least two years according to DIET guidelines so that adequate time to theory and practice can be provided. If the state has adequate resources, the B.El.Ed. course can be introduced.
5. The study has revealed lot of variations in implementing elementary teacher education curriculum in terms of agency for curriculum development, number of working days, periods in a week, duration of periods, teaching approaches in different

subjects, evaluation system, etc. These variations shown in the study need further in-depth qualitative analysis and research support to see the effectiveness in teaching-learning process in elementary teacher education institutions and schools.

6. Different names are given for compulsory and optional papers of PSTE course. It would be better if these are put under foundation course, stage specific course and additional papers. These papers should have linkages with practical work and practice teaching so that theory and practice can be integrated.
7. All the teaching subjects related to both cognitive and non-cognitive should have practice session in schools. It will help in integrating both content and methodology in PSTE programme.
8. The practice teaching during D.Ed. programme is not taken seriously in many states/UTs. It should be of longer duration. Proper steps should be taken for preparing student teachers for practice teaching. They should be made to perform all activities of the school independently. The proper feedback to be provided during teaching practice by the supervisors. The school experiences need to be shared after the teaching practice. It will minimise the gap between theory and practice.
9. The work experience, health and physical education, community work, ICT, music, educational technology and action research were prescribed under practical work in D.Ed. course by different states. The practical exercises should have linkages and should be based on foundation course and teaching practices. It will help in integrating theory and practice, and content and methods. For further verification, research study to be conducted for the practical work related to co-scholastic areas.
10. The D.Ed. curriculum is transacted by using lecture method, demonstration, group discussion, project, assignments, field trip, etc. Beside these, constructive approach should be followed in D.Ed. course for preparing reflective and creative teachers.
11. Two agencies namely SIEs/SCERTs and Boards of School Education are responsible for construction of curriculum in most of the states. But from the findings of the study it appears that there is no coordination between the two important agencies. Both the agencies should work together for preparing the PSTE curriculum and follow the NCTE norms. It will also improve the quality of ETT curriculum.
12. In most of the states, marking is followed for evaluation of student teachers achievement of Elementary Teacher Education course. Continuous and Comprehensive Evaluation (CCE) is also not

followed in most of the states and union territories. A study maybe undertaken for knowing the strengths and weaknesses of marking system, CCE and grading system in evaluation.

In the end, it can be concluded that there are lot of variations in terms of weightage given by different states to foundation courses, pedagogical aspects, practicals and internship programmes of Elementary Teaching Education curriculum. Academic subjects are still given considerable more weightage in comparison to the co-scholastic area in PSTE course. The integration of theory and practice, content and methods and use of ICT in teaching learning process are not reflected clearly in the PSTE course. Therefore, there is need to follow DIET guidelines for developing curriculum at this stage. It will help to tackle the issues raised above to certain extent. Besides this, in-depth research study should be conducted to find out the gaps and causes so that suitable strategy can be evolved to improve this course.

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Effectiveness of Outdoor Environmental Education Programme for Enhancing Responsible Environmental Behaviour among Fifth Grade Students

VANDANA MEHRA* AND MANPREET KAUR**

ABSTRACT

The present study was conducted to study the effect of outdoor environmental education programme for enhancing responsible environmental behaviour among fifth grade students of high, average and low intelligence. One hundred twenty fifth grade students belonged to two schools of Gurdaspur. The data were analysed with the help of 2-way Analysis of Variance. The major findings of the study were (a) Students taught environmental education by the outdoor environmental education programme exhibited better mean gains on responsible environmental behaviour and its dimensions as compared to students of control group who were taught environmental education by traditional method of instruction. (b) Students with high, average and low intelligence exhibited comparable mean gains on responsible environmental behaviour and its dimensions, locus of control, environmental attitude, beliefs and values related to the environment, environmental sensitivity, personal responsibility, environmental action strategies, and intention to act. (c) Students of high intelligence exhibited better mean gains on knowledge of ecological concepts and knowledge of environmental issues and problems than students with low and average intelligence. (d) Students of average intelligence group exhibited better mean gains on knowledge of environmental issues and problems as compared to students of lower intelligence. (e) There was significant interaction between treatment and levels of intelligence in relation to mean gains on knowledge of ecological concepts.

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Environment is the aggregate of external conditions that influence the life of an individual or the population, specifically the life of man (Shrivastava, 2004). A variety of environmental problems like acid rain, air pollution, global warming, hazardous waste, ozone depletion, smog, water pollution, overpopulation, and rain forest destruction, etc. now affect our entire world. As globalisation continues and the earth's natural processes transform local problems into international issues, few societies are being left untouched by major environmental problems. The real solution of environmental problems can be sought by educating people.

Environmental Education (EE) refers to organised efforts to teach about how natural environment functions and, particularly, how human beings can manage their behaviour and ecosystems in order to live sustainably. The term is often used to imply education within the school system, from primary to post-secondary. According to Ramsey, Hungerford and Volk (1992), Environmental Education can mean concepts in ecology, outdoor education, environmental science or instruction about issues. Megenity (1995) has defined, Environmental Education as a multidisciplinary approach to the study of humanity problems of maintaining a liveable earth.

Outdoor Education

There's no way that we can help children to learn to love and preserve this planet if we don't give them direct experiences with the miracles and blessings of nature (Olds, 2001).

Outdoor education is important to understand things which can be learned best outside the classroom. Outdoor education has been defined in a variety of ways throughout its history. Those who influenced the field earlier defined outdoor education with the needs of camping education in mind. Sharp (1943), one of the earliest advocates of camping education stresses on a proper division of learning processes to be undertaken inside and outside the school.

Outdoor education is a method for learning; is experiential; takes place primarily in the outdoors; but not exclusively, in the outdoor setting. Some aspects may occur indoors such as learning basic concepts before the field trip, preparation of materials for an ecology study, watching a nature slide show or lecture, and planning the logistics for an expedition. However, it is the outdoors which provides the setting and, ultimately, the inspiration for learning; requires use of all senses and domains; is based upon interdisciplinary curriculum matter; and is a matter of relationships involving people and natural

resources (Priest, 1986). According to Hammerman Hammerman, and Hammerman (2001) outdoor education is “education which takes place in the outdoors”.

Students require a range of structured, sequenced, and developmentally appropriate learning opportunities in outdoor education. Health and Physical Education in the New Zealand Curriculum, Ministry of Education reported that “in developing outdoor education programmes, schools should make use of the school grounds and the immediate local environment and make the most of opportunities for direct experiences that can be completed in a school day”. During the last half of 1999, Education Outdoors New Zealand (EONZ) had a contract with the Ministry of Education to develop learning materials and provide professional development for teachers. EONZ focused on three areas: First, development of units of work that was sequential from level 1 to level 5 of the curriculum, and in one topic area through level 6 to 7. Second, using the school and local environment to teach such activities. Third, writing learning activities that all teachers could use safely with students. The teachers realised that they had the ability to teach outdoor education, the students really enjoyed the learning opportunities they were able to experience, and all this without having to go on a hike or sleep in a tent (Periam, 2000).

Without continuous hands-on experience, it is impossible for children to acquire a deep intuitive understanding of the natural world that is the foundation of sustainable development. A critical aspect of the present-day crisis in education is that children are becoming separated from daily experience of the natural world. Experiences with natural world increased language and collaborative skills (Moore and Wong, 1997).

The concepts of environmental education could be better understood by providing the direct experiences at earlier grade levels. If one wishes learners to develop an understanding of layering in the forest, it is more effective to visit the oak-hickory forest nearby than to study about the exotic tropical rainforest thousands of miles away (Ballard and Pandya, 1990).

Spending time outdoors with a positive role model is the number one reason people begin to develop environmental sensitivity, or awareness and empathy towards the natural world (Sivek, 2002). In an era of extensive habitat loss and landscape suburbanisation, children face ever decreasing opportunities to spend time with nature. Even in rural areas, many children experience increasingly scheduled

lives, with discretionary time often spent in front of the television or computer while outdoor activities and positive experiences with natural world improves awareness, reasoning, and observational skills (Pyle, 2002).

Children have an innate, genetically predisposed tendency to explore and bond with the natural world known as biophilia, i.e. love of nature (Wilson, 1993 and 1996; Tilbury, 1994; Sobel, 1996; Kellert, 2005). For children's natural inclination of biophilia to develop they must be given developmentally appropriate opportunities to learn about the natural world based on sound principles of child development and learning (Kellert, 1997; Chawla, 2006). If children's natural attraction to nature is not given opportunities to flourish during their early years, biophobia, an aversion to nature may develop. Biophobia ranges from discomfort and fear in natural places to contempt for whatever is not man-made, managed or air-conditioned (Cohen, 1992; Cohen and Horm-Wingerg, 1993; Orr, 1993 and 1994; Bixler, Floyd and Hammutt, 1994; White, 2004).

Burroughs (1919) cautioned that, "Knowledge without love will not stick. But if love comes first, knowledge is sure to follow". The problem with most environmental education programmes is that they try to impart knowledge and responsibility before children have been allowed to develop a loving relationship with the natural world (Sobel, 1996; Wilson, 1997). Children's emotional and affective values of nature develop earlier than their abstract, logical and rational perspectives (Kellert, 2002). We need to allow children to develop their biophilia, their love for the Earth, before we ask them to academically learn about nature and become guardians of it (Olds, 2001; Sobel, 2008).

Responsible Environmental Behaviour

The term 'responsible environmental behaviour' refers to 'the variety of recognised approaches to environmental action available to individuals or groups for use in preventing or resolving environmental problems or issues'(Peyton, 1977; Marcinkowski, 1988). A change towards environmental responsible behaviour is generally considered a desired goal in environment education (UNESCO-UNEP, 1978; Hungerford and Volk, 1990; Newhouse, 1990).

Factors that contribute to Responsible Environmental Behaviour

Hines, Hungerford and Tomera (1987) conducted a meta analysis of research on responsible environmental behaviour, reviewing studies from a variety of fields and using statistical procedures to determine

the strength of the relationship between responsible environmental behaviour and associated variables. Positive correlations were found for verbal commitment, locus of control, attitude, personal responsibility, knowledge, educational level, income, and economic orientation.

While there is some discussion of how exactly these factors break down, there is agreement that they can be classified as cognitive and/or affective. Locus of control (internal and external, group and individual), knowledge of environmental issues, knowledge of and skills in environmental action strategies and knowledge of ecological concepts, personal responsibility, beliefs and values related to environmental issues, environmental sensitivity, and attitude have all been identified as factors related to responsible environmental behaviour (Ramsey and Hungerford, 1989; Sivek and Hungerford, 1989; Newhouse, 1990; Ramsey, 1993; Hwang, Kim, and Jeng, 2000)

According to Ramsey and Hungerford (2002), the research indicates that responsible environmental behaviour is associated with environmental sensitivity, knowledge of ecological concepts, knowledge of environmental problems and issues, skill in identifying, analysing and evaluating environmental problems and solutions, belief and values, knowledge of environmental action strategies, skill in using environmental action strategies, and internal locus of control.

Research Studies Related to Responsible Environmental Behaviour

Chawla (1988) reported that studies within natural settings are important if environmental educators are to understand how outdoor experiences formatively contribute to the development of environmental attitudes, sensitivity, and concerns. Howe, Disinger and John (1988) performed research related to environmental education. It had consistently indicated that many students and young adults attribute a large amount of their knowledge of environmental concepts, problems and issues to out-of-school (non-formal) education settings and experiences.

Dresner and Gill (1994) found that a two week nature camp experience increased levels of environmental concern in students and they showed better environmental behaviour than before.

Outdoor educators have conducted studies to assess the effect of environmental outdoor education programmes on knowledge and attitudinal change. The knowledge-attitude-behaviour change model described by Matthews and Riley (1995) holds that an increase in knowledge will lead to a change in attitude, which will in turn influence behaviour. Consequently, environmental knowledge and attitude have

been frequently evaluated when attempting to determine the effect of outdoor education programmes on the development of environmental responsibility (Matthews and Riley, 1995).

Tung, Huang and Kawata (2002) studied the effects of different environmental education programmes on the environmental behaviour of fifth-grade students and related factors and concluded that among the four schools that participated in this study, only experimental school III, which combined teaching and activities, had improvement in the area of environmental behaviour. Curriculum or school activities alone simply are not enough to change environmental behaviour.

Hsu (2004) assessed the effects of an environmental education programme on responsible environmental behaviour and associated environmental literacy variables in Taiwanese college students. The results indicated that the environment education course did significantly promote the students' responsible environmental behaviour, locus of control, environmental responsibility, intention to act, perceived knowledge of environmental issues, and perceived knowledge of and skills in using environmental action strategies.

Harjai (2007) studied the effect of experiential learning strategies for teaching environmental education to a sample of 120 students of two schools of Ropar. In 50 action-oriented lessons, students learnt by the use of media, outdoor experiences and fun-based hands-on activities. He concluded that students who were taught EVS by experiential learning strategies exhibited better environmental awareness and environmental sensitivity as compared to students of control group taught by traditional learning methods.

A problem with most young children's environmental education programmes is that they approach education from an adult's, rather than a child's perspective. Teaching nature abstractly in the classroom does not lead to pro-environmental behaviours in later life (Schultz, 2000). Research has substantiated that an empathy with and love of nature, along with later positive environmental behaviours and attitudes, grow out of children's regular contact with and play in the natural world. Children's understanding of humans' relationship to nature is both partially under development and complete during early childhood (Phenice and Griffore, 2003). Recent research strongly suggests that the opportunity for children younger than age 11 to explore in wild, natural environments is especially important for developing their biophilic tendencies and that the type of play should be child-nature play, such as catching frogs in a creek

or fireflies at night, versus only child-child play such as playing war games with walnuts. The best learning environments are informal and naturalistic outdoor nature-scapes where children have unmediated opportunities for adventure and self-initiated play, exploration and discovery. Such informal experiences stimulate genuine interest in and valuing of environmental knowledge that is provided in more structured environmental education programmes (Bunting and Cousins, 1985; Chawla, 1988 and 2006; Palmer, 1993; Bixler, 1997; Wilson, 1997; Corcoran, 1999; Kals, Schumacher and Montada, 1999; Schultz, 2000; Bixler, Floyd and Hammutt, 2002; Kals and Ittner, 2003; Ewert, Place and Sibthorp, 2005; Wells and Lekies, 2006; Berenguer, 2007; Vadala, Bixler and Janes, 2007; Hinds and Sparks, 2008; Sobel, 2008; Thompson, Aspinall and Montarzano, 2008). Early childhood and grade schools have the opportunity to help and fill the void in children's lives of regular access to the natural world. With developmentally appropriate natural outdoor environments and programmes, schools can help our children develop to become responsible stewards of the Earth (Herrington and Studtmann, 1998; Sobel, 2004).

Intelligence

Intelligence is a capacity of an individual to understand the environment and the resourcefulness to cope with its challenges (Gerrow, Brothen and Newell, 1989). Intelligence, as measured by Intelligent Quotient (IQ) and other aptitude tests, is widely used in educational, business, and military settings due to its efficacy in predicting behaviour (Geary, 2004). In the present study intelligence was the classification variable.

Rationale of the Study

Today's environmental problems arise from the lifestyles humans lead. As a result of those lifestyles, public health has been endangered, and there has been a loss of ecological balance. Therefore, learning to respect nature and understanding how to coexist with and care for the environment are essential parts of lifelong learning tasks everyone must henceforward face. One of the most fundamental aspect in this process of lifelong learning is environmental education in schools (Tung, Hwang and Kwatta, 2002).

It has been reported that for students today the primary sources of information about environment are television and other mass media, not the classrooms (Disinger, 1990; Hausbeck, Enright and Milbrath, 1992). Students' knowledge of the environment is limited

and incomplete. The Shinno Environmental Education Research Survey Committee (1992) found that students are more concerned with global environmental issues than environmental phenomena experienced in daily life. In addition, the rate at which students practice environmental behaviour is rather low, for that reason there is a need to promote environmental education in schools.

Research by Wilson (1994) and Simmons (1994) (based on personal interviews with groups of children varying in age from pre-school to age nine) found that the attitudes children expressed towards various aspects of the natural environment (rain, wildflowers, trees, birds) included more expressions of fear and dislike than appreciation, care or enjoyment. Cohen and Horm-Wingerd (1993) contend that children's unfounded fears and misconceptions about the natural environment develop when they have very little actual contact with living things and obtain most of their attitudes through the electronic media.

The lives of children today are much more structured, supervised and scheduled with few opportunities to explore and interact with the natural outdoor environment. Children's physical boundaries have shrunk. Childhood and regular unsupervised play in the outdoor natural world are no longer synonymous (Francis, 1991; Pyle, 1993 and 2002; Moore and Wong, 1997; Kellert, 2002; Kuo, 2003; Brooks, 2004; Kyttä, 2004). Most children these days live what one play authority has referred to as a childhood of imprisonment (Francis, 1991). Children are disconnected from the natural world outside their doors and in children this condition is called nature-deficit disorder (Louv, 2005).

Investigator felt that there was need to study the effectiveness of environmental education programmes on students of different intelligence levels as intelligence is a general factor that runs through all types of performance. It is the capacity to learn or to profit by experience.

So, the present study was conducted to investigate the effectiveness of outdoor environmental education programme for enhancing responsible environmental behaviour among fifth grade students. Intelligence was studied at three levels high, average, and low.

Research Questions

The present research was designed to answer the following research questions:

- Does outdoor environmental education programme result in greater enhancement of responsible environmental behaviour

among fifth grade students as compared to traditional learning method?

- Is there any difference among the responsible environmental behaviour of students of high, average, and low intelligence?
- Is there interaction between the two instructional treatments and intelligence with regard to responsible environmental behaviour?

The study was delimited with respect to class, subject, content, place of study and intelligence as follows:

- The study was conducted on Class V students.
- The study was limited to Class V students of two schools, viz., Little Flower Convent School and HRA International School of Gurdaspur (Punjab).
- Students were taught topics of environmental studies from their syllabus for 50 working days.

Hypotheses of the Study

As discussed earlier, locus of control, knowledge of environmental issues, knowledge of and skills in environmental action strategies and knowledge of ecological concepts, personal responsibility, beliefs and values related to environmental issues, intention to act, environmental sensitivity, and attitude have all been identified as factors related to responsible environmental behaviour (Ramsey and Hungerford, 1989; Sivek and Hungerford, 1989; Newhouse, 1990; Ramsey, 1993; Hwang Kim and Jeng, 2000).

The study was designed to test the following set of null hypotheses:

- H₁ The two instructional treatments yield equal mean gain scores on responsible environmental behaviour of the students
The two instructional treatments yield equal mean gain scores with respect to
- H_{1.1} Dimension I viz., Knowledge of ecological concepts
H_{1.2} Dimension II viz., Knowledge of environmental issues and problems
H_{1.3} Dimension III viz., Locus of control
H_{1.4} Dimension IV viz., Environmental attitude
H_{1.5} Dimension V viz., Beliefs and values related to the environment
H_{1.6} Dimension VI viz., Environmental sensitivity
H_{1.7} Dimension VII viz., Personal responsibility
H_{1.8} Dimension VIII viz., Environmental action strategies
H_{1.9} Dimension IX viz., Intention to act

- H₂ There is no significant difference in mean gain scores on responsible environmental behaviour of the students of high, average and low intelligence.
There is no significant difference in mean gain scores of the students of high, average and low intelligence with respect to
- H_{2.1} Dimension I viz., Knowledge of ecological concepts
H_{2.2} Dimension II viz., Knowledge of environmental issues and problems
H_{2.3} Dimension III viz., Locus of control
H_{2.4} Dimension IV viz., Environmental attitude
H_{2.5} Dimension V viz., Beliefs and values related to the environment
H_{2.6} Dimension VI viz., Environmental sensitivity
H_{2.7} Dimension VII viz., Personal responsibility
H_{2.8} Dimension VIII viz., Environmental action strategies
H_{2.9} Dimension IX viz., Intention to act
- H₃ There is no significant interaction between instructional treatment and intelligence with regard to responsible environmental behaviour of the students.
There is no significant interaction between instructional treatment and intelligence of the students with respect to
- H_{3.1} Dimension I viz., Knowledge of ecological concepts
H_{3.2} Dimension II viz., Knowledge of environmental issues and problems
H_{3.3} Dimension III viz., Locus of control
H_{3.4} Dimension IV viz., Environmental attitude
H_{3.5} Dimension V viz., Beliefs and values related to the environment
H_{3.6} Dimension VI viz., Environmental sensitivity
H_{3.7} Dimension VII viz., Personal responsibility
H_{3.8} Dimension VIII viz., Environmental action strategies
H_{3.9} Dimension IX viz., Intention to act

Sample

Firstly, principals of various schools of Gurdaspur were approached by the investigators. Principals of two schools Little Flower Convent School, Gurdaspur and HRA International School, Gurdaspur showed interest and promised to cooperate. Intelligence test (Coloured Progressive Matrices, 1995) was administered to 300 students of two schools.

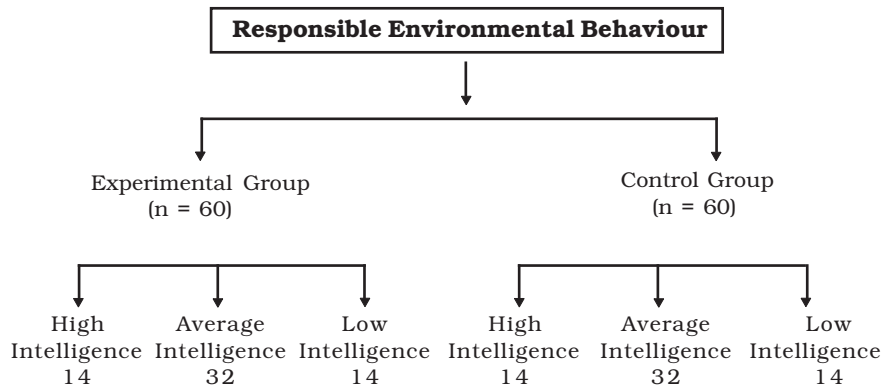


Fig. 1: Schematic layout of sample of study

In accordance with the manual, students were divided into three groups, High Intelligence, Average Intelligence and Low Intelligence. Students which lie at or above the 75th percentile were placed in high intelligence group, students which lie between the 25th and 75th percentile were placed in average intelligence group, and students which lie at or below 25th percentile were placed in low intelligence group.

Thus, 28 students with High Intelligence, 28 students with Low Intelligence and 64 students with Average Intelligence were selected. Each of three groups of students were randomly allocated to two sub groups, i.e. experimental and control group (as shown in Figure 1). So, the final sample comprised of 120 students. In the present study, the number of boys and the number of girls in each group were approximately the same and they belonged to middle class socio-economic status.

Design of the Study

The 2×3 factorial design was computed by ANOVA for the mean gain scores on responsible environmental behaviour. Here, instructional treatment and intelligence were the independent variables. Gain on responsible environmental behaviour scores was the dependent variable which was calculated as the differences in post-test scores and pre-test scores for each subject. The variable of instructional treatment was studied at two levels namely experimental group (T_1), which was taught by outdoor environmental education and control group (T_2), which was taught by traditional learning methods. The variable intelligence was studied at three levels viz. High (I_1), Average

(I₂), and Low (I₃) levels. The schematic layout of the design has been presented in Figure 2.

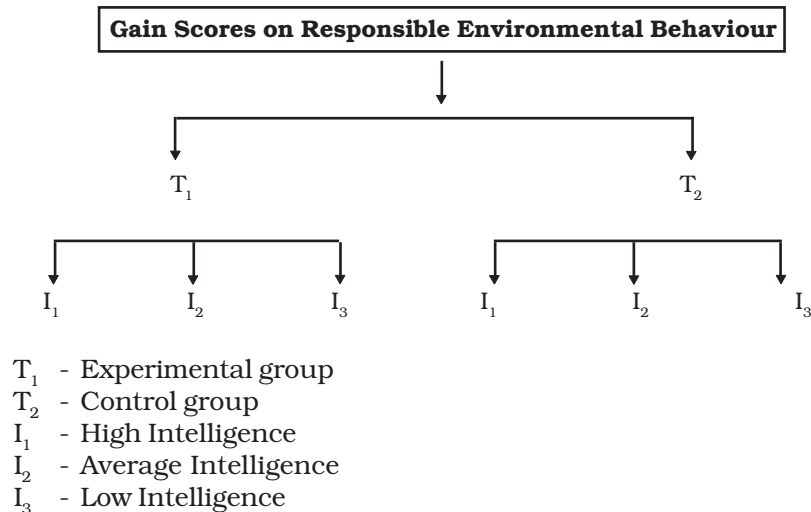


Fig. 2 : Schematic layout of 2×3 factorial design for mean gain scores on responsible environmental behaviour

The Tools Used

For the present investigation following tools were used:

1. **Instructional material for implementing outdoor environmental education**

- The content for the instructional plans was selected from the syllabus of Class V for Environmental Education.
- The entire content (environmental education for Class V) was scrutinised and divided into 50 sub units of related concepts
- The chapters included in the lesson plans were Unique features of trees; Importance of trees; Natural orchestra; Save the earth; Ecosystem; Soil Profile; Importance of sunlight for plants, Pollution, its types, causes and effects; Biodegradable and non-biodegradable material; Compost; Natural resources; Soil erosion, Terracing; Food web; Identification of native birds; Biotic and Abiotic components of environment; Adaptations; Protective colouring; Bird house; Bird feeders; Wild animals; Save animals;

Waste in School, Hazards of waste accumulation; Reduce, Reuse and Recycle waste; Greenhouse effect; Global warming and Environment-friendly practices.

- Related outdoor activities were also included.
- Instructional objectives were written for each sub unit.
- The instructional plans were developed with the help of activities included in prescribed books, search on internet and discussions with teachers of environmental education.
- Instructional plans were tried out on 50 students of Class V.
- Tryout of the instructional plans revealed their inadequacies and weak points which were revised and modified. Suggestions of students and teachers were incorporated, wherever necessary changes were made regarding presentation and clarity in the language. The suggestions of experts in the field of environmental science and environmental education regarding activities were incorporated and instructional plans were again reviewed.

2. Responsible environmental behaviour test

There were 94 items in nine dimensions viz. knowledge of ecological concepts (8 items), knowledge of environmental issues and problems (16 items), locus of control (8 items), environmental attitude (14 items), beliefs and values related to the environment (8 items), environmental sensitivity (10 items), personal responsibility (8 items), environmental action strategies (14 items), and intention to act (8 items).

Scale contained 24 multiple choice type items and 70 items in scale. There were 58 positive items {locus of control (8 items), environmental attitude (9 items), beliefs and values related to the environment (3 items), environmental sensitivity (8 items), personal responsibility (8 items), environmental action strategies (14 items), and intention to act (8 items)} and 12 negative items {environmental attitude (5 items), beliefs and values related to the environment (5 items), environmental sensitivity (2 items)}

The test retest reliabilities were calculated for all nine dimensions and the whole test. Reliabilities of nine dimensions were 0.75 (knowledge of ecological concepts), 0.76 (knowledge of environmental issues and problems), 0.69 (locus of control), 0.71 (environmental attitude), 0.74 (beliefs and values related to the environment), 0.82 (environmental sensitivity), 0.73 (personal responsibility), 0.71 (environmental action strategies), and 0.84 (intention to act).. Reliability of whole test was 0.92. The test possesses high validity as its content validity was found with the help of experts.

3. Coloured progressive matrices (1995) by J.C. Raven, J.H. Court and J. Raven. were used for classifying students according to their level of intelligence.

Procedure

After the selection of sample and allocation of students to the two instructional treatments, the experiment was conducted in three phases as given below:

Phase I: Administration of the pretest

This phase involved the administration of the responsible environmental behaviour test to students of both the experimental group and control group.

Phase II: Conducting the instructional programme

Students of experimental group were exposed to outdoor environmental education programme for 50 days. Students learnt EVS by use of outdoor experiences (visit to factory, pond, polluted area, zoo, forested area) and activities (environmental rally, fancy dress show, poster making competition, planting samplings, cleaning the school campus) with lots of interest and enthusiasm. The students of control group were taught similar topics by traditional method of instruction by the second author.

Phase III: Administration of the post test

Immediately after the instructional treatment of 50 days was over, the subjects were assessed by administering the responsible environmental behaviour test on both the experimental and control groups.

Table 1
Data Schedule of the Experiment

Activity	Date
• Administration of intelligence test	20 March, 2008 –24 March, 2008
• Pre-test stage	26 March, 2008 –28 March, 2008
• Instructional programme	1 April, 2008 – 30 May, 2008
• Post test stage	1 June, 2008 – 3 June, 2008

Data Analysis

The gain scores as measured by the difference of post-test scores and pre-test scores were calculated for each student separately and were subjected to analysis of variance. Two-way analysis of variance was used for the gain scores.

Table 2
Means and Standard Deviations of Sub Samples of 2×3 Design for
Mean Gain Scores of Responsible Environmental Behaviour (REB) and
its Dimensions

T	I		Reb	Dimensions								
				I	II	III	IV	V	VI	VII	VIII	IX
T ₁	I ₁	N	14	14	14	14	14	14	14	14	14	14
		Mean	42.14	4.78	4.64	4.21	5.14	4.28	4.07	3.21	5.42	6.35
		SD	12.79	1.25	2.40	2.57	3.37	2.26	2.46	2.91	1.82	4.74
	I ₂	N	32	32	32	32	32	32	32	32	32	32
		Mean	33.97	2.18	2.68	4.84	4.62	4.53	3.56	4.93	3.03	3.56
		SD	12.46	1.42	1.57	3.02	4.33	3.35	2.98	4.74	3.43	3.07
	I ₃	N	14	14	14	14	14	14	14	14	14	14
		Mean	35.78	1.21	1.92	4.35	5.07	5.64	5.28	5.64	1.92	4.71
		SD	13.81	.974	2.70	3.47	4.44	3.69	4.02	6.51	1.77	4.33
	Total	N	60	60	60	60	60	60	60	60	60	60
		Mean	36.30	2.56	2.96	4.58	4.85	4.73	4.08	4.70	3.33	4.48
		SD	13.07	1.81	2.26	3.00	4.09	3.21	3.17	4.87	3.02	3.92
T ₂	I ₁	N	14	14	14	14	14	14	14	14	14	
		Mean	14.92	1.00	2.21	1.71	.857	3.28	1.21	1.85	1.14	1.64
		SD	6.46	1.03	2.11	2.78	1.29	2.36	.974	1.46	2.47	2.09
	I ₂	N	32	32	32	32	32	32	32	32	32	
		Mean	14.96	.906	.468	2.56	1.81	2.43	1.96	2.03	1.37	1.40
		SD	6.22	1.05	.802	3.40	2.14	2.67	1.95	1.85	1.33	1.66
	I ₃	N	14	14	14	14	14	14	14	14	14	
		Mean	15.64	1.50	1.42	2.42	1.50	2.35	1.92	1.50	1.85	.714
		SD	4.61	2.27	2.10	3.03	2.27	2.61	1.38	1.82	1.23	1.72
	Total	N	60	60	60	60	60	60	60	60	60	
		Mean	15.11	1.51	1.10	2.33	1.51	2.61	1.78	1.86	1.43	1.30
		SD	5.86	2.02	1.68	3.15	2.02	2.57	1.65	1.75	1.64	1.78

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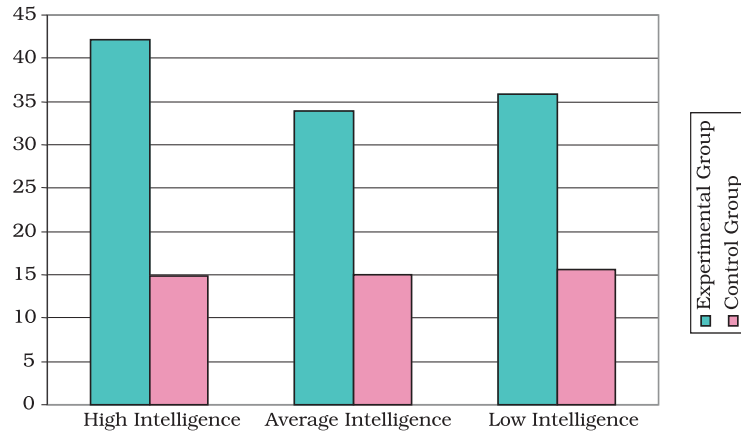


Fig. 3: Mean gain scores of three intelligence groups on responsible environmental behaviour

Table 3
Summary of 2×3 ANOVA for Mean Gain Scores on Responsible Environmental Behaviour and its Dimension (I-IV)

	Source of Variation	df	Type III Sum of Squares	Mean Square	F ratio	Level of Significance
Responsible Environmental Behaviour	T	1	12645.29	12645.29	125.94	S**
	I	2	322.176	161.088	1.604	NS
	T X I	2	338.456	169.228	1.685	NS
	Error	114	11446.15	100.405		
Dimension I Knowledge of Ecological Concepts	T	1	54.408	54.408	34.605	S**
	I	2	38.472	19.236	12.235	S**
	T X I	2	71.358	35.679	22.693	S**
	Error	114	179.237	1.572		
Dimension II Knowledge of Environmental Issues and Problems	T	1	76.088	76.088	22.661	S**
	I	2	71.293	35.647	10.616	S**
	T X I	2	17.268	8.634	2.571	NS
	Error	114	382.772	3.358		
Dimension III Locus of Control	T	1	129.293	129.293	13.303	S**
	I	2	10.789	5.395	.555	NS
	T X I	2	1.176	.588	.061	NS
	Error	114	1107.951	9.719		
Dimension IV Environmental Attitude	T	1	326.929	326.929	30.593	S**
	I	2	1.351	.657	.062	NS
	T X I	2	11.086	5.543	.519	NS
	Error	114	1218.232	10.686		

S** Significant at 0.01 level of confidence; NS Not significant

Table 3 (continued)
Summary of 2×3 ANOVA for Mean Gain Scores on Dimensions (V-IX)
of Responsible Environmental Behaviour

	Source of Variation	df	Type III Sum of Squares	Mean Square	F ratio	Level of Significance
Dimension V Beliefs and Values Related to the Environment	T	1	116.875	116.875	13.624	S**
	I	2	5.626	2.813	.328	NS
	T X I	2	18.304	9.152	1.067	NS
	Error	114	977.987	8.579		
Dimension VI Environmental Sensitivity	T	1	175.080	175.080	27.647	S**
	I	2	16.875	8.438	1.332	NS
	T X I	2	17.976	8.988	1.419	NS
	Error	114	721.915	6.333		
Dimension VII Personal Responsibility	T	1	202.935	202.935	15.046	S**
	I	2	20.561	10.280	.762	NS
	T X I	2	27.343	13.672	1.014	NS
	Error	114	1537.629	13.488		
Dimension VIII Environmental Action Strategies	T	1	103.847	103.847	19.592	S**
	I	2	31.614	15.807	2.982	NS
	T X I	2	64.198	32.099	6.056	NS
	Error	114	604.254	5.300		
Dimension IX Intention to Act	T	1	339.356	339.356	38.162	S**
	I	2	45.893	22.947	2.580	NS
	T X I	2	37.954	18.977	2.134	NS
	Error	114	1013.737	8.892		

S** Significant at 0.01 level of confidence; NS Not significant

MAIN EFFECTS

Treatment (T)

F ratios for the difference between the two instructional treatments were found to be significant for total scores on responsible environmental behaviour and its dimensions at 0.01 level of confidence (Tables 2 and 3). Hence H_1 , $H_{1.1}$, $H_{1.2}$, $H_{1.3}$, $H_{1.4}$, $H_{1.5}$, $H_{1.6}$, $H_{1.7}$, $H_{1.8}$, and $H_{1.9}$ were rejected as students taught environmental education by the outdoor environmental education programme exhibited better mean gains on responsible environmental behaviour and its dimensions, i.e. knowledge of ecological concepts, knowledge of environmental issues and problems, locus of control, environmental attitude, beliefs and values related to the environment, environmental sensitivity, personal responsibility, environmental action strategies, and intention to act.

Similar results were obtained by Ramsey, Hungerford and Tomera (1981); Ramsey and Hungerford, (1989) and Ramsey, (1993) on classroom educational interventions in the United States, which showed that environmental education emphasising issue investigation and action training did promote students' responsible environmental behaviour. A two week nature camp experience increased levels of environmental concern in students, which appeared to result in them showing more environmental behaviour than previously (Dresner and Gill, 1994).

Children can be taught environmental topics through the use of games and significantly improve their reported environmental behaviour (Hewitt, 1997). Harding (1997) concluded with the results that Outdoor Residential Environmental Education Program (OREEP) produced significantly better ecological knowledge of the students as well as developed their attitudes towards environment.

The cooperation of formal and non-formal environment education could present an appropriate social context in which an individual can gain reinforcement for responsible environmental behaviour (Hsu and Roth, 1998). Iozzi (1989a, 1989b) suggested that outdoor environmental education experiences were beneficial for students in many ways, including the development of environmental attitudes and values. Howe, Disinger and John (1988) performed research, which indicated that many students and young adults attribute a large amount of their knowledge of environmental concepts, problems and issues to out of school (non-formal) education settings and experiences. Tung, Huang and Kawata (2002) studied the effects of different environmental education programmes on the environmental behaviour of fifth-grade students and concluded that combining teaching and activities, made an improvement in the area of environmental behaviour.

Hoody (2002) reviewed that at the Huntington Middle School in Pennsylvania, environment based service learning not only enhanced environmental awareness but also made students more responsible towards environmental problems and their solutions. A study conducted by Hsu (2004) indicated that the EE course did significantly promote the students responsible environmental behaviour, locus of control, environmental responsibility, intention to act, perceived knowledge of environmental issues, and perceived knowledge of and skills in using environmental action strategies. Teaching nature

abstractly in the classroom does not lead to pro-environmental behaviours in later life (Schultz 2000). Research has substantiated that an empathy with and love of nature, along with later positive environmental behaviours and attitudes, grow out of children's regular contact with and play in the natural world (Phenice and Griffore, 2003). With developmentally appropriate natural outdoor environments and programmes, schools can help our children develop to become responsible stewards of the earth (Herrington and Studtmann, 1998; Sobel, 2004).

A study conducted by American Institute for Research (2005) concluded that children who participated in outdoor environmental education programme had significantly larger gains in environmental behaviours as compared to children who did not attend the programme.

Intelligence (I)

F ratios for the difference between the students with different levels of intelligence on responsible environmental behaviour and its dimensions, locus of control, environmental attitude, beliefs and values related to the environment, environmental sensitivity, personal responsibility, environmental action strategies, and intention to act were not significant even at 0.05 level of confidence. Hence H_2 , $H_{2.3}$, $H_{2.4}$, $H_{2.5}$, $H_{2.6}$, $H_{2.7}$, $H_{2.8}$ and $H_{2.9}$ were retained (Tables 2 and 3). However, F ratios for the difference between the students with different intelligence were found to be significant for the dimensions I and II viz., knowledge of ecological concepts and knowledge of environmental issues and problems at 0.01 level of confidence. Hence $H_{2.1}$ and $H_{2.2}$ were rejected. Students of high, average and low intelligence exhibited comparable gains in responsible environmental behaviour and its dimensions, locus of control, environmental attitude, beliefs and values related to the environment, environmental sensitivity, personal responsibility, environmental action strategies, and intention to act. Glance at Tables 4 and 5 reveals that students with high intelligence exhibited significantly higher mean gain scores on knowledge of ecological concepts and knowledge of environmental issues and problems than students with low and average intelligence. It is also evident that mean gain scores on knowledge of environmental issues and problems are significantly higher in average intelligence group as compared to lower intelligence group.

Table 4
Means and Standard Deviations of Three Intelligence Groups for
Mean Gain Scores on Dimensions I and II of Responsible
Environmental Behaviour

Variable	High Intelligence		Average Intelligence		Low Intelligence	
Knowledge of Ecological Concepts	N	28	N	64	N	28
	Mean	2.89	Mean	1.55	Mean	1.57
	SD	2.23	SD	1.40	SD	1.37
Knowledge of Environmental Issues and Problems	N	28	N	64	N	28
	Mean	3.43	Mean	1.58	Mean	1.68
	SD	2.54	SD	1.67	SD	2.39

Table 5
t Values for Three Intelligence Groups for Mean Gain Scores on
Dimensions I and II of Responsible Environmental Behaviour

Variable	High Intelligence and Average Intelligence	Average Intelligence and Low Intelligence	Low Intelligence and Average Intelligence
Knowledge of Ecological Concepts	3.50**	2.67**	0.78
Knowledge of Environmental Issues and Problems	4.13**	2.65**	2.32*

*p<.05 **p<.01

INTERACTION EFFECT

Treatment and Intelligence (T X I)

F ratios for the interaction between treatment and intelligence were found to be insignificant for mean gain scores on responsible environmental behaviour and its dimensions, knowledge of environmental issues and problems, locus of control, environmental attitude, beliefs and values related to the environment, environmental sensitivity, personal responsibility, environmental action strategies, and intention to act were not significant even at 0.05 level of confidence. Hence H_3 , $H_{3.2}$, $H_{3.3}$, $H_{3.4}$, $H_{3.5}$, $H_{3.6}$, $H_{3.7}$, $H_{3.8}$ and $H_{3.9}$ were retained (Tables 2 and 3 a & b). F ratio for the interaction between

treatment and intelligence was found to be significant for knowledge of ecological concepts at 0.01 level of confidence, hence $H_{3,1}$ was rejected. This reveals that there is no significant interaction between treatment and level of intelligence in relation to scores on responsible environmental behaviour and its dimensions, knowledge of environmental issues and problems, locus of control, environmental attitude, beliefs and values related to the environment, environmental sensitivity, personal responsibility, environmental action strategies, and intention to act, however there is significant interaction between treatment and level of intelligence in relation to mean gain scores on knowledge of ecological concepts.

Table 6
t Values for Different Combinations of Treatment and Intelligence
(T x I) for Mean Gain Scores on Dimension I of Responsible
Environmental Behaviour (Knowledge of Ecological Concepts)

Mean	T ₁ I ₁	T ₁ I ₂	T ₁ I ₃	T ₂ I ₁	T ₂ I ₂	T ₂ I ₃
T ₁ I ₁ 4.78		6.24**	8.50**	8.79**	10.19**	5.18**
T ₁ I ₂ 2.19			2.75**	3.21**	4.06**	.52
T ₁ I ₃ 1.21				.55	.93	1.42
T ₂ I ₁ 1.00					.28	1.8
T ₂ I ₂ 0.906						2.14*
T ₂ I ₃ 1.93						

** Significant at 0.01 level of confidence * Significant at 0.05 level of confidence

NS Not significant

The t ratios for different combinations of treatment and intelligence for mean gain scores on dimension I of responsible environmental behaviour i.e., knowledge of ecological concepts have been presented in Table 6. The table reveals that:

- Students of high intelligence exhibited better mean gains in knowledge of ecological concepts than students of average intelligence when taught by outdoor environmental education programme (t = 6.24).
- Students of high intelligence exhibited better mean gains in knowledge of ecological concepts than students of low intelligence when taught by outdoor environmental education programme (t = 8.50).
- Students of high intelligence taught by outdoor environmental education programme exhibited better mean gains in knowledge of ecological concepts than students of high intelligence taught by traditional method of instruction (t = 8.79).
- Students of high intelligence taught by outdoor environmental education programme exhibited better mean gains in knowledge of ecological concepts than students of average intelligence taught by traditional method of instruction (t = 10.19).
- Students of average intelligence taught by outdoor environmental education programme exhibited better mean gains in knowledge of ecological concepts than students of high intelligence taught by traditional method of instruction (t = 3.21).
- Students of average intelligence taught by outdoor environmental education programme exhibited better mean gains in knowledge of ecological concepts than their counterparts taught by traditional method of instruction (t = 4.06).
- Students of average intelligence taught by outdoor environmental education programme and students of low intelligence taught by traditional method of instruction exhibited comparable mean gains in knowledge of ecological concepts (t = 0.52).
- Students of low intelligence taught by outdoor environmental education programme and students of high intelligence taught by traditional method of instruction exhibited comparable mean gains in knowledge of ecological concepts (t = 0.55).
- Students of low intelligence and those of average intelligence when taught by traditional method of instruction exhibited comparable mean gains in knowledge of ecological concepts (t = 0.93).
- Students of low intelligence taught by outdoor environmental education programme and their counterparts taught by traditional method of instruction exhibited comparable mean gains in knowledge of ecological concepts (t = 1.42).

Educational Implications

In the present study, it was found that teaching environmental education by outdoor programme enhanced responsible environmental behaviour of Class V students. So, outdoor programmes should be used to teach environmental education especially to the primary classes as young children are active learners. Their best learning occurs with hands-on, interactive play and self-discovery rather than on trying to impart knowledge to them.

- Findings of the study reveal that outdoor environmental education is good for young children. This will be helpful in development of the values, attitudes, and basic orientation towards the world that they will carry with them throughout.
- The study has revealed that there is significant difference in responsible environmental behaviour of students taught environmental education by the outdoor environmental education programme, therefore, there is a dire need for the teachers and educators to review the syllabus on environmental education for children at different stages of school education and finalise, different spots for the essential field visits as educational excursion, identify them and list them comprehensively.
- The findings of the investigation will provide help to the teachers, educators, and parents to help their wards in channelising their energy as the way children learn is completely different than adults. To be effective, children's environmental education needs to be designed to match children's developmental needs, interests, abilities and learning styles.
- Outdoor environmental education programmes will provide children with regular and positive interactions within the nature, allow children to feel comfortable in it, develop empathy with it and grow to love it.
- Since environmental issues are often complicated, outdoor environmental education could provide varied opportunities and educational resources to help people gain and reinforce appropriate environmental behaviour.

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Attendance is One of the Major Factors for Academic Performance of the Students of Elementary Classes

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Introduction

The main objectives of education, as quoted by GEN J.J. SINGH¹, Governor of Arunachal Pradesh, 11 September 2009 are to bring “changes not only in the amount of knowledge but also for achieving abilities to do something, to think and to acquire habits, skills and attitudes, which characterise an individual, who is socially accepted and adjusted”. Keeping these in view Sarva Shiksha Abhiyan was launched in 2001 by MHRD, Government of India with the objective of implementing scheme of ensuring education to children upto eleven years of age by 2007 and upto fourteen years of age by 2010.

Since interest in schooling as E.A. Hanushek and G.T. Burtless² held comes from a policy perspective, which depends on several sources, schooling is perceived as an important determinant of individual productivity and learning. Thus, schooling is considered as an instrument for affecting both the national economy and the individual income and earnings. And hence schooling maybe considered as an important tool for economic growth of the nation along with functioning of democratic norms, which justify for an important component of public investment.

However, student attendance in this context also is a major concern to the educators. J. Brauer³ (1994), held the view that absence on the part of the student “creates a dead, tiresome, unpleasant classroom environment that makes students who do attend class feel uncomfortable”.

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Therefore, good attendance and prompt arrival to school and or in class is expected to achieve the aims and objectives as mentioned above. Poor attendance not only hinders academic achievement but also promotes a poorly educated society and thus leads to many negative social issues. Some educational experts argue that students who have not acquired an association between academics and life experiences do not feel that good school attendance is relevant to their future (Collins, 1982).

Students with high self-efficacy seem to be more successful in maintaining consistent attendance (Bouffard-Bouchard, 1990).

A domino effect result which starts with poor attendance, proceeds to low achievement, increases the dropout rate, and amplifies a host of social problems.

In a recent paper, S.T. Hijazi and S.M.M. Raza Naqvi⁴ held the view that student's performance is "associated with students' profile like his attitude towards class attendance, time allocation of studies, parent's level of income, mother's age and mother's education". Similarly, a good number of scholars conducted a number of studies on student's performance in the context of his profile like race, gender, sex (Hansen, Jeo B 2000), economic circumstances and the risk of becoming a dropout that proved to be positive (Goldman, N., Hancy, W., and Koffler, S., 1998; Pallas, A., Natriello, G., Mcdill, E, 1989; Levin, H., 1986) B.A. Chansarkar and A. Mishaeloudis (2001) conducted the study on the effects of age, qualification, distance from learning place, etc. on student's performance. Y.B. Walters, Kola Soyibo⁵ (1998) held the view that "high school students' level of performance is with statistically significant differences, linked to their gender grade level, school location, school type and socio-economic background (SEB)."

The Objective of the Study

The basic objective of the study is to identify the factors, which are responsible for students' academic performance in elementary school level.

Hypothesis

The hypothesis of the study is as follow:

- (a) Student's attendance in the class has a positive impact on his academic result.
- (b) Family income of the student is positively related to the student's academic result.

- (c) Mother's education has a positive influence on student's academic performance.
- (d) Father's education has a positive impact on student's academic performance.
- (e) Distance of the school from the student's house has a negative impact on his academic result.
- (f) Sex of the student has an impact on student's academic performance. Girls are showing better academic result than the boys.
- (g) Percentage of trained teacher in the school has a positive impact on better result of the student.

Methodology

This study is based on primary data and the information was collected from schools and households of the surveyed students. For the analysis of the data simple statistical techniques like average, percentage, correlation, etc. were used. In case of graphical representation, diagrams like pie chart, bar diagram, line diagram were also used in this study.

Sample selection criteria

This study was conducted in the schools of Agartala Municipal Council area. As per the information of Sarva Shiksha Abhiyan, Rajya Mission, Office of the State Project Director, Agartala, at present there are 115 schools in Agartala Municipal Council area. Among these 80 are managed by Education Department, Government of Tripura, 23 schools are private aided and rest 11 are private unaided.

Recently Agartala Municipal Council (AMC) area has been extended. The new extended AMC area is less developed compared to the old AMC area. So in this study schools were selected on the basis of Stratified Random Sampling Method. For the selection of the schools, the whole AMC area was classified into two strata.

Stratum I: It consists of 50 schools situated in newly extended Agartala Municipal Council area.

Stratum II; It consists of 65 schools situated in old Agartala Municipal Council area.

For this study 12 schools from each stratum (i.e. in total 24 schools) were selected on the basis of Simple Random Sampling Method. A sample of 332 students of Classes I to VIII was taken from these 24 selected schools also by applying Simple Random Sampling Method.

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Data collection procedure

To collect various information regarding students strength, faculty position, students attendance and school infrastructure, a questionnaire was canvassed. Besides this, Focus Group Discussion (FGD) was followed to capture the different qualitative magnitude of students' attendance.

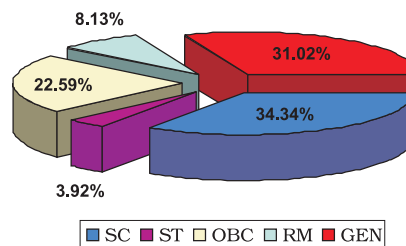
For household level survey, the most knowledgeable adult household member (who maybe the head of the household) and student of the house were interviewed.

Data Analysis

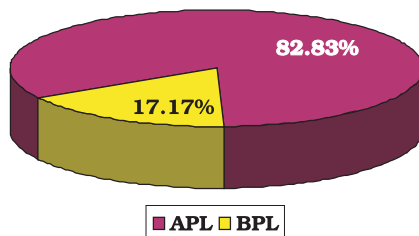
Demographic profile of the surveyed student

It also reveals from the study that among these surveyed students 34.34 per cent belongs to SC community, whereas 31.02 per cent belongs to general class. The ST, OBC and RM students are 3.92 per cent, 22.59 per cent and 8.13 per cent respectively.

Social Status of the Surveyed Students

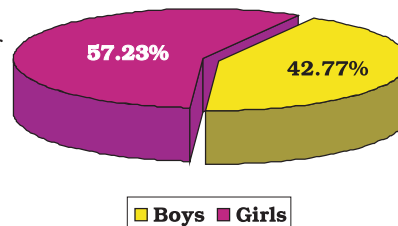


Economic Status



Out of 332 surveyed students, 82.83 per cent belongs to APL family, whereas 17.17 per cent belongs to BPL family.

Sex-wise classification of the surveyed Students



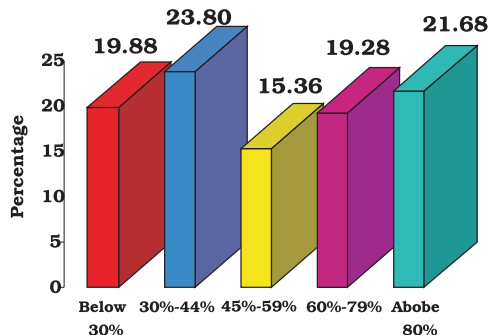
Among the surveyed students of selected schools 42.77 per cent were boys and the rest were girls.

Academic performance of the surveyed student

In this study annual result of the surveyed students of Classes I to VIII was considered as performance of the student. All the surveyed schools follow the same curriculum, same book, and same syllabus under one authority SCERT (State

Academic Performance of the Surveyed Students

Council of Education Research and Training). As a result almost similar kind of question paper was set by the school authority of the surveyed schools. To analyse the performance of the student, percentage of Total Aggregate marks was taken. Among these surveyed students 19.88

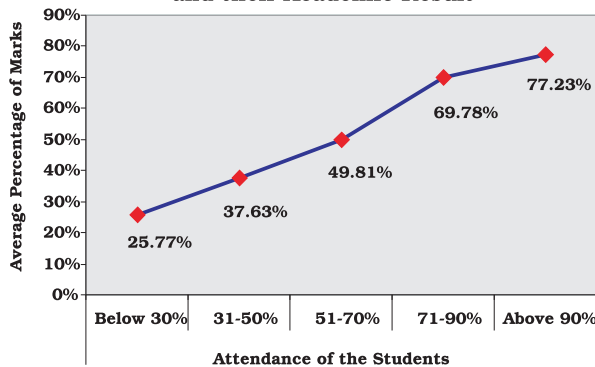


per cent have got below 30 per cent marks in their last annual examination. 23.80 per cent students have scored 30 to 44 per cent marks, whereas, 15.36 per cent scored 45 to 59 per cent. Around 19 per cent students have got 60 to 79 per cent marks, whereas, 21.68 per cent students have scored above 80 per cent marks in their last annual examination.

Relation between student's attendance in the school and their academic performance

To examine the relation between students' attendance and their academic performance, attendance of the students was classified into five groups i.e. below 30 per cent, 31-50 per cent, 51-70 per cent, 71-90 per cent and above 90 per cent. It is found from the study that students belonging

Relation between Students' Attendance in School and their Academic Result



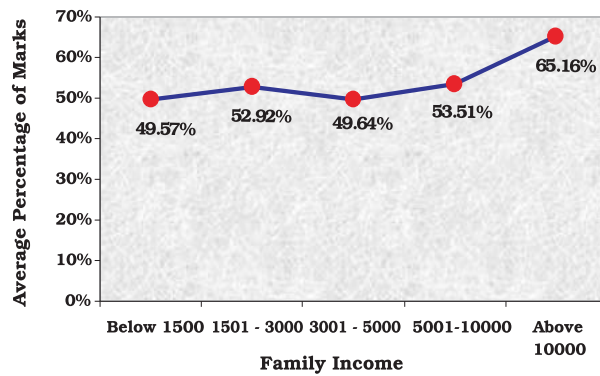
to below 30 per cent attendance group scored 25.77 per cent in their annual examination. The students belonging to 31-50 per cent, 51-70 per cent, 71-90 per cent and above 90 per cent attendance group, got 37.63 per cent, 49.81 per cent, 69.78 per cent and 77.23 per cent marks respectively in their last annual examination. It shows that performance of the students increases with the increase of their attendance in the school. It satisfies the hypothesis (a) i.e. students' attendance in schools has a positive impact on their academic performance.

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Relation between student's family income and their academic performance

In this study, total income of the household was considered as the students' family income. It is accepted that money can buy all comforts that students need. To examine the relationship between students' family income and their annual

Relation between Students' Family Income and their Academic Performance

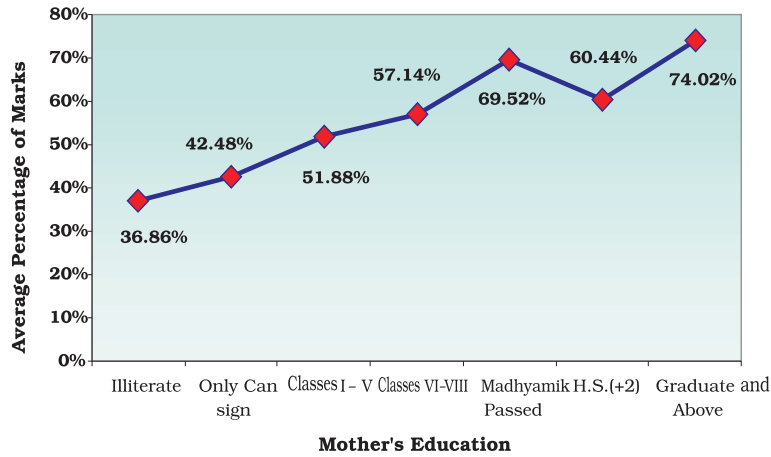


result, total family income was divided into 5 income ranges i.e. below ₹1500, ₹ 1501-₹ 3000, ₹ 3001- ₹ 5000, ₹ 5001-₹ 10000 and above ₹10000. Study shows that students belonging to income group of below ₹1500 have scored 49.57 per cent mark in their last annual examination. Student have scored 52.92 per cent marks in the income group of ₹ 1501- ₹ 3000. But the students belonging to the income group of ₹ 3001- ₹ 5000 have scored 49.64 per cent marks in their last annual examination, whereas, in the income range of ₹ 5001- ₹ 10000 and above ₹ 10000 students have scored 53.51 per cent and 65.16 per cent marks respectively. So, no clear indication is found from the above discussion. Besides, the correlation coefficient value is 0.12 only. This shows that there is a weak relation between students' family income and their academic performance. Hence, the hypothesis (b) does not hold good.

Relation between students' mother's education and their academic performance

To examine the impact of mother's and father's education on their child's academic performance, level of education was classified into 7 groups, i.e. Illiterates, only can sign, Class I-V, Class VI-VIII, Madhyamik Passed, H.S(+2) passed and Graduate and above. Study shows children of illiterate mothers have scored poor marks in the examination. Almost in all cases, percentage of marks increased with the increase of mother's education. Besides, correlation coefficient value is 0.38. It shows that there is a positive relation between

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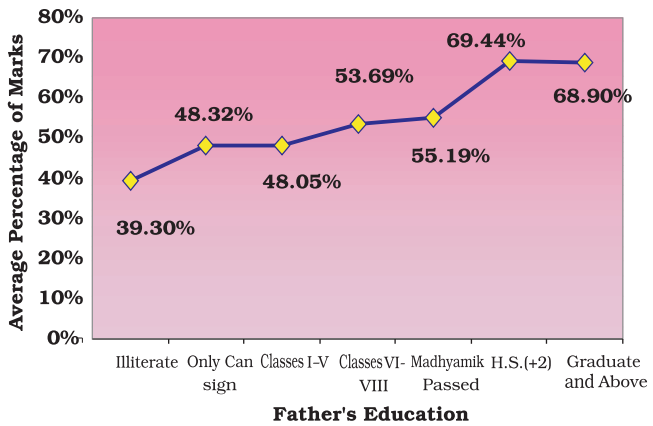


students' academic relation and their mother's education. So, it satisfies our hypothesis (c).

Relation between students' father's education and their academic performance

In this study, father's education of the surveyed students has been also classified in to 7 groups. These groups are Illiterate, Only can sign, Classes I-V, Classes VI-VIII, Madhyamik Passed, H.S(+2) passed and Graduate and above.

No clear indication is found from the this study. Besides, correlation coefficient value is 0.29. So, our hypothesis (d), i.e. father's education has a positive impact on students' academic performance does not hold true.



Relation between distance of school from students' house and their academic performance

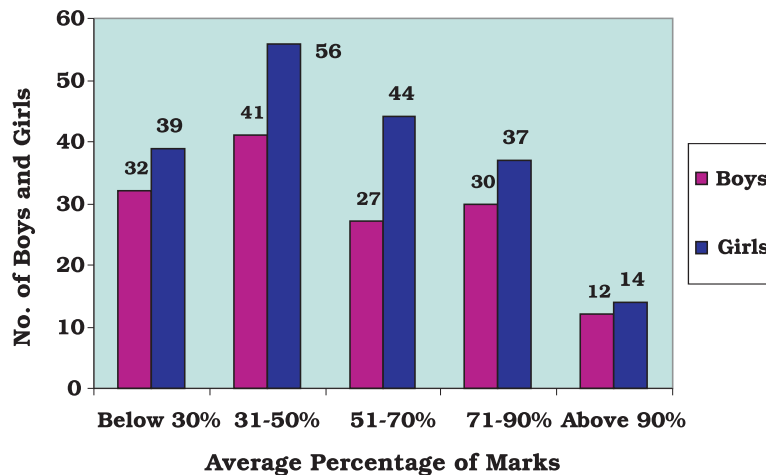
It was assumed that distance of the schools from the students' house

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has a negative impact on students' academic performance. The study shows that correlation coefficient value of these two variables is 0.013. This shows that the relation is negative. Therefore, hypothesis (e) does not hold true.

Relation between sex of the student and their academic performance

It was assumed that sex of the students has an impact on their academic performance. In this study, marks obtained by the students are divided into five categories. These are below 30 per cent, 31-50 per cent, 51-70 per cent, 71-90 per cent and above 90 per cent. The study reveals that in all five categories number of girls is higher than the number of boys, i.e. girl students are showing better academic performance than the boys. Thus, the results satisfy our hypothesis (f).



Relation between students' academic performance and percentage of trained teachers in the school

In this study, teachers having BT/BD training are considered as trained teachers. A trained teacher can teach the students better than an untrained teacher. The value of correlation coefficient of trained teacher and students' academic performance in the school is 0.053. This shows that the relation between students' academic performance and percentage of trained teachers in school is weak. Thus, hypothesis (g) does not hold true.

Regression Analysis

The above discussion reveals that academic performance of the

students with respect to eight independent variables has been expressed in percentile form. But percentile form of analysis does not always focus on the exact result. For this reason a number of scholars have used Linear Regression Approach. In this study, 24 schools were surveyed and all of them follow the same curriculum, same book, and same syllabus under one authority SCERT (State Council of Education Research and Training). As a result almost similar kind of question paper was set by the school authority of the surveyed school and examination was taken in almost the same time. Under this condition Regression Model could be applied for testing the relation of the variables with respect to students' academic performance.

Regression model

For the similar kind of study, linear regression model was used by a number of scholars. Eskew and Faley⁶ (1988), Miller and Westmoreland⁷ (1998) used linear regression model for establishing relation between students' performance and number of explanatory factors. Kruck & Lending⁸ (2003) developed a multivariable regression model for finding out relation with the use of five independent variables to predict performance and hence to analyse grade in an introductory information science course. Garcia and Jenkins⁹ (2003) used similar multiple regression model to establish relation between performance of a degree programme with 20 independent variables.

Following the models proposed by Eskew and Faley (1988) and others analysed above, an attempt has been taken here to find out the relation between the performance of the student with seven independent variables. The proposed regression model was as

$$Y = b_1 + b_2 AS + b_3 FI + b_4 ME + b_5 FE + b_6 TR + b_7 TT + b_8 SS + b_9 DS + U$$

where, Y is the dependent variable and it represents academic performance of the students and $b_1, b_2, b_3, b_4, b_5, b_6, b_7, b_8$ and b_9 are the coefficients. U represents the disturbance term of the model.

The Exogenous variables of the model are:

AS = Attendance of the Student. It represents how many classes student attended in last academic year and it shows the seriousness and attitude towards studies.

FI = Family Income of the Student. The family can provide better facilities to the student if the family income is high.

ME = Mother's Education. If mothers are educated, they can contribute to improve the performance of the students.

FE = Father's Education. An educated father can understand the nature of education beneficial for his child's future.

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TT = Trained Teacher in the school. If the teacher is trained, he can teach the student better than an untrained teacher.

SS = Sex of the Student, Dummy as Girl=1, Boy=0. Usually, sex difference is found in academic performance of the students.

DS = Distance of School from the student's house. If the school is near the residence of the student, he/she can easily attend the school regularly.

Data Analysis

Results of regression analysis

Table 1
Regression Statistics

Adjusted R Square	0.525
Standard Error	17.97
F Stat	49.563

	Unstandardised	x	Standardised	t	Sig.
	B	Std. Error	Beta		
(Constant)	-6.760	4.771		-1.417	0.158
Attendance(AS)	.685	0.044	0.655	15.630	0.000
Income (FI)	-3.531E-05	0.000	-0.005	-0.116	0.908
Mother's Education (ME)	1.861	0.619	0.167	3.009	0.003
Father's Education (FE)	0.317	0.613	0.028	0.516	0.606
Percentage of Trained Teachers (TT)	9.073E-02	0.041	0.089	2.229	0.027
Sex of the Student (SS)	-0.190	2.090	-0.004	-0.091	0.928
Distance (DS)	2.271	2.300	0.040	0.988	0.324

a Dependent Variable: MARKS

Table 2
Correlation Matrix

	Marks	Attendance	Income	Mother's Education	Father's Education	Percentage of trained teachers	Sex of the student	Distance
Marks	1.000	0.700	0.115	0.390	0.291	0.058	0.002	-0.013
Attendance	0.700	1.000	0.091	0.298	0.220	-0.064	0.014	-0.115
Income	0.115	0.091	1.000	0.305	0.313	-0.071	0.007	0.167
Mother's Education	0.390	0.298	0.305	1.000	0.676	0.062	0.025	0.117

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Father's Education	0.291	0.220	0.313	0.676	1.000	0.007	-0.048	0.155
Percentage of trained teachers	0.058	-0.064	-0.071	0.062	0.007	1.000	-0.097	-0.014
Sex	0.002	0.014	0.007	0.025	-0.048	-0.097	1.000	0.060
Distance	-0.013	-0.115	0.167	0.117	0.155	-0.014	0.060	1.000

Table 3
Case Summaries

	N	Mean	Std. Deviation	Coefficient of Variation	Variance
Marks	332	52.06	25.86	49.67	668.70
Attendance	332	59.58	25.03	42.01	626.31
Income	332	4312.95	3548.94	82.29	12594986.14
Mother's Education	332	4.63	2.38	51.40	5.68
Father's Education	332	4.92	2.57	52.24	6.61
Percentage of Trained Teachers	332	62.23	25.48	40.94	649.27
Distance	332	0.77	0.46	59.74	0.21

Discussion

It reveals from the study that the value of R^2 is 0.53. It means that 7 of the variables together can explain 53 per cent of the model and rest 47 per cent maybe explained by the other factors not mentioned in this regression model. Mean, Standard Deviation, Coefficient of Variation, and correlation coefficients are also shown in the above tables.

It is found from Table 1 that standardised coefficient of percentage of attendance is 0.66 and the t value is 15.63, which is significant at 99 per cent confidence interval. It implies that impact of student's attendance on his/her performance is positive. The result shows that a student who attends the classes regularly can do better in examination.

It was assumed that the relationship between student's academic performance and students family income is positive because money can buy all comforts that student need. But the result could not prove these relation, because coefficient value is -0.005 and insignificant t value -0.116 as reveals from Table 1. Since all kinds

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of educational expenditure are being maintained by the state government for the students of elementary classes, it can be said that family income is not an affecting factor for the academic performance of the students of the said categories.

It was assumed that mother's education is positively related to the academic performance of the student. An educated mother can take better care of her child and the result of the study also proves the relation. It is found from the Table 1 that the coefficient value is 0.167 and significant t value 3.009. It shows there is a positive relation between student's academic performance and student's mother's education; the student is doing better whose mother is educated.

It was expected that student's academic performance is positively related to student's father's education. An educated father can guide his child to choose the better field of studies. The result of the study as reveals from Table 1 shows that the coefficient value is 0.028 and there is insignificant t value 0.516. Here it can be said that fathers are not habituated to taking care of the education of their kids at the elementary level. Beside, they remain busy and remain out of houses for most of the daytime for maintaining their livelihood.

It was assumed that the relation between dependent variable and the percentage of trained teachers in the school is positive. A trained teacher can teach the student better than an untrained teacher. It is found from Table 1 that the coefficient value is 0.089 and significant t value 2.229 though due to small value of correlation coefficient (0.053) as shown in Table 2, the relation between academic performance and percentage of trained teacher is found weak.

It was believed that sex of the students has an influence on their academic performance and it is also assumed that girls are showing better performance than the boys but the coefficient value -0.004 and t value -0.091 , as found in table 1 are insignificant in support of the hypothesis (f). Hence the hypothesis (f) does not hold good.

It was expected that students' academic performance and distance of school from students' house are positively related. If the school is near the residence of the student, he/she can easily attend the school regularly. The study shows that the relation does not hold well because coefficient value is 0.040 and t value 0.988 is insignificant as revealed from Table 1. The study shows that the correlation coefficient of distance and academic performance is only -0.13 . Since there is a direct relationship between academic performance and attendance and negative relationship between attendance and distance, it shows a negative relation between academic performance and distance of the school.

Conclusion

The academic performance of the student depends on a number of socio-economic factors, only 7 (seven) of which have been identified by us. This can explain at least 53 per cent of our proposed model. Out of these seven variables, attendance of the students has a major impact on their academic performance in comparison with the other variables.

As a part of overall suggestion of the study, students must be urged to be regular in their attendance and appointing authority or the department may reconsider its policy of appointing trained teacher for qualitative performance of the student. Besides this, educational programme like 'Vidhyalay Chalo Abhiyan' should be implemented more carefully to cover all dropout boys and girls. Because today's boys and girls are future fathers and mothers of our society.

There maybe other factors which may have direct effect on the performance of the students. Thus, this requires an elaborate study of the performance of the student with multiple socio-economic factors by the application of multiple regression analysis as suggested by Bickel¹⁰ (2007).

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Knowledge of Computers among Prospective Teachers

MADHU SAHNI*

ABSTRACT

The purpose of the present investigation was to assess the level of knowledge of computers among prospective teachers and to study the influence of type of college, gender, attitude towards computers and their various interactions on knowledge of computers among prospective teachers. The sample comprised 320 prospective teachers selected randomly from six B.Ed. colleges affiliated to M.D.U., Rohtak. Data were analysed by adopting the criterion Mean \pm SD and using three-way ANOVA (2x2x2 factorial design) and t-test. Results indicated that (i) most of the prospective teachers got comparatively moderate level of knowledge of computers; (ii) there is significant independent effect of variables viz. type of college, gender and attitude towards computers on knowledge of computers among prospective teachers; and (iii) there is significant two factor and three factor interactive effect of variables on knowledge of computers among prospective teachers.

Introduction

In the present era, the development in various aspects of computer technology has reached beyond our imagination and expectations. As computer becomes part and parcel of our life, knowledge of computers is very much needed for everyone. Learning about computers is one of the major ways through which students acquire

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experience with new Information Technology (IT). This is important because using computer and computer applications require a certain amount of basic knowledge and skills with regard to the functioning of computers and software packages. Hence, computer has become an unavoidable instrument now in all the field of human life.

In the field of education it has created revolution and is very useful in teaching-learning process and content of education. Therefore, computer literacy is very much required for teachers as well as students. Pelgrum and Plomp (2000) are of the view that students need to have certain generic knowledge (for example of hardware components and software packages) and should understand some basic principles of how to operate software packages and computer equipments of different types, such as how to switch on a machine, how to start a programme, how to store information, what is a mouse, etc.

Favourable attitude towards computers plays a very important role in making one really interested in it. Fishbein and Ajzen (1975) introduced a theory, which proposed that, computer attitude affect user's behavioural intentions (future desires) that in turn affect actual computer usage (experience). When there is clear linkage between the target action and any attitudes that are formed, the degree of predictability will be highest. So unless the teachers possess a favourable attitude towards computers, they may not be interested in it, which in turn will affect their knowledge of computers and also they will find learning with help of computer difficult, which in turn will affect students' learning. Reece and Gable (1982) noted that introducing computers into schools without developing students' positive attitudes towards computers would be a waste of time and money. On the other hand, having negative attitude towards computers may lead students to resist learning about computers and affect acceptance of technology use.

In this context, teacher education institutions, which have a responsibility to prepare teachers, cannot afford to take back seat. Looking to the technological competency to be developed on the part of the teachers the input of IT in education at pre-service level is introduced. So teacher educators are the central actors who hold the key to develop in the prospective teachers the appropriate knowledge of computers and essentials skills in working with them.

To fall in line with this, an attempt has been made to study knowledge of computers among prospective teachers. Keeping in view the importance of attitude in learning and fast opening self-financing colleges of education, type of college of education (self-financing/

government aided) and attitude towards computers are taken as independent variables.

Operational Definition of the Terms

Prospective Teachers: Pupil teachers or teacher trainees enrolled in B.Ed. course during the session 2008–2009.

Knowledge of Computers: Knowing about the various fundamental aspects of computers, the basic skills involved in the operation of computers, and the function of computer applications.

Attitude towards computers: Subject's feelings, beliefs and perceptions towards general computer use.

Type of college of Education: Government-aided colleges, which receive grant from UGC or self-financing colleges which don't receive any grant from UGC and are purely running on commercial basis.

Objectives

1. To study the level of knowledge of computers among prospective teachers.
2. To study the influence of type of college, gender, attitude towards computers and their various interactions on knowledge of computers among prospective teachers.

Hypothesis

There is no significant influence of type of college, gender, attitude towards computers and their various interactions on knowledge of computers among prospective teachers.

Tools Used

Following tests were used to obtain reliable data:

1. Computer Knowledge Test by Aziz (2004).
2. Computer Attitude Scale (CAS, 2005) by Loyd and Gressard.
3. Intelligence Test by S.M. Mohsin.
4. Personal Information Schedule (PIS) developed by investigator to get the information like gender, name of college, prior computer training, possession of PC at home, etc.

Sample and Procedure

Data were collected in July–Aug 2009, when the prospective teachers were ready to appear in B.Ed. final practical examination of information technology after taking theory exams. For collecting data, six colleges of education (three government aided and three self-financing) affiliated to M.D.U., Rohtak, were selected randomly from Haryana. Due to mushrooming growth of colleges of education in

Haryana, present state of affairs indicates that colleges of education have variance with a wide margin mainly on count of attending or non-attending prospective teachers. So it is worth mentioning that in these six colleges of education regularity of prospective teachers prevailed.

The investigator personally visited the colleges one by one. After rapport formation she administered the tools to all prospective teachers present on the day. After collecting the tools back, those cases were discarded who had computer training from computer institute or who had Personal Computer (PC) at their homes or who did not belong to moderate level of intelligence; as review suggested that students who own computer has more computer knowledge than those who do not (Al-Badar, 1993) and IQ has significant relationships to students' achievement regarding knowledge of computers (Tipton, 1991). Then on the basis of Mean and S.D., the prospective teachers of government-aided and self-financing colleges of education were divided into four parallel groups — males having favourable attitude towards computers, males having unfavourable attitude towards computers, females having favourable attitude towards computers and females having unfavourable attitude towards computers. From each of these groups, 40 prospective teachers were selected randomly, that is 40 from each combination group. In this way final sample comprised 320 prospective teachers as given in Table 1.

Table 1
Distribution of Sample

Type of College	Male Prospective teachers (160)		Female prospective teachers (160)	
Government Aided (160)	Having favourable attitude (40)	Having unfavourable attitude (40)	Having favourable attitude (40)	Having unfavourable attitude (40)
Self-financing (160)	Having favourable attitude (40)	Having unfavourable attitude (40)	Having favourable attitude (40)	Having unfavourable attitude (40)

(Note : N = 320)

Statistical Techniques Employed

To find out the level of knowledge of computers among prospective teachers criterion of Mean±SD was applied to scores of knowledge of computers. In order to study the influence of type of college, gender, attitude towards computers and their various interactions on

knowledge of computers three way ANOVA (2×2×2 factorial design) was employed. The first independent variable type of college (A) varied in two ways — Aided (A₁) and Self financing (A₂); the second independent variable gender (B) varied in two ways — Males(B₁) and Females (B₂); and the third independent variable attitude towards computers (C) varied in two ways — favourable (C₁) and unfavourable (C₂). In case of significant main effects as well as interactions, the ANOVA was supplemented by *t*-test.

Analysis and Interpretation

In pursuance of the objectives data were analysed and interpreted under the following heads:

1. Level of knowledge of computers among prospective teachers

320 subjects were classified into three groups by adopting the criterion of Mean ±SD to their score value in computer knowledge test as follows:

Table 2
Classification of Subjects into Three Groups on the Basis of their Score in Computer Knowledge Test

Sr. No	Level of knowledge	Range of Scores	N (%)
1.	High	24 or above	64(20%)
2.	Moderate	17-24	172(54%)
3.	Low	17 or below	84(26%)

Results in Table 2 reveal that majority of prospective teachers had moderate (54%) followed by low computer knowledge (26%). A small percentage of subjects (20%) fell in the category of high computer knowledge.

2. Influence of type of college, gender, attitude towards computers and their various interactions on knowledge of computers among prospective teachers

The summary of ANOVA (2×2×2) is given in Table 3.

Table 3
Summary of 2×2×2 Factorial Design ANOVA of Knowledge of Computers

Source of Variance	df	Sum of squares	Mean Squares	F-value	Remark
A	df _A = 1	SS _A =1730	MS _A =1730	F _A =455.26	P<.01
B	df _B = 1	SS _B =720	MS _B =720	F _B =189.47	P<.01

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C	df _c = 1	SS _c = 556	MS _c = 556	F _c = 146.32	P < .01
A×B	df _{AB} = 1	SS _{AB} = 174	MS _{AB} = 174	F _{AB} = 45.79	P < .01
B×C df _{BC} = 1	SS _{BC} = 177	MS _{BC} = 177	F _{BC} = 46.58	P < .01	
A×C df _{AC} = 1	SS _{AC} = 23.21	MS _{AC} = 23.21	F _{AC} = 6.11	P < .05	
A×B×C df _{ABC} = 1	SS _{ABC} = 148.47	MS _{ABC} = 148.47	F _{ABC} = 39.07	P < .01	
Within SS	df _w = 312	SS _w = 1185.75	MS _w = 3.8		
Total	319	4714.68			

(Note : N = 320)

2.1 Knowledge of Computers by Type of College

From table 3 it can be seen that the F-value for type of college is 455.26, which is significant at 0.01 with df = 1/312 . It shows that type of college significantly influenced the knowledge of computers among prospective teachers. Thus the null hypothesis that there is no significant influence of type of college on knowledge of computers among prospective teachers is rejected. In order to interpret this, t-test was applied. The results for the same have been given in Table 4.

Table 4
Type of college wise Mean, SD and t-value of
Knowledge of Computers

Group	N	Mean	SD	t-value	Remark
A ₁	160	21.76	3.95	6.53	P < .01
A ₂	160	19.12	3.25		

From Table 4 it is evident that t-value is 6.53, which is significant at 0.01 level of significance. It indicates that the mean scores of knowledge of computers among prospective teachers of aided and self-financing colleges differ significantly. Thus, the null hypothesis that there is no significant difference in mean scores of knowledge of computers among prospective teachers of aided and self-financing colleges is rejected. Further, mean score of knowledge of computers among prospective teachers of aided colleges is 21.76, which is significantly higher than that of prospective teachers of self-financing colleges, whose mean score of computer knowledge is 19.12. It may therefore be said that knowledge of computers was found to be significantly higher in case of prospective teachers of aided colleges in comparison to prospective teachers of self-financing colleges.

2.2 Knowledge of computers by gender

The F-value for gender of prospective teachers is 189.47 (vide Table 3), which is significant at 0.01 level. It reflects that there is significant influence of gender on knowledge of computers among prospective teachers. Thus the null hypothesis that there is no significant influence of gender on knowledge of computers among prospective teachers is rejected. In order to interpret this t-test was applied. The results are as given in Table 5.

Table 5
Gender Wise Mean, SD and t-value of Knowledge of Computers

Gender (B)	N	Mean	SD	t-value	Remark
Male (B ₁)	160	21.93	4.26	7.48	P<.01
Female (B ₂)160	18.94	2.64			

From Table 5 it is evident that t-value is 7.48, which is significant at 0.01 level of significance. It indicates that the mean scores of knowledge of computers among male and female prospective teachers differ significantly. Thus, the null hypothesis that there is no significant difference in mean scores of knowledge of computers among male and female prospective teachers is rejected. Further, mean scores of knowledge of computers among male prospective teachers is 21.93, which is significantly higher than that of female prospective teachers whose mean score of knowledge of computers is 2.64. It may, therefore, be said that knowledge of computers was found to be significantly more in case of male prospective teachers in comparison to female prospective teachers.

2.3 Knowledge of computers by attitude towards computers

The F-value for attitude towards computers of prospective teachers is 146.32 (vide Table 3), which is significant at 0.01 level. It may, therefore, be said that attitude towards computers significantly influenced knowledge of computers among prospective teachers. Thus, the null hypothesis that there is no significant influence of attitude towards computers on knowledge of computers among prospective teachers is rejected. In order to interpret this, t-test was applied. The results have been given in Table 6.

Table 6
Attitude towards Computers Wise Mean, SD and t-value of Knowledge of Computers

Attitude towards Computer (C)	N	Mean	SD	t-value	Remark
Favourable (C ₁)	160	22.76	3.28	13.68	P<.01
Unfavourable (C ₂)	160	18.11	2.84		

From Table 6 it is evident that *t*-value is 13.68, which is significant at 0.01 level of significance. It indicates that the mean scores of knowledge of computers among prospective teachers having favourable and unfavourable attitude differ significantly. Thus, the null hypothesis that there is no significant difference in mean scores of knowledge of computers among prospective teachers having favourable and unfavourable attitude towards computers is rejected. Further, mean scores of knowledge of computers among prospective teachers having favourable attitude towards computers is 22.76, which is significantly higher than that of prospective teachers having unfavourable attitude towards computers whose mean score of knowledge of computers is 18.11. It may, therefore, be said that knowledge of computers was found to be significantly more in case of prospective teachers having favourable attitude towards computers in comparison to prospective teachers having unfavourable attitude towards computers.

2.4 Two Factor Interaction Effect on Knowledge of Computers

2.4.1 A x B Interaction

The F-value for the double interaction between Types of college and Gender (A x B) is 45.79 (vide table 3 for df= 1/312) is significant at 0.01 level, leading to inference that the two variables interact with each other. To investigate further, the interaction between type of college and gender, the *t*-ratios were computed. The results for the same have been given in Table 7.

Table 7
Significance of Difference of Mean scores of Knowledge of Computers among Different Combination Groups for Type of College x Gender

Group (Mean)	A ₁ B ₁ (24)	A ₁ B ₂ (19.51)	A ₂ B ₁ (19.88)	A ₂ B ₂ (18.36)
A ₁ B ₁ (24)	-	8.63*	6.97 *	9.75*

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A ₁ B ₂ (19.51)	-	-	0.87	2.82*
A ₂ B ₁ (19.88)	-	-	-	3.04*
A ₂ B ₂ (18.36)	-	-	-	-

*0.01 level of significance

Table 7 shows that male prospective teachers of aided colleges have more knowledge of computers (M=24) than female prospective teachers of aided colleges (M=19.51). Male prospective teachers of aided colleges are higher on knowledge of computers (M=24) as compared to male prospective teachers of self-financing colleges (M=19.88). Male prospective teachers of aided colleges have more knowledge of computers (M=24) as compared to female prospective teachers of self-financing colleges (M=18.36). Female prospective teachers of aided colleges (M=19.51) and male prospective teachers of self-financing colleges (M=19.88) yield comparable mean scores on knowledge of computers. Female prospective teachers of aided colleges have more knowledge of computers (M=19.51) than female prospective teachers of self-financing colleges (M=18.36). Male prospective teachers of self-financing colleges have more knowledge of computers (M=19.88) as compared to female prospective teachers of self-financing colleges (M=18.36).

Further, male prospective teachers of aided colleges have maximum knowledge of computers (M=24), while female prospective teachers of self-financing colleges have lowest knowledge of computers (M=18.36).

2.4.2 B × C Interaction

The F-value for the double interaction between Gender and Attitude towards computers (B×C) is 46.58 (vide table 3 for df = 1/312), which is significant at 0.01 level, leading to inference that the two variables interact with each other. To investigate further, the interaction between gender and attitude towards computers, the t-ratios were computed. The results for the same have been given in Table 8.

Table 8
Significance of Difference of Mean Scores of Knowledge
of Computers among Different Combination Groups for
Gender × attitude towards Computers

Group (Mean)	B ₁ C ₁ (25)	B ₁ C ₂ (20.52)	B ₂ C ₁ (18.88)	B ₂ C ₂ (17.35)
B ₁ C ₁ (25)	-	11.79*	16.19*	17.98*
B ₁ C ₂ (20.52)	-	-	6.07*	9.52*
B ₂ C ₁ (18.88)	-	-	-	4.6*
B ₂ C ₂ (17.35)	-	-	-	-

*0.01 level of significance

Table 8 reveals that male prospective teachers having favourable attitude towards computers have more knowledge of computers (M=25) as compared to male prospective teachers having unfavourable attitude towards computers (M=20.52). Male prospective teachers having favourable attitude towards computers have more knowledge of computers (M=25) as compared to female prospective teachers having favourable attitude towards computers (M=18.88). Male prospective teachers having favourable attitude towards computers have more knowledge of computers (M=25) as compared to female prospective teachers having unfavourable attitude towards computers (M=17.35). Male prospective teachers having unfavourable attitude towards computers have more knowledge of computers (M=20.52) as compared to female prospective teachers having favourable attitude towards computers (M=18.88). Males having unfavourable attitude towards computers (M=20.52) are higher on knowledge of computers than female having unfavourable attitude towards computers (M=17.35). Female prospective teachers having favourable attitude towards computers have more knowledge of computer (M=18.88) as compared to female prospective teachers having unfavourable attitude towards computers (M=17.35).

Further, male prospective teachers having favourable attitude towards computers have maximum knowledge of computers and female prospective teachers having unfavourable attitude towards have minimum knowledge of computers.

2.4.3 A × C Interaction

From Table 3 it is evident that double interaction between Type of college and Attitude towards computers (A × C) is 6.11, which is significant at 0.05 level, leading to inference that the two variables interact with each other. To investigate further, the interaction between types of college and attitude towards computers, the t-ratios were computed. The results for the same have been given in Table 9.

Table 9
Significance of Difference of Mean Scores of Knowledge of Computers among Different Combination Groups for Type of College × Attitude towards Computers

Group (Mean)	A ₁ C ₁ (23.81)	A ₁ C ₂ (19.7)	A ₂ C ₁ (21.71)	A ₂ C ₂ (16.53)
A ₁ C ₁ (23.81)	-	7.75*	4.27*	14.30*
A ₁ C ₂ (19.7)	-	-	5.76*	8.51*
A ₂ C ₁ (21.71)	-	-	-	16.71*
A ₂ C ₂ (16.53)	-	-	-	-

*0.01 level of significance

From Table 9, it is evident that prospective teachers of aided colleges having favourable attitude towards computers have more computer knowledge (M=23.81) than prospective teachers of aided colleges having unfavourable attitude towards computers (M=19.7). Prospective teachers of aided colleges having favourable attitude towards computers are higher on knowledge of computers (M=23.81) than prospective teachers of self-financing colleges having favourable attitude towards computers (M=21.71). Prospective teachers of aided colleges having favourable attitude towards computers have more knowledge of computers (M=23.81) than prospective teachers of self-financing colleges having unfavourable attitude towards computers (M=16.53). Prospective teachers of self-financing colleges having favourable attitude towards computers have more knowledge of computers (M=21.71) than prospective teachers of aided colleges having unfavourable attitude towards computers (M=19.7). Prospective teachers of aided colleges having unfavourable attitude towards computers have more knowledge of computers (M=19.7) than

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prospective teachers of self-financing colleges having unfavourable attitude towards computers (M = 16.53). Prospective teachers of self-financing colleges having favourable attitude towards computers have more knowledge of computers (M = 21.71) than prospective teachers of self-financing colleges having unfavourable attitude towards computers (M = 16.53).

Further, prospective teachers of aided colleges having favourable attitude towards computers have maximum scores on knowledge of computers and prospective teachers of self-financing colleges having unfavourable attitude towards have minimum scores on knowledge of computers.

2.4.4 Three Factor Interaction (A × B × C) Effect on Knowledge of Computers

The F-value for the triple interaction between Type of college, Gender and Attitude towards computers is 39.07 which is significant at 0.01, level (vide Table 3), leading to inference that the three variables interact with each other. To investigate further, the interaction between type of college, gender and attitude towards computers, the *t*-ratios were computed. The results for the same have been given in Table 10.

Table 10
Significance of Difference of Mean Scores of Knowledge of
Computers among Different Combination Groups for
(Type of College × Gender × Attitude towards Computers)

Group	A ₁ B ₁ C ₁ (27.48)	A ₁ B ₁ C ₂ (20.53)	A ₁ B ₂ C ₁ (20.15)	A ₁ B ₂ C ₂ (18.88)	A ₂ B ₁ C ₁ (22.53)	A ₂ B ₁ C ₂ (17.23)	A ₂ B ₂ C ₁ (20.9)	A ₂ B ₂ C ₂ (15.83)
A ₁ B ₁ C ₁ (27.48)	-	13.75*	19.91*	21.13*	14.42*	23.84*	19.91*	31.15*
A ₁ B ₁ C ₂ (20.53)	-	-	0.73	3.02*	3.99*	5.85*	.72	9*
A ₁ B ₂ C ₁ (20.15)	-	-	-	3.01*	6.60*	6.58*	2**	11.08*
A ₁ B ₂ C ₂ (18.88)	-	-	-	-	9.12*	3.46*	4.87*	7.14*
A ₂ B ₁ C ₁ (22.53)	-	-	-	-	-	12.51*	4.62*	18.27*
A ₂ B ₁ C ₂ (17.23)	-	-	-	-	-	-	8.39*	3.12*
A ₂ B ₂ C ₁ (20.9)	-	-	-	-	-	-	-	13.25*
A ₂ B ₂ C ₂ (15.83)	-	-	-	-	-	-	-	-

Table 10 shows that Male prospective teachers of aided colleges having favourable attitude towards computers (M=27.48) are higher on knowledge of computers as compared to male prospective teachers of aided colleges having unfavourable attitude towards computers (M=20.53). Male prospective teachers of aided colleges having favourable attitude towards computers (M=27.48) have more knowledge of computers as compared to female prospective teachers of aided colleges having favourable attitude towards computers (M=20.15). Male prospective teachers of aided colleges having favourable attitude towards computers (M=27.48) are higher on knowledge of computers as compared to female prospective teachers of self-financing colleges having unfavourable attitude towards computers (M=18.88). Male prospective teachers of aided colleges having favourable attitude towards computers (M=27.48) are higher on knowledge of computers as compared to male prospective teachers of self-financing colleges having favourable attitude towards computers (M=17.23). Male prospective teachers of aided colleges having favourable attitude towards computers (M=27.48) have more knowledge of computers as compared to male prospective teachers of self-financing colleges having unfavourable attitude towards computers (M=17.23). Male prospective teachers of aided colleges having favourable attitude towards computers (M=27.48) are higher on knowledge of computers as compared to female prospective teachers of self-financing colleges having favourable attitude towards computers (M=20.9). Male prospective teachers of aided colleges having favourable attitude towards computers (M=27.48) are higher on scores of knowledge of computers as compared to female prospective teachers of self-financing colleges having unfavourable attitude towards computers (M=15.83). Male prospective teachers of aided colleges having unfavourable attitude towards computers (M=20.53) and female prospective teachers of aided colleges having unfavourable attitude towards computers (M=20.15) yield comparable mean scores on knowledge of computers. Male prospective teachers of aided colleges having unfavourable attitude towards computers (M=20.53) are higher on scores of knowledge of computers as compared to female prospective teachers of aided colleges having unfavourable attitude towards computers (M=18.88). Male prospective teachers of self-financing colleges having favourable attitude towards computers (M=22.53) have more knowledge of computers as compared to male prospective teachers of aided colleges having unfavourable attitude towards computers (M=20.53). Male prospective teachers of aided colleges having unfavourable attitude towards computers (M=20.53)

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are higher on knowledge of computers as compared to male prospective teachers of self-financing colleges having unfavourable attitude towards computers (M = 17.23). Male prospective teachers of aided colleges having unfavourable attitude towards computers (M = 20.53) and female prospective teachers of self-financing colleges having favourable attitude towards computers (M = 20.9) yield comparable mean scores on knowledge of computers. Male prospective teachers of aided colleges having unfavourable attitude towards computers (M = 20.53) are higher on scores of knowledge of computers as compared to female prospective teachers of self-financing colleges having unfavourable attitude towards computers (M = 15.83). Female prospective teachers of aided colleges having favourable attitude towards computers (M = 20.15) have more knowledge of computers as compared to female prospective teachers of aided colleges having unfavourable attitude towards computers (M = 18.88). Male prospective teachers of self-financing colleges having favourable attitude towards computers (M = 22.53) are higher on scores of knowledge of computers as compared to female prospective teachers of aided colleges having favourable attitude towards computers (M = 20.15). Female prospective teachers of aided colleges having favourable attitude towards computers (M = 20.15) are higher on knowledge of computers as compared to male prospective teachers of self-financing colleges having unfavourable attitude towards computers (M = 17.23). Female prospective teachers of self-financing colleges having favourable attitude towards computers (M = 20.9) have more knowledge of computers as compared to female prospective teachers of aided colleges having favourable attitude towards computers (M = 20.15). Female prospective teachers of aided colleges having favourable attitude towards computers (M = 20.15) are higher on knowledge of computers as compared to female prospective teachers of self-financing colleges having unfavourable attitude towards computers (M = 15.83). Male prospective teachers of self-financing colleges having favourable attitude towards computers (M = 22.53) are higher on knowledge of computers as compared to female prospective teachers of aided colleges having unfavourable attitude towards computers (M = 18.88). Female prospective teachers of aided colleges having unfavourable attitude towards computers (M = 18.88) are higher on knowledge of computers as compared to male prospective teachers of self-financing colleges having unfavourable attitude towards computers (M = 17.23). Female prospective teachers of self-financing colleges having favourable attitude towards computers (M = 20.9) have more knowledge of computers as compared to female prospective teachers of aided

colleges having unfavourable attitude towards computers (M = 18.88). Female prospective teachers of aided colleges having unfavourable attitude towards computers (M = 18.88) are higher on knowledge of computers as compared to female prospective teachers of self-financing colleges having unfavourable attitude towards computers (M = 15.83). Male prospective teachers of self-financing colleges having favourable attitude towards computers (M = 22.53) are higher on knowledge of computers as compared to male prospective teachers of self-financing colleges having unfavourable attitude towards computers (M = 17.23). Male prospective teachers of self-financing colleges having favourable attitude towards computers (M = 22.53) have more knowledge of computers as compared to female prospective teachers of self-financing colleges having favourable attitude towards computers (M = 20.9). Male prospective teachers of self-financing colleges having favourable attitude towards computers (M = 22.53) are higher on knowledge of computers as compared to female prospective teachers of self-financing colleges having unfavourable attitude towards computers (M = 15.83). Female prospective teachers of self-financing colleges having favourable attitude towards computers (M = 20.9) are higher on knowledge of computers as compared to male prospective teachers of self-financing colleges having unfavourable attitude towards computers (M = 17.23). Male prospective teachers of self-financing colleges having unfavourable attitude towards computers (M = 17.23) have more knowledge of computers as compared to female prospective teachers of self-financing colleges having unfavourable attitude towards computers (M = 15.83). Female prospective teachers of self-financing colleges having favourable attitude towards computers (M = 20.9) are higher on knowledge of computers as compared to female prospective teachers of self-financing colleges having unfavourable attitude towards computers (M = 15.83).

Further, male prospective teachers of aided colleges having favourable attitude towards computers have maximum scores on knowledge of computers while female prospective teachers of self-financing colleges having unfavourable attitude towards computers have minimum scores.

Findings

1. There is significant difference in knowledge of computers among prospective teachers with respect to type of college.
2. There is significant difference in knowledge of computers among prospective teachers with respect to gender.

3. There is significant difference in knowledge of computers among prospective teachers with respect to attitude towards computers.
4. There is significant difference in knowledge of computers among prospective teachers with respect to type of college and gender.
5. There is significant difference in knowledge of computers among prospective teachers with respect to gender and attitude towards computers.
6. There is significant difference in knowledge of computers among prospective teachers with respect to type of college and attitude towards computers.
7. There is significant difference in knowledge of computers among prospective teachers with respect to type of college, gender and attitude towards computers.

Discussion

Results of the present study indicate that only 20 per cent of the prospective teachers belong to high level of knowledge of computers. 54 per cent of them belong to moderate level and 26 per cent belong to low level of knowledge of computers. It means they do not know well even the various fundamental aspects of computers and the basic skills involved in the operations of computers. This is a question mark on the quality of education being provided in colleges and schools as prospective teachers would have to prepare their students to achieve success in the outside world.

Another finding of the present study is that knowledge of computers is significantly more in case of prospective teachers of aided colleges in comparison to prospective teachers of self-financing colleges. One of the possible causes for this could be that prospective teachers enrolled in aided colleges have to work harder, struggle more to be there and so they strive to achieve higher levels.

Further, the results also indicate that male prospective teachers have more knowledge of computers as compared to female prospective teachers. The study supports earlier findings that sex significantly affects the knowledge of computers (Baker, 1986; Pelgrum and Plomp, 2000). Further, these findings are in line with previous study (Palaigeorgiou et al., 2005) where it was observed that male members have more knowledge of computers, e.g. hardware computer, software package and basic principles how to operate software packages and different types of computer components, than the female subjects. However, on the other hand there are studies, which report no significant difference between males and females with regard to knowledge of computers (Al-Badar, 1993; Compton et al., 2003). The

tentative explanation of the present findings maybe put forward in the sense that computer knowledge and its use was thought to be a male domain. But there are also certain other factors which may determine the knowledge of computers among males and females.

Findings of the present study also reveal that prospective teachers having favourable attitude towards computers have more knowledge of computers than the prospective teachers having unfavourable attitude towards computers. That means attitude towards computers may enhance or impede learning process. The results are in consonance with the findings of S.R. and P.V. (2007) who reported significant and positive relationship between the knowledge of computers and the attitude towards computers of the higher secondary school teachers. Simonson et al. (1987) also concluded that the development and maintenance of positive attitude towards computers is crucial for computer literate person.

Regarding interactional effects, the joint effect of factors viz., i) type of college and gender ii) gender and attitude towards computers iii) type of college and attitude towards computers, and iv) type of college, gender and attitude towards computers is found significant on knowledge of computers. This joint effect of various interactions on knowledge of computers may be significant due to the reason that factors like type of college, gender and attitude towards computers exert significant independent contributing effect in determining the scores on knowledge of computers. Another probable reason for significant various interaction effects may be due to the two different ways in which each factor is varying viz., aided and self-financing colleges of education; males and females prospective teachers; and favourable and unfavourable attitude towards computers.

Educational Implications

1. Since development and maintenance of positive attitude towards computers are essential elements for better achievement in knowledge of computers, the negative attitude towards computers might lead to low achievement. So, it is important that attitudes of prospective teachers towards computers have to be influenced positively. For it, the personal experience of people with computers as well as subjective implications of computers for people need to be understood and managed.
2. In colleges of education, painstaking efforts should be made to develop in the prospective teachers the appropriate knowledge of computers and essentials skills in working with them. In this

- context, special attention should be given to female prospective teachers and prospective teachers of self-financing colleges.
3. Teacher educators need to incorporate technology into their lesson plans in addition to teaching prospective teachers how to use computers so that it is woven into many curricular activities throughout the week. Some teachers are just not interested in using computer and are not going to change no matter what. It is important to build enough time into the daily schedule allowing teachers enough time to collaborate and to work with their students. Overall, the concern for introducing IT in education is not to develop technocrats but technopedagogs.
 4. In teacher education institutions, syllabi followed shows less weightage to IT as far as content and marks are concerned. This aspect should be considered while redesigning the curriculum.
 5. Apex agencies namely NCTE and NAAC should see that fast growing self-financing teacher education institutions have the professional feel and appeal.

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Role of Teacher as a Therapist: Issues, Challenges and Reflective Practices

K. CHELLAMANI*

ABSTRACT

The competitive era of today lays stress on students. This is caused by unhappy situations created by teachers due to emotional imbalance. Teachers attend only the cognitive components and they do forget the emotive behaviour of students. It is the understanding of the teachers on Neurocognition that brings beneficial changes in the learning environment of the students so as to help them learn. In applied psychological terms we can call it neurocognitive therapy. As a therapist, the teacher takes an active role in guiding his students as he works to develop friendly environment during and after Instructional programme. Hence, the teacher needs to be familiar with the diagnosis and treatment for handling situations and conditions such as anxiety, disorders, depression, learning disabilities and bi-polar disorder. Along with this knowledge base, the teacher should know the strategies for neurocognitive therapy. One of such strategies is reflective practices. The author attempts to illuminate portfolio writing and reflective learning journals, the two essential reflective practices every teacher has to follow for healthy bringing up of future citizens.

Key terms: Neurocognition, reflective practices, portfolio-writing, reflective learning journals

The societal change due to globalisation awakens the educational authorities and the Central Government's educational policy has brought higher education centre stage. The eleventh Five Year plan was described by the Prime Minister of India as an 'Educational Plan'.

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The economic inability of the aspirants and poor quality of education are identified as the two inadequacies that exist in higher education. Despite other factors, the role of teachers plays a vital role in the quality of education.

The function of a teacher falls within the broad framework of the school education system — its goals, curricula, materials, and methods. The curriculum framework of teacher education needs to be in consonance with the curriculum framework for school education. A teacher needs to be prepared in relation to the needs and demands arising in the school context, to engage with questions of school knowledge, the learner and the learning process. The expectations of the school system from a teacher change from time to time, responding to the broader social, economic and political changes taking place in the society. Other than the changes, there are certain issues to be solved in this communicative era.

Issues

In today's world everything is open to students. They can access information. At the same time, the manner in which schools run suggests that education is perceived as preparation for work. The school and the parents emphasise marks, often at the cost of the child's well-being. This results in commitment of suicides. Moreover, in the name of correction of 'misbehaviour', still teachers and school authorities use corporal punishments. If quality education refers to holistic perspectives of education, it definitely means the emotional component of students along with their cognitive development. The psychologist Steve Killick (2007) writes, "Schools do not 'teach' emotional literacy, they need to practice it." This indicates the importance of teachers to possess the knowledge and the skill of understanding the emotion of students. Maybe because of this emergency, National Curriculum Framework for Teacher Education (NCFTE, 2009–10) is subtitled as 'Towards Preparing Professional and Humane Teacher.' An important contribution of teacher education is its development of teachers' abilities to examine teaching from the perspectives of learners who bring diverse experiences and frames of references to the classroom.

The frequent 'mishaps' in schools, make educationists ponder over the cause for it. They state the existence of total negligence of emotional component among teachers. Krathwohl (1964) and his associates analysed the feeling components and listed them under affective domain in Instructional design. Of late, scientists and educationists brought Neuroscience to the attention of the public for

everyone to understand the inside of man. No more teachers can have the say, 'Spare the rod and spoil the child'. The Supreme Court Order of 2000 banned corporal punishment. Emphasis has been given to child-friendly curriculum and learner friendly methodology. Yet teachers need time to comprehend and tune themselves for the above. There is greater urgency on the need to possess knowledge, not only on psychology but also on the biology of the brain and its operation. It is neurocognition that talks about the process behind one's behaviour. It is high time for teachers and teacher educators to be aware of neuro cognitive science before the NCFTE (2009–10) comes into practice.

Neurocognition

In psychology, it refers to an information processing view of an individual's psychological function. In other words, it is information processing approach that views the mind as an information processing system that selects, transforms, encodes, stores, retrieves and generates information and behaviour (Lachman & Butterfield, 1979). It includes every mental process that maybe described as an experience of knowing, perceiving, recognising, conceiving and reasoning as distinguished from an experience of feeling or of willing. It describes the cognitive functions closely linked to the function of particular areas, neural pathways, or critical networks in the brain. Therefore, their understanding is closely linked to the practice of neuropsychological and cognitive neuroscience, two disciplines that broadly seek to understand how the structure and function of the brain relates to thought and behaviour.

Neural science explains human behaviour in terms of the activities of the brain. The ultimate challenge is to understand the biological basis of consciousness and mental processes by which we perceive, act, learn and remember. The brain is the leader for coordinating our physical activities. Exercise strengthens the brain's interconnections and rejuvenates the mind. The chemical link between the mind and body is best exemplified by the brain derived neurotrophic in our factor (BDNF), a protein found in our brain which helps brain cells to stay healthy, sprout new connections and develop plasticity. The short-term and long-term exercises both lead to a release of BDNF from various parts of our brain the cortex, basal forebrain and hippocampus which are the areas considered — vital for learning, higher thinking and memory. Neurocognitive functioning is strongly affected by stress levels, hormonal functions, sleep, exercise, health habits and many other environmental factors.

Challenges

The essence of understanding Neurocognition is to bring beneficial changes in the learning environment of the students so as to help them learn. In applied psychological terms we can call it neuro-cognitive therapy. As a therapist, the teacher takes an active role in guiding his students as he works to develop friendly environment during and after Instructional programme. Hence, the teacher needs to be familiar with the diagnosis and treatment for handling situations and conditions such as anxiety, disorders, depression, learning disabilities and bipolar disorder. Along with this knowledge base, the teacher should know the strategies for neurocognitive therapy.

It focuses on changing attitudes and thought patterns as well as behaviours. It is as if a client moves from asking 'what's wrong with me' to asking 'what are my strengths and weaknesses.' The therapist can begin to guide him to find good matches between his interests, abilities and traits that can help him reach his potentials at school or at work.

Educational researches on cognitive functions reveal the fact that the frontal lobes are part of the brain where concentration and learning take place. This area is also associated with working memory as well as all our executive functions including prioritising, organising, planning and behaviour control. Researches emphasise cognitive exercises for cognitive processing.

Students' academic performance will be improved by enhancing their focus on attention, concentration and memory. On account of this behaviour, a teacher should incorporate appropriate strategies to enhance cognitive functions. The essential strategies are given below. A teacher would be a therapist in developing the following cognitive functions.

- Attention duration
- Divided attention
- Selective attention
- Working memory
- Sequential processing
- Simultaneous processing or multitasking
- Processing speed
- Sensory motor co-ordination
- Visual processing
- Auditory processing
- Audio-visual coordination

Role of Teacher as a Therapist: Issues...

- Peripheral vision
- Concept comprehension
- Visual blending

Students will benefit from

- enhancing all aspects of attention and concentration;
- improving short-term and long-term memory;
- increasing self-control;
- enhancing speed of processing;
- improving self-discipline and self-confidence;
- improving the ability to concentrate in the presence of distractions;
- reducing hyperactivity;
- reducing impulsivity;
- improving the ability to relax;
- improving patience;
- enhancing the ability to multitask;
- improving learning ability;
- improving the ability to quickly shift focus;
- improving the ability to sustain focus for prolonged periods of time; and
- improving planning and organisations.

Performing the role of a therapist is a real challenge to a teacher. Other than the academic calendar, he has to attend to every individual in terms of realising the strengths and weaknesses, design strategies to overcome difficulties, provide adequate input for strengths and operate relevant strategies for cognitive functions. This wide spectrum of activities could possibly be done only through adequate planning and systematic execution with periodical monitoring. In order to perform these activities, first of all he has to practise cognitive functions to happen in him. This could be achieved through portfolio writing and journal writing. These practices regulate the individual in terms of self-awareness, self-monitoring and self-regulating. This expectation is sensitised by educational experts and so NCFTE (2009–10) insists on process based learning and reflective practices.

Reflective Practices

Reflection involves thinking. In the process of thinking, self-reflection on thinking enables one to proceed and reflect on one's own thinking process. This reflectivity is centred on a function. Reflection on thinking process enables one to complete a function by the application and reorganisation of knowledge and skills to perform a function.

These reflectivity and functionality would be possible only in the context of application of learning strategies and self-regulation skills. While applying in the context, the individual should be able to progress, if not, he has to self-regulate for progress by revising his own learning process. On the basis of self-regulation he would be able to strike a balance between the quality and quantity of the activity. This entire process would enable one to cultivate deeper cognitive process. The two reflective practices, i.e. portfolio writing and journal writing refine individuals towards successful personalities.

Portfolio Writing

The word 'portfolio' in the seventeenth century was recognised by almost all disciplines and of late, is being processed by each and every competent individual towards quality product. In education, portfolio refers to a personal collection of information describing and documenting a person's achievements and learning. There is a variety of portfolios ranging from learning logs to extended collections of achievement evidence. Portfolios are used for many different purposes such as accreditation of prior experience, job search, continuing professional development and certification of competencies. Portfolios are valid measures of literacy. There is evidence that portfolios inform students as well as teachers and parents, and that the results can be used to improve instruction, another major dimension of good assessment (Gomez, Grace & Block, 1991).

The review of researches shows that studies were both on process portfolio and product portfolio. In the process students reflected on the difficulties they encounter. The student teachers become effective teachers through the use of actual products they developed in classroom situations; portfolio provides a forum for extended and complex learning activities and observation. It becomes a powerful assessment tool in teacher preparation programmes. It promoted collaborative learning, increased students' reflection and aided psychologically secure environment in the classroom.

A well-planned documentation in terms of portfolio speaks about the efficiency of a successful teacher. Similarly, the learner's individual developmental portfolios and individual learning portfolios reflect the candidate's attitude, interest and level of development and growth in a given period of time. Thus, portfolio becomes an essential component in the field of education.

The main focus of portfolio is writing. This writing is in three different dimensions, viz. describing, analysing and reflecting. In other

words, we describe what; analyse-so what and reflect-then what. These indicate the ongoing cyclic process of writing for one's development in teaching and learning. These entries will be read both by the individual and by others in the course of assessing. Hence the entries should be organised and structured.

According to Paulson, Paulson and Mayor (1991), "Portfolio offers a way of assessing student learning that is different than traditional methods. Portfolio assessment provides the teachers and students an opportunity to observe students in a broader context of taking risks, developing creative solutions, and learning to make judgments about their own performance". Portfolio assessment provides thoughtful evaluation to take place. A combined effort of teacher and students is essential in framing criteria for assessment, both formative and summative. Throughout the academic year, students and teachers have to work together to identify significant artifacts and processes to be captured in the portfolio. This reflective thinking refines their decision-making and evaluation capacity. It is a thoughtful practice for development.

Reflective Learning Journals

The act of writing down things always helps us to clarify our thoughts and emotions, to work out strategies, and to focus on our development and progress. It helps us to focus on our own development. Reflection is often defined as 'meditation, thoughtfulness or careful consideration of some subject matter, idea or purpose'. Life is full of experiences. The art of taking the experiences critically into our understanding leads us towards development. The ongoing interactions between thought and action deepen our understanding. And this in turn, changes our educational practices.

How could the interactions be?

Hardly it is possible to keep all the messages we received from our experiences. If we record it in our journal regularly, it will be quite possible to reflect on our experiences, thoughts, struggles and insights as we move along our learning path.

What do we write?

Anything which helps us to reflect on:

- our feelings about the course, the topic, the lecture, the lecturers, peer group responses and our progress;
- the challenges we face;

- the changes we find in our attitude;
- the strategies we apply to tackle problems;
- the unsolved areas;
- the resources we search in; and
- things that we find about ourselves.

What is the use of these entries?

This journal entry helps us to

- explore questions on the concept that is important to us;
- analyse patterns and relationships;
- examine assumptions, beliefs and values;
- respond to new ideas;
- appreciate learning;
- celebrate success;
- attend alternative mode;
- develop personal theories;
- take thoughtful action; and
- identify the skills to be honed.

How can we maintain a journal?

A reflective journal is not a diary or a log of daily activities. It is a log or a register being maintained for personal use. The thoughts, feelings, enquiries can be recorded in a narrative form or in bullets. Sometimes, we can even include visual representations like drawings, maps, lists or charts. If we practise reflecting in the journal regularly, we make sense of our learning journey. In due course, it will help us in preparing portfolio.

How shall we activate?

To begin with, let us think of the tools we require. Maybe it is our favourite notebook or a sketchbook; or probably our computer. Then we must find a quiet place or a personal area where we sit and write our experiences without any disturbance. This is an ongoing process, leaving a link for further developments.

Journaling Strategies

As we discussed earlier, we probe into thoughts in different dimensions. Those dimensions can be expressed in different formats.

Narration

Feelings could be expressed in short imperatives. Sometimes, we can express our feelings and emotions with words, using different colour sketches or through symbols and images.

Enquiries

In the process of learning, we tend to get unsolved questions. They activate our attention and curiosity. In certain occasions we may get answers while in other, we may get amazing questions. It is worth keeping a separate area in our journal book for exploring questions. It will be a record of what we do not know and what we come to know.

Analysis

Generally, in meaning making process, we go for patterns and associations. As a result, we get 'why' questions. By analysing critical incidents, we may arrive at new theories and sometimes we tune ourselves to take new actions.

Examine assumptions, beliefs and values

The experiences in classrooms let us frame beliefs on teaching, learning, and education. Those beliefs could be modified with other resources.

Respond to new ideas

Everyday we come across new information, new ideas, and new experiences through many resources. Some maybe surprising. And some maybe amazing. All enquiries and doubts maybe clarified by working out logic through puzzle solving diagrams like Venn diagram, flow charts or concept mapping. By drawing connections between facts we come to believe one truth. Through collaborative journaling (with friends and peers) we construct new ideas and understandings.

Taking thoughtful action

We know that change is permanent. We tend to have our thoughts and ideas change, so do our attitude and behaviour. Education brings behavioural change. Through reflective journal writing modification of thoughts and attitudes is towards well-being. The written journal is not an end product. It is for reading. Everytime we read, we find new meanings and we start perceiving things in a new dimension. The impact of those experiences makes learning very significant.

The ongoing journal writing and reflection becomes a therapy. It helps in self examination development of self image. It improves one's memory and allows for a sense of direction and purpose. Journal writing could also be in the form of a diary entry. The basic daily entry maybe an internal dialogue which could be a record of daily happenings or important thoughts. It is like a photo album painted

with words. It sharpens one's memory, allows for details and enriches one's learning.

These strategies in journal writing help the individual to be aware of his strengths and weaknesses. It sharpens his perception and improves his understanding. This self-perception could be further taken to analyse his products (the assignments, test papers, i.e. the artifacts of the individual) and express in writing the 'what', 'why' and 'how' of the product. In other words, allowing the individual to assess his product and state the reason (what and why) for the product status. Further, he should draw steps for (how) corrective measures. If an individual practice to analyse and reflect on his performances, there is room for further improvement. It becomes a healthy practice to compare himself from what he was yesterday and what he is today. He becomes his own competitor and there is no competition between individuals. Here in this environment, the teacher facilitator becomes a therapist developing all the cognitive functions discussed earlier.

For a teacher to whom journal writing becomes a habit, personal and professional development is assured. A teacher who trains her students in journal writing actually fosters deeper and harmonious form of human development. Education is a means of bringing about personal development and building relationships among individuals, groups and nations. It is an expression of affection for children and young people welcoming them into society and offering them the place where they have all the rights. Therefore, it is imperative for teachers to understand neurocognitive perspective of learning, maintenance of portfolio writing and practise journal writing.

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The Need for Life Skills among Adolescents

SEEMA AWASTHI* AND CHANDRA KUMARI**

ABSTRACT

Adolescence is a crucial phase in human life. It is a critical period of rapid physical, mental and social development. They face numerous challenges in their life such as adjusting to changing body growth and achieving a satisfactory sexual identity, self-identity (self-concept and self-esteem) and choosing a vocation, which leads to the establishment of economic independence. Adolescents have diverse need but their needs are not fulfilled by our education system and they experience gap between school and out of school reality. There is lacuna in education that seems to be getting more obvious as in the form of drug abuse, suicides, depression, violence, declined value system, stressful competition, materialism, and crimes. There is need to understand adolescents' diverse need and efforts should be made to meet their unmet need. Present study attempts to assess the need for life skills among adolescents of secondary school. The data were collected from a sample of 264 adolescents from Classes IX and X of public and private schools of Etawah city with the help of self-administered questionnaire. Results of study revealed that 38.25 percent had low knowledge level of life skills and only 18.18 per cent showed high knowledge level of life skills and remaining 43.57 per cent were in the category of moderate knowledge of life skills. Students' socio-economic status was significantly associated with their knowledge level of life skills. There is strong need to relate the education with the sensible aspect of life where student can be skillfully made responsible for his/her behaviour or actions and life skills education should become an integral part of education so an individual can operate effectively in society in an active and constructive way.

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Introduction

Adolescence is a dynamic period of growth and development. The term adolescents refers to individuals in the age group of 10 to 19 years and are understood in different ways in different cultural contexts. In India, adolescent comprises of 22.5 per cent of total population and their number according to 2001 census is over 225 million and this number is growing with a definite possibility of making this country the youngest in the world in near future. This period needs a special consideration because it is a period of increased risk taking and therefore, susceptibility to behavioural problems at the time of puberty and new concerns about reproductive health. (UNEP 1995).

The present condition of adolescents clearly shows that our youths' quality of life has significantly deteriorated. Researches show that significant rise in the problems faced by the adolescents for example, serious emotional disturbances has increased (WHO,2001), along with increased sexual activity, rise in AIDS cases in India and greater use of alcohol consumption. Studies have found that one-third of one-half of adolescents struggle with low self-esteem, especially in early adolescence (Harter, 1999;Hirsch & Dubois, 1991). The result of low self-esteem can be temporary, but in serious cases can lead to various problems including depression, delinquency, self-inflicted injuries, suicide and anorexia nervosa (Battle, 1990; Bhatti 1992). There is high prevalence of suicidal ideation, suicide attempts, death wish and deliberate self harm in adolescent population (Tanuj Sidharta and Shivanada Jena, 2006). The host of factors that promotes high risk behaviour such as alcoholism, drug abuse and casual relationships are boredom, rebellion, disorientation, peer pressure and curiosity. The psychological factors such as the inability to tackle emotional pain, conflicts, frustrations and anxieties about the future are often the driving force for high risk behaviour. Narayanan, S. (2003) found that it is shocking to note that almost 80 per cent of students feel that they cannot talk to their parents about personal problems. Nearly 40 per cent also said that they feared examinations and suffered from fear of failure.

There is a need for adolescent-friendly services, programmes, policies and interventions to meet their needs and psychosocial well-being. Many interventions have focused on addressing specific risk factors and health problems rather than using a combination of mutually supportive activities. Combination of mutually supportive interventions that promote psycho-social development impart skills that would strengthen adolescent abilities and also enhance their

quality of life, which is the need of the hour. One of the best practice models for contributing to psycho-social well-being of adolescents is development of life skills. Life skills are problem-solving behaviours appropriately and responsibly used in the management of personal affairs. Life skills play an indispensable role in one's health with respect to physical, mental and social well-being. It enables an individual not only to develop a sense of well-being but also the ability to cope with oneself, others and the general environment.

WHO (1997) rightly points out life skills "a group of psycho-social competence and interpersonal skills that help people to make informed decision, solve problems, think creatively and critically, communicate effectively, build healthy relationships, empathize with others and cope with and manage their lives in a healthy and productive manner. These abilities help in the promotion of mental and social well being and competence in adolescents to face the hard realities of life". Further UNESCO (2001) conceptualised life skills as person's ability to maintain a state of mental well-being and to demonstrate the same in adaptive and positive behaviour while interacting with others or his environment. It has been widely recognised that the development of life skills should be the primary concern of education. UNICEF defines life skills as a behaviour change or behaviour development approach designed to address a balance of three areas: knowledge, attitude, and skills.

Adolescents with low level of life skills are known to develop high risk behaviours which lead to long-lasting health and social consequences. Life skills development is a key to facilitate this process of transforming information into healthy behaviour. Many countries across the world have introduced life skills education in the school curriculum or for adolescents in special situations. Life skills have been defined by the World Health Organization (WHO) as "the abilities for adaptive and positive behaviour that enable individuals to deal effectively with the demands and challenges of everyday life". WHO and UNICEF agree that life skills are generally applied in various aspects of life such as in the context of health and related problems. It can be utilised in many content areas, issues or topics such as preventions of drug abuse, sexual violence, teenage pregnancy, HIV/AIDS/STDs prevention, suicide prevention, etc.

Life skills education approach is an interactive educational methodology that not only focus on transmitting knowledge but also aim at shaping attitudes and developing interpersonal skills. The important goals of the life skills approach are to enhance young people's abilities to take responsibility for making healthier choices,

resisting negative pressures and avoiding risk behaviour. Teaching methods are youth centred gender sensitive, interactive and participatory. The most common teaching methods include working in groups, brainstorming, role-playing-storytelling, debating, and participating in discussions and audio-visual activities. Therefore, Life-skills are the building blocks of one's behaviour and need to be learnt well/adequately to lead a healthy, meaningful and productive life.

Objectives

- To assess the socio demographic profile of the adolescents.
- To assess the need for life skills education among adolescents.

Method

Selection of locale and sample

The area selected for the present study was the Etawah District, Uttar Pradesh. The subjects included in this study were 264 students of government and private schools between the age group of 13 to 15 years.

Data collection and instrument

Socio-economic status scale developed by Dr. Bhardwaj was used to measure individual's socio-economic status and it includes items from different aspect of socio-economic status. The answer have to be elicited on five point scale and subjects are asked to give responses for father, mother and himself (case) separately in the scale. For the assessment of need for life skills, a structured questionnaire was developed by the investigator. At preliminary state, a careful study of the relevant literature and other questionnaires/inventory was done by the investigator. The tool was pretested on small number of adolescents to ascertain its comprehensibility as well as feasibility of administration under the field conditions and to remove any ambiguity in questions. Questionnaire comprises of questions related to three fundamental dimensions of life skills –

- A. Cognitive Skills: Problem-solving, Decision-making, Critical thinking, Creative thinking
- B. Social Skills: Empathy, Effective Communication and Interpersonal relationship
- C. Self Management: Self-Awareness, Coping with emotions and Coping with stress

Results

On the basis of the data analysis and interpretation, the following main findings have emerged out of the present investigation:

Table 1
Socio-Demographic Profile of Respondents

Demographic characteristics	Frequency (N=264)	Percentage	
Age	13-14	150	56.81
	15-16	114	43.18
	Boys	130	49.24
	Girls	134	50.75
Grade	IX	144	54.54
	X	120	45.45
School	Government	132	50.00
	Private	132	50.00
Socio-economic Status	Upper class	85	32.19
	Middle class	120	45.45
	Lower class	59	22.34
Parents' education	Fathers' Education		
	Illiterate	18	6.81
	Primary	31	11.74
	Secondary	70	26.51
	Graduation	61	23.10
	Postgraduation	84	31.81
Mothers' education	Illiterate	27	10.22
	Primary	44	16.66
	Secondary	87	32.95
	Graduation	66	25.00
	Postgraduation	40	15.15

The study was conducted on 264 adolescent's boys and age group of girls in the age group 13 to 16 years. Respondents in the age of 13 to 14 years were highest in number (56.81 per cent) followed by 15 to 16 years (43.18 per cent). They were studying in Class IX and X in government and private school of Etawah city and they belonged to different socio-economic classes. Out of 264 adolescents, majority of them (45.45 per cent) were from middle socio-economic status followed by upper socio-economic status (32.19 per cent) and low socio-economic status (22.34 per cent).

In the analysis of parents education, it has been found that majority of fathers were post-graduates (31.81 per cent); 70 (26.51 per cent) fathers had secondary and higher secondary education and only 6.81 per cent fathers were illiterate. Mothers of these adolescents had lower education than fathers, majority of them completed secondary education and only 15.15 per cent had post-graduation.

Table 2
Frequency and Percentage Distribution of Respondents
on Life Skills Knowledge Scores

Score Range	Categories	Frequency (N = 264)	Percentage
293-400	High knowledge	48	18.18
186-293	Moderate knowledge	115	43.56
80-186	Low knowledge	101	38.25

Table 2 exhibits the respondents' knowledge of life skills. Out of 264 respondents majority of them, i.e., 43.56 per cent fell in the category of moderate level of knowledge of life skills. Whereas, 38.25 per cent respondents fell in low level of knowledge of life skills and only 18.18 per cent showed high level of knowledge regarding various life skills.

Table 3
Gender Wise Distribution of Study Population on Life
Skills Knowledge Scores

Score Range	Categories	Boys (N = 130)		Girls (N = 134)	
		Frequency	Percentage	Frequency	Percentage
293-400	High knowledge	27	20.76	21	15.67
186-293	Moderate knowledge	58	44.61	57	42.53
80-186	Low knowledge	45	34.61	56	41.79

Table 3 reveals that among boys respondents majority of them i.e., 44.61 per cent fell under the category of moderate level of life skills. Apart from this 20.76 per cent were in the category of high knowledge level of life skills and 34.61 per cent respondents had low level of knowledge, whereas, 41.79 per cent girls respondents had low level of knowledge regarding different life skills and only 15.67 per cent were in the category of high level of knowledge.

Table 4
Frequency and Percentage Distribution of Government and Private
School Respondents on Life Skills Knowledge Scores

Score Range	Categories	Boys (N = 132)		Girls (N = 132)	
		Frequency	Percentage	Frequency	Percentage
293-400	High knowledge	19	14.39	29	21.96
186-293	Moderate knowledge	60	45.45	55	41.66
80-186	Low knowledge	53	40.15	48	36.36

Table 4 indicates the knowledge of life skills among government and private school respondents. Among government school respondents 45.45 per cent were in the category of moderate level of knowledge whereas 40.15 per cent respondents had low level of knowledge and only 14.39 per cent showed high level of knowledge regarding life skills. Among private school respondents, majority 41.66 per cent were in the moderate level of life skills, 21.96 per cent respondents showed high knowledge of life skills and 36.36 per cent fell under the category of low level of knowledge regarding various life skills.

Table 5
Mean and SD Scores of Respondents on Life Skills Knowledge Scores

Dimensions of life skills	N=264		
	Mean	SD	M+_SEM
Cognitive skills			
Decision making	23.47	6.10	0.375
Problem solving	25.89	5.86	0.368
Critical thinking	28.13	5.04	0.310
Creative thinking	23.88	5.37	0.330
Social skills			
Empathy	28.57	4.81	0.296
Effective communication	23.90	6.13	0.377
Interpersonal relationship	27.28	5.17	0.318
Self-management			
Self awareness	26.71	5.27	0.324
Coping with emotions	24.09	5.30	0.326
Coping with stress	23.31	4.58	0.282
Overall	255.23	15.37	0.9464

Table 5 depicts the knowledge scores on life skills among adolescent and the overall knowledge mean score is 255.23 and SD is 15.37. Respondents obtained higher knowledge mean scores in the dimension of empathy (28.57) followed by critical thinking (28.13); interpersonal relationships (27.28) and self-awareness (26.71). Out of the three dimensions of life skills (cognitive skills, social skills and self-management skills) respondents scored high mean on social skills (empathy, interpersonal relationships and effective communication) in comparison to other dimension of life skills. The low scores knowledge areas are coping with stress (23.31), effective communication (23.90), creative thinking (23.88) and decision-making (23.47).

Table 6
Mean and SD Scores of Boys and Girls Respondents
on Life Skills Knowledge Scores

Dimensions of life skills	Boys (N=130)		Girls (N=134)		't' value
	Mean	SD	Mean	SD	
Cognitive skills					
Decision-making	24.81	3.75	23.07	2.57	4.393**
Problem-solving	26.77	3.18	25.61	3.40	2.871**
Critical thinking	28.42	3.26	28.53	3.06	0.393
Creative thinking	23.69	4.57	23.50	5.21	0.315
Social skills					
Empathy	28.53	3.64	29.88	2.45	3.878**
Effective communication	24.87	4.85	23.77	4.72	1.867
Interpersonal relationship	26.72	3.70	27.95	3.04	2.946**
Self-management					
Self-awareness	27.61	3.77	26.04	3.16	3.691**
Coping with emotions	23.20	2.53	22.80	2.26	1.602
Coping with stress	23.76	4.20	21.89	4.58	3.462**
Overall	258.94	13.28	252.85	11.52	3.980**

** Significant at 0.01 level of significance

Table 6 presents the gender wise knowledge scores on different dimension of life skills. The overall mean score obtained by boys is 258.94 and girls is 252.85. The calculated t value is higher than the table, which clearly shows the significant difference between the knowledge of life skills among boys and girls respondents. Girls obtained higher knowledge scores on empathy (29.88), interpersonal relationship (27.95) than boys and there is significant difference in these areas. Apart from this boys scored higher knowledge mean scores in coping with stress (23.76), self-awareness (27.61) decision making (24.81) and problem-solving (26.77) in comparison to girls' respondents and t values indicate Significant difference between the knowledge level of life skills among boys and girls respondents.

Table 7
Mean and SD Scores of Government and Private School
Respondents on Life Skills Knowledge Scores

Dimensions of life skills	Government		Private		't' value
	schoo	(N=132)	schoo	(N=132)	
	Mean	SD	Mean	SD	
Cognitive skills					
Decision-making	24.58	3.92	23.20	4.23	2.76**

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Problem-solving	25.21	3.19	26.22	3.41	2.48*
Critical thinking	27.79	3.56	28.23	3.28	1.10
Creative thinking	23.43	3.22	24.31	3.54	2.11*
Social skills					
Empathy	28.37	3.40	28.72	3.11	0.360
Effective communication	22.20	3.51	24.19	3.43	4.73**
Interpersonal relationship	27.09	3.68	27.73	4.06	1.36
Self-management					
Self-awareness	25.81*	4.26	27.17	3.51	2.83**
Coping with emotions	24.72	3.63	24.35	3.09	0.902
Coping with stress	23.97	3.12	22.89	3.76	2.54*
Overall	252.88	14.17	257.36	12.02	2.788**

** Significant at 0.01 level of significance

* Significant at 0.05 level of significance

In the analysis of Table 7, it has been found out that there is significant difference between the overall knowledge mean scores among respondents of government school (252.88) and respondents of private school (257.36). Respondents of government school scored higher knowledge mean on decision-making (24.58), followed by coping with stress (23.97) than private school respondents. Whereas, the knowledge scores obtained by private school respondents on problem solving (26.22), effective communication (24.19), self-awareness (27.17) are higher in comparison to government school respondents.

Table 8
Association of Life Skills Knowledge with Socio Economic Status of Adolescents

Socio-economic Status	Life Skills Knowledge			Total
	Low knowledge	Moderate knowledge	High knowledge	
Low SES	40	37	8	85
Middle SES	50	51	19	120
High SES	11	27	21	59
Total	101	115	48	264

Table 8 shows the association of life skills knowledge with respondents' socio-economic status. The chi-square value as calculated is found to be 15.33 (d.f. = 4, $p > 0.05$) at four degree of freedom, which is higher than the table value at 0.05 level of

significance. This analysis signified that socio-economic status of individual significantly affects their knowledge and skills.

Discussion

Adolescents across the world face many changes and challenges during this phase of life. It is important to equip the adolescents with the necessary skills to adopt the developmental changes and deal effectively with the demands and challenges of everyday life. Life skills refer to the knowledge that is essential for each and every member of the community to lead a healthy life. The present research was an effort to identify the knowledge level of life skills among adolescent boys and girls. The results of the study clearly illustrate the need for planning life skills intervention to target such youth towards developing their life skills and strengthening capacity of adolescents to handle problems and questions commonly encountered in daily human life.

The rapid pace of transformation in the social, economical, political and cultural set-up has shudder our youth at large. It is not only the expectations or the pressure from parents and teachers to excel in life but also the inability of adolescents to measure up to their own expectations that is worsening their situation. There is growing vulnerability of these young people to suicides, depression, drug abuse, violence, declined value system, stressful competitions, materialism and crimes which is distressing. Development of life skills means improving the personal effectiveness of young people, particularly those who are at risk. Our traditional education system is unable to fulfill needs of our adolescents and only focuses on intellectual development of students. Today's youth requires life skills to solve the mysteries of life enthusiastically and there is also a strong need to relate the education with the sensible aspect of life where adolescents can be skillfully made responsible for his/her behaviour or actions. Learning a variety of life skills prepare adolescents for a more successful life at home, school, in their communities and in the workforce. Now, schools are expected to impart life skills that are needed for the socialisation of young people and to prepare them for a productive and prosperous life.

We can conclude that for the all-round development of the adolescent life skills education should be compulsory and the school system needs to realise the importance of life skills education and provide slots in the school curriculum for the development of these skills. The use of the term life skill is at the initial phase of recognition in India and needs the support of various educationists,

administrators, policy makers and non-governmental agencies. So there is a need of a basic life education curriculum which along with educational/vocational training equips adolescents with the necessary skills and information to cope with the real problems, they face in real life. Life skills are effective tools to empower adolescents to act, take initiative and charge of their lives and life skills education should be designed to put together knowledge and expertise about how education can best support healthy human development.

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An Empirical Inquiry into Status of Suicidal Ideation among Higher Secondary Students

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ABSTRACT

Objective: Suicidal ideation is generally considered as Non-fatal Suicidal Behaviour (NFSB) by most researchers. Across different cultures, the prevalence of NFSB has been found to be alarmingly high among adolescents. As there is no published study estimating prevalence rates in India, a study was conducted on adolescents in Varanasi city to find prevalence of NFSB.

Method: Data was collected from 666 higher secondary students through Suicidal Behaviour Questionnaire (SBQ) following descriptive survey method.

Results: Three per cent of the participants were found to have higher level of Suicidal Ideation and 4.9 per cent have moderate level of thought. 38.8 per cent students had average level of suicidal ideation and 53.3 per cent were found to have negligible amount of this thought. The item wise analysis showed that 56.27 per cent of students really thought for committing suicide, whereas, 46.94 per cent students accepted to have attempted to kill themselves. Female participants were found to have more suicidal ideation than their male counterparts. Significantly, higher level of suicidal ideation was found among Class XII students in commerce stream and also among the students studying in CBSE Board schools.

Conclusions: There is high prevalence of frequency of suicidal ideation and in communication of suicidal thoughts to others. Attitude and expectation of actually attempting suicide is also high among adolescents who need urgent intervention to remediate this serious problem.

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Background of the Study

Well-being of adolescents is largely the product of interactions among the multiple context in which adolescents are embedded (Resnick et al., 1997). In India there is a heavy academic and social pressure that results in negative emotional states and more internalising problems (Verma; Sharma; Larson, 2002). In many studies of self-harm, academic pressure was found to be associated with suicidal ideas and occurrence of deliberate self-harm (Verma et al., 2002; Krishnakumar et al., 2005; Lai et al., 1992). Suicide is considered to be the second most common cause of death in adolescents in industrialised countries, and high rates are reported from India as well (Aron et al., 2004; Rey et al., 1997).

The suicidal rates are different for each country, but the increase among young people is very prominent everywhere (Lubin et al., 2001; Bilici et al., 2002). The same situation is valid for suicidal thoughts as well (kjoller et al., 2000; Mazza, 2000). In addition to it, one of the most worrying factor is the death of student. According to a survey of National Crime Records Bureau in 2009, among the total suicidal victims reported in 2009, 5.3 per cent (n=1, 27,151) were students. The data discussed so far show that basically students studying in schools and universities are the vulnerable group in context of suicidal ideation. There could be several factors which contribute to this tendency with major share of academic stress and anxiety. Parental pressure to perform well in studies and a competition-oriented environment also creates a serious predicament before students. If we look deeply at this scenario, we all will agree that somehow the family environment and the whole social set-up is responsible for the suicides of the students. A student really gets depressed when he is not able to secure good marks in the examination, along with the feeling of shame that he has to face in front of his classmates. There is a constant pressure from his family also to perform well. When a student is unable to meet these pressures for good performance and for getting a good job, last way out for him becomes 'death' (Bhut, 2010). Therefore, it is high time when studies should be conducted in this area to save our future generation from this catastrophic incident. But, surprisingly such studies are very less to investigate the prevalence of suicidal ideation among adolescents who are usually at higher secondary level of schooling. In Indian context, there is absolute dearth of such studies. Hence, the investigator conducted a study to find out empirical answers of the following questions:

1. What is the level of suicidal ideation among higher secondary students?
2. If some personal and demographic variables like gender, grade, academic stream and board of study affect suicidal ideation?

Objectives of the Study

1. To study the prevalence of suicidal ideation among higher secondary students.
2. To study suicidal ideation among higher secondary students with respect to their
 - Gender
 - Grade
 - Academic stream
 - Board of school

Assumptions and Hypotheses

In order to achieve first objective of the study, an assumption was made that the higher secondary students hold an identifiable and measurable degree of suicidal ideation and for next objective of the study, following null hypotheses were framed:

- There is no significant difference among higher secondary students in suicidal ideation with respect to their gender.
- There is no significant difference among higher secondary students in suicidal ideation with respect to their grade of study (i.e., Classes XI & XII).
- There is no significant difference among higher secondary students in suicidal ideation with respect to their academic stream (i.e., Science, Arts and Commerce).
- There is no significant difference among higher secondary students in suicidal ideation with respect to their administrative board of school (i.e., UP Board and CBSE Board).

Methodology

Descriptive survey method has been applied to achieve the objectives of the study.

Population and Sample

The target population of the present study consisted of higher secondary students of different CBSE and UP Board students of urban area of Varanasi. Ten schools were selected randomly and all the students of Classes XI and XII of selected schools were taken as sample

for data collection. In this way the sample of the study was composed of 666 higher secondary students comprising 226 boys and 440 girls. The sample was stratified across stream and board of study.

Measuring Instrument

Suicidal Behaviour Questionnaire as developed and standardised by Linehan (1981) was used for this investigation. A written approval was taken by the developer through E-mail to adapt and modify the tool according to Indian socio-cultural set-up. The tool consisted of four items and it uses the Rating Scale to measure the thought of suicide or suicidal attempt. The tool also measures its frequency, and the communication of suicidal thoughts to others, and the attitude and expectation of actually attempting suicide. The items were translated into Hindi and necessary expert consultation was done to establish its validity in Indian setting. There were four items in scale i.e., "Have you ever thought about or attempted to kill yourself?"; "How often have you thought about killing yourself in the past year?"; "Have you ever told someone that you were going to commit suicide, or that you might do it?" and "How likely is it that you will attempt suicide someday?" The responses were to be given in a rating scale of 1-5. The face validity and content validity of the scale were established from the expert of psychology, education and sociology.

The Split half reliability of the tool was found to be 0.82 and test-retest reliability was 0.88, which is sufficiently high to be used as reliable scale.

Data Collection

The researchers would like to mention here that a high degree of fear was exposed among school principals to tackle such a sensitive issue among students. Many of the principals denied administering such tool as they did not want to raise this issue before students. Such experience itself shows that the issue of suicide among students is not being addressed properly in our schools. Instead of having a healthy dialogue with students on this issue, administrators are overlooking and trying to turn face from this bitter reality. During the data collection of the study, need of serious counseling was felt on the part of principals and teachers. The researchers somehow succeeded to convince some principals of the schools and got permission for data collection.

Results

Status of Suicidal Ideation

The analysis of the study shows that out of 666 students, 355 (53.3 per cent) students had zero or negligible suicidal ideation, whereas 258 (38.8 per cent) had average level of suicidal ideation, 33 (4.9 per cent) students had moderate level of suicidal ideation, and 20 (3 per cent) students had higher level of this thought.

Although the status of suicidal ideation was clear with the overall score in scale but in order to get comprehensive status of suicidal thought, item wise analysis was also done. The itemwise analysis revealed that 175 (26.28 per cent) participants responded positively for item no. 1 i.e., 'they have thought about or attempted to kill themselves'. Item no. 2 was positively responded by 146 (21.92 per cent) students which asks students that 'How often they thought about killing themselves in the past year'. About 88 students (13.21 per cent) responded that they have shared their feelings with others about their planning of committing suicide as revealed by the responses of item no. 3. The expectation of actually committing suicide in future was positively responded by 232 (34.83 per cent) participants.

Gender difference in Suicidal Ideation

One of the objectives of the study was to study if gender difference exists in suicidal ideation. The related null hypothesis was formulated that 'there is no significant difference among higher secondary students in suicidal ideation with regard to gender' and was tested at 0.05 level of significance using t-test. The table-1 below provides the statistical details:

Table 1
Gender Difference in Suicidal Ideation

Gender	N	Mean	SD	Standard error of difference	t-value
Male	226	1.65	2.98	0.26	1.48
Female	440	2.03	3.29		

As it is evident from Table 1 that t-value obtained was not significant at 0.05 level, it is concluded that male and female students do not differ significantly in terms of suicidal ideation and the related null hypothesis was accepted.

Effect of Grade on Suicidal Ideation

In order to study the effect of grade on SI, another null hypothesis was framed that 'there is no significant difference among higher secondary students in terms of suicidal ideation with respect to grade'. The hypothesis was tested at 0.05 level of significance using t-test. The Table 2 given below provides the statistical details:

Table 2
Effect of Grade on Suicidal Ideation

Grade	N	Mean	SD	Standard error of difference	t-value
XI	382	1.86	3.38	0.25	0.48
XII	284	1.98	2.92		

The finding of Table 2 indicated that Class XII grade students had higher suicidal ideation (Mean = 1.975) than that of Class XI grade students (Mean = 1.856) but this difference was not significant and the related null hypothesis was accepted.

Effect of Academic Stream on Suicidal Ideation

At higher secondary level, students are divided into different study streams, but the major popular stream which is mostly available in all the schools are science, arts and commerce. The highest number of students is also found in these streams. Therefore, in present study three basic streams i.e., science, arts and commerce were chosen for the analysis.

The related null hypothesis 'there is no significant difference among higher secondary students in terms of suicidal ideation with respect to academic stream' was tested using F-test at 0.05 level of significance. Table 3 given below provides the result of statistical analysis.

Table 3
Effect of Academic Stream on Suicidal Ideation

	Sum of Squares	df	Mean Square	F-value
Between Group	64.08	2	32.04	3.17*
Within Group	6712.15	663	10.12	
Total	6776.23	665		

* Significant at 0.05 level.

The obtained F-value shows that all the three groups differ significantly in terms of suicidal ideation. Hence, the related null hypothesis was rejected. Further, in order to study mean difference between academic streams, consequent t-test was applied. The results are shown in Table 4 below.

Table 4
Mean Differences in Suicidal Ideation among Academic Streams

Stream	N	Mean	SD	t-value
Arts	271	1.54	2.90	2.13* (df=383)
Commerce	114	2.24	3.08	
Science	281	2.13	3.47	0.28 (df=393)
Commerce	114	2.24	3.08	
Science	281	2.13	3.47	2.19* (df=550)
Arts	271	1.54	2.90	

*Significant at 0.05 level

The Table 4 shows that arts and commerce students differ significantly in terms of suicidal ideation. The mean score of commerce students shows that level of suicidal ideation was highest among the other two academic streams. Arts students had lowest suicidal ideation, whereas, science students were slightly lower than commerce students in terms of suicidal ideation. Further, the mean difference between science and commerce students was not found significant at 0.05 level as there was a slight mean difference between the groups. Lastly, the mean difference between Arts and Science students was also found significant at 0.05 level. Thus, it is concluded that among the academic streams, commerce and science stream students had significantly higher suicidal ideation than arts students in which highest suicidal ideation exists among commerce stream students.

Effect of Board of Study on Suicidal Ideation

The suicidal ideation among higher secondary students was also analysed according to their administrative board of study i.e., CBSE board and UP Board. The related null hypothesis 'there is no significant difference among higher secondary students in terms of suicidal ideation with respect to board of school' was tested using t-test at 0.05 level. The Table 5 given below provides the result.

Table 5
Effect of Administrative Board of Study on Suicidal Ideation

Board of School	N	Mean	SD	Standard error of difference	t-value
CBSE	250	2.26	3.42	0.25	2.22*
UP Board	416	1.69	3.03		

* Significant at 0.05 level (df = 664).

It is clear from Table 5 that CBSE Board students (Mean = 2.260) have higher suicidal ideation than UP Board students (Mean = 1.694) and this difference was also found significant. Therefore, it is concluded that the students studying in CBSE schools have higher suicidal ideation than their peers in UP Board schools.

Discussion

The findings of the present study suggest that out of 666 participants, 311 (46.7 per cent) could be diagnosed as having suicidal ideation, either in varying intensity. Rest of the 355 participants had 0 score in the test. Out of 311 participants who were diagnosed as having suicidal ideation, only 88 had shared their feelings with others. It means rest of the students who hadn't shared their feeling of suicidal attempt, feared of disclosure of their feelings or they did trust anybody. The situation is not good as they are suppressing their feelings and not getting any companion in form of friends, parents, siblings or teachers. The situation is also a threat to their psychological well-being. It is also revealed that 175 participants had thought about killing themselves and 146 had attempted to commit suicide by various means. In addition to it, out of 311 students, 232 had accepted that they can attempt suicide in future. The findings expose a serious picture of poor mental health among our adolescents today. Somehow our societal set-up or educational environment has failed to develop courage and ability of adjustment in our adolescent to face the adverse situation confidently, that they feel in future they may commit suicide. In context of gender difference in suicidal ideation, girls were found to have higher suicidal ideation than boys, but this difference was not significant. Differences between genders observed in the present study are in agreement with previous findings (Rubies & Hollenstein, 2009; Friedrich, Reams & Jacobs, 1982) who also found higher suicidal ideation among female. Girls in our society are under

more pressure than boys. Family's attitude towards continuing their education is found comparatively unfavourable than boys and girls also found themselves in a state of confusion if they fail to perform better in their academics. Pressure of getting married early may also be one of the causes. All these factors must have contributed towards higher suicidal ideation in girls.

In case of stream of study, commerce students had highest suicidal ideation followed by science and arts students. In the age of liberalisation, privatisation and globalisation there is sudden upsurge of job opportunities in corporate sector and students' attention shifted to commerce stream from science. Although, this created more job opportunities but at the same time it raised the level of aspiration of job aspirants as well as the intensity of competition. Today students have intense feeling of getting entry into any multinational company in managerial position, fear of being failure at the same time paves way for suicidal ideation. At the same time, science students are also under stress to qualify medical, engineering and other professional entrance test which they perceive to be the only golden opportunity for them. In case of Arts students, their job profile starts basically after graduation where they have more job opportunities based on Arts stream. Thus, looking at the extent of studies in adolescent period and job opportunities according to nature of study stream the finding is quite specific and implies urgent intervention strategies. Higher suicidal ideation in Class XII students was found as compared to Class XI students, although it was not significant. It seems that higher expectation leads to higher suicidal ideation as Class XII students have specific expectations related to studies and career as compared to Class XI students. Students studying in CBSE schools were found to have higher suicidal ideation as compared to students of UP board. This might be due to higher socio-economic status of students of CBSE schools. The CBSE schools of the sample were mostly of elite nature catering to educational needs of central government employee's ward whereas students of UP board were from poor socio-economic status thus, leading to different and might be lower expectations related to studies and job opportunities.

Suggestions

On the basis of suicidal ideation status exposed during the study, following suggestions in the form of educational implications are made.

1. The sample of the study showed 47 per cent of the students have suicidal ideation. This needs urgent remediation with due care

from policy makers to practitioners. There is need to design early intervention and remedial programmes to minimise suicidal ideation.

2. The global economy has created manyfold job opportunities, but it seems that it has also become a threat to mental health of its aspirants particularly in case of commerce students. Thus, commerce students need to be given special attention in such remedial programmes.
3. Special care needs to be given during terminal stages of schooling as Class XII students were found to have higher suicidal ideation than their younger counterparts. During this phase, the pressure of studies is paramount in which job insecurity makes it more unmanageable in some cases.
4. The findings suggest that students of CBSE schools have higher suicidal ideation. Thus, parents, teachers and other school personnel need to keep a student-friendly environment in these schools so that students may share their problems and do not think of taking adverse step.
5. During data collection, students expressed that they are under pressure due to higher parental expectations. Such pressure was found to be high among parents with higher socio-economic status. Thus, parents, teachers and others should assist the child in developing the courageous attitude of accepting all situations in their life and should discuss numerous job opportunities one can get even after poor performance in one of the exams.
6. Girls were also found to be among the vulnerable group. Therefore parents, teachers and other stakeholders should try to take girls' education as seriously as of boys so that girls may feel confident for their future opportunities and come out from the stress of their early marriage.
7. A regular counsellor should compulsorily be appointed in all schools so that he may assist all students to resolve mental conflict and rescue them from stress situation.
8. To sum up, it is the responsibility of all educational stakeholders to tackle this problem sensibly and efficiently. Some programmes have already been started to minimise academic stress but more dedicated efforts are needed to resolve today's youth from such predicament so that our future generation may stand with firm footage and face the hardship of life courageously.

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Gender Differences in Environmental Sensitivity among Primary School Students

SHARAD SINHA* AND SEEMA TANEJA**

ABSTRACT

Environmental sensitivity is a significant objective of environment education to create an emotional empathy and bonding with environment so as to enhance environmental responsible behaviour. The purpose of this investigation was to study the environmental sensitivity of primary school students in relation to their gender and locus of control. The sample comprised 400 primary school students of Rohtak. 200 students were with external locus of control (123 boys and 77 girls) and 200 students with internal locus of control (119 boys and 81 girls). The tools employed were environmental sensitivity scale (developed by authors) and locus of control by Dr. Roma Pal (1982). Mean, S.D., and ANOVA were used to analyse the data.

Introduction

Environmental sensitivity has been described as one of the main objectives of environmental education for long thirty years but yet to be achieved. It is one of the several variables that contribute to the creation of citizens who will work to maintain a varied, beautiful and resource rich planet for future generations (Tanner, 1980). In Hungerford and Volk's words it is prerequisite or at the very least a variable that would enhance a person's decision-making, when environmental actions are taken.

Environmental sensitivity refers to an empathetic view of the environment and of its problems and issues. It is a view that respects ecological stability and promotes the idea that human beings must

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live in harmony with the natural environment. Research indicates that environmental sensitivity is more prevalent among those who behave in environmentally responsible ways than among those who do not (Marcinkowski 1989; Sia, Hungerford and Tomera 1985-86; Sivek and Hungerford 1990).

Environmental sensitivity is a predisposition to take an interest in learning about the environment, feeling concern for it and acting to conserve it, on the basis of formative experiences. Chawla (1998) found that there is no single experience that affects sensitivity but a combination of factors, such as

- childhood experiences in nature;
- experiences of environmental destruction;
- pro-environmental values held by the family;
- pro-environmental organisations;
- role models; and
- education.

Seven variables were found to be statistically significant in predicting responsible environmental behaviour. They were (1) level of environmental sensitivity; (2) perceived knowledge of environmental action strategies; (3) perceived skill in using environmental action strategies; (4) psychological sex role classification; (5) individual locus of control; (6) group locus of control and (7) attitude towards pollution. Three major behaviour predictors (perceived skill in and knowledge of environmental action strategies and environmental sensitivity) need to be addressed in curriculum development and instructional practice (Sia et al, 1985-86). Determinants of environmental sensitivity include cultural socio-structural group level and individual factors. Both mother's language and gender are among the determinants of the relative position of a person in the concrete socio-cultural symbolic landscape, which shape his/her socialisation towards certain attitude and beliefs (Chawla, 1998). Combination of adventure recreation and adventure education helped to develop as well as to enhance the environmental sensitivity and also the feelings of responsibility to care for our environment (Olson, 1999). Outdoor experiences, environmental destruction and positive formal education can be cited as life experiences instrumental in the development of environmental sensitivity (Sward, 1999). Environmental education programmes like field trips, hiking, camps and adventure activities purport to enhance student's appreciation and sensitivity towards the environment, outdoor behaviour and social relationship (Palmberg and Kuru, 2000).

Gender differences in environmentalism reflect real and symbolic asymmetry between categorical groups in the society. Subordinate groups tend to be more environmentally sensitive and express stronger beliefs and attitudes associated with environmentalism due to their greater vulnerability and having less power valuing altruism (Kalof et al, 2002). Sub-dominant social groups express greater environmental sensitivity as compared to the dominant ones. Men and women have also different patterns of environmental sensitivity (Rausdeep et al, 2004). Students showed significant environmental sensitivity when taught by action oriented experiential learning strategies (Harjai, 2007). Nature documentaries have a positive effect on students' environmental sensitivity (Barbos et al, 2009).

Locus of Control

Locus of control refers to one's perceived ability to bring about desirable outcomes in the world through one's actions. This concept deals with an individual's sense of personal effectiveness: that their actions and words ultimately do or don't make a difference in the world. Individuals with an 'internal' locus of control have a high expectancy of reinforcement for their actions and tend to take action with confidence. Those with an 'external' locus of control believe that situations are out of their control and lie in the hands of those more powerful.

According to Ramsey and Hungerford (2002) the research indicates that responsible environmental behaviour is associated with the following variables:

- Environmental sensitivity (i.e. feeling of comfort in and empathy toward natural areas).
- Knowledge of ecological concepts.
- Knowledge of environmental problems and issues.
- Skill in identifying, analysing and evaluating environmental problems and solutions.
- Beliefs and values (i.e. beliefs are what individuals hold to be true and values are what they hold to be important regarding problems/issues and alternative solution/action strategies).
- Knowledge of environmental action strategies (i.e., consumerism, political action, persuasion, legal action and physical action).
- Skill in using environmental action strategies.
- Internal locus of control (i.e. the belief that by working alone or with others, an individual can influence or bring about the desired outcomes).

By teaching citizen action skills, educators can help build up student's locus of control. Of course, without a desire to act, there will be no action. We can add strength to a student's locus of control by using positive reinforcement engaging hiking groups in leadership and empowerment activities that allow them to be more self sufficient and telling them stories of other young students who have made a positive difference in the world.

Locus of control was significantly associated with environmental activism and willingness to engage in personal conservation and anti-pollution activities (Robert and Mark, 1981). A person with internal locus of control has belief in his own attempts and efforts and thus he believes in changing the world and solving the environmental problems by his own efforts (Rothbaum, 1982). Internals' approach towards solving environmental problems was also found to be positive (Findley and Cooper, 1983). Individuals with a stronger internal locus of control are more likely to participate in environmentally responsible behaviour because they believe their actions can help precipitate change (Newhouse, 1990). There was a significant correlation between a person's belief that they can influence the environment and that person's environmentally responsible behaviour (Smith-Sebasto and Fruntiner, 1994). There is a positive relationship between internality and pro-environmental orientation (Osama, 2000). People started taking interest in the problems concerned with the environment and their possible solutions with change in their locus of control (Harris and Case, 2001). The students with marked changes in their locus of control showed more belief, more control over their own efforts and showed the tendency to solve the environmental problems and to work over their solutions willingly (Thielker, 2004). Internals exhibited better in their environmental sensitivity than externals (Devender, 2007). Behavioural intentions, environmental affects and locus of control could be accounted as significant predictors of self-reported environmentally friendly behaviour (Alp et al, 2008).

Rationale of the Study

Children's and adolescent's opinion and knowledge concerning the environment have been under research although children's environmental education has existed for many years. However, from educational point of view, attitudes and perceptions of the future generation are crucially important. Their views and awareness should be understood as they will be responsible for demands on the remaining natural resources (Karhonen, 2004).

Young people comprise nearly 30 per cent of the global population and will be the decision-makers of the future. Their way of thinking about the environment is already shaping the world of tomorrow. The involvement of today's youth in environment and development, decision-making and in the implementation of programmes has been internationally recognised as critical to sustainable development (UNEP).

Today's young children are tomorrow's leaders. It seems logical that the behavioural changes towards environment will be easier and more effective if students are environmentally sensitive.

The younger one starts, the better it is. Children are the future of the world so it is important to investigate their sensitivity related to the environment.

So the investigators proposed to investigate the environmental sensitivity of primary school students of Rohtak with internal and external locus of control.

Objectives

Following objectives were framed to conduct the study:

- To study the environmental sensitivity of primary school students.
- To compare the environmental sensitivity of primary school students with internal and external locus of control.
- To compare the environmental sensitivity of boys and girls of primary school.
- To compare the environmental sensitivity of boys and girls with internal and external locus of control.

Hypotheses

Hypotheses of the study were as follows:

H₁ There is no significant difference between total environmental sensitivity mean scores of primary school students with internal and external locus of control.

There is no significant difference between environmental sensitivity mean scores of students with internal and external locus of control with respect to

H_{1.1} Domain I - Empathy

H_{1.2} Domain II - Responsible environmental behaviour

H_{1.3} Domain III - Action strategies

H_{1.4} Domain IV - Love for environment

H₂ There is no significant difference between total environmental sensitivity mean scores of boys and girls of primary school students.

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There is no significant difference between environmental sensitivity mean scores of boys and girls of primary school with respect to

- H_{2.1} Domain I - Empathy
- H_{2.2} Domain II - Responsible environmental behaviour
- H_{2.3} Domain III - Action strategies
- H_{2.4} Domain IV - Love for environment
- H₃ There is no significant interaction between gender and locus of control with regard to environmental sensitivity mean scores.

There is no significant interaction between gender and locus of control with respect to

- H_{3.1} Domain I - Empathy
- H_{3.2} Domain II - Responsible environmental behaviour
- H_{3.3} Domain III - Action strategies
- H_{3.4} Domain IV - Love for environment.

Tools Used

Following tools were used for investigation:

Environmental sensitivity scale (Developed by the authors)

The authors followed Likert's method of summated ratings for the construction of the environmental sensitivity scale. Statements formed were both positive and negative. Initially, the authors selected 70 statements, area-wise, with the help of certain books on environment, environmental education and various research papers related to environmental sensitivity. The language of the statements was kept simple and clear to avoid any type of confusion. As the main aim of the researcher was to know the environmental sensitivity of primary school students, too much technical and very specific terms were avoided. Following four areas for framing the statements were considered.

1. Empathy towards environment.
2. Responsible environmental behaviour.
3. Action strategies.
4. Love for environment.

Item analysis was carried out by employing the 't' test for each of the statements for the higher and lower groups. Only those statements which showed a significant difference between high and low groups at least at 0.05 levels, were selected for inclusion in the final form of the scale. The final draft of the scale of environmental sensitivity consisted of 54 statements in four domains. There were 33 positive

statements and 21 negative statements. Each item alternative was assigned a weightage ranging from 4 (Strongly Agree) to 0 (Strongly Disagree) for favourable items. In case of unfavourable items the scoring was reversed, i.e. from 0 (Strongly Agree) to 4 (Strongly Disagree). The score of an individual was the sum total of items scored in all the four areas. Thus, the range of scores was from 54 to 216 with higher score indicating more environmental sensitivity and vice versa. Reliability of the scale was found to be 0.738.

Locus of control scale developed by Dr. Roma Pal (1982) to assess the internal and external locus of control of primary school students

The test consists of 25 statements. The statements of this test have been chosen according to the mental level of children between the age of 5 to 11 years. Scores to be given to the extremely positive response in a statement is 5, to the positive response is 4, 3 to the moderate response, and 2 and 1 score to be given to the negative and extremely negative response of a statement respectively. As the total number of items included remains 25, which clearly indicates that the minimum possible score in the test is 25 and maximum possible score is 125. The reliability coefficient was found to be 0.75 (Split-half method) and 0.82 (Test- retest method). The validity coefficient was found to be 0.78.

Sample

Purposive sampling was employed to the present study. Primary school students were selected on the basis of their internal and external locus of control. Locus of control scale was administered to 650 students of six schools of Rohtak. The scores of the students on locus of control were arranged in an ascending order, in accordance with the manual, and students with internal and external locus of control, were identified. Thus, 200 students with external locus of control which had 123 boys and 77 girls, and 200 students with internal locus of control, which had 119 boys and 81 girls were selected. So, the final sample comprised 400 students.

Method of the Study

Descriptive survey method of research was employed for the present study. The two independent variables were — gender which was studied at two levels, viz. boys (G_1) and girls (G_2); the variable of locus of control was studied at two levels viz internal (L_1) and external (L_2). To study the main effects and interaction effects of boys and girls

with internal and external locus of control on dependent variable environmental sensitivity ANOVA was employed.

Data Collection

Environmental sensitivity scale was given to the selected sample of 400 students on the basis of internal and external locus of control. They were asked to follow instructions and to give response to each and every statement in the scale. Students were assured that their responses were needed just to check their views, not for examination purpose. Participants completed the questionnaire individually and were not permitted to consult anyone. However, they were allowed to ask questions to the researcher regarding the questionnaire items.

Data Analysis

The scores as measured by environmental sensitivity scale were calculated for students with internal and external locus of control for the total environmental sensitivity and all the domains involved were also calculated separately for each student and were subjected to the analysis of variance. Two-way analysis of variance was employed separately for all the four domains and for the total environmental sensitivity scores.

Means, SD's (Standard Deviation) of different sub samples and the summary of ANOVA for 2×2 design for scores of total environmental sensitivity as well as its four domains of different sub samples were calculated separately and have been presented in Tables 1 and 2.

Table 1
Means and SD's of Sub Samples of Scores on Total Environmental Sensitivity and its Various Domains

		G ₁ Boys	G ₂ Girls	Total
Total	L ₁	M = 152.13 SD = 30.16 N = 119	M = 160.42 SD = 24.26 N = 81	M = 155.49 SD = 28.16 N = 200
	L ₂	M = 131.94 SD = 23.33 N = 123	M = 146.88 SD = 25.54 N = 77	M = 137.69 SD = 25.22 N = 200
	Total	M = 141.87 SD = 28.69 N = 242	M = 153.82 SD = 25.73 N = 158	
Domain I	L ₁	M = 25.34 SD = 5.4 N = 119	M = 26.64 SD = 4.72 N = 81	M = 25.87 SD = 5.16 N = 200

Note: L — Locus of control
G — Gender type

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	L ₂	M = 23.93 SD = 4.85 N = 123	M = 25.21 SD = 5.4 N = 77	M = 24.42 SD = 5.09 N = 200
	Total	M = 24.62 SD = 5.16 N = 242	M = 25.94 SD = 5.1 N = 158	
Domain II	L ₁	M = 51.03 SD = 11.72 N = 119	M = 53.84 SD = 10.04 N = 81	M = 52.17 SD = 11.13 N = 200
	L ₂	M = 44.2 SD = 9.31 N = 123	M = 48.17 SD = 10.54 N = 77	M = 45.72 SD = 9.97 N = 200
	Total	M = 47.56 SD = 11.09 N = 242	M = 51.08 SD = 10.64 N = 158	
Domain III	L ₁	M = 47.32 SD = 10.6 N = 119	M = 49.91 SD = 8.69 N = 81	M = 48.37 SD = 9.93 N = 200
	L ₂	M = 40.63 SD = 9.12 N = 123	M = 46.53 SD = 9.12 N = 77	M = 42.9 SD = 9.54 N = 200
	Total	M = 43.92 SD = 10.41 N = 242	M = 48.27 SD = 9.03 N = 158	
Domain IV	L ₁	M = 28.44 SD = 6.57 N = 119	M = 30.02 SD = 5.28 N = 81	M = 29.08 SD = 6.12 N = 200
	L ₂	M = 23.19 SD = 6.27 N = 123	M = 26.97 SD = 5.96 N = 77	M = 24.64 SD = 6.41 N = 200
	Total	M = 25.77 SD = 6.93 N = 242	M = 28.54 SD = 5.81 N = 158	

Table 2
Summary of 2x2 ANOVA for Total Environmental Sensitivity
Scores and its Various Domains

	Source of variance	df	Ss	Mss	F ratio	Level of significance
Total	L	1	26901.674	26901.674	39.536**	Significant at 0.01 level
	G	1	13071.445	13071.445	19.21**	Significant at 0.01 level
	LxG	1	1005.031	1005.031	1.477	Not significant
	Error	396	269452.144	680.435		

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Domain I	L	1	194.269	194.269	7.472**	Significant at 0.01 level
	G	1	158.795	158.795	6.107*	Significant at 0.05 level
	L × G Error	1 396	6.48E-03 10296.508	6.48E-03 26.001	0	Not significant
Domain II	L	1	3737.609	3737.609	34.186**	Significant at 0.01 level
	G	1	1097.856	1097.856	10.042**	Significant at 0.01 level
	L × G Error	1 396	32.575 43294.901	32.575 109.331	0.298	Not significant
Domain III	L	1	2420.34	2420.34	26.787**	Significant at 0.01 level
	G	1	1722.724	1722.724	19.067**	Significant at 0.01 level
	L × G Error	1 396	260.757 35779.966	260.757 90.353	2.886	Not significant
Domain IV	L	1	1579.77	1579.77	43.815**	Significant at 0.01 level
	G	1	733.835	733.835	20.353**	Significant at 0.01 level
	L × G Error	1 396	98.552 14277.993	98.552 36.056	2.733	Not significant

** Significant at 0.01 level of significance

* Significant at 0.05 level of significance

NS Not significant

Main effects

Locus of control (L)

F ratio for the students with different locus of control was found to be significant for total scores on environmental sensitivity and for domain I, domain II, domain III and for domain IV at 0.01 level of significance. Hence H_1 , $H_{1.1}$, $H_{1.2}$, $H_{1.3}$, and $H_{1.4}$ were rejected. Students with internal locus of control exhibited better scores on environmental sensitivity with respect to domain I, i.e., empathy, domain II responsible environmental behaviour, domain III, action strategies and domain IV, love for environment than students with external locus of control.

Gender type (G)

F ratio for the difference between gender was found to be significant

for total scores on environmental sensitivity and for domain II, domain III and domain IV at 0.01 level of confidence and for domain I at 0.05 level of confidence. Hence H_2 , $H_{2.1}$, $H_{2.2}$, $H_{2.3}$ and $H_{2.4}$ were rejected. Girls exhibited better total environmental sensitivity and sensitivity with respect to domain I (empathy) domain II (responsible environmental behaviour) domain III (action strategies) and domain IV (love for environment) than boys.

Interaction effect

Locus of control and gender

(L×G)

F ratio for the interaction between gender and locus of control was found to be not significant for total scores on environmental sensitivity, for domain I, domain II, domain III, and domain IV, even at 0.05 level of confidence. Hence H_3 , $H_{3.1}$, $H_{3.2}$, $H_{3.3}$, $H_{3.4}$ all were retained.

Findings

- Primary school students with internal locus of control exhibited better environmental sensitivity than their counterparts with external locus of control.
- With respect to domain I, i.e. empathy towards environment, students with internal locus of control exhibited better environmental sensitivity than students with external locus of control.
- The internals exhibited better responsible environmental behaviour, i.e. domain II of environmental sensitivity than externals.
- Students with internal locus of control exhibited better sensitivity towards action strategies, i.e. domain III than students with external locus of control.
- Students with internal locus of control exhibited more love towards environment, i.e. domain-IV of environmental sensitivity than students with external locus of control.
- Girls of primary school exhibited better environmental sensitivity than boys of primary school.
- Girls of primary school exhibited better empathy towards environment, i.e. domain I of environmental sensitivity than boys.
- Better responsible environmental behaviour, i.e. domain II of environmental sensitivity was shown by girls than boys.

- With respect to domain III, i.e. action strategies, girls exhibited better environmental sensitivity than boys.
- Girls of primary school exhibited more love for environment, i.e. domain IV of environmental sensitivity than boys of primary school.
- There was found no significant interaction between gender and locus of control with regard to total environmental sensitivity.
- There was found no significant interaction between gender and locus of control with regard to domain I (empathy) domain II (responsible environment behaviour) domain III (action strategies) and domain IV (love for environment).

Educational Implications

The results of this study revealed that primary school students with internal locus of control exhibited better environmental sensitivity than externals.

A good educational programme with a power of changing external locus of control to internal locus of control can be of great help to solve such environmental problems existing at a global level.

Educators must realise that locus of control has major effect on action behaviour. So in the primary stage, when the children are in the process of building their locus of control, they need to be taught in this sphere by providing number of experiences.

Action-oriented curricula should be formed that can create shifts in student's locus of control. This internal mechanism can be enhanced by the cumulative and consistent influence of family, home, school and real life experiences that support the importance of individual action. Teachers can add strength to a student's locus of control by using positive reinforcement, engaging hiking groups in leadership and empowerment activities that allow them to be more self.

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ERIC Projects Completed

Exploring and Identifying the Work Values among Junior High School Students

Principal Investigator

DR ARUN KUMAR TIWARI

Summary : 'Human Capital Theory', proposed in the field of industrial/organisation sciences, views human capabilities, their knowledge, skills, talents, efforts, and work habits as integral part of the capital of an organisation along with financial and physical resources. India, as a nation, is also an organisation. It has projected a vision of an agenda of development for 2020. This agenda can be realised only when the nation develops a human capital of high quality. Here the educationists and social scientists have major role to play. They will have to explore the means and modalities to develop such human capital. For this purpose, educational institutions appear as one of the most important sites for relevant interventions.

The work habits and work values would be an integral part of such human capital. It is unfortunate that despite strong advocacies in favour of dedication and hardwork, there do not seem to be high work values among people in general. Now, if we have to reach the target set by 'Agenda 2020', we have to analyse and investigate the scenario in order to prepare appropriate strategies of interventions to transform the situation. The studies have revealed that the work values formed during childhood and adolescence are found to be relatively stable over time. Based on these findings, it is advocated to work for such a curriculum at elementary education that may inculcate the essential values among the students of this level. The same is true for the inculcation of work values also. The work values determine how one feels (pleased, anxious, punished or stressed) while working. A person develops socialisation process (including the process of imitation, modelling and conformity) or educational processes. Thus, it is apparent that the education system can be used in order to generate positive work values.

With these presumptions, the present research project was planned in order to address the following major objectives:

1. Identification of work values available in curriculum, presently being taught at junior high school level.
2. Study the pattern of preferences and practices of work values prevailing among these students.
3. Examining the views of the stakeholders (e.g. parents, teachers, school administrator).
4. To develop a work value scale for junior high School students.
5. Examination of the variation in work values in relation to contextual variables (gender, rural-urban habitation and classes or grades).

The project was conducted in three phases. In Phase I, the textbooks of hindi, english and social studies of Classes VI to VIII prescribed by CBSE and U.P. Board were analysed for the content to find out the themes related to 'work'. Despite all the efforts and leniencies, only 83 references in total, were found where the work related themes were available in these textbooks. The number of these themes was 39 only. It was really a small number. Hence, it is suggested to include more themes containing references of work values in the syllabi.

In phase II, 30 students, 20 teachers, 30 parents and 20 administrative staff (serving in educational set-up) were interviewed with the help of a semi-structured interview schedule, which consisted of questions about the meaning of work, attitude towards work and work values. The obtained information analysed and some very interesting results were found. For example, 73 per cent of respondents were of the view that the students of classes VI to VIII understand the meaning of work. These respondents also felt that if a student does not understand the meaning of work, he/she cannot be made responsible for the same. It is a lapse on the part of guardians, teachers and society, which are to be blamed for this situation.

Phase III was the major part of the study. In this phase, the first task was to develop a reliable and valid scale to measure work values of students at elementary level. This scale was developed and used at the next stage of this phase. The prime objective of this stage was to examine the variations in work values across some contextual variables. These variables were: gender, rural-urban habitation and grades of the students (Classes VI, VII and VIII). The results indicated that gender played more significant role. The female students were found to have higher work values in comparison to their male classmates. Interestingly, they did not differ with each other on domestic work value and home assignment value. The rural and urban students also did not differ on these two factors, but they showed

patterns of differences on the rest of scores. Rural people had more positive feelings with work, whereas the scores on the knowledge through work were higher in urban students. The grades of the students also were found determining the variations in work values. The scores on the work values obtained in case of Class VII students were higher than that of Class VI, suggesting an improvement in work values at this stage. However, the scores of Class VIII students were not different with the scores of Class VII students. It indicated stagnation in development of work values after Class VII. From the efforts of interaction among these three variables, only one interaction effect (between gender and class) was significant. The female students of Class VI and VII scored higher in comparison to their male counterparts. Such difference was not obtained among Class VIII students. It also suggested above said stagnation after Class VII.

The findings of the study were found to have several policy implications. For example, the groups of students, teachers, parents and administrative staff, when interviewed in this study, expressed the view that the children in general understand the meaning of work. However, the children recognise the instrumental aspect of work only, in which it is believed that the work, when completed, gives some rewards of physical nature, such as money, meal or toy. They have no idea about the intrinsic aspect of work. Therefore, it can be suggested to make children aware about the intrinsic aspects of the work. The possibility of teaching them the 'skill' to work with a sense of non-attachment (*Anasakti*) should also be explored.

The parents, teachers and administrative staff were found to concede that the students cannot be blamed for not having proper work values. It is a failure of our system that has not been able to promote and nurture the work values among them. As a corrective measure, the entire education system should be re-evaluated focusing on its components that might have links with the development or work values. Also, the teachers should be given special training of instilling work values among their students. The parents should be provided suggestions and guidelines, useful in nurturing the work values in their children, at guardians meet.

The results indicated that the development of work values gets stagnated after Class VII. The policy makers should take notice of it. If, it is true the causes should be traced and action should be taken to remove them. The policy implications of other findings also are discussed in final report. This discussion can be of use for our policy makers, parents and teachers in developing the strategies for instilling the adequate work values among children who would shape the fate of the country in future.

Book Review

Vibrant Children's Library in the Digital Era

by Samantary, Moortimatee

PUBLISHED BY Pratibha Prakashan

PRICE ₹ 350. **PAGES** 159

The book highlights the importance of learning during the process of education from pre-school to higher secondary school. It has linked it to school education, school library as a centre of learning, live workshop and the quality of education. It has also shown the role that books play in Continuous and Comprehensive Evaluation (CCE). The importance of reading habits has been stressed among children in the book. Organising various books-related activities is central point of the book. The book also gives a brief outline on children's literature and salient features of a good children's book. The book is divided into 12 chapters. The introductory chapter explains the best ways to improve the quality of education by making it respond to the demands of the society to usher in social change, development and do away with the outdated social practices. This chapter also explains education as a social process, where participation of community in the education process has been shown as pre-condition to knowledge, which has been said to be created by the interaction of knower and knowee. Organisation of knowledge includes knowledge creation, knowledge accumulation and knowledge dissemination.

The next three chapters explain 'education and learning', 'role of school libraries in quality education' and 'the school library, a centre of learning and live workshop'. In these chapters, it is explained that education is a system, which acts as an agent for the transfer of knowledge as well as socialisation of individuals. According to the author, the characteristic of education as a social sub-system can be that education can serve as a powerful agent in building social individualism that helps to modulate the society. These chapters explain that school library plays a major role in bringing learning to the children of disadvantaged group; it helps

the teachers as well as pupils to learn to think logically, to work alone, and to work and play with others, etc. This book also explains that school library is the best place for learning. It helps all of us to do better work, be better citizens and to live useful, happy and full lives. These chapters seem to justify the need, scope and importance of school library. The three chapters include 'School library and Continuous Comprehensive Evaluation (CCE)', 'A brief outline on children's literature' and 'A good children's book'. These chapters explain that education is a continuous process. Evaluation has to be carried out in every possible situation or activity and throughout the period of formal education of people. Evaluation has to be continuous. The main purpose of evaluation has been shown to make a judgement continuous about the progress of the learner and measure achievement of the pupils at the end of instruction. According to the book, learning is basically to acquire the four major skills: listening, speaking, reading and writing. Chapter VI explains that children change their purpose reading according to the changing needs. This chapter has justified the selection of good children's book through knowledge and individual needs, interest and abilities as well as equal understanding of literature. The content, theme characterisation, style, format, and other consideration are the important criteria for evaluating children's fiction. The book highlights the characteristics of children's literature. Children's literature is the literature meant for moral instructions. The book also highlights dramatic changes that have taken place in children's publishing. Book clubs, book fairs and co-publications would all give children's book publishing a much needed boost. Another chapter also explains the attributes of children book's like: good central ideas, originality in idea, good hand writing style, characterisation, and sense of humour. The attributes shown in the book designed and written for children are limited vocabulary, short sentences, large-sized type 14 font, durable binding, etc.

The book also covers concern for fostering reading habits among children, 'NCF-2005 and Reading habit — A study and introduction to e-Books'. These chapters explain the importance of language, the importance of reading as education. The chapter has highlighted development of new words in everybody's conversation. The habit can become a healthy addiction and add to the information available in various topics, supplementing educational developments, etc. Next chapter explains the advantages of a good book or reading as an informative piece that makes an ideal companion. Books are shown to help in enjoying childhood thoroughly and to grow up, be able to

make full use of their abilities and their opportunities for service and happiness. School library is highlighted as provider of information and idea of thousands of years that are fundamental to functioning successfully in today's information and knowledge based society. Another chapter explains the increasing usage of the internet as the major cause of the rise in web-based publishing by the academic community. The electronic publishing has very specific non-book characteristics that distinguish it from print publishing and it has been highlighted. Electronic publications can be disseminated worldwide. Validation, authentication and copyright are the major issues concerned with e-publishing. E-books are easy to use and available on time. The book gives issues in e-book development from various perspectives. The role and potential of e-books in the spectrum of the scholarly content in electronic form is discussed well in the book. 'Librarian brings fresh thinking to e-book' is the outcome drawn out of this chapter.

The book also includes chapters on 'NCDL (National children's Digital Library), A survey' and 'vibrant library for children in the Digital Era'. This has a chapter on survey explaining children's books is important source in young people's life as these books contribute to the child's ability to be literate in today society. This chapter also explains the idea of 'collaborative digital library for children,' at national level. With the survey results as a supposition and the evidence, the book justifies the need of institutions, NGOs, publishers, authors, illustrators and parents working on a common platform.

Next chapter explains the four steps of cognitive development proposed by the project. The need of the library has further been emphasised on the child with the support of construction approach that constructs his knowledge by his own actions; children's book and programmers can be used as tools by parents to assist their children. This chapter explains that the key to successful school is through affection libraries as to balance study and reading with fun and activity that stimulate children and inspire them to explore further.

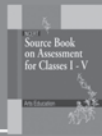
The book is an excellent treatise on the importance of learning during the process of education—pre-school to higher secondary school. This book highlights the ways and means of reaching out to children across the states making their school library vibrant in digital way. There are various ideas in the book with ample examples from different sources for digital books and their effective use. This book helps to understand that library can sharpen and enhance

Book Review

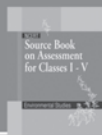
one's understanding and perspective in a big way. This book could help in motivating children and teachers to use library and develop reading habits, whereas it may help librarians and administrators to develop good libraries at all levels of education.

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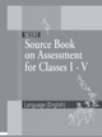
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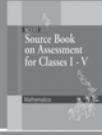
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