CONTENTS

EDITORIAL

The National Council of Educational Research and Training, New Delhi brings out a biannual refereed journal, the *Indian Educational Review*. This journal gives an opportunity to the educationists, researchers, teachers, teacher educators, planners and administrators for educational discourse on the issues of contemporary concerns. It provides a dynamic medium for effective communication. Researchers and Research scholars disseminate their research experiences among fellow researchers and research communities through papers, articles and research notes published in this journal. The present issue contains eight research papers and research notes besides two ERIC studies completed and two book reviews. This issue contains research papers on teacher education, special education, self learning instructions, job satisfaction, ICT and critical thinking etc. The issue also contains book reviews on the books titled "Early Childhood Care and Education" and "Dialogue with Teacher Educators".

Environmental Education being an important educational concern, this issue in the first paper discusses the concept and goals of Environmental Education in relation to sustainable development. The paper talks of community linked in-service teacher training programme for empowering teachers to understand the concept of sustainable development through activities, projects,community work etc. and has shown how it increases understanding helping in their better transaction. Next paper is also on enhancement of environmental awareness but it is among primary school students through experiential learning strategy. The paper quotes the study showing better performance of students at comprehension level of objectives. Third paper mentions the positive impact of Jurisprudential Inquiry Model of teaching on value inclination of school students. The study shows that jurisprudential inquiry model increased the values like untouchability, scientific outlook, citizenship, self discipline and cooperation among secondary class students. Fourth paper is based on enhancement of scholastic achievement of Class 9 students through environmental awareness. The paper advocates the use of outdoor projects and orientation programmes to enrich and strengthen the Environmental Education. Fifth paper is devoted to English Self Learning Instruction. The paper stresses on appropriate relation between the components of English self Learning and instruction in order to make it effective. The next paper on correlates of job-satisfaction has tried to find the relation between academic record, attitude towards teaching and job satisfaction. Last two papers are related to the integration of ICT in curriculum and critical thinking as an important aspect of quality, respectively.

In addition to the regular papers, this issue carries abstract of two recently completed studies under the financial support by the Educational Research and Innovation Committee (ERIC) in the NCERT. Of these, one study is concerned with examining the pre-service secondary teacher

education programme of Haryana and the second focusses on some low performing Navodaya Vidyalayas in the country.

We look forward to receiving your valuable comments and suggestions to enhance the quality of this journal in terms of making it more useful for the educationalists, researchers and policy planners.

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.

Indian Educational Review is published half-yearly, in January and July by the National Council of Educational Research and Training (NCERT), New Delhi. Copyright of the articles published in the Journal will vest with the NCERT and requests for reproducing the material should be addressed to the *Academic Editor.* The journal is indexed in *Indian Psychological Abstracts and Reviews, Sociological Abstracts and Contents Pages in Education (U.K.).*

Education for Sustainable Development

D. Dash* B. Mishra* and M.K. Satapathy**

Abstract

Education for Sustainable Development (ESD) is different from traditional Environmental Education(EE) as it involves a shift from knowledge to action. Besides ecological/environmental issues, ESD looks into economic, social and political aspects with the objective of improving the quality of life of people living on the planet. Considering education as an input for environmental sustainability, UNO in its general assembly resolution 57/254 during December 2002 has proclaimed the knowledge and understanding of 450 secondary (243 pre-service and 207 in-service) school teachers of Orissa using SD knowledge inventory showed that both pre as well as in-service teachers had moderate level of knowledge on SD. In general teachers were more deficient in comceptual knowledge (issues like indicators of economic development, productivity, eco-technology, carrying capacity, biodegradation, global climate change, conventional agricultural practices, biological pest control, indigenous technology etc.) than factual informations. There was increase in their understanding of SD issues with increase in teaching experience. Lack of adequate knowledge and understanding and its implications for revision of teacher preparation curriculum and organisation of community linked in-service teacher training programme in order to empower teachers to understand and transact the SD concepts effectively through activities, projects, community work etc. have been discussed.

* Department of Education in Science and Mathematics, Regional Institute of Education, Bhubaneswar 751022

** Department of Education in Science, Mathematics, and ICT, North-East Regional Institute of Education, Non-grim Hills, Shillong 793003

Introduction

The phenomenal increase in human population followed by fast growing industrialisation and urbanisation in the last few centuries have overstrained the environment resulting in the continuing depletion of natural resources, deforestation, extinction of many plant and animal species, rise in global temperature, environmental pollution, thinning of life saving ozone layer etc. These problems are further being compounded with population explosion, food crisis, hunger, malnutrition, poverty, insanitation, and unbridled consumerism which together have causes serious strains on the essential life support systems of our planet, even threatening all living beings including man himself with disaster or extinction. Now the challenge (Costanza et al; 1997) is to live sustainably and well but within the material limits of finite planet resources.

Following the famous Brundtland report, "Our Common Future" (WCED, 1987) which recognised that natural resources are not inexhaustible and the development process should be aimed, "to meet the needs of present generation without compromising the ability of the future generation to meet their own needs," the human dimension (Satapathy, 2007) of Sustainable Development (SD) has been stressed also. Though it is highly essential for constant monitoring, evaluation and periodic updating of our data on environment and resources management by research and analysis, at the same time, it is necessary to disseminate the information for the awareness, understanding and motivation of the people in order to change their behaviour, practices and life style.

Education is the first and foremost a human rights as proclaimed in Article 26 of Universal Declaration of Human Rights. It not only makes man flexible to change and adjust with the new situations but acts as the key to building up the skills and capacities in all domains necessary for techno-economic development. In the world of tomorrow, education should not only be concerned with simple transmission of knowledge but must foster all forms of behaviour, life styles, and values necessary for human survival on a crowded planet (Mayer, 1997).

The UN conference on environment and development popularly known as Earth Summit (1992) in its agenda 21 gave importance on "Education, awareness and training" the critical factors of public understanding–fundamental to any progress to be made. It stressed reorienting education, critical for promoting sustainable development

and improving the capacity of people to address environment development issue.

Teachers, being the most critical agents of change, are responsible for growth, development and progress of the societies and communities (Mangal, 2002). They not only disseminate knowledge but also create and generate new knowledge. It is assumed that enlightened, emancipated and empowered teachers lead (NCTE, 1998) communities and nations in their march towards better and higher quality of life. Hence, teacher's education in general as well as professional has a special role to play in sustainable development. Teacher's knowledge and understanding of environment and developmental isues and level of commitment, attitude and devotion determine the future society and its development. Thus realising the importance, the present study was conceptualised to assess the preparedness of secondary school teachers in terms of their quantum of knowledge and understanding of environment and sustainable development in terms of economic, environmental, and social issues and level of commitment in promoting ESD.

Conceptual Background

Education in the past has been lopsidedly anthropocentric, ignoring its eco-centric integration, for after all humans and their environment are inseparable and are utterly interdependent for mutual survival. Consequently most of the educationists and environmentalists have stressed on the environmental literacy for all (Knimiller, 1983). The first use of the term, Environmental Education (EE) goes back to 1960 at an IUCN (International Union for Conservation of Nature and Natural Resources) meeting held at Paris.

With the first UN sponsored conference on "Human Environment" held on Stockholm in June 1972, to assess the damage done to environment on a global level and contemplate on ways and means of protecting those, human dimension of environmetal protection and conservation has been highlighted with stress on the need for environmental awareness and education (Dash and Satapathy, 2007). Though this conference approved the action plan for environmental education, major recognition was given to it in 1975 at International Environmental Education workshop held at Belgrade, followed by the workshop – The Tibilisi Inter-governmental conference on EE held at Georgia in 1977.

With publication of the report "Our Common Future" by World Commission on Environment and Development (WCED,1987) set up

by the United Nations General Assembly, environmental agenda acquired a new term called as Sustainable Development. It recognized that natural resources are not inexhaustible and the developmental process should be aimed "to meet the needs of the present generation without compromising the ability of the future generations to meet their own needs". Thus the dividends of development must flow continuously through generations for not only alleviating poverty but also upgrading the quality of life. Sustainable development is possible if principles of ecology are followed in planning developmental activities and long-term socio-economic need is kept in view and not just short-term profit. It looks to the upliftment of all citizens of a society to a quality of life which enables them realise their potential, build self-confidence and live life of fulfillment and dignity. Such sustainable development conserves land, water, plant, and animal reservoirs and looks for apporaches that are environmentally non-degrading, technically appropriate, economically viable and socially acceptable.

As a whole sustainable development stresses everything that we can do to save the planet. It emphasises that development should be aimed at improving the quality of life of all sections of the population, combating poverty, protecting environment and most importantly building the innermost capacity of mutual respect, tolerance, co-operation and peaceful co-existence.

All international gatherings and conferences have emphasised on sustainable development and the environmental education has changed to environmental education for sustainable development. The Millenium Development Goals (MDG) adopted by 189 nations in 2000 as a part of comprehensive development agenda has repeatedly stressed on environmental sustainability. The World Summit on Sustainable Development (WSSD) held at Johannesberg in 2002 noted that much of the current education falls far short of what is required and calls for a new vision and deeper and more ambitious way of thinking about education (UNESCO, 2002) to promote SD. Thus the focus shifted from the problems of environment to those of the people (Sterling, 2005).

Subsequently UNO's proclamation of 2005-14 as the Decade of Education for Sustainable Development (DESD) in 2002 by its general assembly resolution 57/254 calls for education for learning of values, behaviour and life styles required for a sustainable future and for possible societal transformation. The major focus of DESD are: (i) to foster an increased quality of teaching and learning in ESD and (ii) to provide countries with new opportunities to incorporate ESD in to

educational reform efforts. As such ESD has come to be seen as a process of learning how to make decisions that consider the long term future of the economy, ecology and equity of all communities. Building the capacity of such future oriented thinking is a key task of teachers and educators.

Objectives of the Study

The specific objectives of the present study were:

  (i) to quantify and assess the knowledge of pre-service and in-service secondary school teachers on SD and its different dimensions;

 (ii) to compare the knowledge of pre-service and in-service school teachers on SD with relation to their subject background, place of residence and socio-economic status;

(iii) to find out the relation, if any, between teaching experience, age, and socio-economic status with knowledge on SD for in-service secondary school teachers; and

(iv) to study the perception of pre-service and in-service secondary school teachers about SD in terms of its relevance to school curriculum.

Design of the Study

Survey method was followed in the present study. The sample was divided into two (pre-service and in-service) main groups on the basis of teacher training programme and teaching experience of teachers. Under each main group, 12 (2 2 3) sub-groups (teacher categories) were put on the basis of subject background, sex and socio-economic status. On the basis of subject combination/discipline in which the teacher pursued his/her bachelor's degree, the teachers were categorised into science and arts (social science/literature combination) groups. For assessing the socio-economic status, the method followed by Panda (1983) was adopted with minor modification.

Sample

In the present study 450 (243 pre and 207 in-service) secondary school teachers volunteered. The pre-service teachers belonged to five teacher training colleges/institutes of the state of Orissa, India. Out of five colleges, four had one year pre-service teacher training programme whereas the fifth one (under administrative control of

NCERT, New Delhi) had two years as well as 4 years (integrated course) pre-service secondary teacher training programme. Stratified random sampling technique was followed in the study and for stratification, variables like subject combination, sex, age, socio-economic status etc. were taken into consideration.

Tools

Knowledge and perception being culture specific, instruments such as Sustainable Development knowledge inventory and questionnaire on perception about SD were developed for collection of required data.

The sustainable development knowledge inventory with five dimensions, viz. economic efficiency, environmental harmony, resource conservation, self reliance and equity, and social justice were developed following the formal procedure. There were 37 items of both factual and conceptual nature developed in a multiple choice format. The retest reliability was 0.62 which showed moderate reliability.

The questionnaire about perception on sustainable development was intended to find out the opinion of secondary school teachers regarding pedagogic aspect of SD educaiton. An open type of format, with 18 items, was used in the questionnaire. The questionnaire included various aspects such as meaning of environment and SD, goal of EE, sources of knowledge on SD for teachers, status of SD subject in school curriculum, training needs of teacher, constrains to teach SD issues etc. were included. The questionnaires was finalised following expert opinion followed by pilot study.

Data Collection

Questionnaires were distributed to the teachers who were requested to fill up the necessary information desired about themselves. They were asked to read the questions/statements and give their response freely. Further the teachers were encouraged to write their opinion/ suggestion, if any at the end of the questionnaire. For pre-service teachers, the investigator distributed the questionnaire in their classroom and collected back after they answered those.

The terms in the knowledge inventory were in a two point scale. For each correct response of the multiple choices item, the respondents were given a weight of 1 and for wrong answer it was 0. The scores of individual items were added to give a score of a dimension. The scores of all the five dimensions were pooled to get a

total score in the knowledge test for an individual. Further the frequency of responses in terms of percentage as a whole was calculated for pre-service and in-service teachers respectively to each alternative in-service teacher separately.

For data on perception about SD, percentage was calculated for each possible answer to each item on the basis of the responses of pre-service and in-service teachers collected separately.

RESULTS

Knowledge on SD among different categories of Pre-service and In-service teachers

Analysis of variance data on knowledge on SD showed that there was significant difference in knowledge scores among different categories of teachers in each (pre-service/in-service) group. The interaction between service and category of teachers was statistically significant at 1per cent level. For each category, the pre-service school teachers had higher scores than their in-service counterparts.

The average knowledge scores on SD issues were 62.5 and 58.6 for pre-and in-service secondary school teachers respectively reflecting their moderate level of knowledge. Among pre-service teachers, all science teachers irrespectively of their sex and socio-economic background had knowledge scores of more than 65 per cent and there was no significant difference among the six categories. This showed they had good knowledge on SD issues. Pre-service arts teachers had moderate level of knowledge on SD, scores being between 55 to 64 per cent. In-service school teachers were found to have moderate level of knowledge with the average knowledge score being between 58.60 per cent for the entire group, 63.67 and 51.42 per cent for science and arts teachers respectively. Among the in-service arts teachers, male low as well as middle socio-economic categories had low level of knowledge (scores being between 50-55%) whereas male high socio-economic category had a score of 60.13 per cent showing their moderate level of knowledge.

Knowledge of pre-service secondary teachers on different dimensions of SD

Average knowledge score on each of the five dimensions of SD showed that pre-service school teachers had more knowledge about environmental harmony, and local self reliance than resource conservation, economic efficiency and equity and social justice (Fig.1).

All science and arts male teachers had knowledge scores of more than 60 per cent (Table 1) on economic efficiency dimension. Among arts female teachers, middle and high socio-economic categories had moderate level of knowledge whereas low socio-economic category had poor knowledge (average score being 45.43%).

TABLE 1

Mean per cent score on knowledge in different dimensions of Sustainable Development among Pre-service Secondary School Teachers of Orissa

	Per cent Score				
Pre-service Teacher Category	Economic efficiency	Environme-ntal Harmony	Resource conser-vation	Local self-reliance	Equity and soci-al justice
SML_0	66.07[a]	76.63[a]	70.26[ab]	72.73[abc]	62.07[ab]
SML_1	62.73[ab]	72.73[ab]	64.70[abcd]	77.16[a]	67.20[a]
SML_2	66.10[a]	77.77[a]	75.20[a]	77.20[a]	67.87[a]
SFL_0	70.83[a]	70.80[ab]	68.10[abc]	70.00[a-d]	61.60[ab]
SFL_1	68.83[a]	74.13[ab]	72.90[ab]	73.00[ab]	66.76[a]
SFL_2	63.20[ab]	76.30[a]	68.56[abc]	66.30[ab]	59.60[ab]
AML_0	61.00[ab]	60.33[bcd]	50.90[e]	58.33[b-e]	47.33[cd]
AML_1	60.40[ab]	65.93[abc]	60.16[cde]	54.87[cde]	60.33[ab]
AML_2	63.73[ab]	67.63[ab]	56.46[cde]	68.17[a-d]	59.86[ab]
AFL_0	45.83[b]	50.33[d]	49.17[e]	52.53[de]	42.20[d]
AFL_1	55.00[b]	53.83[cd]	51.37[e]	47.00[e]	55.30[bc]
AFL_2	56.33[b]	50.33[d]	53.17[de]	55.00[cde]	53.50[bc]

In each column, means followed by a common letter are not significantly different at 5% level by DMRT.
S = Science teacher, A = Arts teacher, M = Male, F = Female.
L_0 = Low socio-economic category, L_1 = Middle socio-economic category, L_2 = High socio-economic category.

In the dimension of environmental harmony, a similar trend was observed as that of economic efficiency. All science teachers and arts male teachers had very good knowledge on environmental harmony, the average score being more than 65 per cent.

In the dimension of resource conservation, the average score on knowledge for pre-service teachers was 61.6 per cent. All science teachers had good knowledge on conservation of natural resources (average score >65%). Arts male low, female low, middle and high socio-economic category teachers had knowledge scores of less than 55 per cent reflecting their moderate level of knowledge.

Regarding the knowledge on local self-reliance all categories of science teachers had an average score of more than 65 per cent and there was no significant difference among their scores. Among the pre-service arts teachers, male high socio-economic category had the score of more than 65 per cent. Arts male middle socio-economic category teachers had moderate level of knowledge.

For equity and social justice dimension, the average score for all categories of pre-service teachers was 59.1 per cent. Science male middle and high and science female middle socio-economic categories had good knowledge in the field, the average score being more than 65 per cent. All other categories of science teachers and arts male, middle and high socio-economic categories had moderate level of knowledge.

Knowledge of in-service teachers on different dimensions of SD

In-service school teachers were found to have moderate level of knowledge in the dimensions of economic efficiency, environmental harmony, local self reliance and equity and social justice and poor knowledge on resource conservation.

In the dimension of economic efficiency, for all in-service teachers except science female low and middle socio-economic categories, the average score was above 65 per cent (Table 2 which reflected their good knowledge in the area. Arts female low as well as high socio-economic category teachers with average scores of less than 50 per cent were found to have poor knowledge on economic efficiency issues.

For environmental harmony, the average knowledge score for in-service science and arts teachers were 70.9 and 57.41 per cent respectively. For all science teachers, the average score being more than 65 per cent reflected that they were having very good knowledge on concept and issues related to environmental harmony.

TABLE 2

Mean per cent score on knowledge in different dimensions of Sustainable Development among In-service Secondary School Teachers of Orissa

| In-service Teacher Category | *Per cent Score* | | | | |
	Economic efficiency	Environme-ntal Harmony	Resource conser-vation	Local self-reliance	Equity and soci-al justice
SML_0	69.43^{ab}	69.97^{ab}	62.87^{ab}	69.30^{a}	60.23^{abc}
SML_1	71.00^{ab}	68.33^{abc}	62.40^{ab}	67.67^{a}	67.83^{a}
SML_2	72.17^{a}	75.00^{a}	70.47^{a}	67.76^{ab}	65.97^{ab}

SFL_0	61.20[ab]	68.97[abc]	56.23[abc]	54.53[abc]	55.63[a-d]
SFL_1	63.33[ab]	73.17[a]	58.17[ab]	61.67[abc]	60.40[abc]
SFL_2	72.00[a]	70.67[ab]	64.13[ab]	61.33[abc]	58.50[abc]
AML_0	50.83[ab]	57.50[bcd]	41.57[c]	56.67[abc]	50.37[bcd]
AML_1	52.00[ab]	63.33[a-d]	48.27[bc]	56.00[abc]	47.83[cd]
AML_2	56.96[ab]	68.10[abc]	54.37[abc]	60.33[abc]	60.87[abc]
AFL_0	48.90[b]	50.13[d]	39.87[c]	45.56[bc]	39.70[d]
AFL_1	51.23[ab]	51.23[d]	45.17[bc]	52.33[abc]	48.70[cd]
AFL_2	48.00[b]	54.67[cd]	47.63[bc]	46.67[bc]	48.83[cd]

In each column, means followed by a common letter are not significantly different at 5 per cent level by DMRT.

S = Science teacher, A = Arts teacher, M = Male, F = Female.

L_0 = Low socio-economic category, L_1 = Middle socio-economic category, L_2 = High socio-economic category.

Regarding knowledge on resource conservation, science and arts teachers had average scores of 64.0 and 52.92 per cent respectively. All science female teachers and science male teachers with low and middle socio-economic background had scores between 55 to 65 per cent reflecting their moderate level of knowledge. All arts teachers except male high socio-economic group had scores of less than 50 per cent. In the dimension of local self-reliance, the average knowledge scores were 64.0 and 52.92 per cent for in-service science and arts teachers respectively. All science male teachers had good knowledge (score 65%) in the area. Arts female teachers had knowledge scores of less than 55 per cent reflected their poor knowledge on the concepts and issues relating to local self-reliance.

Looking into the dimension of equity and social justice, all science male teacehrs had scores above 65 per cent highlighting their good knowledge. All science female teachers and arts male high socio-economic category teachers had moderate level of knowledge (score 65%) in the area. All arts female teachers and arts male middle socio-economic category teachers had scores of less than 50 per cent reflected their poor knowledge in the field.

Knowledge on SD with relation to specific variable

Pre-service Teachers

Subject Orientation

The average mean scores on knowledge on SD were 69.70 and 55.40 per cent (Table 3) for science and arts teachers, respectively

and there was significant difference between these two groups. It showed that science teachers were good in their knowledge whereas arts teachers were moderately knowledgeable in the area.

TABLE 3

Sample size (N), mean score (Mn), (%), Standard Deviation (SD) and 't' value about knowledge on Sustainable Development of Pre-service Secondary Teachers of Orissa

Teacher Category	Sample size (N)	Mean Score (Mn) ± SD	't' value
Science	144	69.70 ± 0.78	86.038**
Arts	99	55.40 ± 1.76	
Male	115	63.28 ± 0.48	18.918**
Female	128	61.61 ± 0.83	
L_0	75	60.56 ± 1.86	6.532**
L_1	78	62.78 ± 2.31	
L_0	75	60.50 ± 1.86	8.357**
L_2	90	64.50 ± 3.78	
L_1	78	62.78 ± 2.31	3.492**
L_2	90	64.50 ± 3.78	

L_0 = Low socio-economic category   * = Significant at 5% level

L_1 = Middle socio-economic category   ** = Significant at 1% level

L_2 = High socio-economic category   ns = Not significant

Sex

The average knowledge scores were 63.28 and 61.61 per cent for male and female teachers respectively. Though both the groups were moderate in their knowledge on SD issues, there was statistical difference (significant at 1% level) in their average scores, and male teachers were more knowledgeable than females.

Socio-economic background

It is interesting to note that there was increase in average knowledge score with increase in socio-economic condition. All the three groups

had an average score of more than 60 per cent reflecting their moderate knowledge on SD issues.

Years of pre-service training

The average scores for one year, two years and four years integrated pre-service (science) teachers were 65.60, 74.89 and 66.78 per cent respectively. Though all pre-service science teachers were having good knowledge in the area of SD (average score being >65%), two years pre-service teachers were having the highest score (Table 4, followed by one year and four years pre-service programme teachers. Among pre-service arts teachers (average score being 50-60%) two years pre-service teachers were more knowledgeable than one year pre-service teachers.

TABLE 4

Sample size (N), mean score (Mn), (%), Standard Deviation (SD) and 't' value about knowledge on Sustainable Development of Pre-service Secondary Teachers of Orissa

Pre-service Programme (Science)	Sample size (N)	Mean Score (Mn) ± SD	't' value
1 Year Prog.	54	65.60 ± 1.78	17.855**
2 Year Prog.	40	74.89 ± 3.22	
1 Year Prog.	54	65.60 ± 1.78	2.221*
4 Year Prog.	50	66.78 ± 3.44	
2 Year Prog.	40	74.89 ± 3.33	11.432**
4 Year (Integrated) Prog.	50	66.78 ± 3.44	

* = Significant at 5% level

** = Significant at 1% level

ns = Not significant

In-service Teachers

Subject Orientation

Looking into the subject background of in-service teachers, it was observed that science and arts teachers were having knowledge scores of 65.16 and 51.40 per cent (Table 5) respectively. This reflected that

science teachers were having better knowledge in the area of SD than arts teachers.

TABLE 5

Sample size (N), mean score (Mn), (%), Standard Deviation (SD) and 't' value about knowledge on Sustainable Development of In-service Secondary Teachers of Orissa

Teacher Category	Sample size (N)	Mean Score (Mn) ± SD	't' value
Science	99	65.16 ± 3.28	31.979**
Arts	108	51.40 ± 2.91	
Male	108	59.48 ± 2.53	5.919**
Female	99	57.46 ± 2.38	
L_0	66	56.84 ± 1.26	5.239**
L_1	75	58.40 ± 2.11	
L_0	66	56.84 ± 1.26	8.461**
L_2	66	60.20 ± 2.97	
L_1	75	58.40 ± 2.11	4.185**
L_2	66	60.20 ± 2.97	
Urban	100	59.94 ± 3.21	5.829**
Rural	107	59.58 ± 2.60	

L_0 = Low socio-economic category   * = Significant at 5% level

L_1 = Middle socio-economic category   ** = Significant at 1% level

L_2 = High socio-economic category   ns = Not significant

Sex

Though male in-service teachers were more knowledgeable than females on SD issues, both categories of teachers were found to have an average score between 50-60 per cent (59.48% for male and 57.46% for female) reflecting their moderate level of knowledge.

Socio-economic background

The average scores for low, middle and high socio-economic category in-service teachers were 56.84, 58.40 and 62.20 per cent respectively. This reflected their moderate level of knowledge on SD issues.

Place of Residence

Though both urban and rural in-service teachers were having moderate knowledge scores (50-60%) in the area of SD, urban in-service teachers were more knowledgeable than their rural counterparts.

Relationship between Teaching Experience and

Knowledge on SD

With science teachers, regression was well fitted with only two sets of data (rural male low and high socio-economic groups) as reflected from R^2 values (Table 6). In all the 12 groups, both for urban as well as rural science teachers, the intercept (Y0) was positive and more than 0.1. This showed that at the beginning of service, the teachers had some amount of knowledge on SD issues. Further for all the groups, there was increase in knowledge level with teaching experience. This increase was more with middle and high socio-economic categories than others as reflected from slope values ('r' value). With arts teachers, the progress curves were not well fitted. At the beginning of teaching career, the teachers were having little knowledge on SD and it was the highest with urban male teachers.

TABLE 6

Summary of linear regression statistics from fitting the linearised form of the logistic model to knowledge data on Sustainable Development of different In-service Secondary School Teacher (science) categories

Teacher Category	Intercept (Y_0)	Parameter estimates Slope (r)	R_2
UM L_0	0.54	0.002	0.003
UM L_1	0.74	0.005	0.03
UM L_2	0.71	0.004	0.06
UF L_0	0.551	0.00001	0.000003
UF L_1	0.6496	0.0009	0.0047
UF L_2	0.40015	0.0102	0.185
RM L_0	0.327	0.0127	0.489
RM L_1	0.337	0.0084	0.173
RM L_2	0.393	0.0155	0.570

RP L_0	0.655	0.0033	0.047
RP L_1	0.4385	0.003	0.032
RP L_2	0.539	0.0045	0.068

Y_0 (the intercept) = the initial amount of knowledge

R (slope) = the apparent rate of yearly increase in percentage of knowledge

R^2 = the variance explained by the regression

U = Urban $\qquad$ L_0 = low socio-economic group

M = Male $\qquad$ L_1 = middle socio-economic group

F = Female $\qquad$ L_2 = high socio-economic group

Analysis of Preception of Pre-service and In-service Teachers about SD Education

Concept of Environment and Goals of EE

The concept of environment comprising all living and non-living components with interactions among them was correctly perceived by 71.34 and 59.30 per cent pre-service and in-service school teachers respectively. The major objective behind EE is to create environmental awareness among common people/students was realised by three fourth of pre-service and two third of in-service teachers.

Concept of SD and its Objectives

The definition and concept of SD was poorly understood by most of the school teachers. Only about one fourth of pre-service teachers and less than 10 per cent of in-service teachers had correct knowledge about it.

About 50.67 and 41.37 per cent pre-service science and arts teachers respectively considered formal education at school/college level as their source of knowledge on SD. Among in-service teachers, 40.36 and 31.67 per cent science and arts teachers respectively considered pre-service training having played some role as their source of knowledge on SD. Teaching of SD concepts would be useful in solving environmental problems was perceived by 80 per cent pre-service and more than 60 per cent in-service school teachers.

Teaching of SD concept (Content and Methodology)

Teaching of SD concepts around environmental problems/issues as the right approach was perceived by more than three-fourth of pre-

service teachers and two third of in-service teachers. Less than 10 per cent of pre-service teachers and 11.73 per cent of in-service teachers considered that the concepts could be taught by some economic means. Regarding methodological approach to teach SD concepts, 70.0 and 46.95 per cent pre-service and in-service teachers respectively considered problem solving approach as the most suitable method. The next suitable method was project method.

Regarding subject area that provides maximum scope to teach SD concepts/issues, more than 70 per cent of pre-service and 60 per cent of in-service teachers perceived science as the most suitable subject followed by social sciences. Regarding the focus of teaching SD concepts, most of the pre-service teachers (>70%) considered local environment to be given importance. On the contrary, in-service teachers (>57%) believed that stress should be given to global environment.

SD Education and Curriculum

With regard to the educational level suitable for introducing SD concept, 63.56 per cent pre-service (69.75% science and 53.63% arts) teachers believed secondary level (Table 7) to be the most ideal stage for introducing such concepts. Only 10-15 per cent teachers believed it to introduce in the teachers training curriculum. Regarding the status of SD concepts at the secondary level, 65.70 and 51.73 per cent pre and in-service teachers perceived that it could be taught through methodological approach in selected subjects. About 25 per cent pre as well as in-service teachers thought that the subject could be taught through interdisciplinary approach. Further most of the teachers (76.67% pre-service and 56.08% in-service teachers) realised that lack of adequate knowledge/training in the area of SD education stands as barrier for effective transaction of concepts in the classroom.

TABLE 7

Level of educational system suitable for introducing Sustainable Development concepts as perceived Secondary School Teachers of Orissa

Level	Pre-service Teacher (%)			In-Service Teachers (%)		
	S	A	S + A	S	A	S + A
Elementary level	10.62	17.27	13.94	19.09	10.00	14.56
Secondary level	69.75	53.63	63.56	8.18	13.34	5.65

College level	4.37	9.09	6.29	47.27	51.67	49.56
Teacher Training level	10.87	11.81	11.34	14.54	18.34	16.52
All the level	4.37	8.18	5.92	10.90	6.67	8.69

S = Science teacher, A = Arts teachers

Teacher training and SD Education

More than 60 per cent pre as well as in-service teachers perceived that current teacher training programme has neither helped them to learn nor to teach SD concepts. Regarding training, more than 75 per cent pre and in-service teachers felt that they should be given specific training in the subject area to understand the concepts and transact those effectively. Further majority (>80%) teachers believed that the current curriculum should be revised incorporating concepts such as environmental conservation and SD issues.

Discussion

Sustainable Development does not look environmental protection and economic growth as mutually exclusive and conflicting objectives. It (SD) believes in the management of human use of biosphere taking in to account ecological relationship as well as social and economic factors (Deisinger, 1990; Khoshoo, 1998). This leads to a better quality of life, satisfaction of basic human needs, sustainability of development, respect for the biosphere, and concern for the needs of future generations. As such there is a shift from awareness and understanding to involvement, participation and problem solving.

Analysis of knowledge showed that secondary school (pre and in-service) teachers in general had moderate level of knowledge on SD issues. Pre-service teachers understood the concepts better than in-service teachers. This could possibly be due to their exposure into the field of environmental problems/studies which has been a contemporary concern and forms a part of school and college curricula today (Chalarn, 1991). Further the low level of knowledge of in-service teachers could be either due to lack of initiatives to keep themselves abreast of the developments taking place or absence of training in the area or both. The higher knowledge of science teachers as compared to arts teachers probably because of their formal learning. All science curricula irrespective of subject (physical/ biological service) combination carry environmental issues/SD

concepts in content at college/university level. Science teachers especially with middle and high socio-economic background were quite knowledgeable about SD issues. This could be due to availability of and their access to books, magazines and mass media like TV, radio, newspaper, internet, etc. as compared to low socio-economic category teachers. The higher knowledge of male teachers over females may be because of their mobility, exposure, experience, activity and realisation of the problems as compared to females. There is no study on teacher knowledge about SD issues. Studies on environmental knowledge showed that students from Gujarat (Singh, 1984) and teachers of Orissa (Praharaj, 1991) had low level of knowledge.

Though pre-service teachers had better knowledge than in-service teachers, interestingly two years pre-service teachers (science) had higher knowledge than pre-service teachers of four years integrated and one year programmes, possibly because that all two years pre-service teachers were recent graduates with a relatively strong understanding in the content area. Further being a newly introduced innovative teacher training programme, many new concepts relating to environment and SD have been built up in their curriculum. Urban teachers were formed to be more knowledgeable than rural teachers on SD issues possibly because of environmental problems such as inhalation of polluted air, dust, urban slums, traffic jam, sanitation, foul smell, etc that affect their daily life making them more conscious about environmental problems.

Analysis of the knowledge revealed that both pre as well as in-service secondary school teachers were deficient in understanding in all the selected five dimensions of SD. They were more deficient in conceptual knowledge than factual information. For example the role of biodiversity in playing important role in the development of new plants/animals, food security, environmental protection was realised and understood by only 22.12 per cent and 50.29 per cent in-service and pre-service secondary teachers respectively. Similarly importance of indigenous technology was known to only about one third of pre and in-service teachers. Likewise many concepts/issues pertinent to SD like indicators of economic development, ecotechnology, carrying capacity of ecosystem, waste recycling, bio-degradation, geo-chemical cycling, global climate change, environmental conservation, conventional agricultural practices, equity, etc. are not well understood by teachers. They need understanding through training/ orientation in the area in order to equip themselves to teach their

students. The favourable attitude of secondary school teachers (Dash et.al., 2008) for ESD reflects the possible success of such training programmes.

Relationship between teaching experience and knowledge on SD showed that teachers had some knowledge at the beginning of their career and there was further growth in their understanding with teaching experience. This reflected that in-service teachers used to gain basic knowledge through pre-service training and it is further enhanced through teaching and learning in their career. Further analysis showed that besides pre-service training, other factors such as socio-economic condition, teaching experience and age also contributed to certain extent for their knowledge. This could be due to that though formal education forms the foundation in a subject, its further growth depends on one's own interest in the subject, learning environment and access to materials (newspaper, books, journals, magazines, electronic media etc) in the area. Hence to enhance the knowledge of in-service teachers, it is necessary to organise refresher courses in areas of current concern such as SD. Further recently introduced science and social science textbooks at secondary level (NCERT, 2006) carry topics such as habitat alteration, deforestation, pollution, climate change, bio-diversity conservation, SD etc. This needs teaching materials, handbook, and in-service training for teachers to update their knowledge in the field. Though NCERT (2001) has published some training materials with the title: Environmental Orientation to School Education – A training module for the eastern region, topics such as SD has not been included. It needs further attention. Our observation goes in tune with Pradhan (1995) who noted increase in environmental awareness with increase in educational qualification among school teachers.

Existence of environmental crisis and the need for EE to create environmental awareness among students and adults was realised by most of the teachers as has been noted by UNESCO (1988). However lack of conceptual clarity about environment and SD brings the need for training/orientation courses on EE (Desh Bandhu et al., 1994). A majority of pre and in-service teachers believed that science subjects provide the best scope to teaching SD concepts followed by social science. This confirms the observation by Atchia (1990) that science and science education provides the conceptual framework for practically managing the biosphere (forest, soil, air, water, biological diversity) as well as the technosphere (human, habitat, industry, transportation, etc.) for sustainable and

environmentally sound development. It may be pointed that science education in US has undergone reform providing an excellent opportunity (Raman, et al., 2000) to use sustainable agriculture as the basic theme in teaching science.

More than 60 per cent of school teachers believed that lack of adequate knowledge/training in the area of SD stands as a limitation for effective transaction of concepts and pleaded for orientation in the area. This is supported by our earlier findings that teachers do not have adequate knowledge and understanding on SD issue. Guidelines laid down by NCTE (1988) and UNESCO (1990) support the need for training/workshops to enhance (Roux and Ferreirra, 2005) their knowledge and teaching skills. It is said (NCTE, 1998) that the professional development of teachers begins with pre-service and gets renewed through in-service programme. There are elements of change and continuity in teacher education system which necessitates renewal and upgradation of skills and competencies acquired by teachers years ago during their pre-service education. While in the past much of the emphasis on education/training was related to cognitive understanding and development, now there is need to address the social and other dimensions of learning.

Besides training most of the teachers realised the need for necessary changes in the teacher training curriculum so as to incorporate concepts such as environmental concerns and socio-economic issues in order to make teacher education programme relevant to the changing needs of the time and society (Pandey, 2004). Maruyama (2008) calls for creating good interpersonal relations as well as net works to different regions to promote SD. Further he believes that ESD provides opportunity to integrate local indigenous wisdom in to modern education. This observation goes in tune with the decision of Hon'ble Supreme Court of India to make EE a compulsory subject (NCERT, 2004) at all levels of education. Thus there is an urgent need to improve teacher preparation curriculum (NCERT, 2000) incorporating activities, projects, data management, community service, etc. in local context (Saxena, 2000) so that the teachers coming out of the new system could inculcate (NCERT, 2005) skills of problem solving, decision making, life long learning, ability to work together, sharing and conservation of resources and other values (Westing, 1996) such as mutual trust, respect for nature, recycle and reuse of wastes, etc. among the students (Jackson, 2001), as with ESD there is a shift (Sterling, 2005) from knowledge to action. Dash and Satapathy (2007) have observed that teacher training

institutions through community partnership could solve some local problems besides getting learning experiences for the teachers. As such ESD lays emphasis on different aspects of learning which includes citizenship education, future education, education for peace and gender equity, health education, population education, women education and empowerment. Developing adequate teaching approaches and sharing of the best practices is the immediate need.

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Effect of Experiential Learning Strategy on Enhancement of Environmental Awareness among Primary School Students

Vandana Mehra* and Jagdeep Kaur**

Abstract

The present study was conducted to compare the effect of experiential learning strategy and traditional learning method on enhancement of environmental awareness of 120 fourth graders with internal and external locus of control. The obtained data was analysed with the help of three-way analysis of variance. The major findings of the study were: (i) students when exposed to experiential learning strategy yielded better mean gain on environmental awareness scores as compared to the traditional learning method; (ii) students with internal locus of control yielded better mean gain on environmental awareness scores than the students with external locus of control; and (iii) the students performed better at comprehension level of objectives than at knowledge level of objectives with regard to mean gain on environmental awareness scores.

Introduction

"Experience is the child of thought and thought is the child of action"—Benjamin Disraeli (2002)

Learning as a cycle that begins with experience, continues with reflection and later leads to action which itself becomes a concrete experience for reflection, is experiential learning (Rogers, 1969; exponent and originator of experiential learning). Rogers gave the list of qualities of experiential learning, viz. personal involvement, learner initiated, evaluated by learner and pervasive effects on learner. This is the learning in, by and through experiences. The model of

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* *Reader,* Department of Education, Punjab University, Chandigarh
** *Sr. Lecturer,* Rayat College of Education, Railmajra

experiential learning is described in three steps, i.e. action, personal and group reflection and connection cum application.

Experiential practices include outdoor environmental and adventure education. As Johnson (1995) puts it, "It seems clear that children need to be taught at a deep level the fact that the earth is our home, how life on the planet functions, that we are a part of those systems of life and that how we live, affects the whole." So, it is obvious that experiential learning can develop environmental awareness, understanding and action skills among the pupils.

Theoretical Perspectives

Experiential learning, according to Rogers (1969) is based on the principles : (a) relevancy of the subject matter to the personal interest of the students, (b) learning which is threatening to the self is more assimilated when external threats are at minimum, (c) self initiated learning is most lasting and pervasive.

The components of experiential learning are recognised as knowledge, activity and reflection.

Blomberg (1967) conducted a study to prove the value of direct experience of teaching out-of-doors. Children were taken on short field trips and excursions and their attitudes and behaviour as well as their accomplishments were evaluated. Trips ranged from 10 minutes to two hours with VI grade class. Experiments took place for 9 years (1955-1964) on various subjects. It was concluded that direct experience teaching in out-of-doors resulted in broader and richer educational opportunities and provided a better climate for learning.

OCP (1975) reported about the measure of the longitudinal impact of outdoor education on the attitudes of the children. Surveys were received from 449 students. This data indicated a positive impact of outdoor experiential education on the students. Pie charts displayed student's responses and indicated 80 per cent increased appreciation for the environment; 76 per cent felt that experience raised their interest in camping and other outdoor activities; and 95 per cent felt that the experience is one that every sixth grader should have.

Impact of week-long experiential programme on 46 U.S. children (31 male and 15 females) who attended a five-day summer school programme of biodiversity activities, revealed that all the children left with an even stronger positive attitude towards the environment.

Experiential learning even shows significant difference in perception, conception and priorities of the children. Roger et. al. (2000) reported that children's understanding of mountainous

landscapes was really remarkable when they were exposed to experiences. 444 children (aged 7-11 years) were drawn from five U.K. inner city schools and data was collected based on their modelling representations and in subsequent interviews.

The exposure in nature not only made the children highly aware but increased their confidence level too. This was revealed by Wells (2003) in his research that, "greater the amount of nature exposure, greater the benefits especially for children of primary classes."

Bogeholz (2006) illustrated the importance of nature experiences for environmental knowledge, values and actions. Recommendations for improving nature experience research were given. It argued that nature experience was one central foundation for the development of knowledge and values in relation to the environment.

Action-oriented teaching is highly fruitful for developing the attitude of the children towards a particular subject (Martin, Kirsten & Helminch, 2005). The philosophy of UPSC (2006) is that young children are best served by teaching the curriculum practices by action oriented lessons that strengthened and supported their intellectual growth and development. It assured that activity time and project work strived to foster "the love of learning and provided an opportunity for teachers to engage in the learning process with their students. Environmental awareness is knowing and understanding about various environmental issues, their significance, needs to preserve and methods to protect the environment. "Environmental awareness is not unidimensional but stems from learning, learning about environment, learning in and through the environment, and finally learning for the environment. So, environmental information stems from many sources and influences the public and individual in many ways" (Carty, 1997).

Roth (1992) defines environmental awareness as "essentially the capacity to perceive and interpret the relative health of environmental systems and take appropriate action to maintain, restore or improve the health of those system. Coyle (2005) reported that environmentally aware and thus responsible people are 10 per cent more likely to recyle, 10 per cent more likely to purchase environmentally safe products, and 50 per cent more likely to avoid using chemicals". Whereas Cordano (1998) examined the relationship between environmental attitudes and environmental awareness with environmental managers' behavioural intentions. The results demonstrated that environmental managers', attitudes and environmental awareness influenced their behavioural intentions.

Noethe (2000) reported that all environmental and conservation issues ultimately depend upon human behaviour, both for their origins and their timely solution. The most prevalent values that emerged from the qualitative exploration were awareness of current realities, connectedness of land, eco-system, people and active involvement.

Wolfgang (2001)'s study was based on the belief that early experiences have an important effect on developmental outcomes during later life. It was concluded that teaching through play activities and exposure directly in the environment added up to their general awareness and also played a positive role in their later development and arousing their environmental sensitivity.

Korhonen (2004) examined the environmental awareness and knowledge of children and adolescents living under different ecological conditions. The role of education in forming environmental awareness was also considered. Research was carried out in villages located in forested areas as well as in more environmentally degraded villages. The results revealed that children in rural areas of Madagascar were measurably aware of environmental issues and could relate them to human activities.

Coyle (2005) indicated that while 52 per cent of Americans reported that they have heard of ozone action days, and 26 per cent of Americans purchased environmentally safe products. This data revealed that environmental awareness and consciousness of these people were the factor which directly and indirectly affected the environmental awareness of their wards at home too.

Mary (2005) researched on 198 students from standard IX in both urban and rural areas and different types of schools by random sampling to investigate the environmental awareness among the high school students. The tool used was environmental awareness opinionnaire prepared by the investigator. It concluded that environmental awareness among high school students was above average. Also, it suggested that education system alone is a powerful medium to ensure environmental protection.

Locus of Control

Locus of control refers to a set of beliefs about the relationship between behaviour and the subsequent occurrence of rewards and punishments. According to Marko (1994), Locus of control is an important variable describing individual differences and predicting

behaviour about control over life events. There are two types of people, viz. people with internal locus of control who have faith in themselves and on the other hand, people with external locus of control who depend upon luck or external factors than themselves. Research findings have shown that internals are more likely to work for achievement, to tolerate delays in reward, to plan for long-term goals, and also internals are likely to raise their behavioural goals. In contrast, externals are more likely to lower their goals.

Gershaw (1989) researched on students with internal and external locus of control students and revealed that the characteristics to be more typical of internal were that internals were more likely to learn about their surrounding and to learn from their experiences.

The study was based on primary class students who were classified on the basis of their locus of control. As it is believed that the students with internal locus of control believe in themselves than mere luck but external LOC students generally believe in luck than in themselves. Thielker (2004) researched on the relationship between positive reinforcement and locus of control and reported in his research that positive reinforcement and motivation provided a good instructional programme that convert students from external locus of control to internal locus of control. The students with marked changes in their locus of control showed more belief, more control over their own efforts, and showed tendency to solve the environmental problems and to work over their solution willingly.

Rationale of the Study

Environmental Education is the need of the hour that is why EVS is introduced as compulsory subject right from the beginning of primary classes.

So, there is a need to provide environmental education by introducing actual hands-on-experiences in order to make them aware of environmental problems and their solutions.

In the present study, experiential learning strategy was compared with traditional learning method in environmental education. It is the learning through direct experiences embedded with the basic qualities of personal involvement, learner initiated, evaluated by learner, and has pervasive effects on learning (Rogers, 1969). It is constructive learning, composed of three components, i.e. knowledge, activity and reflection.

Research Questions

The present research was designed to answer the following research questions–
• Does experiential learning strategy in environmental education result in greater environmental awareness than traditional learning method?
• Is there any difference among the students with internal locus of control and students with external locus of control on environmental awareness?
• Is there any difference in environmental awareness of the students at knowledge and comprehension levels of objectives?
• Is there any interaction between the two instructional treatments, locus of control, and levels of objectives?

The objectives of the study were:
• To compare the mean gain on environmental awareness of the students taught through different instructional treatments (experiential learning strategy and traditional learning method).
• To study the effectiveness of the two instructional treatments for the students with internal locus of control and students with external locus of control.
• To study the effectiveness of two instructional treatments for student's with internal locus of control and students with external locus of control at knowledge and comprehension levels of objectives.
• To study the interaction between instructional treatments and locus of control as well as instructional treatments and levels of objectives.
• To study the interaction between instructional treatment, locus of control and levels of objectives.

The study was limited to
(a) class IV students of Shivalik Public School and Rayat International School of Ropar.
(b) 50 sub-topics of EVS in 50 working days employing principles of experiential learning strategy.
(c) students selected on the basis of their internal and external locus of control.
(d) two levels of objectives, viz. knowledge and comprehension.

Sample

The research study was carried out on 120 students of IVth class of two schools of Ropar i.e. Shivalik Public School, Ropar and Rayat

International School, Ropar. As per the requirement of present investigation, students had to be classified on the basis of LOC. LOC test for primary school children was administered to 120 students. Thus students with internal LOC and with external LOC were identified.

Thus, on the basis of LOC test, 60-60 students were randomly allocated to experimental and control groups.

Design of the Study

2 2 2 factorial designs with repeated measures ANOVA was employed for analysis of mean gain scores on environmental awareness. The dependent variable was the mean gain scores on environmental awareness test for knowledge as well as comprehension levels of objectives. The independent variables were instructional treatment, LOC and levels of objectives. The variable of instructional treatment was studied at two levels namely experimental group (T_1) which was taught by experiential learning strategy and control group (T_2) which was taught by traditional learning method. The third variable was levels of objectives, viz. knowledge level of objective and comprehension level of objective.

The factorial design permits to evaluate the effect of two or more experimental variables. The design of the investigation is termed repeated measures, because the same individuals were measured on different occasions corresponding to each treatment.

The schematic layout of the design has been presented in Fig. 1 below.
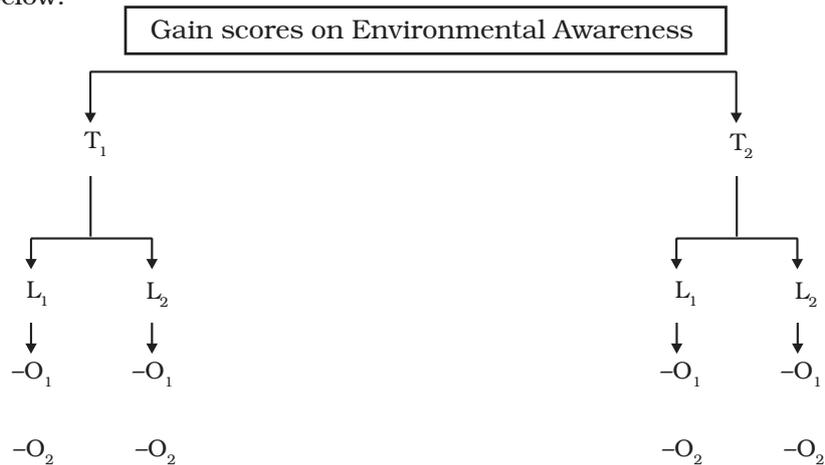
Fig. 1

T_1 – Experimental group

T_2 – Control group

L_1 – Internal locus of control

L_2 – External locus of control

O_1 – Knowledge level of objectives

O_2 – Comprehension level of objectives

Tools Used

1. Instructional material/50 lesson plans based on the chapters to be covered from the syllabus of EVS of Class IV prescribed by NCERT. The chapters included were:
   Living and non-living, our internal organs, waste and its management, natural resources, pollution, its types, causes and effects, local agencies responsible for waste disposal, population explosion, health and hygiene, balanced diet, pet and wild animals, greenhouse effect, windmill, soil erosion, our concern to environment.

2. Environmental Awareness Test comprised of 132 items, 60 items at knowledge and 72 at comprehension level. Reliability of the test was found to be 0.90.

3. Locus of Control Test (for primary children) comprised of internal and external scale, constructed and standardised by Pal (1982).

Procedure

Procedure of the experiment comprised of two main stages, viz. selection of the sample and conducting the experiment.

Phase I: Selection of the sample

The present study was conducted on 120 Class IV students from Shivalik Public School, Ropar, and Rayat International School, Ropar. Class IV students were selected for experimentation after administering LOC test to 380 Class IV students. Each group consisted of randomly allocated students with internal and external locus of control.

Stage 2: Conducting the experiment

In the first phase, the pre–test on environmental awareness was conducted. In the second phase, experimental group, students were

exposed to experiential learning strategy for fifty working days to teach several topics of EVS, where students learnt by the use of media, out-door experiences and fun based hands-on-activities. The students also learnt EVS by watching presentation on CDs, by experiencing short trips, excursions, rallies, visiting various sites with natural beauty. Activities like cartooning, puppet show, fancy dress show, dramatisation, plantation and collecting litter in the playground were also performed. Students of the control group were taught the same topics by traditional learning method. Immediately after the instructional treatment of 50 days, the subjects were assessed by administration of post–test on environmental awareness.

The experiential learning based activities were selected for fifty lessons in which students by means of mass media, out-door experiences and fun activities, learnt the otherwise difficult concepts in appreciable and easy ways. They not only learnt them easily, but showed their interest to learn more and more in such experiential strategies. Students and investigator used to start everyday activity by taking oath, viz. Earth pledge. They used to tag badge to their school dress everday, with healthy environmental messages like 'Grow more trees', 'Save water', 'Save Environment', 'love trees', etc. The oath started with the words: 'We promise that we will share the environment, avoid wastage of water, grow more trees, save the electricity and never pluck the flowers, we will not cut the trees. We love our country very much'.

Data Analysis

After scoring, the gain scores as measured by the difference of post-test and pre-test scores on environmental awareness test were computed for each student at knowledge and comprehension levels of objectives and were converted into percentages. The obtained gain scores were subjected to 2 × 2 × 2 analysis of variance. The means and SDs of different sub-samples were computed and have been presented in Table 1 and a summary of ANOVA for 2 × 2 × 2 design for mean scores in environmental awareness has been presented in Table 2.

TABLE 1

Means and standard deviations of sub-samples of 222 design for mean gain scores on environmental awareness

L	O	T_1	T_2	Total
L_1	O_1	M = 55.22 SD= 4.62 n = 30	M = 26.67 SD = 3.74 n = 30	M = 40.94 SD = 6.75 n = 60
	O_2	M = 59.55 SD = 5.44 n = 30	M = 31.80 SD = 3.49 n = 30	M = 45.68 SD = 6.13 n = 60
L_2	O_1	M = 52.83 SD = 6.49 n = 30	M = 19.87 SD = 3.98 n = 30	M = 36.35 SD = 6.68 n = 60
	O_2	M = 52.75 SD = 5.31 n = 30	M = 27.47 SD = 3.86 n = 30	M = 40.11 SD = 7.51 n = 60

TABLE 2

Summary of 222 ANOVA for mean gain scores on Environmental Awareness

Source of variation	df	SS	MSS	F-ratio	Level of Significance
Treatment (T)	1	46118.042	46118.042	352.861	S**
Locus of Control (L)	1	2507.321	2507.321	19.184	S**
T L	1	18.676	18.676	0.143	NS
Error between	116	15160.890	130.697	--	--
Categories of Objectives (O)	1	1630.991	1630.991	33.679	S**
T O	1	220.551	220.551	4.554	NS
L O	1	143.763	143.763	2.969	NS
T L O	1	152.275	152.275	3.144	NS
Error Within	116	5617.581	48.427	--	--

S** – Significant at 0.01 level of confidence.
S* – Significant at 0.05 level of confidence.
NS – Not Significant

Main Effects

Treatment (T)

F-ratio for two instructional treatments was found to be significant at 0.01 level of confidence. The two instructional treatments exhibited difference in the mean gains on environmental awareness, as the students taught EVS by experiential learning strategy exhibited better environmental awareness than those taught by traditional learning method.

This finding matches with the research findings of Blomberg (1967) that out-of-doors situation is more effective instructional strategy for sixth graders. Out-of-doors students of 11-15 years of age performed better than indoor students taught traditionally (Clark, 1997). Ryan (1969) reported that out-door experiential education was better in increasing appreciation for environmental conservation among sixth graders (Orange country project, 1975-76). Aghi (1977) taught EVS to primary school children and found that it stimulated an interest among children towards the environment. Howe, Disinter and John (1988) reported that young adults attributed a large amount of their knowledge of environmental concepts, problems and issues to out of school experiences. Ballard and Pandya (1990) and Seever (1991) reported that direct experiences related to Environmental Education at earlier grade levels can increase environmental awareness of the students. Purdie, Neil and Richards (2002) reported that exposure enhanced environmental awareness of young pupil. Greater the amount of natural exposure, greater the increasing awareness of primary school children (Wells, 2003).

Locus of Control (L)

F-ratio for the difference between mean gain scores obtained by students with internal and external locus of control was found to be significant at 0.01 level of confidence. Students with internal locus of control performed better than their counterparts with external locus of control on the environmental awareness test.

This finding is in accordance with that of Coleman (1996) and Findley and Cooper (1983) who found that the students with internal locus of control performed better in academics than those with external locus of control. Also the students with internal locus of control exhibited more self-control, confidence and concern about the environment than the students with external locus of control (Hancock, 1971). Locus of control contributed to environmental attitude and directly to

environmental action behaviour (Hicks, 1993; Engelson, 1993; Harris & Case, 2001; Whittle, 2003; and Thielker, 2004).

Levels of Objectives (O)

F-ratio for the difference in means of the two levels of objectives was found to be significant at 0.01 level of confidence. Students performed better at comprehension level of objectives than at knowledge level of objectives with regard to environmental awareness.

Interaction Effects

Treatment and locus of control (T L)

F-ratio for the interaction between the two variables, viz. treatment and locus of control was not found to be significant even at 0.05 level of confidence. So, it may be inferred that there was no significant interaction between instructional treatments and locus of control, with respect to environmental awareness scores.

Treatment and levels of objectives (T O)

F-ratio for the interaction between the two variables, viz. treatments and level of objectives was not found to be significant even at 0.05 level of confidence. So, it may be inferred that there was no significant interaction between instructional treatments at knowledge as well as comprehension levels of objectives.

Locus of control and levels of objectives (L O)

F-ratio for interaction between locus of control and levels of objectives was not found to be significant even at 0.05 level of confidence leading to the inference that there is no interaction between locus of control and levels of objectives, i.e. the students with internal and external locus of control obtained comparable mean gain scores in knowledge based and comprehension based items in environmental awareness test.

Treatment, locus of control and level of objectives (T L O)

F-ratio for the interaction among the three variables was not found to be significant even at 0.05 level of confidence. Thus, treatment, locus of control, and levels of objectives were not found to interact with one another.

Educational Implications

The students of experimental group taught EVS by experiential learning strategy exhibited better environmental awareness as compared to the students taught by traditional learning method. Also the students with internal LOC exhibited better mean gain scores on environmental awareness than the students with external LOC. So experiential learning is helpful to enhance awareness of the pupil regarding a particular subject and also to build their actual beliefs by real hand-on-experiences. Action oriented lesson plans should be maximum utilised in teaching-learning process. Environmental education is the burning need of the hour. A large percentage of the population lives in poverty with few options to choose environmentally apporpriate life-styles. Others are in position to make environmentally sensitive decisions but do not do so, partly due to lack of awareness. So, it is necessary to make every individual aware about environment through education.

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Effectiveness of Jurisprudential Inquiry Model of Teaching on Value Inclination of School Students

VEER PAL SINGH*

ABSTRACT

The present research article is intended to highlight the effectiveness of jurisprudential inquiry model (JIM) of teaching on value inclination of secondary school students belonging to different intelligence and socio-economic status (SES) groups. Hence, in order to see the effect of treatments to value inclination, the four-way factorial (2 2 2 2) nesting-cum-crossing design was followed as per Lewis, 1968. Forty students were exposed to JIM and forty students were taught through conventional method. The treatment lasted for four months. There were four parallel groups under each treatment, i.e. high intelligence and high SES, high intelligence and low SES, low intelligence and high SES and low intelligence and low SES. The value inclination of students towards selected five values, namely, untouchability, scientific outlook, citizenship, self-discipline and cooperation was measured with the help of value identification test. The result of this study indicates that (i) JIM was significantly effective than conventional method in developing ability to identify issues pertaining to four values, namely, untouchability, scientific outlook, citizenship, self-discipline and cooperation among students. (ii) High intelligent students attained significantly higher scores than low intelligents for the value of scientific outlook, and (iii) Low SES students attained significantly higher scores in comparison to high SES students in case of value of citizenship.

* *Reader,* DEME, NCERT, Sri Aurobindo Marg, New Delhi-110 016.
  E-vpsncert2@rediffmail.com

Introduction

Education is a life-long process and potent force for all round development of the individual. Gandhi Ji rightly said that, "Education is the preparation for complete living, adjustment to environment, perfection of one's nature, character-building and harmonious development of personality". It has an implication that education has the responsibility not only to provide training in three R's (Reading, writing, and arithmetic), but also to develop the qualities of hand, heart and head. In simple words, the purpose of education is to draw out best of the child by stimulating the spiritual, intellectual and physical faculties of the child. Therefore, the role of education in achieving the objectives of life has become more crucial in the present-day society where values and morals are said to be deteriorating. A great concern about the deterioration of essential values has also been shown in the National Policy on Education (1986) which states, "The growing concern over the erosion of essential values and an increasing cynicism in society has brought to focus the need for readjustment in the curriculum in order to make education a forceful tool for cultivation of social and moral values". Moreover, school education in the country seems to have developed some kind of neutrality towards the basic values and community in general has little time or inclination to know about religions in the right spirit. This makes it imperative for the Indian School Curriculum to include inculcation of the basic values and an awareness of all the major religions of the country as one of the central components (National Curriculum Framework for School Education-2000). Reiterating the need for development of values for peace National Curriculum Framework, 2005 has pointed out that values like tolerance, justice, intercultural understanding and civic responsibility need to be developed among the younger generation.

Concepts of Values

The term 'value' expresses the significance–great or small–which a man ascribes to matters related to particular activity or experience or to his life in general and thus provides him guidance for his behaviour. Values do not exist as objects in space and time, but are established by judgments–by judging things, qualities, event or actions from a personal point of view. The idealists believe that "the objective of living and learning is to develop the natural man into the ideal man." According to them, values substantially exist and man values them because they are realities and part of the fabric of cosmos.

They, however, add that while the values exist in themselves, the act of valuing them is an individual experience. They believe that the student realises values and value has existence in his interests and desires (Taneja, 1984).

Unlike the idealists, the pragmatics hold that values are not pre-existent, fixed or eternal. Pragmatic values are not absolute in themselves but are valuable in a relative way to the situation requiring a choice and to the future situation that might hypothetically exist as the result of immediate alternatives of action. Man creates values according to circumstance and environment. The naturalists and realists believe that values are found in nature and are discovered by man who is a rational being.

Rationalists consider the eternal and absolute nature of value in different prospects. According to them, if values are really universal, they should have so among all communities in the world, but this is not the case. So much so, some values of various communities even oppose each other. Likewise, if values have objectivity in themselves, they should be equally obvious to all as the fans and telephones are. But this is also not the case of objective nature of values.

In the broader view, any thing good or bad is a value (Pepper, 1958) or a value is anything of interest to a human subject (Perry, 1954). Men are not indifferent to the world; they do not stop with a sherry factual view of their experience (Kohler, 1938). Explicitly or implicitly, they are continually regarding things as good or bad, as true or false, as virtues or vices. Thus, the phenomena of evaluation is valuing and is a continuous life-long process. Rath et al. (1966) writes, "Persons have experiences, which work as general guides to behaviour. These guides tend to give direction to life and may be called values."

Rokeach (1973) defines values as an enduring belief, a specific mode of conduct, or end state of existence. Value is "a belief upon which a man acts by preferences" (Allport, 1964). A value is what is desired or what is sought. Values may be operationally conceived as those guiding principles of life which are conducive to one's physical and mental health as well as to social welfare and adjustment and which are in tune with one's culture.

Post Independence Initiatives Taken for Values Inculcation

Initiatives for values inculcation among succeding generations have been made from the very beginning of Indian society in one or another

way but the organised efforts made by the government after independence reflected in the reports of various committees and commissions. After independence almost all the commissions and committees have highlighted the need for value inculcation. Some of the important milestones in value education have been the recommendations of University Education Commission (1948-1949), Secondary Education Commission (1952-53), Sri Prakash Committee (1961), Kothari Commission (1964-66), National Commission on Teachers (1983), National Policy on Education (1986) and Programme of Action (1992). The standing committe of the Parliament has made some very bold and practical recommendations for ministry of human resource development under the chairmanship of Shri S.B. Chavan. Its report was presented to the Parliament of India in February, 1999. Its recommendations on value education and religion have been included comprehensively in the National Curriculum Framework for School Education, 2000 (Rajput; 2002). National Curriculum Framework-2005 categorically mentioned that "Education in the true sense should empower individuals to clarify their values; to enable them to take conscious and deliberate decisions, taking into consideration the consequences of their actions; to choose the way of peace rather than evidence; to enable them to be makers of peace rather than only consumers of peace." Actually, the need for value inculcation was felt from time to time but the target practically could not be achieved because at the implementation stage the policy formulations have not been transformed into pragmatic strategies.

Values Inculcation: Methods and Approaches

'Ethical development does not mean the imposition of do's and don'ts. Rather it call for devising means and ways of helping children learn to make choices and decide what is right, what is kind, and what is best for the common good, keeping in view the broader implications for personal and social values' (National Curriculum Framework-2005). Thus, the teaching of certain procedural values, such as logical or critical thinking, is essential to pedagogical effectiveness. In order to make students able to evaluate rationally various conclusions and recommendations to which they are exposed during their life, there is a need to teach them the value of rational analysis and values of objectivity. For this, various methods and approaches are being used like lecture method, goldfish bowl method, silent sitting, role playing, story telling, books and supplementary reading, morning assembly, programmes like NCC, NSS, Shramdan, etc. The major drawback with

these methods is that these appeal to emotions not to reasons. Hence, such a method of teaching is required where mental processes should be involved in valuation. In this direction, value clarification approaches seem to be quite useful. Here, the individuals are invited to initiate and explore their own valuing process and within the context of group situation, they are encouraged to use one another as resources.

Jurisprudential Inquiry Model of Teaching

Jurisprudential Inquiry Model (JIM) is a value clarification approach given by Oliver and Shaver (1966). The dictionary meaning of jurisprudence is science or philosophy of law, or the knowledge or skill to deal with issues in legal fashion. It involves jury like process of resolving complex controversial issues within the context of productive social order. In other words, it is a process of inquiry for solving controversial issues as is held by a Supreme Court judge. The judge first of all listens the case which is followed by evidences, then analyses the legal position taken by both the sides, weighs these positions and evidences, assesses the meaning and position of law and finally makes the best possible decision. When a similar role is played by the teacher along with the students in the classroom to analyse the social problem or public policy issues, then it becomes jurisprudential way of teaching. This model helps the students in understanding the complexity of the problems so that they can be able to make their position reflect that complexity. The main purpose of this method is to help students learn how to formulate defensible stances on public policy issues. Following this model, the students get opportunities to develop public policy stances and diologue skill by using types of competence that is (i) an understanding of the value's framework of Indian creed; (ii) mastery of the intellectual skills of legal reasoning; and (iii) knowledge of contemporary public issues.

This method involves conception of values and productive dialogue as well as curriculum and pedagogical consideration. During the process of dialogue, students take a position and the teacher challenges the position with questions. The teacher's questions are designed to push students' thinking about their stance and to help them learn. The teacher orients the class to the case and students usually become emotionally involved in the analysis, making the discussion intense and personal. With more practice, it is hoped that their positions will become more complex and well formulated. The model, however, has to be looked into from the point of view of its assumptions and characteristics (Singh; 2004).

(a) **Assumptions:** The basic assumptions underlying the Jurisprudential Inquiry Model are:

(i)   In society, people differ in their views and priorities in which social values legitimately conflict with one another.

(ii)   Controversial issues are not simple and there is no one right solution for them.

(iii)   The differences in values can be negotiated through free and open debate by making it the process of rational consent.

(b) **Characteristics:** The specific features of Jurisprudential Inquiry Model are:

(i)   *Socratic Dialogue*: The heart of this model is Socratic style of dialogue. The teacher persuades the students to take a position on an issue. Then the teacher challenges the taken position with questions. These questions are designed to push student's thinking about the stand taken by him.

(ii)   *Public Policy Issue*: After the case presentation, the students identify one or more public policy issues. A public policy issue is a question involving choice or a decision for action by students. These policy issues can be phrased either as general question or as choices for personal action. These question(s) begin from the word "Should" that is why called "Should Questions". On the basis of these questions, conflicting values have to be identified.

(iii)   *Conflicting Values are Taken*: The situation is taken up in terms of conflicting social values. The stand on these values taken through the process of dialogue. This dialogue implies commitment to reason, reflection and the right of all parties to express themselves before being bound by a decision.

(iv)   *Use of Analogies*: During the dialogue, the teacher uses analogies as means of contradicting student's general statement. Further, these help in testing the logic as well as limits of student's statement.

(v)   *Legal Reasoning Process*: The teaching process involves free and open discussion on controversial issues. The discussion is always based on legal reasons pertaining to a particular value (social, ethical or political) involved in the process.

(vi)   *A Framework of Value*: In order to analyse the public policy issue, the students have to identify the legal ethical issue underlying the public policy issue. Legal ethical issues are

the legal tool that is called as framework of value. These help the students and teachers in abstracting the general values from the concrete situation and identifying the conflicting values.

(vii)   *Balancing Values*: Oliver and Shaver feel that the best stance on an issue is to maintain a balance of values in which each value is minimally compromised. To achieve such a balance, each party in a controversy tries to understand the reason and assumptions behind the other's position.

(viii)   *Particular Pattern of Argumentation*: During the process of defending or attacking a policy stance, four patterns of argumentation are involved. One is establishing the point at which the value is violated; second is concerned with clarification of value conflict through analogies: third is connected with proving desirable or undesirable consequences of a position while fourth type of argument is linked with assertion of priority of one value over another.

Hence, this model has specific features which help the students to comprehend the values involved in a particular social situation.

Value Clarification Approaches: a Review

A number of studies have been conducted to see the effectiveness of value clarification approach in terms of different aspects of human development and personality. Value clarification approach is found effective in terms of moral reasoning and moral development (Bauer, 1979; Mckenzie, 1980; Noreen Cavan, 1986), cognitive achievement (Smith, 1973; Barman, 1974), academic achievement (Chapman, 1979), reading comprehension (Pracejus, 1975), development of verbal fluency (Singh, 2008), positive attitude towards science (Rutkowski, 1975), attutude towards a course (Little, 1975), students' attitude towards schools, self-acceptance of their decision-making and acceptance and understanding of their peers (Rogers, 1983), self-knowledge, knowledge of self in relation to career and in planning activities in seeking career information (Kaufman, 1974), active participation of students (Wenker-Konner et al. 1973), students' personal growth, clarifying teaching philosophy, expending teaching skills, facilitating teacher staff interaction and using value clarification within curriculum and aiding students' academic growth (Betof, 1979), self-concept (Covault, 1973, Wilgoren, 1973, Fitch, 1979, Jackson, 1982, Setian, 1990), self-actualisation (Osman, 1974), reducing the frequency of observed negative behaviour (Thompson,

1978), coping resources for stress (Knapp, 1989), development of students' value and value system (Hobstetter, 1980), students' views of peer values (Temple, 1979), terminal and instrumental values (Patrick, 1982), work values (Smith, 1979), value of dedication to teaching profession, cooperation, nationalism, and scientific outlook (Singh et. al. 1986), capabilities of students for national analysis of controversial issues (Evams, 1978), developing certain values such as equality, tolerance, justice, etc. (Pandey, 1991), inculcating values like untouchability,citizenship and self-discipline among secondary school students (Singh 2008), and comparing JIM with CAM (concept attainment model) in development of concepts and judgement and person values of Class VIII pupils (Mohanty, 1992).

Value clarification has also been found effective in case of the attitude of students towards themselves, their values and their personal and social skills in selected areas, in providing a framework within which students can examine personal values (Neely, 1978), initiation and effective direction of classroom activities, positive attitude towards learning (Covault, 1973), dogmatism, classroom attitude, absenteeism and grade point average (Fitch, 1979), in producing measurable change in some nursing students' level of moral judgement (Frisch, 1987), in clarifying some of nursing students values (Tjallinks 1989), in developing the social conciousness and ability to solve value conflicts (Pal & Mishra, 1992), in promoting human values (Nanda, 1997), in value orientation of urban, rural, and tribal adloscents (Mathur & Bhadoria, 2001), in developing moral reasoning of children (Dhull & Khatri, 2002), in bringing significant changes in the students attitudes, social views and desired behaviour (Edwards & Allen, 2008). Moreover, value clarification exercises (VCE) were found most helpful for clarifying values of the patients (Fieldman-Streward, Brenneentuhl, Brundage & Roques, 2006). Apart from this, different approaches of value development have also been tested by various researchers in different ways like integrating value through curricular and co-curricular activities (Peter, 2003), comparing personal computer group participants who reported greater perceived effectiveness than those in traditional group (Franklin, 1986), Carrying out different activities in the community and exemplifying values in actions by the volunteers or teachers (Soni, 2003), and developing ethical, social spiritual values through various approaches (Prameela, 2007).

But the study conducted by other researchers revealed that the clarification is not significantly effective in case of student's level of moral reasoning (Perlmutter, 1980), cognitive achievement (Anderson,

1982), prediction of reading achievement (Compton, 1979), total reading vacabulary, word study skills and comprehension achievement (Jackson, 1982), reduce racial prejudicial attitudes and attitude towards other ethnic group (Dunber, 1980), attitude towards biology, science and the effective domain (Barman 1974), personality dimensions-self-acceptance, locus of control, sex-role identity (Smith, 1979), self-concept (Gray, 1975; Chapman, 1979; Van der Wert, 1979; Mckenzie, 1980; Lingis, 1981), ego-development (Perlmutter, 1980), value priorities (Sklare, 1974), students' view of their own values (Temple, 1979,) theoretical, social, political and religious values except aesthetic values (Glassco, 1982), and inculcation of values like scientific outlook, and cooperation among school students (Singh, 2008).

The findings of all these studies are inconclusive and conflicting. The reason may be that they used different value clarification strategies, with different cultural samples and subjects. Keeping this in view, a need is felt to test the applicability of value clarification strategy like Jurisprudential Inquiry Model (JIM) in Indian context.

Objective of Study

To find out the effect of Jurisprudential Inquiry Model (JIM) of teaching on value inclination towards five values, namely untouchability, scientific outlook, citizenship, self-discipline, and cooperation of students belonging to different intelligence and socio-economic status (SES) groups.

Hypotheses: The hypotheses framed to test the effect of jurisprudential inquiry model of teaching on value inculcation of school students are as under:

1. There is no significant effect on value of untouchability of students belonging to different intelligence and socio-economic status (SES) groups taught through jurisprudential inquiry model and those taught through the conventional method.

2. There is no significant effect on value of scientific outlook of students belonging to different intelligence and socio-economic status (SES) groups taught through jurisprudential inquiry model and those taught through the conventional method.

3. There is no significant effect on value of citizenship of students belonging to different intelligence and socio-economic status (SES) groups taught through jurisprudential inquiry model and those taught through the conventional method.

4. There is no significant effect on value of self-discipline of students belonging to different intelligence and socio-economic status (SES) groups taught through jurisprudential inquiry model and those taught through the conventional method.

5. There is no significant effect on value of cooperation of students belonging to different intelligence and socio-economic status (SES) groups taught through jurisprudential inquiry model and those taught through the conventional method.

6. There is no significant effect on values of students belonging to different intelligence and socio-economic status (SES) groups taught through jurisprudential inquiry model and those taught though the conventional method.

METHODOLOGY

Design

As the study was intended to find out the effect of jurisprudential inquiry model of teaching on value inclination of school students, the nesting-cum-crossing design was followed. It was nested in the sense that two sections of ninth grade students were undertaken and two treatments were assigned to them randomly, viz. jurisprudential inquiry model and conventional method. In each of the sections, there were students belonging to two levels of intelligence that is, high and low. Further, in each of the intelligence level, students belonging to two levels of socio-economic status (SES), viz. high and low, were present. In this way, the students belonging to different levels of SES were nested in different levels of intelligence and then the students belonging to different levels of intelligence were nested in different treatments. All these categories of the students were different from each other which is one of the characteristics of nesting design. The design was crossing because all the groups of students were pre-tested and post-tested. In this way, the experimental design was nesting-cum-crossing (as per Lewis, 1968).

Further, the experiment resembled four-way factorial (2 2 2 2) nesting-cum-crossing design. Here, two treatments involved were jurisprudential inquiry model and conventional method; two levels of intelligence, viz. high and low; two levels of socio-economic status, i.e. high and low; and two occasions of testing were pre-test and post-test, for the dependent variable of value inclination. There were, thus, 2 2 2 2 = 16 (sixteen) combinations. The schematic presentation of the design is given below:

SCHEMATIC PRESENTATION OF DESIGN WITH NESTING-CUM-CROSSING (2 2 2 2)

Experimental Groups
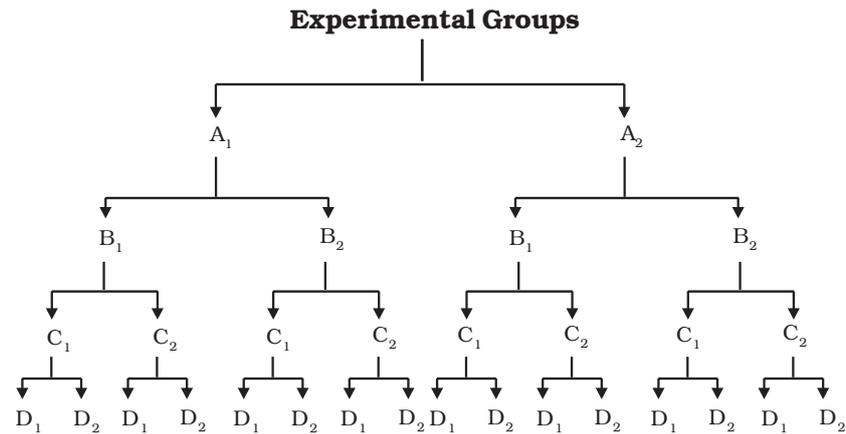
A$_1$ = Jurisprudential Inquiry Model   C$_1$ = High SES
A$_2$ = Conventional method   C$_2$ = Low SES
B$_1$ = High Intelligence   D$_1$ = Pre-test
B$_2$ = Low Intelligence   D$_2$ = Post-test

Sample

Two sections of grade ninth of a school were selected randomly. Students of both the sections were administered the Ravan's progressive matrices and Kulsheshtha's socio-economic status scale (urban A). On the basis of mean and S.D., the students of each section were divided into four parallel groups — high intelligence and high SES, high intelligence and low SES, low intelligence and high SES, and low intelligence and low SES. Each group was consisted of 10 students. In this way, 40 students (4 10) were selected from each section and 80 students (40 2) in total.

Tools

Following tools were employed in this study:

(i) *The Raven's Progressive Matrices*: to measure the intelligence of the sampled students.

(ii) *The Kulsheshtha Socio-Economic Status Scale (Urban-Form A)*: to record the information about socio-economic status of the sampled students.

(iii) *The Value Identification Test*: to measure the value inclination of students towards the selected five values, namely, Untouchability, Scientific outlook, Citizenship, Self-discipline and Cooperation. This test contains 20 items. Each item is written in the form of an incident, having four alternative responses. The respondent is required to tick mark only one alternate out of four to whom he/she had highest agreement. Test-retest reliability of the test was 0.62.

Intervention

The two different groups of students were given different kinds of treatments that lasted for four months. One of the group was taught through Jurisprudential Inquiry Model (JIM) designated as 'A$_1$'. Second group was taught through conventional method designated as 'A$_2$'. The content taught to both the groups was same. The topics were selected from the prescribed syllabus of class ninth.

Independent Variables

There were four independent variables. These included two treatments, viz. Jurisprudential Inquiry Model (JIM) and conventional method; two levels of intelligence – high and low; two levels of socio-economic status (SES) – high and low; and two occasions of testing, i.e. pre-test and post-test.

Dependent Variables

The variables which was taken as criterion of the effect of treatment was value inclination. The objective of taking this variable was to find out the change in value preferences of the students because of treatment.

Intervening Variables

In this experimental study, intervening variables like teacher behaviour, religious spirit, sex of the students, other pupil variables, physical environment of the class room, contamination effect, organisational effect, extra literature reading, etc. may have an effect on the outcome of the treatment. All these variables were either controlled experimentally, or equalised statistically.

Experimentation

The experiment was conducted under three phases. In the first phase,

the students of both the treatment groups were administered value identification test to know their value priority. After administration of this scale, the students were provided orientation and instruction about the treatments to be given to them. The orientation was given for one week. The purpose of giving such a long orientation was to get over the anxiety and curiosity of the students which may create hindrance to the final outcome of the results. For example, the students of Jurisprudential Inquiry Model (JIM) group were given a trial of the model, so that the students may be able to follow what they have to do in a particular phase of the model. Similarly, the students of conventional group were made familiar with the objectives, methodology, etc. so that they may not feel a total novelty in the experimental setup. After this orientation, regular treatment was given to both the groups accordingly. Third phase was the evaluation phase, the students were again tested on value identification test after the treatment.

Data Collection and Analysis

The data for value inclination was collected on two occasions, one was pre-test occasion (before the treatment) and the other was post-test occasion (after the treatment).

In order to find out the effect of treatments, levels of intelligence, levels of socio-economic status and testing occasions on value preferences four-way analysis of variance (2 × 2 × 2 × 2) per Lewis (1968) was employed. For deeper understanding, graphs are plotted for interactional effect.

Results and Discussion

The results of this investigation have been presented and discussed value-wise for all the five values, i.e. Untouchability, Scientific Outlook, Citizenship, Self-discipline, and Cooperation as well as for total scores as under:

Untouchability

The results for summary of four-way ANOVA (2 × 2 × 2 × 2) for the value of untouchability is presented in Table-1 which shows that none of the F-ratio is significant. This means that there is no significant difference between the two methods of teaching, i.e. Jurisprudential Inquiry Model of teaching and Conventional method. It indicates that both the strategies of teaching produced more or

less equal effects on value inclination scores of the students for the value of untouchability.

TABLE 1

ANOVA for Untouchability

S.No.	Source of variation	Degree of Freedom	Sums of squares	Mean squares	F-ratio
1.	A	1	9.03	9.03	3.46
2.	B	1	7.23	7.23	2.77
3.	C	1	0.90	0.90	0.34
4.	D	1	2.50	2.50	0.96
5.	A B	1	4.90	4.90	1.88
6.	A C	1	2.03	2.03	0.78
7.	A D	1	2.03	2.03	0.78
8.	B C	1	2.03	2.03	0.78
9.	B D	1	0.03	0.03	0.01
10.	C D	1	0.90	0.90	0.34
11.	A B C	1	0.10	0.10	0.04
12.	A B D	1	0.10	0.10	0.04
13.	A C D	1	0.63	0.63	0.24
14.	B C D	1	0.23	0.23	0.09
15.	A B C D	1	0.90	0.90	0.34
16.	Within A B C D	144	375.60	26.08	
17.	Pupils(P)within A B C	72	187.90	2.61	
18.	Residual (PD) within A B C	72	187.70	2.61	

Scientific Outlook

Table 2 comprises results for summary of four-way ANOVA (2 2 2 2) for the value of scientific outlook which shows that the F-ratio (4.93) is significant for df 1/72 for the effect of intelligence at 0.05 level of confidence. The computed mean scores for high intelligent students were higher (M = 54.13) than the low intelligent students (M = 50.94) as depicted in Table 3. It indicates that high intelligent students could identify matters related to the value of scientific outlook more easily than low intelligent students. In other words, students belonging to high intelligence groups could comfortably identify and analyse the social situation pertaining to scientific value than their counterparts.

Table 2 also reveals that the F-ratio = 5.50 is significant for df 1/72 for testing occasions at 0.05 level of confidence. The computed mean scores of the students on testing occasion II were higher

(M=14.91) than on testing occasion-I (M=14.35) for the value of scientific outlook as shown in Table 4. It means that treatments were found effective for developing scientific value among students. It, in other words, connotes that students could scored more on the issues related to value of scientific outlook at occasion-II when exposed to treatments.

TABLE 2

ANOVA for Scientific Outlook

S.No.	Source of variation	Degree of Freedom	Sums of squares	Mean squares	F-ratio
1.	A	1	9.50	9.50	1.89
2.	B	1	24.80	24.80	4.93*
3.	C	1	0.06	0.06	0.01
4.	D	1	12.66	12.66	5.50*
5.	A B	1	0.31	0.31	0.06
6.	A C	1	1.81	1.81	0.36
7.	A D	1	24.81	24.81	10.78**
8.	B C	1	3.91	3.91	0.78
9.	B D	1	1.66	1.66	0.07
10.	C D	1	3.31	3.31	1.44
11.	A B C	1	15.00	15.00	2.98
12.	A B D	1	2.26	2.26	0.98
13.	A C D	1	2.26	2.26	0.98
14.	B C D	1	1.81	1.81	0.79
15.	A B C D	1	0.31	0.31	0.13
16.	Within	144	528.30	3.67	
17.	A B C D Pupils(P)within	72	362.35	5.03	
18.	A B C Residual (PD) Within ABC	72	165.95	2.30	

* Significant at 0.05 level of significance.
** Significant at 0.01 level of significance.

TABLE 3

Mean Scores of different Intelligence Groups for the Value of Scientific Outlook

S.No.	Groups	Mean Scores
1.	B_1	54.13
2.	B_2	50.94

TABLE 4

Mean Scores on different Testing Occasions for the Value of Scientific Outlook

S.No.	Groups	Mean Scores
1.	D_1	14.35
2.	D_2	14.91

Table 2 further shows that the interactional effect of treatments and testing occasions (A D) is significant (F = 10.78) for df. 1/72 at 0.01 level of confidence. The calculated mean scores of the students were highest (M = 15.55) on occasion-II and least on occasion-I (M = 14.20) when exposed to Jurisprudential Inquiry Model of teaching as depicted in Table 5. Figure 1 also support this interpretation. It means that students taught through JIM achieved higher scores than their counterparts exposed to conventional method. In other words, JIM played a significant role in developing the ability to identify the scientific value involved in various issues among students in comparison to conventional teaching. This finding is similar to the results of Singh and Singh (1986) who observed that Value Clarification Approach is more effective than conventional method when value orientation was measured through VOBT-Test-D.
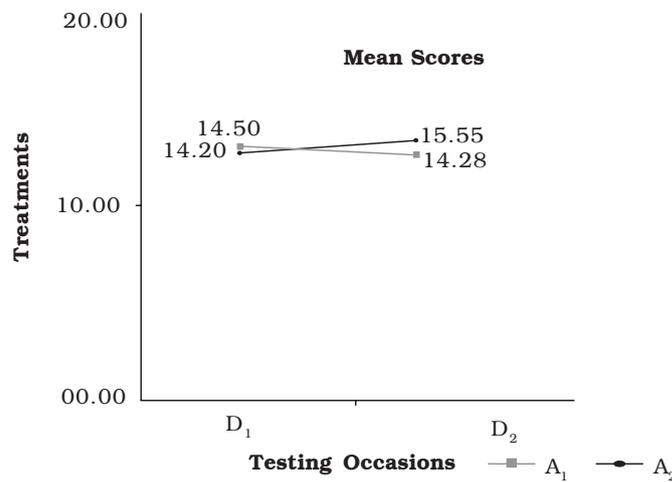
Fig 1: Mean Scores for Scientific Outlook for Interaction between the Treatments and Testing Occasions (A D)

TABLE 5

Mean Scores for the Value of Scientific Outlook for Two-way Interaction (22) between the Treatments and Testing Occasions (A D)

S.No.	Groups	Mean Scores
1.	A_1D_1	14.20
2.	A_1D_2	15.55
3.	A_2D_1	14.50
4.	A_2D_2	14.28

Citizenship

The results for summary of four-way ANOVA (2 2 2 2) for the value of citizenship have been presented in Table 6 which depicts that the F-ratio = 4.83 is significant for df 1/72 for the effect of socio-economic status at 0.05 level of confidence. The obtained mean scores of low SES students were higher (M = 17.91) than the students of high SES (M = 17.03) as presented in Table 7. It has an implication that students of low SES could easily identify the matters pertaining to the value of citizenship than the students of high SES. It means that the treatments were found significantly effective even in developing the value of citizenship among students of low SES than their counterparts.

TABLE 6

ANOVA for Citizenship

S.No.	Source of variation	Degree of Freedom	Sums of squares	Mean squares	F-ratio
1.	A	1	15.00	15.00	2.30
2.	B	1	0.76	0.76	0.11
3.	C	1	31.51	31.51	4.83*
4.	D	1	18.91	18.91	5.06*
5.	A B	1	0.31	0.31	0.05
6.	A C	1	1.40	1.40	0.22
7.	A D	1	8.56	8.56	2.29
8.	B C	1	8.56	8.56	1.31
9.	B D	1	2.76	2.76	0.74
10.	C D	1	0.01	0.01	<.01
11.	A B C	1	0.06	0.06	<.01
12.	A B D	1	3.91	3.91	1.04
13.	A C D	1	0.31	0.31	0.08
14.	B C D	1	3.31	3.31	0.88
15.	A B C D	1	1.41	1.41	0.38

16.	Within	144	739.10	5.13	
17.	A B C D Pupils(P)within	72	469.75	6.52	
18.	A B C Residual (PD) Within ABC	72	269.35	3.74	

* Significant at 0.05 level of significance

TABLE 7

Mean Scores of different SES Groups for the Value of Citizenship

S.No.	Groups	Mean Scores
1.	C_1	17.03
2.	C_2	17.91

Further, it may be seen from Table 6 that F-ratio = 5.06 is significant for df 1/72 for testing occasions at 0.05 level of confidence. The computed mean scores of students were higher (M = 17.81) on occasion-II than occasion-I (M = 17.13) as cleared vide Table-8. This means that after the treatment the students could easily identify and analyse the matters pertaining to the value of citizenship in diferent social situations.

TABLE 8

Mean Scores on different Testing Occasions for the Value of Citizenship

S.No.	Groups	Mean Scores
1.	D_1	17.13
2.	D_2	17.81

Self-discipline

The results for summary of four-way ANOVA (2 2 2 2) for the value of self-discipline have been enlisted in Table 9 which reveals that none of the F-ratio is significant neither for simple effect nor for interactional effect. It means that both the value developing approaches, i.e. Jurisprudential Inquiry Model and Conventional method had produced equal effects on students' preferences regarding the value of self-discipline and no one is significantly superior to the other.

TABLE 9

ANOVA for Self-discipline

S.No.	Source of variation	Degree of Freedom	Sums of squares	Mean squares	F-ratio
1.	A	1	0.51	0.51	0.12
2.	B	1	1.41	1.41	0.34
3.	C	1	1.41	1.41	0.34
4.	D	1	0.16	0.16	0.05
5.	A B	1	3.91	3.91	0.95
6.	A C	1	3.31	3.31	0.80
7.	A D	1	0.01	0.01	<.01
8.	B C	1	1.81	1.81	0.44
9.	B D	1	2.76	2.76	0.93
10.	C D	1	1.41	1.41	0.48
11.	A B C	1	0.50	0.50	0.12
12.	A B D	1	3.91	3.91	1.32
13.	A C D	1	2.76	2.76	0.93
14.	B C D	1	0.31	0.31	0.10
15.	A B C D	1	1.06	1.06	0.36
16.	Within	144	508.89	3.53	
17.	A B C D Pupils(P)within	72	296.75	4.12	
18.	A B C Residual (PD) Within A B C	72	212.15	2.95	

Cooperation

The results for summary of four-way ANOVA (2 2 2 2) for the value of cooperation have been given in Table 10 which reveals that none of the computed F-ratio is significant except in case of testing occasions. The F-ratio = 4.95 for testing occasions for df 1/72 is significant at 0.05 level of confidence. The obtained mean scores of the students on occasion-II were higher (M = 15.61) than on occasion-I (M = 15.19) as shown in Table 11. It means that after the treatment, the students could smoothly identify and analyse matters pertaining to the value of cooperation. The similar results were observed by Singh and Singh (1986) who found that treatments were effective for the value of cooperation when value orientation of B.Ed students was measured through VOBT-Test-D.

TABLE 10

ANOVA for Cooperation

S.No.	Source of variation	Degree of Freedom	Sums of squares	Mean squares	F-ratio
1.	A	1	3.60	3.60	1.52
2.	B	1	3.02	3.02	1.28
3.	C	1	3.02	3.02	1.28
4.	D	1	7.23	7.23	4.95*
5.	A B	1	0.03	0.03	0.01
6.	A C	1	0.03	0.03	0.01
7.	A D	1	1.23	1.23	0.84
8.	B C	1	0.90	0.90	0.38
9.	B D	1	0.00	0.00	0.00
10.	C D	1	2.50	2.50	1.71
11.	A B C	1	0.40	0.40	0.17
12.	A B D	1	2.50	2.50	1.71
13.	A C D	1	0.10	0.10	0.07
14.	B C D	1	4.23	4.23	2.89
15.	A B C D	1	0.23	0.23	0.15
16.	Within	144	275.39	1.91	
17.	A B C D Pupils(P)within	72	170.40	2.37	
18.	A B C Residual (PD) Within ABC	72	104.99	1.46	

* Significant at 0.05 level of significance

TABLE 11

Mean Scores on different Testing Occasions for the Value of Cooperation

S.No.	Groups	Mean Scores
1.	D_1	15.19
2.	D_2	15.61

Total Score

The results for summary of four-way ANOVA (2 2 2 2) for total scores on value identification test have been entered in Table 12. It shows that F-ratio = 8.45 is significant for df 1/72 for testing occasions at 0.01 level of confidence. The obtained mean scores of the students on occasion II (M = 78.35) were higher in comparison to occasion-I (M = 76.10) as given in Table 13. It connotes that after the treatment, students achieved higher scores which might be due to the

enhancement of their ability to identify and analyse social issues pertaining to different values namely, untouchability, scientific outlook, citizenship, self-discipline and cooperation.

TABLE 12

ANOVA for Identification Test

S.No.	Source of variation	Degree of Freedom	Sums of squares	Mean squares	F-ratio
1.	A	1	0.40	40	<.01
2.	B	1	67.60	67.60	1.57
3.	C	1	21.02	21.02	0.49
4.	D	1	202.50	202.50	8.45**
5.	A B	1	0.00	0.00	0.00
6.	A C	1	9.02	9.02	0.21
7.	A D	1	129.60	129.60	5.41*
8.	B C	1	3.02	3.02	0.07
9.	B D	1	2.50	2.50	0.10
10.	C D	1	3.02	3.02	0.13
11.	A B C	1	27.22	27.22	0.63
12.	A B D	1	0.10	0.10	<.01
13.	A C D	1	9.02	9.02	0.38
14.	B C D	1	24.02	24.02	1.00
15.	A B C D	1	11.02	11.02	0.46
16.	Within	144	4828.00	33.53	
17.	A B C D Pupils(P)within	72	3102.64	43.09	
18.	A B C Residual (PD) Within ABC	72	1725.35	23.97	

* Significant at 0.05 level of significance
** Significant at 0.01 level of significance

TABLE 13

Mean Scores on different Testing Occasions for Total Scores

S.No.	Groups	Mean Scores
1.	D_1	76.10
2.	D_2	78.35

Further, Table 12 reveals that interactional effect of treatments and testing occasions (A D) is significant (F = 5.41) for df 1/72 for total scores on value identification test at 0.05 level of confidence. In this connection, Table 14 depicted that the students of JIM group

were having highest mean scores (M = 79.30) on occasion II and least (M = 75.25) on occasion-I. Figure 2 also support this interpretation. It indicates that Jurisprudential Inquiry Model of teaching is an approach significantly effective for developing the ability to identify and analyse social issues pertaining to various values namely, untouchability, scientific outlook, citizenship, self-discipline and cooperation among students in comparison to conventional method.

TABLE 14

Mean Scores for the Total Scores on Value Identification Test for Two-way Interaction (22) between the Treatments and Testing Occasions (A D)

S.No.	Groups	Mean Scores
1.	A_1D_1	75.25
2.	A_1D_2	79.30
3.	A_2D_1	76.95
4.	A_2D_2	77.40
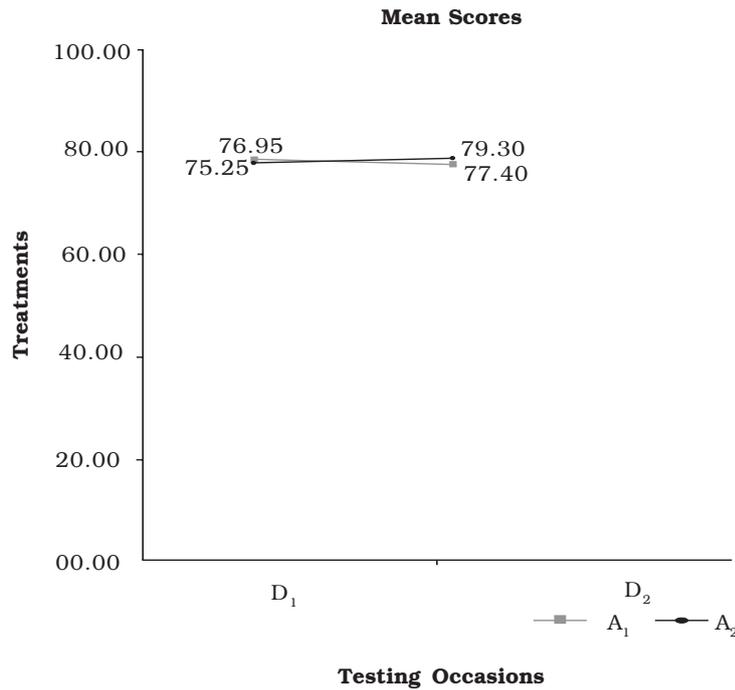
Fig 2: Mean Total Scores on Value Identification Test for Two-way Interaction between the Treatments and Testing Occasions (A D)

Conclusions

On the basis of findings following conclusions can be drawn:

1. Jurisprudential Inquiry Model of teaching was significantly effective than conventional method in developing ability to identify matters pertaining to different values namely untouchability, scientific outlook, citizenship, self-discipline and cooperation among students.

2. High intelligent students attained significantly higher scores than their counterparts' low intelligent in case of value of scientific outlook.

3. Low socio-economic status (SES) students attained significantly higher scores in comparison to high SES students for the value of citizenship. Hence, socio-economic status of the students significantly affect their ability to identify and analyse matter pertaining to the value of citizenship.

Hence, in a nutshell, it may be said that Jurisprudential Inquiry Model of teaching is significantly effective than conventional method of value inculcation and this approach may be employed for inclination towards certain values like Untouchability, Scientific Outlook, Citizenship, Self-discipline, and Cooperation among students specially at the secondary level. However, more studies need to be conducted to strengthen the finding of present study and applicability of this model in Indian context.

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A Study of Environmental Achievement in IX Standard Students Through Environmental Awareness

M. VELLAISAMY*

ABSTRACT

The present study examined functions and performances of students in strengthening environmental education and environmental awareness. Correlation has been found between the achievement of the students in environmental education and awareness. Environmental education is very important for self fulfillment and social development. The environmental education is needed for the protection and preservation of environment in order to maintain the quality of life. The role of students should go a long way in strengthening the environmental education for society. Normative survey method was used for this study. A sample of 100 students was drawn from IXth standard of four different schools of Vedaranyam Block. Questionnaire was used to collect the data from students and an environment awareness ability test was used to measure the extent and degree of awareness among students. Percentage calculation was used to find out the performance of students. Coefficient of correlation "r" was used to find out the relationship between achievement in environmental education and environmental awareness ability. The study indicates that the students are not performing to solve the problem of population explosion, exhaustion of natural resources, and pollution of the environment. As a result, students are not having enough awareness and skills for identifying and solving environmental problems. No significant positive relationship was found between achievement in environmental education and environmental awareness ability. The outdoor project, the orientation programme is to be given to students to enrich and strengthen the environmental education. Project and out of class activities should also be given to students to increase performance of students.

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* *Lecturer,* DIET, Mannargudi, Thiruvarur, Tamil Nadu.

Introduction

Environmental education means the educational process dealing with man's relationship with his natural and man made surroundings. It should aim not merely at imparting knowledge and understanding of man's total environment but also at including skills, attitudes and values necessary to understand and improve the biosphere and the troposphere. Environmental education is the process of recognising values and classifying concepts in order to develop skills and attitudes necessary to understand and appreciate the interrelatedness among man, his culture and his biophysical surroundings. Environmental education is not a separate branch of science but it is a life-long integral education.

Environment is a global concept today. Environmental education is an approach to learning and not a subject of study. It endeavours to create a way of thinking requiring people to overcome prejudices. Enviroment education helps in programming learning experiences ranging from the simple to the complex. The principle of environmental education is that it makes the child's education problem-based for understanding the environment and the hazards of pollution. The environmental education curriculum is socially relevant as it how unchecked and unplanned development pollutes air, water, and soil, thereby threatening our subsistence and existence.

Environmental education is very important for the child and the adult for self-fulfillment and social development. It helps in the maintenance of life to get good health. Environmental education helps to understand and appreciate how the environment is used for making a living and for promoting a material culture. It helps in appreciating and enjoying the nature and society.

The need for the protection of environment in order to maintain the quality of life has been identified by many countries in the world. Environmental protection starts by creating awareness among the people so that it becomes part of people's life style. Environmental education addresses issues of population explosion, exhaustion of natural resources and pollution of the environment and sheds light on methods of solving them.

Context of the study and the statement

In the current context the need for studying the environmental awareness of secondary school students is a must. It is very essential for each individual to develop an awareness of protection and

preservation towards environment. Our environment is threatened due to many hazards. Air, water and soil pollution is on the increase. Degradation of environment results in many problems. Therefore, there is a great need to protect and preserve our environment. The role of students would go a long way in achieving such desired goals. In order to hasten their awareness towards environment, it is necessary to know what levels of awareness they possess, towards environment.

Objectives

1. To study the environmental achievement as awareness of class IXth students.
2. To study the role of students in strengthening environmental education.
3. To find out the environmental awareness ability among students.
4. To find relation between achievement scores in environmental education and environment awareness ability.

Method

The normative survey method was used for this study to examine the role of students in strengthening environmental education of secondary school students. Environmental awareness ability and learning achievement are dependent variable. The investigator personally visited all the selected schools and met the students to explain the purpose of study and instructed them as to how to respond to the questionnaire and Environment Awareness Ability Scale. The questionnaire has 50 yes or no questions. 10 are related to subject knowledge in environmental education, 10 are related to protect the natural resources and 10 are related to environmental pollution and 10 are related to environment and social issues. Environment Awareness Ability Measure are having 50 items. Each item carried the value of one mark and each disagreed item carried zero mark. The negative items are scored inversely. Thus, on the total scale the scores ranged between 0-50. The scale gives a composite score of environment awareness ability of the subject.

Hypotheses

There will be no relation between learning achievement of students in environmental education and environmental awareness ability.

Sample

The sample of this study comprised 100 students from four different schools at Vedaranyam block of Nagapatnam district. The sample of students was selected using simple random sampling technique. All the students of one section from IXth standard were taken for the study.

The students included in the sample were both boys and girls.

S. No.	Name of the Schools	No. of Students
1.	Government Higher Secondary School–Kodiyakkarai	50
2.	Government Higher Secondary School–Vedaranyan	50
3.	Government High School–Pushpavanam	50
4.	Government High School–Arkattuthurai	50

Tools

The questionnaire was used to collect the data on the role responses of students.

Environment awareness ability measure is also used as tool. It measures the extent and degree of awareness of students about environmental pollution and its protection and consists of five components, viz. (i) causes of pollution; (ii) conservation of soil, forest, air, etc; (iii) energy conservation; (iv) conservation of wild life and animal husbandry. More and several items in each component constituting the total of 50 items on the scale. Three indices of reliability were determined. Split-half reliability was found to be 0.62. Secondly it was calculated by test-retest method. Two test retest reliabilities were determined one after an interval of one month and the other after two months and the values were found to be 0.75 to 73 respectively. Also the scale was found to have a validity of 0.84.

Data Analysis

TABLE 1

Responses of students to achieve the basic knowledge in environmental education

S.No	Particulars	Yes %	No%
1.	Role to take interest and know the objectives of environmental education.	72 (144)	28 (56)
2.	Role to advise the parents and society about the importance of environmental education.	60 (120)	40 (80)

3.	Role to instruct the parents and society to feel the impact of environmental education	61 (122)	39 (78)
4.	Role to help the society to acquire a basic understanding and its associated problems	60 (120)	40 (80)
5.	Role to help the social groups and individual to acquire an awareness and sensitivity to the total environment and its allied problems through various competitions like speech, drawing, dramas.	62 (124)	38 (76)
6.	Find the solutions for developing awareness of environmental education through community meeting or camp	62 (124)	38 (76)
7.	Helps to social groups and individuals acquired with skills for identifying and solving environmental problems	52 (104)	48 (96)
8.	Knowing the ecosystem	67 (134)	33 (66)
9.	Role to know the impact of environmental education	58 (116)	42 (84)
10.	Achievement of students in environmental education	28 (56)	72 (144)
	Average percentage of performing and not performing role respectively	**58.2**	**41.8**

From Table 1 it is clear that 58.2 per cent of students performing well and 41.8 per cent of students are not performing well to achieve the basic knowledge in environmental education.

TABLE 2

Classifications of students on their basic knowledge in Environmental Education

S.No	Role Performance Level	Frequency	Performance in Percentage
1.	High Level	56	28
2.	Moderate Level	100	50
3.	Low Level	44	22

From Table 2 it is clear that 28 per cent of students perform their role at high level, 50 per cent of the students perform their role at moderate level, and 22 per cent of students perform this role at low level.

TABLE 3

Responses of students "to protect the natural resources"

S.No	Particulars	Yes %	No%
11.	Role to protect the natural resources of land or soil.	68 (136)	32 (64)

12.	Role to protect the natural resources of water	56 (112)	44 (88)
13.	Role to protect the natural resources of air	31 (62)	69 (138)
14.	Role to protect the natural resources of sunlight	61 (122)	39 (78)
15.	Role to protect the natural resources of minerals	22 (44)	78 (156)
16.	Role to develop afforestation	72 (144)	28 (56)
17.	Role to prevent deforestation	51 (102)	49 (98)
18.	Role to protect the coal mines	21 (42)	79 (158)
19.	Role to participate in field trip to the appreciation of wind energy, solar energy sea wave energy, biotic energy, atomic energy	60 (120)	40 (80)
20.	Role to know the applications of trees and wild animals and protect the same	50 (100)	50 (100)
	Average percentage of performing and not performing Role respectively	**49.2**	**50.8**

From Table 3 it is clear that 49.2 per cent of students performing well and 50.8 per cent of students are not performing well to protect the natural resources.

TABLE 4

Classifications of students on preservation of the natural resource

S.No	Role Performance Level	Frequency	Performance in Percentage
1.	High Level	64	32
2.	Moderate Level	100	50
3.	Low Level	36	18

From Table 4 it is clear that 32 per cent of students perform their role at high level, 50 per cent of the students perform their role at moderate level, and 18 per cent of students performing at low level.

TABLE 5

Responses of students in protecting environmental pollution

S.No	Particulars	Yes %	No%
21.	Role know the causes of ozone depletion	71 (142)	29 (58)
22.	Role to know the causes to acid rain	72 (144)	28 (56)

23.	Role to avoid air pollution especially bursting of crackers	43 (86)	57 (114)
24.	Role to avoid air pollution especially bursting of crackers.	54 (108)	46 (92)
25.	Role to avoid water pollution	62 (124)	38 (76)
26.	Role to avoid land pollution	68 (136)	32 (64)
27.	Role to do social work like proper disposal of sewage, water effluents, hospital wastes and industrial waste	65 (130)	35 (70)
28.	Role to advise to avoid burning of plastics	67 (134)	33 (66)
29.	Role to avoid the use of plastics	61 (122)	39 (78)
30.	Role to form gobar gas plant	46 (92)	54 (108)
	Average percentage of performing and not performing role respectively	**60.9**	**39.1**

From Table 5 it is clear that 60.9 per cent of students performing well and 39.1 per cent of students are not performing well.

TABLE 6

Classifications of students in protecting environmental pollution

S.No	Role Performance Level	Frequency	Performance in Percentage
1.	High Level	108	54
2.	Moderate Level	86	43
3.	Low Level	6	3

From Table 6 it is clear that 54 per cent of students perform their role at high level and 43 per cent of the students perform their role at moderate level, and only 3 per cent of students performing at low level.

TABLE 7

Responses of students on environmental and social issues

S.No	Particulars	Yes %	No%
31.	Role to help the society to follow environmental protection act	63 (126)	37 (74)
32.	Role to know about the impact of global warming	68 (136)	32 (64)
33.	Role to conserve the rain water harvesting in every house	71 (142)	29 (58)

34.	Role to help the society to avoid the CO_2, SO_2 gas by the burning of coal, underground oil gas	38 (76)	62 (124)
35.	Role to know the impact of chlorofluoro carbon in atmosphere	67 (134)	33 (66)
36.	Role to guide the people about the conservation of human health	71 (142)	29 (58)
37.	Role to help to know the moral values of environmental education	63 (126)	37 (74)
38.	Role to help society to know the human rights with respect to environmental education	44 (88)	66 (136)
39.	Role to advise the society not carry the unnecessary fancy life for the protection of environment	22 (44)	78 (156)
40.	Role to give awareness about HIV/AIDS to the society	82 (164)	18 (36)
	Average percentage of performing and not performing role of students respectively	**58.9**	**42.1**

From Table 7 it is clear that 58.9 per cent of students performing well and 42.1 per cent of students are not performing well.

TABLE 8

Classification of students with respect to environment and social issues

S.No	Role Performance Level	Frequency	Performance in Percentage
1.	High Level	68	34
2.	Moderate Level	88	44
3.	Low Level	44	22

From the Table 8 it is clear that 34 per cent of students perform their role at high level, 44 per cent of the students perform their role at moderate level, and 22 per cent of students performing at low level.

Correlation Study

The relationship between environment achievement and awareness ability was analysed by finding the co-efficient of correlation between them and the significance of 'r' is shown in table

TABLE 9

Showing the value of 'r' and its significance

N	r	df	Significance at 0.01 level
200	0.16	198	0.181

The calculated value of 'r' is 0.16 and is lower than the value of 'r' at 0.01 level of significance and indicates negative or negative relationship.

Since the 'r' value is very low it is concluded that there is a no positive relationship between learning achievement and environment awareness ability. It indicates the very low environment awareness ability among students due to the poor achievement in environmental education.

Findings

1. Role of students to achieve the basic knowledge of environmental education is 58.2 per cent and only 28 per cent of students performing at high level.

2. Role to protect the natural resources is 49.2 per cent of students and only 32 per cent of students performing at high level.

3. Role of students in protecting the environmental pollution is 60.9 per cent of students involving and 54 per cent of students performing at high level.

4. The role of students in keeping the relation between environment and social issues is that 58 per cent and 34 per cent of students performing at high level.

The conclusion is that students are not performing their role properly and systematically at high level in strengthening environmental education. Therefore students involvement is needed in optimum level for above mentioned roles in strengthening the environmental awareness. Also the students' role are not satisfied to protect the national resources.

Educational implications and suggestions

The present study reveals that the students do not perceive some of the roles. Because, they are not aware of their roles. Special training should be given to students.

This study will help to find out environmental achievement of students as awareness. The level of environmental awareness has also been identified among students on the basis of their scores on the environmental awareness. The students are having lower level of environmental awareness, i.e., students are not having enough awareness and skill for identifying and solving environmental problems. So, the achievement in environmental education is also in

lower level. As a result, achievement of students depends upon the awareness in environmental education.

Based on the results obtained from the study, some suggestions were worked out for developing environmental awareness among students which leads achievemental education.

Students should contribute in oral discussion about the social and physical aspect of the environment.

Students should maintain a good rapport between community, parents, and in strengthening the environmental education.

Students should help to develop the society by giving guidance to remove the social issues in environmental education.

The students should contribute to out-of-class activities of real experiences like local visits to ponds, lakes, rivers, farms, zoos, factories, quarries and geological sites, ancient monuments, national park and nature trails.

The students should study the community of vegetation and the plant formations.

The outdoor project, debate, the orientation programme should be assigned to students to enrich and strengthen the environmental education.

The environmental based project or out-of-class activities should also be given to students for real experiences to increase performance of students to strengthen the environmental education.

The environmental day should be celebrated all over the India for awareness programme.

English Self-learning Instruction at the Secondary Level
A Critical Appraisal

PURNIMA GUPTA*

ABSTRACT

The present study aims at making a critical appraisal of ESL instruction at secondary level in terms of the instructional objectives, the textbooks, the evaluation procedures used and the relationship among these components of the curriculum. It also aims at determining the action of different forces acting on ESL instruction by studying teachers' perceptions towards these forces. The sample includes curricular components of three states – Himachal Pradesh, Rajasthan and West Bengal and 183 teachers from these states. Analysis of data was done descriptively. Different states follow different approaches to ESL instruction. Objectives of ESL instruction are laid down with varying degrees of specificity in different states. Textbooks across the states vary in their substantial dimensions. The evaluation procedures in ESL are similar across the three states. The study shows that where the above mentioned components of ESL instruction are not appropriate and are not appropriately related, teachers tend to hold more negative perceptions about the forces than in places (West Bengal) where such relationship is more appropriate.

Conceptual Framework

Indian society is essentially a multilingual, multiethnic and multicultural society. There are many languages spoken here and the communicative function of a particular language gets restricted to a particular region or to a particular community. For interpersonal interaction and mutual enrichment, and in order to join the

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* *Lecturer,* Maharaja Surajmal Institute, New Delhi

mainstream of national life, it is obligatory for every Indian to learn a language other than his own mother tongue, a language that is commonly shared by a majority of people. Today, no language other than English is in a position to serve this purpose. Moreover, the rapid rate of progress, the advancement in science and technology and the increasing globalisation today, have intensified the need for inter-group communication. One cannot afford to limit him/her self to one's own nation. English has also acquired a new significance as an international language.

In British ruled India, English had occupied a privileged position. It was the language of the government. In educational institutions, it was not only a compulsory subject, but the medium of instruction as well. Even after Independence, English remained an associate official language of the Union. English cannot be really done away with in the modern times. The Secondary Education Commission (1952-53) recommended compulsory teaching of English in the secondary school curriculum. The Central Advisory Board of Education (CABE, 1956) included English in the three language formula and the Education Commission (1964-66) in its modified version of the formula. The National Policy of Education (1986) and its revised versions (1990 and 1992) have emphasised the need for an effective instruction in the language.

Today, English is a compulsory feature of the Indian education system. Different state systems differ on when and with what intensity to teach English in schools. The dominant pattern, however, is one under which English is the Second Language taught after the first few years of schooling through the mother tongue. If English is taught as a second language emphasis is more on developing the passive skills rather than the active. It is true that for some people, English serves as the main tool for interpersonal interaction, but for the vast majority of our population, English is primarily meant to provide access to the world of learning and scientific scholarship.

The teaching-learning process of a second language is considerably different from that of the mother tongue. The habits in the mother tongue are acquired and confirmed quite spontaneously, and by the time, a child comes to the age when he becomes conscious that he is learning a language, he has already acquired it to a considerable extent. He can express his ideas and feelings to others and can understand theirs. Formal instruction in a native language is required only to teach him the written script of the language and to provide him experiences and the necessary vocabulary to be able

to communicate in a wide variety of situations. The teaching of English, on the other hand, has to be a conscious effort, to be formally taken by an educational agency, where teaching of the language has to be taken up with definite objectives, and the materials and methods of teaching judiciously selected and adapted so as to acquire the objectives with economy of time and accuracy of performance.

In defining the objectives of second-language learning, emphasis is more on developing the passive skills rather than the active. The same is true for English too. As English is taught after one or two Indian languages have been learnt and used for interpersonal, affective and cognitive roles, it comes in to serve as an additional tool whose primary function is to provide a link to the world of knowledge or 'to serve as the main library language' (Education Commission, 1964-66). The study group, that advised the Government of India on the changed role of English, expressed the implication of its changed status thus: 'there will be a shift on emphasis from expression to comprehension. The main aim of teaching will, then, be to develop the ability of students to read and understand books and journals and reference material in English.... The main emphasis will be on reading and comprehension' (MOE 1967). It is true that in these changed times, with increased need for international communication, for a large number of people, English serves as the main tool for interpersonal interaction, but for the vast majority of our population, English is primarily meant to provide access to the world of knowledge.

With this objective in view, the teaching-learning of English should provide support to conceptualisation and formation of abstract relations. As it is taught now, English does not always provide an adequate support towards the shared responsibility of serving as a basic tool for cognitive growth and academic achievement. As a result, even after studying English for 4-5 years and passing the Secondary School Examination with distinction, students fail to understand, in general, the Higher Secondary texts or the classroom lectures delivered in English. As for expression, it is almost non-existent in a large majority of cases.

Taking cognisance of the low effectiveness of ESL instruction, numerous efforts have been made to improve upon it. In line with the recommendations of the Education Commission (1964-66) and later the National Policies on Education (1968 and 1986), a number of English Language Teaching Institutes (ELTIs), Regional Institutes of English (RIEs), National Council of Educational Research and

Training (NCERT), New Delhi, Central Institute of English and Foreign Languages (CIEFL), Hyderabad and H. M. Patel Institute of English, Vallabh Vidyanagar have focussed on improving language achievement of the students. As a result, new teaching materials are being developed, the existing ones are being revised, new teaching methods are being evolved and new evaluation procedures are being devised. Pre-service and in-service training is also being provided to the teachers.

In spite of all these efforts, the achievement of our students in the language still remains poor. What, then, is ailing ESL instruction? Where exactly do we fail? A look into the ESL instructional system is necessary to answer these questions.

Since most of our students get little exposure of English in their environment and most ESL instruction takes place in a formal setting, the responsibility of its instruction rests heavily on the teacher. In fact, it is the teacher who is the central figure, around whom the whole instructional process revolves. E.V. Gatenby (1967) confidently asserts that 'most of the obstacles to the learning of a second language will be removed if we can provide the perfect teacher' because 'the teacher is the key figure in the process of guiding children in their experiences'. Prudence Cutright (1948), too, stresses the same point but in different words, 'the educational progress which is the good of all curriculum planning is achieved by improved teaching and in no other way'. It is the teacher who determines the quality of educational experiences which comprise the school's curriculum. In his day by day work with children under his guidance, it is he who decides what activities are appropriate for the pupils, and it is he who stimulates, guides and evaluates their work. It is his information on social values, needs and problems; his understanding of educational aims and objectives; his knowledge of children and how learning takes place; his familiarity with the resources of the school and the community for providing worthwhile experiences as well as his skill in teaching which determines the curriculum.

What teachers do in the classroom is largely determined by what they think. The importance of teachers' thought processes as determinants of pedagogical practices came into light with the publication of Jackson's (1968) book, *Life in the Classroom.* A number of researches conducted worldwide in different areas are indicative of a direct and positive relationship between teachers' beliefs and their instructional practices. Such studies have been based on the assumption that teaching is a high level decision making process

and is greatly influenced by teachers' thinking. Since thoughts and beliefs are a result of individual perceptions, it is important to study how the teachers perceive the system and also the various forces influencing the system.

An ESL teacher, like any other teacher, has to work with a number of 'givens'. Some examples of such givens are the school and the classroom, the physical resources, the teaching time available, the instructional objectives, the textbooks, the examination system, etc. In spite of all these 'givens', a teacher has a very significant role in imparting effective learning. It is for him to decide how he would use these 'givens'. It is he, who decides the day to day instructional inputs — what is to be taught, how it is to be taught, how much should be the emphasis placed on it and how it is to be evaluated. These decisions, though important, cannot be completely rational, as they cannot be made in a social and professional vacuum. These decisions are made under the influence of the 'givens' which form a complex field of forces operating on ESL instruction.

The 'givens' act as forces external to the teacher and impinge upon him to make decisions about teaching in a unique way, different from the other teachers teaching the same subject to the same class. The need and relevance of ESL instruction, out-of-school context, in-school context, students, the three major curricular components— the instructional objectives, textbooks and evaluation procedures, methods and techniques of ESL instruction form important categories of external forces acting upon ESL instruction. The teacher's knowledge, experience, self-concept and values are also important forces that act upon ESL instruction. These forces, internal to the teacher, influence the way the teacher perceives the action of the other external forces and consequently makes decisions about classroom teaching.

The teachers' perceptions are shaped by the action of internal and external forces. Instructional decisions that they make are shaped by these perceptions. A teacher of ESL who perceives these forces to be pressures on him will teach for the sole purpose of 'covering the portions'. Such a teacher will drill the students with the content; his main focus will be to enable the students to pass the examination. Such a class will be a teacher-centred class where the teacher himself will take all the decisions. On the other hand, a teacher who accepts these givens and looks for possible opportunities in them, is able to manipulate them to his advantage thus rendering them 'facilitators' rather than 'pressures'.

The internal and external forces operating on ESL instruction tend to vary from one instructional situation to another. However, three of these forces namely, the objectives of ESL study, the textbooks and the evaluation procedures adopted are common in all the state-board schools of any particular state. These three form important components of the instructional system. The objectives of ESL study determine the destination to be reached; the textbooks provide a means to reach the destination and the evaluation procedures determine the extent to which one is successful in reaching the destination. For the system to work effectively these three components should be closely related to each other.

Rationale

ESL instruction, in the present scenario, faces a lot of criticism for its ineffectiveness. The objectives of ESL study are criticised for their lack of specificity and as being far fetched and unachievable. The ESL textbooks are criticised as being dull, uninteresting and culturally alien. The examination procedures face criticisms for testing mere memorisation of content instead of language skills. The teachers are being criticised for using the textbook as a 'crutch', for resorting to word for word translation into the regional language and for teacher-centred, examination focussed teaching.

These criticisms raise several questions regarding ESL instruction. Are the objectives of ESL study relevant for the learners in the ESL scenario today? Are they consistent and clear in their statement? More importantly, are the objectives achievable in the given time and situation? Are the ESL textbooks appropriate? Are the evaluation procedures that are adopted to measure students' achievement able to give a true picture of their learning, or do newer ways of assessing learning need to be devised? Are the objectives of ESL study, the textbook and the evaluation procedures appropriately related to each other? How do the teachers perceive this relationship? How do the teachers perceive the forces that impel them to act the way they do? How do these relationships and perceptions differ across states? These are some significant issues which require careful investigation.

Only an intensive investigation of these issues will enable us to understand the true nature of ESL instruction in the country. Only then we will be able to understand what actually happens in our classroom and why it happens the way it does. And in the face of criticisms that ESL instruction faces today, such an understanding of the system becomes almost imperative.

In recent years, the focus of researchers has been mainly on methodology of ESL instruction. The often unspoken belief is that if we can get the methodology right, everything else will fall into place. Teachers' attitudes, beliefs and perceptions as areas of research have been somewhat neglected. Since teaching involves a human teacher, who has to deal with human learners, the subjective element in this process cannot be denied.

Apart from methodology of instruction, a few researches have been done in other areas such as curriculum evaluation, textbook appraisal, problems faced by teachers and learners during the teaching learning process and factors affecting the ESL instructional process. These studies have brought out the limitations of specific components of the instructional system. Such studies have been very objective and have been localised to particular regions. On the basis of such researches conducted on specific elements of any one component, it is difficult to explain the complex process of ESL instruction as a whole. What is needed is a wide study taking into consideration ESL instruction as a whole.

As already stated, the givens in ESL instruction vary from situation to situation. Therefore, it is necessary to study the ESL instructional system as it operates under the influence of the various forces affecting it in different contexts.

Though ESL instruction varies from state to state, the expectations regarding the level of achievement of language competencies at the end of the secondary stage are similar in all states as this stage marks the end of compulsory school education. So a comparative study of ESL instruction across different states at the secondary stage might lead to some enlightening facts about the system.

Realising the need for a comprehensive study in the area of ESL instruction, the investigator chose to critically appraise the ESL instruction at the secondary level across different states in India.

Statement of the Problem

'ESL Instruction at Secondary Level– A Critical Appraisal

Objectives of the Study

The objectives of the study were:
1. To critically appraise the secondary level ESL instruction with reference to:
   (i)   The instructional objectives

(ii)   The textbooks

(iii)   The evaluation procedures

2. To study the perceptions of the secondary school teachers of ESL towards the various forces operating on ESL instruction.

Hypotheses

The hypotheses of the study were framed as:

1. The instructional objectives, the textbooks and the evaluation procedures of ESL are appropriate for the secondary level.

2. The instructional objectives, the textbooks and the evaluation procedures of ESL are appropriately related to each other.

3. Teachers are capable of discerning and dealing with the forces acting on ESL instruction.

Operational Definitions of Terms Used

Critical Appraisal has been used to refer to the assessment of ESL instruction. ESL instruction is considered to be effective when the instructional objectives are consistent, clear, relevant and feasible; the textbooks are appropriate in their approach, content presentation and physical make-up and are administratively suitable; and the evaluation procedures used are appropriate, effective and practicable. Besides, these three components of the instructional system – the instructional objectives, the textbooks and the evaluation procedures are appropriately related to each other. Also, ESL teachers should be able to discern the forces affecting ESL instruction and deal with them effectively.

Instructional objectives refers to the objectives set by different Boards of Secondary Education (state-boards) for the study of ESL at the secondary level.

The textbooks refers to those ESL textbooks which were prescribed by the Boards of Secondary Education for the secondary level.

Evaluation procedures refers to the procedures of evaluation prescribed by the concerned state-boards, the assessment tools used, their nature, frequency and periodicity of their use, kinds of items and the kinds of language competencies they assess.

Forces acting on ESL instruction were taken to be those psycho-social influences from within the teacher and from the classroom, the school and the society, which operate upon ESL instruction which when perceived by an ESL teacher, impinge upon him to act in a

particular way. The effect of the forces may be positive or negative depending upon the way the teacher perceives it. If a teacher perceives a force to be conducive to his purpose, it becomes a facilitator for him. If another teacher perceives the same force as an obstruction in his way, it acts as a pressure on him. A teacher's actions are a product of the various forces acting on ESL instruction and his perception of these forces.

Sources of Data

In the present study, data were collected from the following sources:

Data related to Instructional Objectives in ESL: The ESL Syllabi prescribed by the state-boards for the Secondary School in the sample states.

Data related to ESL Textbooks: ESL textbooks prescribed for the secondary classes by the state-boards in the sample states.

Data related to Evaluation Procedures in ESL: Secondary school syllabi prescribed by the state-boards and internal examination and board examination ESL question papers for the secondary classes.

Data related perception towards forces affecting ESL instruction: Teachers of ESL at secondary level.

Nature of Data

Data related to Instructional Objectives in ESL: Descriptions in the form of general and specific language competencies

Data related to ESL Textbooks: Numerical and descriptive details of the texts, exercises, illustrations and format.

Data related to Evaluation Procedures in ESL: Numerical and descriptive details of the nature of examination, nature of questions, nature of language competencies evaluated and weightage for each.

Data related perception towards forces affecting ESL instruction: Descriptive self reporting.

Sampling

Since instructional objectives, textbooks and evaluation procedures in ESL differed from state to state, and as it was impossible to study the instructional process in all the states within a limited time frame, it was necessary to select a sample of states. This sample of states was a purposive sample and consisted of three states– Himachal Pradesh, West Bengal and Rajasthan. This sample was chosen considering the diversity of ESL instruction across the country.

The study also aimed at studying the teachers' perceptions towards forces affecting ESL instruction. The total sample of teachers comprised 183 teachers– 49 from Himachal Pradesh, 48 from Rajasthan, and 39 from West Bengal. For the sampling of the teachers, three districts were initially chosen from each state, the criteria again being their differing geographical locations. However, in the state of West Bengal, it was found that each district had only 2-3 schools run by the government and there were only 2-3 teachers teaching English at secondary level in each school. So, two more districts were included in the sample. Schools in the districts were selected in consultation with the district education authorities. The criterion of selection of schools was their reputation for being 'good' schools. All teachers teaching English as a second language in the selected schools were included in the sample.

Insturmentation

The following data gathering tools were used for the study:

1. Proforma for content analysis of syllabus
2. Proforma for content analysis of textbooks
3. Proforma for content analysis of question papers
4. Interview guide

All the above mentioned tools were developed by the researcher.

Scheme of Analysis and Interpretation of Data

The data obtained from the above process were very varied in nature. Some were in the form of quantities whereas others were in the form of descriptions. Data obtained from each state were analysed and interpreted separately.

Instructional objectives of ESL for each state were appraised on four criteria: consistency, relevance, clarity and feasibility. For a critical appraisal of ESL textbooks four aspects were taken into consideration — approach, content presentation, physical make up, and administrative concerns. Each textbook was rated on these four aspects on the Textbook Appraisal Form and its degree of appropriateness found in terms of percentage of the maximum score. Appraisal of evaluation procedures was made on three criteria: appropriateness, effectiveness and practicability.

After appraising the three curricular components separately, their compatibility with each other was descriptively analysed.

Data related to perceptions of teachers towards forces affecting

ESL instruction was collected through interviews with teachers. The recordings of all the interviews from teachers in each state were content analysed separately. For the content analysis of interviews, different perceptions towards a particular force were listed down separately for each force. While differing perceptions towards a force were added to the list, for similar perceptions, tally marks were put against the listed perception. When all the interviews had been content analysed, the tally marks against each perception towards each force were counted and put down in numerical form. These were later converted into percentages of the total. On the basis of these percentages, interpretations were drawn. In the end, the major findings on all the four variables were consolidated to get an overall view of ESL instruction.

Findings

The analysis and interpretation of data from all the three states led to the following findings:

Objectives of ESL instruction are laid down with varying degrees of specificity in different states. In West Bengal instructional objectives are laid down very specifically, mentioning all the competencies expected to be developed at the secondary stage. In Himachal Pradesh, though general and specific objectives were mentioned separately, the specific objectives were more like general objectives lacking specificity in terms of level of complexity in which the four language skills are to be developed. In Rajasthan, there is no mention of instructional objectives in ESL either in the syllabus or in the textbooks. The Instructional objectives, wherever stated, have consistency among themselves and are feasible for the secondary level learners.

Different states follow different approaches to ESL instruction. Whereas in Rajasthan and Himachal Pradesh, ESL instruction is based on the structural approach, in West Bengal a functional communicative approach is followed. Whatever be the approach followed, wherever it is specifically mentioned and specific guidelines are laid down for the teachers and students, the teachers in general perceive ESL instruction more positively than in those cases where no such specification are laid down.

Textbooks across the states vary in their substantial dimensions. While in Rajasthan there are separate textbooks for detailed study and supplementary reading, in West Bengal and Himachal Pradesh, there is only one ESL textbook for each class. The textbooks mainly cater to

reading and writing skills. Since textbooks in Rajasthan and Himachal Pradesh do not have specified instructions for listening and speaking, teachers as well as students generally ignore these skills. In West Bengal too, though there are specific instructions related to speaking, listening skills have been totally neglected. The Himachal Pradesh ESL textbooks do not even have exercises specifically related to writing skills.

The textual material in ESL textbooks is mostly narrative-descriptive and in some cases expository. ESL textbooks generally lack in argumentative, persuasive and reflective modes of writing.

In cases where structural approach is followed, the exercises and activities related to ESL learning seem stereo typed and mechanical. Though attempts have been made to lend them variety, they are not related to the daily life activities of the students. In West Bengal, where functional-communicative approach is followed, the exercises are more life-related, relevant and interesting.

Though both prose and poetry forms the content of ESL instruction in the states of West Bengal and Himachal Pradesh, in Rajasthan, ESL textbooks poetry is not included. Most teachers of ESL also feel that poetry is a relevant form for ESL instruction.

One of the major drawbacks of ESL textbooks is that they are not accompanied by teachers' manuals. In the absence of clear guidelines on how to use the textbook, the teachers teach these in their own way, most often resorting to translation of the text in the mother tongue. In West Bengal, where specific instructions were provided, teachers follow those and few teachers adopt translation method.

Teachers in general, irrespective of what approach to ESL instruction is followed, generally consider formal grammar to be essential for learning of the language. They also perceive the need for a separate grammar book.

The ESL textbooks are generally free from religious and gender biases.

ESL textbooks prescribed by the State Boards are generally not attractive and make use of poor quality of paper. In the ESL textbooks of Rajasthan and Himachal Pradesh, there are many printing errors which hamper ESL instruction.

The evaluation procedures in ESL are similar across the three states. There are written examinations assessing reading and writing skills. Reading comprehension is assessed through textual questions (in Rajasthan and Himachal Pradesh), seen and unseen passages (in all three states) and through translation from Hindi to English and vice versa (in Himachal Pradesh). Assessment of reading

comprehension skills through textual questions leads to rote-memoris-ation of answers.

Evaluation procedures in ESL do not assess listening and speaking skills in any of the states. Besides only in the state of Rajasthan ten per cent of the total marks have been kept for internal assessment. Most of the teachers feel some marks should be allotted for internal assessment.

Thus, the textbooks and the evaluation procedures are compatible with each other but these two components only cater only two language-skills — reading and writing. Also, textbooks and evaluation procedures need to be modified a little to be able to cater to the objectives of ESL instruction at Secondary Level.

Perception of teachers towards the need and relevance of ESL instruction is quite negative in states where structural approach is followed whereas it is positive in states where functional-communicative approach is followed.

Most teachers perceive that ESL instruction would be more effective if English is taught to students from an earlier stage.

Lack of proper school and home environment are also perceived to be factors responsible for low achievement in English.

Lack of teaching aids and inadequate teaching time has also been perceived to be negatively affecting ESL instruction.

Where instructional objectives and teaching methodology is not properly laid down, teachers in those states feel translation in mother tongue is necessary and that their students would not be able to understand English. These teachers have a very negative perception of their students' abilities.

In cases where instructional objectives are not specifically laid down, teachers tend to seek support from the textbooks and the examination procedures and the main aim of ESL instruction as perceived by them is to ensure maximum number of passes in the Board Examination. All their efforts are directed towards this aim. According to them, preparing their students for the ESL question paper does not leave them with enough time to pay attention to listening and speaking skills.

Teachers in general perceive the necessity of teacher training though they feel it should be made more relevant to ESL instruction.

Discussion

As stated earlier, ESL instruction, seen as a process, consists of various components which are inter-related and inter-dependent and

work towards a common objective-effective ESL learning. Three main components of the ESL instruction — the instructional objectives, the textbooks and the evaluation procedures have been studied to determine their appropriateness and their relationship with each other.

For an ideal system, the objectives of ESL instruction should be specifically laid down for each of the four language skills, the ESL textbooks should have activities and exercises related to the development of these language skills and the evaluation procedures should systematically assess achievement in these four skills. Also, because ESL instruction is the responsibility of ESL teacher, the teacher should be able to perceive this relationship, and the other forces acting on ESL instruction positively.

Generally we hear lots of criticism about ESL instruction. ESL instruction is not being effective due to the lack of appropriate relationship between these components and negative perception of ESL teachers towards some forces that affect ESL instruction.

The objectives of ESL instruction are not properly laid down in some states. In the absence of definitive objectives teachers tend to fall back on the support of the textbooks and the evaluation procedures. The results of the study clearly show that if instructional objectives are laid down specifically, teachers would know what to teach for and the students would know what is expected out of them. In such a case, even if the textbooks are not appropriate, the teacher would try to adapt the materials or use supplementary material so that they cater to the pre-set instructional objectives. In Rajasthan and Himanchal Himachal Pradesh, where instructional objectives are not properly laid down, more than 90 per cent teachers have stated that their main aim is to ensure that all students pass the ESL examination. And as ESL examination gives importance to the skills of reading and writing, these teachers also spend most of their instructional time in developing these skills in students, neglecting the skills of listening and speaking. In West Bengal, however, where objectives related to reading and writing are specifically laid down, teachers do not perceive ensuring maximum passes in the examination to be their main objective.

Besides instructional objectives being stated clearly, the substantial dimensions of the textbooks should also be such that it leads to the development of all the skills and competencies laid down as instructional objectives. In the absence of specific instructional objectives, the textbook writers will also not be sure of what to include

in the textbook. Thus, in Rajasthan, the textbooks do not contain any instructions for the teachers or the students regarding development of skills of listening and speaking. In Himanchal Himachal Pradesh, even though these skills find a place in the stated instructional objectives, no exercises or activities specific to development of these skills have been included. In West Bengal, the textbook contains specific instructions for the teachers and the students about how to use them. This is perhaps why teachers' perception towards methods and techniques of ESL instruction in West Bengal is more positive than in the other two states. The texts and exercises included in the textbooks should be interesting challenging and related to students' life so as to sustain their interests. In terms of physical aspects too, the textbooks should be able to attract the students. Scrutiny of ESL textbooks in all the three states shows that they are very dull in appearance, some do not even have pictorial illustrations and the quality of paper and printing is also poor. English, being a second language, the students need greater motivation to learn it and textbooks do not provide any help in this regard.

The evaluation procedures in all the states are based on written examination only. Except in the state of Rajasthan, in other states there is no weightage given to internal assessment. A fixed weightage to internal assessment with proper guidelines would help students and teachers take ESL instruction more seriously. Besides, internal assessment would also cater to evaluation of listening and speaking skills. As most of the teaching in the country is examination oriented, improvement in the quality of examination would also result in effective ESL instruction. The quality of questions should be such that they do not encourage rote memorisation of answers. In the state of Himachal Pradesh, it has been found that assessment of comprehension is through translation. If translation is asked in the examinations, teachers in the classroom would be forced to indulge in translation and thus students' exposure to English becomes very limited and they fall back on translation while communicating in English.

Thus, all the three components of ESL instruction – the instructional objectives, the textbooks and the evaluation procedures, need to be strengthened and made more consistent with each other if the instructional process has to be more effective.

Besides these three components, the way the teachers perceive the different forces acting on ESL instruction also determines how

they teach. The study shows that where the above mentioned components of ESL instruction are not appropriate and are not appropriately related, teachers tend to hold more negative perceptions about the forces than in places (West Bengal) where such relationship is more appropriate. ESL teachers are not able to motivate their students enough because they themselves perceive the forces acting on ESL instruction negatively. These teachers consider themselves a victim of circumstances and are consequently not able to put in the effort required for effective instruction. Teacher education programmes should provide certain attitudinal inputs to prospective teachers so that they would be able to develop a more positive outlook towards ESL instruction. Also, in-service training programmes should be started in order to provide them proper guidelines to deal with these forces positively. Only then can ESL instruction become more effective.

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A Study of Academic Record, Adjustment and Attitude as Correlates of Job Satisfaction among the Central School Teachers of Eastern U.P.

Arun Kumar Singh*

ABSTRACT

The present study was conducted on 500 central school teachers of eastern U.P. The main aim of the study was to assess job satisfaction of central school teachers and its correlation with academic record, adjustment and attitude towards teaching. Job Satisfaction Inventory developed by Mishra, Tiwari and Pandey, Mangal's Teacher Adjustment Inventory, Ahluwalia's Teacher Attitude Inventory and Academic Proforma developed by Singh (2006) were used for collecting responses of teachers. The results of the study indicate that the central school teachers are satisfied with their job. Female central school teachers are less satisfied as compared to males. Female teachers are found to be better in academic record than males, but male teachers are having more favourable attitude towards teaching than females. PGTs are having more favourable attitude towards teaching than others viz., TGTs, PRTs and miscellaneous teachers. However, positive and significant correlation has been found between Job Satisfaction and academic record, job satisfaction and adjustment, as well as between job satisfaction and attitude towards teaching.

Introduction

Satisfaction has been set forth as one of the goals of human adjustment and as one of the factors to be reckoned within an acceptable concept of efficiency. A glow of satisfaction may prevail in

* PGT (Bio), Kendriya Vidyalaya, Jawaharnagar, Sitamarhi, Bihar.

the day's work and make events seem to rum smoothly and a cloud of dissatisfaction may descend and envelop the individual in a fog of discontentment. Whatever nature of one's philosophy of life may be it would be reasonable to assume that one is entitled to a certain minimum level of satisfaction as a part of the product of his work.

Nowadays, the educational institutions are considered as social system and in that system, teachers are significant actors. Hence, the above is true for teachers too. Job satisfaction is a primary requisite for a successful teaching learning process. Job satisfaction is a complex phenomenon involving various personal, institutional and social aspects. If the teacher attains adequate job satisfaction then they will be in a position to fulfill day-to-day educational objectives as well as the national goals. If a teacher is not experiencing satisfaction in his job, he would not be able to develop desirable attitudes, values, habits, interests and other qualities in his pupils. Moreover it will be very difficult for him to carry on his professional responsibilities properly. The role of teachers in influencing the future of our advancing national development is becoming increasingly important. Inspite of this, there are very few studies conducted so far concerning the problems they have as an individual in discharging their responsibilities. In the studies conducted so far both in India and abroad, no study seems to have been conducted on the needs and satisfaction of teachers in a consolidated manner. The major findings of some of the studies are as given below.

Anand (1972) found that there is no difference between male and female teachers of higher secondary schools with regard to job satisfaction. Goyal (1980) conducted a study of the relationship among attitudes, job satisfaction, adjustment and professional interests of teacher educators in India and found that these variables are associated with each other. Srivastava (1986) found lack of physical facilities as a factor of dissatisfaction among primary teachers. Dixit (1986) pointed out that female teachers felt more satisfaction than male teachers both at primary and secondary levels. Chand (2004) found that level of existing ground and court facilities does not effect job satisfaction of physical education teachers working in Himachal Pradesh schools.

The above review reveals that no study has been undertaken so far to find the relationship among job satisfaction, academic record, adjustment and attitude towards teaching of the central school teachers. The above studies were limited to certain state level primary and secondary schools. It is a well known fact that central schools in

India play a very important role in the school level education. It also has a national character. The nature of job of teachers is also transferable. Therefore, the role of teachers in central schools is quite challenging as compared to state schools. It was found that so far no study has been conducted to find answer to the following four questions related to job satisfaction of central school teachers.

(i) Whether male and female central school teachers differ in their job satisfaction?

(ii) Whether PGTs, TGTs, PRTs and miscellaneous central school teachers differ in their job satisfaction?

(iii) Whether there is any relationship between job satisfaction, academic record, adjustment and attitude of central school teachers?

(iv) Whether there is an interaction effect of academic record, adjustment and attitude on the job satisfaction of central school teachers?

Therefore, the present study is an attempt to answer above questions.

It is also important to note that population wise Uttar Pradesh (U.P.) is the biggest state in India. Particularly, the eastern Uttar Pradesh is most densely populated as well educationally backward. Therefore the role of central school teachers working in eastern Uttar Pradesh is of utmost significance. As evident from above, their job satisfaction will certainly play important role in their significant role in schools. Therefore, following problem statement was specifically framed for this study.

"A Study of Academic Record, Adjustment and Attitude as Correlates of Job Satisfaction among the Central School Teachers of Eastern U.P."

Objectives of the Study

This study aimed to achieve the following three objectives:

1. To find out the job satisfaction, academic record, adjustment and attitude of central school teachers.

2. To find out the relationship between the attitude and job satisfaction, academic record and job satisfaction and adjustment and job satisfaction of central school teachers.

3. To find out the interaction effect of academic record, adjustment and attitude on the job satisfaction of central school teachers.

Method

Sample

In the present study random, cluster and stratified sampling techniques were used to collect the sample. It involved the sample drawn from central schools affiliated to Central Board of Secondary Education, New Delhi and governed by Kendriya Vidyalaya Sangathan, New Delhi. The teachers of central schools of eastern Uttar Pardesh were the respondents. Out of Chandouli, Varanasi, Sonebhadra, Deoria, Mau, Allahabad, Ghazipur, Ballia, Azamgarh, Siddharthnagar, Padrauna, Basti, Gorakhpur, Sant Ravidasnagar, districts which are supposed to be part of eastern U.P., only 6 districts namely Varanasi, Ghazipur, Azamgarh, Allahabad, Mau and Ballia were selected for this study. Further 500 central school teachers (CST) working in these 6 districts were randomly selected as sample of this study. The sample composition of the teachers has been given in the following table:

S.No.	Category		No. of teachers	Percentage
1.	Sex	Male	320	64%
		Female	180	36%
2.	Designation	PGTs	100	20%
		TGTs	160	32%
		PRTs	200	40%
		Miscellaneous	40	8%
		Total	500	100%

Tools

The following tools were used in the present study for collecting the required informations:

- Mangal Teacher Adjustment Inventory
- Teacher Attitude Inventory
- Job Satisfaction Inventory
- Academic Record Proforma

Mangal Teacher Adjustment Inventory

It is a short form of Teacher Adjustment Inventory known as MTAI, which has been constructed and standardised by Dr. S.K.Mangal. It has only 70 items. The mode of response to each item of the inventory

is in the form of either 'Yes' or 'No'. In the present teacher adjustment inventory 10 items are such where the response 'Yes' shows adjustment. For the remaining 60 items, the response 'No' shows adjustment. The scoring is done on adjustment side by assigning '1' marks for the response showing adjustment and '0' marks for response showing maladjustment. Thus, the total mark obtained by the individual may range from 0 to 70.

Teacher Attitude Inventory

The inventory has been constructed and standardised by Dr. S. P. Ahluwalia, Reader in Education, B.H.U. This inventory is a 90 items likert instrument consisting of six sub scales. Each sub scale has 15 statements pertaining to a particular aspect of teacher attitudes i.e., teaching profession, classroom teaching, child centred practices, education process, pupils and teachers. It contains total 43 favourable and 47 unfavourable items. Each item alternative is assigned a weight ranging from 4 (strongly agree) to 0 (strongly disagree) for favourable items and in case of unfavourable items range of weights is reversed, i.e. from 0 (strongly agree) to 4 (strongly disagree).

Job Satisfaction Inventory

This inventory is constructed and standadised by Dr. R. S. Mishra, Dr. Manorama Tiwari and Mr. D. N. Pandey. It contains 41 statements covering 11 areas. These areas are security, monetary remuneration, service conditions, future advancement, recognition of good work, social circle, working conditions, nature of job, supervision, accommodation and leave facilities. The responses to the statements were recorded under the five-points scale, i.e. most favourable, favourable, neutral, unfavourable and most unfavourable. In case of positive statements, most unfavourable was given 1 mark and most favourable 5 mark, other marks were adjusted within these two lower and upper limits. But in case of negative statements the scoring was in reverse, i.e. most unfavourable got 5 marks and favourable got 1 mark.

Academic Record Proforma

It was developed by investigator and in this proforma complete bio-data of the teachers was obtained (from high school to the highest degree achieved along with division and percentage of marks) through personal interview and school records. For scoring weightage was assigned as given below—

S.No.	Name of Examination	Weightage Assigned		
		I Division	II Division	III Division
1.	High School	5	3	2
2.	Intermediate	7	5	2
3.	Graduation	10	8	4
4.	Post Graduation	15	12	10
5.	Ph.D	20		

Procedure

The scores obtained through the above mentioned tools were categorised in two different ways, i.e. sex-wise and designation-wise. After that mean, t-test and ANOVA (two-tailed) statistical procedures were used for calculation, analysis and interpretation.

Result

1. Job Satisfaction of Central School Teachers

(a) Sex-wise

Table-1 (a) - Frequency distribution scores of job satisfaction of CST (Sex-wise)

S.No	Males (N = 320)		Females (N = 180)		t-Value
	Class interval	Frequency	Class interval	Frequency	
1.	116-125	38	113-122	18	
2.	126-135	38	123-132	18	
3.	136-145	76	133-142	90	7.38*
4.	146-155	95	143-152	54	
5.	156-165	57			
6.	166-175	16			
Mean	144.97		137.5		

* Significant at 0.05 levels.

The perusal of table 1(a) reveals that male central school teachers differ significantly from female teachers in their job satisfaction, at 0.05 levels of significance. The mean of job satisfaction scores in the same table reveals that female central school teachers are significantly less satisfied than male central school teachers.

(b) Designation-wise

Table-1 (b)– Frequency distribution scores of job satisfaction of CST (Designation-wise).

S. No.	PGTs (N = 100)		TGTs (N = 160)		PRTs (N = 200)		Misc. Teacher (N = 40)		F-Value
	C-I	Fre	C-I	Fre	C-I	Fre	C-I	Fre	
1.	126-135	12	122-131	25	125-134	41	128-137	10	
2.	136-145	55	132-141	35	135-144	41	138-147	02	
3.	146-155	11	142-151	84	145-154	76	148-157	08	1.28**
4.	156-165	22	152-161	01	155-164	42	158-167	20	
5.			162-171	01					
6.			172-181	14					
Mean	144.8		144		145.45		152		

** Not significant at 0.05 levels.

Table 1(b) reveals that F-value for job satisfaction of PGTs, TGTs, PRTs and Miscellaneous teachers is not significant at 0.05 levels of significance. Thus, it is clear that teachers working at different levels do not differ in regard to their job satisfaction.

2. Adjustment of Central School Teachers

(a) Sex-wise

Table-2 (a) - Frequency distribution scores of adjustment of CST (Sex-wise)

S.No	Males (N = 320)		Females (N = 180)		t-Value
	Class interval	Frequency	Class interval	Frequency	
1.	46-50	57	46-50	18	
2.	51-55	76	51-55	36	
3.	56-60	74	56-60	54	–0.0088**
4.	61-65	95	61-65	72	
5.	66-70	18			
Mean	57.07		58		

** Not significant at 0.05 levels.

Table 2(a) indicates that male central school teachers do not differ significantly from female central school teachers in their adjustment at 0.05 levels of significance. Therefore, it can be interpreted that both male and female central school teachers are almost equally adjusted.

(b) Designation-wise

Table- 2(b)- Frequency distribution scores of adjustment of CST (Designation-wise).

S. No.	PGTs (N = 100)		TGTs (N = 160)		PRTs (N = 200)		Misc. Teacher (N = 40)		F-Value
	C-I	Fre	C-I	Fre	C-I	Fre	C-I	Fre	
1.	49-53	11	49-52	30	50-54	72	47-51	10	
2.	54-58	42	53-56	25	55-59	85	52-56	10	
3.	59-63	33	57-60	45	60-64	34	57-61	12	1.35**
4.	64-68	02	61-64	45	65-69	09	62-66	08	
5.	69-73	12	65-68	15					
Mean	59.1		58.25		56.5		56.25		

** Not significant at 0.05 levels.

Table 2(d) illustrates that F-value for adjustment of PGTs, TGTs, PRTs and Miscellaneous teachers is not significant at 0.05 levels. Hence, it is clear that teachers working at different levels do not differ in regard to their adjustment.

3. Attitude of Central School Teachers

(a) Sex-wise

Table-3(a)- Frequency distribution scores of Attitude of CST (Sex-wise)

S.No	Males (N = 320)		Females (N = 180)		t-Value
	Class interval	Frequency	Class interval	Frequency	
1.	180-201	18	208-217	50	
2.	202-223	19	218-227	04	
3.	224-245	113	228-237	36	
4.	246-267	37	238-247	08	
5.	268-289	95	248-257	10	2.78*
6.	290-311	38	258-267	18	
7.			268-277	06	
8.			278-287	36	
9.			288-297	12	
Mean	254.16		246.61		

* Significant at 0.05 levels.

The t-value in table 3(a) reveals that in attitude towards teaching male and female central school teachers differ significantly at 0.05 levels of significance. On considering the mean of attitude scores in the same table, it is revealed that male central school teachers are having significantly more positive attitude towards teaching than female central school teachers.

(b) Designation-wise

Table-3(b)– Frequency distribution scores of attitude of CST (Designation-wise)

S. No.	PGTs (N = 100)		TGTs (N = 160)		PRTs (N = 200)		Misc. Teacher (N = 40)		F-Value
	C-I	Fre	C-I	Fre	C-I	Fre	C-I	Fre	
1.	217-226	10	180-189	10	180-189	15	239-244	10	
2.	227-236	11	190-199	02	190-199	07	245-250	09	
3.	237-246	10	200-209	15	200-209	30	251-256	08	
4.	247-256	01	210-219	13	210-219	10	257-262	10	
5.	257-266	02	220-229	02	220-229	68	263-268	08	
6.	267-276	08	230-239	35	230-239	50	269-274	04	3.34*
7.	277-286	24	240-249	20	240-249	12			
8.	287-296	34	250-259	30	250-259	08			
9.			260-269	03					
10.			270-279	30					
Mean	267.9		239.37		221.85		257.55		

* Significant at 0.05 levels.

Table 3(b) indicates that the calculated F-value for attitude towards teaching of PGTs, TGTs, PRTs and Miscellaneous teachers is significant at 0.05 levels. Thus, it is clear that teachers working at different levels differ significantly in regard to their attitude towards teaching. On considering the means of attitude scores in the same table, it is revealed that PGT's have significantly more favourable attitude towards teaching than TGTs, PRTs, and Miscellaneous central school teachers.

4. Academic record of Central School Teachers

(a) Sex-wise

Table-4(a)– Frequency distribution of academic record scores of CST (Sex-wise)

S.No	Males (N = 320)		Females (N = 180)		t-Value
	Class interval	Frequency	Class interval	Frequency	
1.	9-13	20	12-16	06	
2.	14-18	15	17-21	18	
3.	19-23	40	22-26	24	
4.	24-28	105	27-31	30	
5.	29-33	70	32-36	30	-5.86*
6.	34-38	46	37-41	40	
7.	39-43	04	42-46	02	
8.	44-48	05	47-51	24	
9.	49-53	10	52-56	06	
10.	54-58	05			
Mean	28.25		33.56		

* Significant at 0.05 levels.

The t-value in table 4(a) reveals that male central school teachers differ significantly from female central school teachers in their academic record at 0.05 levels of significance. On considering the mean of academic record scores in the same table, it is revealed that female central school teachers are having significantly better academic record than male central school teachers.

(b) Designation-wise

Table-4(b)– Frequency distribution of academic record scores of CST (Designation-wise)

S. No.	PGTs (N = 100)		TGTs (N = 160)		PRTs (N = 200)		Misc. Teacher (N = 40)		F-Value
	C-I	Fre	C-I	Fre	C-I	Fre	C-I	Fre	
1.	21-25	05	19-23	20	9-13	21	12-16	02	
2.	26-30	15	24-28	40	14-18	24	17-21	06	
3.	31-35	35	29-33	50	19-23	24	22-26	10	
4.	36-40	36	34-38	30	24-28	104	27-31	03	
5.	41-45	01	39-43	02	29-33	12	32-36	08	
6.	46.50	01	44-48	04	34-38	05	37-41	03	1.29**
7.	51-55	03	49-53	14	39-43	04	42-46	02	
8.	56-60	04			44-48	06	47-51	06	
Mean	35.4		31.69		24.08		31		

** Not significant at 0.05 levels.

Table 4(b) illustrates that calculated F-value for academic record of PGTs, TGTs, PRTs and Miscellaneous teachers is not significant. Hence, it is clear that teachers working at different levels do not differ in regard to their academic record.

5. Relationship between Job Satisfaction and Other Variables under Study

Table-5– Correlation between Job Satisfaction and Academic Record, Adjustment and Attitude towards teaching

S.No.	Name of Variables	Coefficient of Correlation
1.	Job Satisfaction and Academic Record	0.41*
2.	Job Satisfaction and Adjustment	0.76*
3.	Job Satisfaction and Attitude	0.69*

* Coefficient of correlation is significant at 0.05 levels of significance.

Table 5 indicates that-

• The value of coefficient of correlation between job satisfaction and academic record of CST is 0.41, which refers to the fact that there is a positive and moderate correlation between these two variables. At the 0.05 levels of significance it has been found to be significant which indicates that job satisfaction of central school teachers is significantly correlated with their academic record.

• The value of coefficient of correlation between job satisfaction and adjustment of CST is 0.76, which shows a substantial or marked correlation between these two variables. At the 0.05 levels of significance it has been found to be positive and significant, which indicates that job satisfaction of central school teachers is significantly correlated with their adjustment.

• The value of coefficient of correlation between job satisfaction and attitude of CST is 0.69, which indicates a substantial or marked correlation between them. At the 0.05 levels of significance, correlation between job satisfaction and attitude towards teaching has been found to be positive and significant. This fact explains that the job satisfaction of central school teachers is significantly correated with their attitude towards teaching.

6. Calculation of Interaction Effect

In the present study (2 ×2 ×2) factorial experiment was used. The first factor of interest was academic record and it was designated as factor 'A' with its two levels 'A$_1$' (good academic record) and 'A$_2$' (poor academic record). The second factor of interest was adjustment designated as 'B' and this factor was classified as 'B$_1$' (good adjustment) and 'B$_2$' (poor adjustment). The third factor of interest was attitude towards teaching designated as 'C' and it was also varied into two parts more favourable and less favourable designated as 'C$_1$' and 'C$_2$' respectively. It has been given in the table given below:

Table-6(a)- The eight treatment combination in the (2 ×2 ×2) factorial experiment

Treatment teaching	Academic Record	Adjustment	Attitude towards
A$_1$B$_1$C$_1$	Good	Good	More favourable
A$_1$B$_1$C$_2$	Good	Good	Less favourable
A$_1$B$_2$C$_1$	Good	Poor	More favourable
A$_1$B$_2$C$_2$	Good	Poor	Less favourable
A$_2$B$_1$C$_1$	Poor	Good	More favourable
A$_2$B$_1$C$_2$	Poor	Good	Less favourable
A$_2$B$_2$C$_1$	Poor	Poor	More favourable
A$_2$B$_2$C$_2$	Poor	Poor	Less favourable

Table-6(b)- Summary of complete analysis of variance for the given (2 ×2 ×2) factorial data

Source of variation	Sum of Squares	df	Mean square	F-value variance
A ×B	46.5	01	46.5	0.5*
A ×C	270.1	01	270.1	2.6*
B ×C	35.1	01	35.1	0.3*
A ×B ×C	43.6	01	43.6	0.4*

* F-Value not significant at 0.05 level.

Conclusion

Based upon the results related to objective one, two and three following conclusions were drawn:

1. As revealed in the present study the central school teachers of eastern U.P. are found to be satisfied with their job. However sex-wise analysis showed that female teachers are less satisfied than

males. On perusal of analysis of academic record, adjustment and attitude towards teaching, it was found that though they do not differ significantly in their adjustment but they differ significantly in academic record as well as in attitude towards teaching. Female teachers are found to be better in academic record than males but male teachers are having more favourable attitude towards teaching than female teachers. No significant difference was found in academic record and job satisfacton of teachers working at different levels (i.e. PGTs, TGTs, PRTs, Miscellaneous teachers) but PGTs are found to have more favourable attitude towards teaching than others.

2. The correlations between job satisfaction and academic record, job satisfaction and adjustment and job satisfaction and attitude towards teaching in the central school teachers of eastern U.P. are found to be positive and significant.

3. Job satisfaction of central school teachers of eastern U.P. is not influenced by interaction effect of academic record, adjustment and attitude.

Discussion and Implication

On summation of above mentioned conclusions it can be derived that the more favourable attitude towards teaching causes higher level of job satisfaction. This conclusion is also corroborated by the research of Gupta (1980). Based on this conclusion administrators and planners are required to develop such an environment in schools that can inculcate positive attitude within teachers. Positive attitude leads to higher level of job satisfaction; hence betterment of academic atmosphere of schools may be resulted. The recruitment procedure of teachers in central schools must incorporate "teaching attitude" related items in significant numbers. Further the different kind of policies related to central school teachers regarding transfers, infrastructure development, pay and emoluments, in-service training programmes, awards/rewards, punishments/penalties posed over teachers must be evaluated in light of their impact on attitude towards teaching.

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Inculcating Technological Know-how and Integrating ICT in Curriculum in the Teaching-learning Process

E.T. Elizabeth Potchelve*

Abstract

This paper discusses the utilisation of ICT within Teaching Training Programmemes around the world approached in a number of different ways with varying degrees of success. These approaches are subsequently described, redefined and merged into some other approaches which are also discussed in detail. In order to make teachers and teacher educators aware of the technological advancement, ICT is introduced in Primary Teacher Training Course and Secondary Teacher Training Course at various levels as a compulsory subject. This paper also attempts to find out the best instructional approach out of the three i.e., ICT skills development approach and Pedagogy approach, Subject-specific approach and Practice-driven approach for inculcating, Technological Know-how and Integrating ICT in the curriculum in the Teaching-learning process. For this purpose, 150 students from three Teacher Training Institutes and two B.Ed. colleges in and around Coimbatore city were selected. They were allotted to three groups on the basis of their scores on intelligence test. These groups were properly instructed about the three approaches. After attaining the raw scores and applying different statistical techniques, it was found that practice-driven approach is the best approach. ICT skills development approach and pedagogy approach is the second best and subject-specific approach is the third one for taking IT and inculcating technological know-how and integrating ICT in curriculum in the teaching-learning process at primary education and secondary education level.

* Teacher Educator in English Education, St. Basil College of Education for Women, Salem, Tamil Nadu.

Introduction

All analysts agree that the explosion of knowledge lies at the root of all change. The material support and the main symbol of current change are the new information and communication technologies. They are the fastest growing fields in India.

Coleridge, an English Romantic poet enunciated the theory of 'willing suspension of disbelief' i.e., making the unbelievable believable and it is the information and communication technology that has made the impossible possible.

Information technology can be simply defined as the interaction of human and machine which under human's control gathers data and disseminates information. The main objective of such a system is to provide information to its user. To accomplish this, data must be evaluated, analysed and processed to produce meaningful and useful information. In the field of education, information technology is widely used.

Technological know-how is practical knowledge or skill in technology. Knowledge applied to knowing, developing, and applying new forms of knowledge is the key to present development. No information society is possible without microprocessor. The concern for knowledge is not related to its material and technological basis. From the point of view of the likely evolution of learning methods and from the point of view of the change in education systems, the epistemological revolution which is occurring is more important than the utilitarian aspect of knowledge or know-how.

Educators and policy makers believe that information and communication technologies are of crucial importance to the future of education. As ICT is becoming an integral part of educational reforms and innovations at secondary and higher secondary schools, this situation calls for an enhancement of pre-service education on ICT for prospective teachers.

The aim of teacher education is to develop skills and appropriate knowledge among student teachers or teacher trainees for using and integrating right technology in an appropriate manner, i.e., a teacher should know about technology, pedagogy and content for using them effectively in day-to-day classroom teaching. Introducing technology in the educational process is not enough to ensure technology integration since technology alone does not lead to change. More to say, it is the way in which teachers integrate technology that has the potential to bring about change in the educational process.

The teachers have to go beyond competence with the latest tools and develop an understanding of the complex web of relationships among users, technologies practices and instruments. It is not only about what technology can do but also what technology can do for them as teachers. Techno-pedagogy is a part of technological know-how in teaching – learning process.

In Techno-pedagogy, three areas of knowledge, viz. content, pedagogy and technology are important. Content is the subject matter to be taught. Pedagogy describes the collected practices, processes, strategies, procedures and methods of teaching and learning. It also includes knowledge about the aims of instruction, assessment and student learning. Technology encompasses modern technologies such as computer, internet, digital video and common place technologies including overhead projectors, LCD, Blackboards and books.

Thus, technology integration is understanding and negotiating the relationships among these three components of knowledge. Good teaching is not simply adding technology to the existing teaching and content domain. Rather, the introduction of technology causes the representation of new concepts and requires developing sensitivity to the dynamic, transactional relationship between content, pedagogy and technology.

INSTRUCTIVISM TO CONSTRUCTIVISM

Teaching and learning have moved from instructivism to constructivism. Constructivism demands the more effective use of information and communication technology. To achieve this, contact strategic changes should be brought about which include the following:

- The existing practice of using ICT to deliver and control instruction ought to be modified thereby supporting the learner's creation of knowledge, investigation and thinking.

- Educational Institutions have to move away from the over emphasis that is given to linear logic and programmemed instruction and learning towards non-linear, networked, branching, hypertext views of learning. The purpose of this change is to establish meaningful connections among various items of knowledge.

It is argued that ICT has considerable potential to catch the tentative nature of knowledge in constructivism since the use of ICT involves drafting and re-drafting, editing and selecting, making connections and reflecting.

ICT can provide situated learning, metacognition and higher order thinking. It helps for the breaking of subject boundaries and for the development of project-based, real-world learning and authentic assessment. Student-centred learning and intrinsic motivation are also advantages of using ICT in education. These features can be considered as a corollary of constructivism.

In a situation where either the teacher or the textbook is the repository of all knowledge, the internet is an embodiment of and medium for the practice of constructivism. Because it is an expanding store of accessible information and it requires students to evaluate and select relevant information and to select their own pathways for learning.

The internet questions the conventional notions of authority, validity, the nature and ownership of knowledge. Student-centred learning is a natural consequence of internet usage and control of meaning by the learner is a leading feature of ICT usage.

ICT EDUCATION IN CLASSROOM

The opinion on the usefulness of ICT in the classroom is not clear. According to Clark (1983) 'Consistent evidence is found for the generalisation that there are no learning benefits to be gained from employing any specific medium to deliver instruction'. The assertions of Clark (1983), emphasise that mere use of ICT in education is not sufficient to make education effective.

A simple example, can illustrate this. To explain the concept of 'force', a teacher can use a table in the classroom and push it forward rather than trying to use complex multimedia presentation. But to illustrate 'projectile movement', a multimedia presentation can be made use of'.

It is easier to show how the use of more force or throwing at different angles changes the shape of the projectile movement. This cannot be explained effectively even by throwing a ball in the field. Similarly a teacher cannot effectively show how two bones are joined or how they move against each other without using an animation clip. Thus, classroom teaching can be complemented using such video clips. Such usage of technology empowers the teachers and exploits its power on the best possible way.

There must be an appropriate change in the way education is imparted with the introduction of technology. Decisions such as what to teach, how to teach, why to teach, when to teach, where to teach, and even where not to use technology need to be made by the teachers.

The ultimate goal of making teaching and learning effective has to be always kept in mind and appropriate tools to improve the learning process needs to be chosen.

HIGHER ORDER THINKING AND ICT

The impact of ICT and new technologies is the shift of emphasis from teaching to learning and from the product to the process of learning. Utilisation of ICT in classrooms, particularly in the constructing approach has great potential to develop students' higher order cognitive skills. The programmemes on computer can act as cognitive tools which facilitate the construction of higher order schemata as well as the use of cognitive skills such as formal, abstract reasoning which were previously considered to be unattainable by younger children.

ICT AND PROJECT BASED LEARNING

Project-based learning, involved in the learning through ICT should encourage students to make decisions and to find out answers for exploratory questions ('what- if '). Such tasks require discussion and communication for reaching the final product or solution. In particular, the content of curricula has increased the potential to provide authentic, real-world learning and materials. What is being suggested here is the need for active meaningful learning based on real-life tasks which will be multi-disciplinary, project based, particularly, i.e. 'minds-on' and 'hands-on' and collaborative learning. Collaborative work will require 'ad-hoc' grouping of students, the pattern of which will be changing off and on. All these will have to be guided by active pedagogies.

ICT AND PEDAGOGY (TEACHING THEORY)

The content alone is not sufficient. Therefore, a number of pedagogical tools have been developed by educationists to teach courses effectively. For a fast changing subject like IT, teachers must adopt other pedagogical tools apart from the age old method of blackboard and chalk.

Besides projects, other pedagogical tools that the educational institutions can use are

- Multimedia lessons
- Projects

- Visit to industries
- Group Discussion
- Student Seminar
- Poster making

But undoubtedly the ICT has successfully brought about many desirable changes and in pedagogy in several areas.

TESTING AND ASSESSMENT

The teacher has to make a careful selection of what is relevant and testable and then prepare the test in advance. Students can be asked different types of questions on the story, characters, their roles, etc. A number of programmemes on scientific experiments are available on the video. They can be used for testing vocabulary, grammar, comprehension, etc. The computer is another tool that can be used; there are a number of questions and answer programmemes that deal with vocabulary spelling and grammar; the word-processing and editing programmemes are very useful in testing various skills. Film strips, cartoon programmemes and cartoons can also be used in testing writing and other language skill. A lot depends on the teachers and the facilities in the institution.

Traditional assessment quite often degenerates into testing of recall memorisation and factual knowledge. Students sometimes have to wait for several days or in the case of public examinations, months for feedback in the form a simple indication of the grade reached. ICT has the potential to develop and use alternative strategies for more fruitful assessment. The provision of diagnostic assessment of strengths, weaknesses, difficulties, achievements and ways of learning and thinking are enriched and facilitated by the ICT not only in terms of speed but also in terms of the quality of the feedback.

Assessment using ICT acts as a springboard for learning having a strong formative potential. It provides a move to strengthen the links between assessment and learning.

APPROACHES TO ICT INTEGRATION IN TEACHER EDUCATION

Utilisation of ICT within teacher training programmemes around the world is being approached in a number of different ways all with varying degrees of success. These approaches are subsequently described, redefined and merged into three primary approaches, viz.

- ICT skills development approach and pedagogy approach

- Subject-specific approach
- Practice-driven approach

The advent of innovative information and communication technologies has induced tremendous changes in the present educational system. These interactive technologies have affected the very nature of teaching and learning. In response to this situation, educational institutions which offer traditional programmemes have been attempting to redefine traditional pedagogical approaches by integrating information and communication technologies in to course syllabi.

IMPACT OF ICT ON BEHAVIOURAL PATTERNS

The main advantage of ICT is that it has liberated human beings from tedious works and works which need much physical effort. Development of ICT has reduced the extent of physical effort earlier required for a number of tasks. However, a condition where no physical work is necessary is not desirable. Development of ICT may thus reach a stage where reproduction will be the only work assigned to human beings, because all other works will be done by computers. Such a condition may make human beings useless. A state where human beings have no physical tasks to perform may turn harmful to the brain and body since these organs are genetically designed for physical work, thinking and feeling. If these natural functions are lost, they may get dehumanised. Lack of physical work, lack of opportunity to communicate with emotion, through common language, and a condition of information over load, all can lead man to such a condition.

The investigator aspires to delve deep into the above mentioned approaches by stating a problem and defining the terms.

STATEMENT OF THE PROBLEM

Comparative study of the effectiveness of three major approaches to ICT integration in teacher education and inculcating technological know-how.

DEFINITION OF TERMS

EFFECTIVENESS

It is a device to assess the standardised achievement criteria test of primary education institute teacher trainees and secondary

education institute student teachers for introducing three main approaches, viz. ICT skills development and pedagogy approach, subject-specific approach and practice-driven approach to information and communication technology, and integration and inculcating in them technological know-how.

ACHIEVEMENT

Achievement is succeeding in doing by effort or skill. In the present investigation, achievement stands fort the scores of the teacher trainees and student teachers on the criterion test on technological know-how and ICT. In the present study, the independent variables are the projected aids developed by the investigator.

ICT SKILLS DEVELOPMENT APPROACH AND PEDAGOGY APPROACH

Emphasis is given to providing training in the use of ICT in general. Student teachers are expected to be skilled users of ICT in their day-to-day activities. ICT is the application of scientific and technological principles in teaching and learning situations. It is the utilisation of scientific knowledge to plan, realise and to assess the teaching learning process. ICT is also a science of technique which helps to solve the problems. In education, many issues crop up every day because of explosions of population and knowledge, aspirations of the public and expectations from the students. Within the limited time and money available more knowledge has to be given to students. This can be achieved only through the proper use of ICT. Knowledge about various software and hardware as well as their use in educational process is provided.

ICT PEDAGOGY APPROACH

This approach also stresses on integrating ICT skills in respective subjects, drawing on the principles of construction, pre-service teachers design lessons and activities that centre on the use of ICT tools that will foster the attainment of learning outcomes. To mention a few the investigator with her technological know-how by using a system demonstrated some grammatical items with regard to listening comprehension and asked questions and most of the students from control group were able to respond correctly. Likewise from life science especially in botany she showed the pictures of four types of viruses and asked some questions and all the students were

able to answer. Because of the presentation of pictures the class became lively. (questions and relevant pictures are annexed)

This approach is useful to the extent that the skills enhance ICT literary skills and the pedagogy allows students to further develop and maintain these skills in the context of designing classroom-based resources.

SUBJECT-SPECIFIC APPROACH

By this method, teachers not only expose students to new and innovative ways of learning, but also provide them with a practical understanding of what learning and teaching with ICT views and feels like.

In the subject-specific approach, emphasis was given to the subject matter with the power of manipulation. Some grammatical items (annexure-I) and multiple-choice questions in life science (botany-viruses) (annexure-II) with pictorial illustrations were presented to the students through the computer. Both the primary education students and the secondary education students from the control group showed more interest to botany than to grammatical items. The arithmetic mean scores scored by them were 20 and 21 respectively.

PRACTICE-DRIVEN APPROACH

Here more significance is given to providing exposure to use of ICT in practical aspects of teacher training also. The students are provided with an opportunity to assess the facilities available at workplace and effectively use their own skills to manipulate these facilities. Based on the concept that the pre-service teacher is a learner, manager, designer and researcher, pre-service teachers are expected to research their practicum school's ICT facilities, design ICT activities with their tutor teacher, manage those activities in the classroom and evaluate their effectiveness in terms of student learning. The investigator presented the following information to the experimental group with regard to practice-driven approach.

Information technology is becoming a means of manipulating power.

Functions of IT

* Making information
    — Creating
    — Collecting

- — Selecting
- — Transforming
- Sending/receiving information
- Storing information
- Displaying information

Creating information is the first step in making information. After an information is created, information should be collected from stores or sources of many kinds from many places and in many forms. The rate of information available depends upon the capacity, flexibility and efficiency of channels for collecting information.

Selecting information precedes and follows collecting. Collecting all the data available without any discrimination must lead to information overload. Therefore we have to make a judicious selection of information.

Transforming information means rearranging, recording and preparing the collected and selected information for presentation in various modes. The transformation function requires the ability to manipulate information as well as to analyse and synthesise it fast and with great flexibility.

Students' computer awareness with technological know-how is slowly increasing as computers are made available in many schools and in almost all the colleges. However, only a minority of students get computer literacy in spite of the motivated teachers who bring computers into their classroom for demonstration. To acquire computer literacy, students must learn by actual experience. They should learn how to operate the various components.

In the present investigation, the learners developed courseware packages in English and botany. Students were given chance to work with computer-based learning project. They were made to prepare project reports using computers.

Among the programmemes for the improvement of literature was a series entitled 'Great Classics' including such titles as 'Julius Caesar' and 'Tale of Two Cities'. In about half an hour, each programmeme tells the story of the play or books, with frequent pauses to display multiple-choice questions on the screen, aimed at testing comprehension. The students had to choose the right answer. If they did that exercise correctly, then the story would continue. A wrong answer made a buzzer sound followed by a request to try again. Likewise in the subject botany also the student-teachers were provided with explanation about different types of viruses and they were asked

to answer the multiple-choice questions on the screen (questions and relevant pictures are annexed). In the practice driven-approach all the students in the experimental group were trained to use the systems properly.

In order to make teachers aware of the technological advancements, ICT is introduced at secondary teacher training course at various levels as a compulsory subject or a special field subject. It is to be highly commended that in Tamilnadu, Bharathiar University, Coimbatore has recently introduced computer assisted instruction and communicative English as compulsory core-subjects from the academic year 2007-08.

OBJECTIVE OF THE STUDY

To compare the effectiveness of three major approaches to ICT integration in teacher training institutes and colleges of education in terms of achievement.

HYPOTHESIS

There is no significant difference between the mean achievement of teacher-trainees and student teachers receiving instructions and developing skills through three main approaches, viz.

- ICT skills development approach and pedagogy approach
- Subject-specific approach
- Practice-driven approach

LIMITATION OF STUDY

Total 150 teacher-trainees and student teachers were selected randomly from three teacher-training Institutes and two colleges of Education. Three equal matched groups of 25 teacher-trainees and student-teachers were taken from each Institute.

RESEARCH DESIGN

Methodology

Experimental research method was adopted in the present investigation. (Experimental hypothesis-testing research was administered).

Sample: 150 students from three Teacher Training Institutes and

two B.Ed colleges in and around Coimbatore city were taken. They were assigned to three groups on the basis of their scores in intelligence test so as to get three equal groups I, II and III.

Group I: 25 teacher-trainees from teacher-training institutes and 25 student-teachers from colleges of education were instructed about ICT skills development approach and pedagogy approach.

Group II: Clear-cut explanation was given to the second group about subject specific approach.

Group III: Third Group was provided with ample instructions about practice-driven approach.

TOOLS

1. Intelligence test for making the three equal matched groups. Individual test of Binet's Intelligent Test and Wechsler's Intelligence Scale and Group Test of Army Alpha Test were conducted. The abilities of the students measured in intellectual tests were
   - Perceptual speeds
   - Memory
   - Verbal meaning
   - Numerical ability
   - Spatial relations
   - Synonyms
   - Analogies
   - Practical judgement
   - Problem solving ability

2. Achievement tests for teacher-trainees and student-teachers for inculcating technological know-how and integrating ICT in curriculum in the teaching-learning process were administered. (questions are annexed).

3. Teaching items in grammar, some items in life science were taught through classroom situations and ICT in classrooms.

PROCEDURE OF THE STUDY

The achievement tests of the teacher-trainees and student-teachers on the three major approaches were the criterion test. After selection of the sample institutions, the investigator divided all the available

teacher trainees and student-teachers into three homogeneous groups. Before teaching the content, achievement test as pre-test was given to all the trainees of the three groups. All the trainees of three groups were exposed to the three types of approaches, viz.

- ICT skills development approach and pedagogy approach
- Subject-specific approach and
- Practice-driven approach.

After completion of the instructions, again achievement test as post-test was given to all the teacher trainees and student teachers. Then the collected scripts were given scores and submitted for further statistical treatments.

Major Findings

An important purpose of ICT in training institution is the development of certain manipulative skills which are required in day-to-day situation. The present study attempts to get an idea about the student-teachers' preference patterns among the three major approaches to ICT integration in the teacher-training institutes and colleges of education. Almost all the students consider practice-driven approach as the best one especially because the investigator used some pictures of viruses followed by questions to be answered.

Using relevant pictures in the classroom are of great help in teaching any school subject. They make teaching-learning more effective by providing variety, interest and inspiration. The more the different pictures the teachers have, the more different situations they can show.

It is a well-known fact that verbal illustrations cannot provide the needed experience to abstract thinking. Using visual aids like pictures to supplement on teaching helps to present the content easily and makes the class more lively. Even it improves the power of retention.

It makes inanimate objects animate. The student-teachers start considering themselves as efficient, resourceful and self-dependent as they start working themselves. The student-teachers develop curiosity towards exploration of various subjects.

Educational Implications

The findings of the study have their implications for teacher-trainees, student teachers, lecturers in teacher training institutions and

teacher educators in colleges of education, curriculum planners, media persons, administrators and policy makers in the field of education. The findings have special and conspicuous relevance to the skills and approaches in ICT and the instructors/lecturers/ teacher educators who are teaching ICT to primary educational institutes and secondary educational institutes.

In majority of teacher education institutions the syllabi followed shows less weightage to practical than theoretical aspects. But, ICT needs more practical inputs than theoretical inputs. This aspect seems to be neglected in designing the curriculum.

This scenario shows that the objectives of introducing ICT at secondary education training institutes level are inculcating technological know-how and awareness regarding various other technologies and software packages. Moreover, the time spent on practical sessions is less since more time is spent on theory sessions. Student teachers will not get much scope to integrate ICT in curriculum in the teaching-learning process. Practice and implementation level are mostly absent.

In teacher-training programme at secondary level, ICT education scenario is struggling with the following problems.

1. Only awareness development level of objectives are being achieved but not of higher order thinking skills regarding the use of ICT.

2. Technology, pedagogy and content integration is not there. They are taught separately creating confusion among students.

3. There is a discrepancy among syllabi of teacher training institutions and secondary schools.

4. Approaches to ICT education at schools mainly concentrating on ICT skills development approach, neglecting integration of other parts.

5. Time duration of the course is too short to impart knowledge and skills.

6. Non-availability of proper infrastructure facilities at most of the institutions.

7. Mismatch between available hardware and software to develop required learning sources.

8. Lack of proper access to computer materials, lack of support in critical situations, lack of decision-making authority on part of teacher to decide academic level activities, etc.

These impediments highlight the importance of providing adequate hardware and support facility for getting the best out of the use of technology in teaching-learning processes.

SOME CONSTRUCTIVE SUGGESTIONS

Following suggestions are aimed at improving the curriculum.

1. It has been found that ICT improves learning only when it identifies a real pedagogic problem and involves skilled administration of teaching and learning using technology.
2. It should not be seen as a total replacement of lecture, workshops and formal laboratories. Rather it can act as a reinforcement of concepts taught in lectures.
3. Students should be engaged in exploration and discuss their findings with others.
4. Professional development of teachers should be given importance.
5. School curriculum and teacher training curriculum should go hand in hand.
6. More practical approach by concentrating on providing techno-pedagogy aspect should have a leading place.
7. In addition to offering ICT as compulsory and special course, some integration approaches need to be undertaken.
8. To provide adequate practical exposure time management should be considered.
9. Taking help of technically trained professionals will enable to decide on proper hardware and software needed to develop learning resources easily and quickly according to the need.
10. In addition to the packages being offered like MS Office, HTML, etc. knowledge about web portals and multimedia software needs to be provided.
11. Both teachers and students need to become co-learners. In this shift of teaching-learning process, technology should play a major role. Tools like search engines can facilitate exploration of information. Skills should be taught in the junior classes and concept may be stressed in senior classes. Students should be exposed to hardware concepts so that they are comfortable with the machines. They should be able to tackle minor hardware problems and carry out preventive maintenance chores.

12. E-groups can encourage discussion between large numbers of people. Website and blog sites can help disseminate information, ideas and thoughts.

13. Proper rules and regulations and delegation of authority to students and teachers in the organisation will help in achieving the objectives of ICT to the possible extent.

Thus ICT refers to the integration of computing technology and communication. It allows us to get information and to communicate with each other or to have an effect on the environment using electronic or digital equipment. It engages students at technical, practical and critical levels. This can be taught in three ways, viz. discrete, cross-curricular and hybrid. In discrete or subject IT, a course called computer science is offered like any other subject where students will be taught about IT and then their knowledge in the subject can be assessed. In cross-curricular approach, IT is taught as part of other subjects.

Information and communication technologies play a significant role in economic, political and cultural development. The discovery publication and application of new knowledge, the dissemination of information concerning best practices and their exchange of views and opinions are essential elements of development work which are effectively facilitated by ICTs.

CONCLUSION

Undoubtedly the students of the future generation shall be techno-savants equipped with skills to function effectively on web world. Therefore, the teachers and teacher educators should be given appropriate training for inculcating skills needed for meeting the challenges and opportunities and also to meet the demands of the life-long learning.

Critical Thinking
An Important Aspect of Quality Learning

GOPAL SINGH* AND K.B.RATH**

ABSTRACT

Teacher has significant role in fostering the development of critical thinking skills among their students. They must have precise meaning of cirtical thinking, its importance and how to modify teaching practices to emphasise critical thinking skills, so that students begin to think critically and take responsibility of their learning. This article focuses on the above dimension of critical thinking with the intention that teachers may apply these techniques in the classroom to improve quality learning of students.

Introduction

We know that children learn in variety of ways through experience, discussion, making and doing things, asking, thinking, reflecting and expressing oneself through speech or writing, listening, interaction with environment, etc. So children require opportunities of all these kinds in the course of their development. But when we observe our classroom practices, such type of opportunities are rarely provided and hence it leads to memorisation, no understanding of concepts as a result learner forget the concept after examination, no motivation among students. So in this way our schools promote stereotype teaching, which discourage critical thinking, which is widely recognised as an important, even essential skill for the knowledge age. Our classroom practices have no focus on the development of thinking patterns among their students. However we need to keep

* NCERT Doctoral Fellow, National Council of Educational Research and Training
** *Dean* of Instruction and *Head* Education, Regional Institute of Education, Ajmer 305 004

faith in child's creative instinct and should not ignore vital dimensions of human capacity to create new knowledge and think critically. NCF-2005 also recognises the primary of children's experiences, their voices, and their active involvement in the process of learning. These learning experiences at school should pave the way for construction of knowledge, fostering creativity and improving students thinking abilities as well as become a source of joy, but not stress.

In recent years there has been growing interest and much research into ways of developing children's thinking and learning skills (Fisher, 2005). This has been informed by growing knowledge about how the brain works, how people learn and how teaching approaches or strategies can help to improve children's ability to think and learn. Many researches suggest that making meaning, developing the capacity for abstract thinking, reflection, problem solving, critical thinking, etc. are the most important aspects of learning. So if students are to function successfully then they must be equipped with life-long learning and thinking skills necessary to acquire and process information in a multifaceted and increasingly complex world, where information changes quickly and new ideas can be distributed and adapted almost instantaneously. Today it is important that students learn critical thinking skills, so that they can be both inventors and the critics of the new information. So critical thinking should be the focus of schooling.

What is Critical Thinking?

Critical thinking is not a new concept but derived from roots in ancient Greek. The word 'critical' derives etymologically from two Greek roots: "Kriticos" (meaning discerning judgment) and "Kriterion" (meaning standards). Etymologically then the word implies the development of "discerning judgment based on standards". Many definitions of critical thinking have been proposed (Hudgins & Edelman, 1986; Chance, 1986; Siegel, 1988; Paul, 1990; Mertes, 1991; Ennis, 1992; Scriven & Paul, 1992; Missimer, 1995; Fisher, 2006). Hudgins & Edelman (1986) stated critical thinking as the disposition to provide evidence in support of one's conclusions and to request evidence from others before accepting their conclusions.

Chance (1986) stated that it is the ability to analyse facts, generate and organise ideas, defend opinions, make comparisons, draw inferences, evaluate arguments and solve problems.

Siegel (1988) characterises Critical Thinking as being "appropriately moved by reasons" (p. 23) and emphasises particular criteria that must be satisfied for reasons to count as appropriate.

Paul (1990) define critical thinking, "The art of thinking about your thinking" (p. 32). It is the ability to think about one's thinking in such a way as:

• to recognise the strengths and weaknesses and as a result

• to recast the thinking in improved form.

Mertes (1991) defines critical thinking as the conscious and deliberate process, which is used to interpret or evaluate information and experiences with a set of reflective attitudes and abilities that guide thoughtful beliefs and actions.

Ennis (1992) stated critical thinking as reasonable reflective thinking that is focused on deciding what to believe or do. This definition comes closest to useful generic definition, which aligns with Bloom's level of evaluation.

Scriven and Paul (1992) define critical thinking as the intellectually disciplined process of actively and skillfully conceptualising, applying, analysing, synthesising and evaluating information gathered from different sources or generated by observation, experience, reflection, reasoning or communication, as guide to belief and action.

Missimer (1995) defines critical thinking as the consideration of alternative arguments in light of their evidence (p.108).

According to Fisher (2006), "Learning to think critically means:

1. Learning how to question, when to question and what questions to ask.

2. Learning how to reason, when to use reasoning and what reasoning methods to use." (p. 53)

The above definitions highlighted that it is a thinking process explicitly aims at well-founded or sound judgment and hence utilises appropriate evaluation standards in the attempt to determine the truth, worth, merit or value of something. When we think critically, we are evaluating the outcomes of our thought processes that how good a decision is or how well a problem is solved. So in short we can say that critical thinking is self-directed, self-disciplined, self-monitored and self-corrective thinking.

What Does Research Tell Us About Critical Thinking?

Most of the educators are now agreed that learning to think critically is among the most desirable or immediate goals of formal schooling. They agreed that it is infact possible to increase student's creative and critical thinking capacities through instruction and practice.

Bailin and Siegel (2003) argued that "critical thinking is often regarded as a fundamental aim and an overriding ideal of education" (p.188) and Sheffler (1973) contended that "critical thinking is of first importance in the conception and organisation of educational activities" (p.1). Several documents in the thinking skills literature (Bransford et al., 1984; Baum, 1990 & Gough, 1991) offer support for infusion of thinking skills activities into subjects in the regular curriculum. However others provide support for separate thinking skills instruction. But findings from various researches revealed that neither infused thinking skills instruction nor separate curricula are inherently superior to the other: both can lead to improve student performance and elements of both are often used together with benefical results. In a recent analysis, Bernard et al. (2008) found that mixed instructional approach that combine both content and critical thinking instruction significantly outperformed all other types of instruction. It has been also found that while developing critical thinking skills among the student's pedagogy matters and collaborative learning conditions have some advantage.

In thinking skills literature, there is strong emphasis on the importance of positive classroom climate to enhance all kinds of learning. We expect our students to think about the content of lesson, but rarely provide opportunities to learn and think about their thinking itself. Paul suggests that relevant model of teaching throughout the most education system is didactic where knowledge is seen as independent of thinking; students are taught what to think rather than how to think. Freeseman (1990) stated that it is crucial for people to have skills in questioning, comparing, contrasting, analysing and evaluating so that they will not become addicted to being told what to think and do both in school settings and in the world outside of school. Students need to be having questioning minds and develop the skills of critical thinking. Moreover the activities gave students a sense of being in control of their own learning. There is also growing realisation that for the development of critical thinking, metacognitive competencies need to be strengthened rather than cognitive one. Metacognition is developed when pupils are helped to be strategic in organising their activities and are encouraged to reflect before, during and after problem solving processes. There is a need to encourage children to think about their learning and how to improve it. It can be done by finding time for reflective writing in their own thinking or learning logs. Olson and Astington (1993) explicitly link the metacognition to critical thinking. Knowing what one knows

and how one knows it and effectively managing, developing one's cognitive resources are the foundations of critical thinking skills. It is clear from various researches that metacognition is the foundation for critical thinking.

Educators are not alone in their concern about the urgency of teaching and learning critical thinking. Various organisations and government all over the world are now more concerned than ever to promote life skills (Craft, 2001, 2005) needed in rapidly changing world. It is now realised that 'Higher Order' thinking skills are required, in addition to basic skills, because individuals cannot 'store' sufficient knowledge in their memories for future use. Information is expanding at such a rate that individuals require transferable skills to enable them to address different problems in different contexts, at different times throughout their lives. Besides this, these skills can improve students' self esteem, motivation and achievement, etc. In England the revised National Curriculum (DfEE 1999) included thinking skills in its rational, stating that thinking skills are essential in 'learning how to learn'. In the United States, "a national survey of employers, policymakers and educators found consensus that the dispositional as well as the skills dimension of critical thinking should be considered an essential outcome of a college education" (Tsui, 2002, 740-741). In Canada, the cross-country consultation on the Canadian federal government's highly influential "Innovation, Knowledge and Skills" policy recommended that schools, colleges and universities "should promote critical thinking...at all levels of education" (Government of Canada, 2002, n.p.). The conference board of Canada expressed the need for Canadians to improve their critical thinking skills to strengthen Canada's innovation profile and competitive advantage in the knowledge-based global economy (Bloom and Watt, 2003).

The National Curriculum in India is no longer to be seen simply as subject knowledge but as being underpinned by the skills of life long learning. NCF-2005 has strongly advocated the development of life skills such as critical thinking skills, interpersonal communication skills, negotiation or refusal skills, decision-making or problem solving skills, and coping and self-engagement skills is very critical for dealing with demands and challenges of everyday life.

Why is Critical Thinking Important?

The above researches stated the importance of critical thinking very clearly regarding the holistic development of student is concerned.

Teaching students to think critically is incredibly rewarding because critical thinking skills will not only help students to navigate the important decision in the process of learning but move their learning beyond memorisation or passive acceptance to understanding, the commitment to persevere untill clarity and insights are achieved. Now-a-days critical thinking skills and its significance is not only to the academic but also to the vocational and personal sucess of students. Because the complexity of modern jobs requires people who can comprehend, judge and participate in generating new knowledge and processes. Modern democratic societies require their citizens to assimilate information from multiple sources, determine its truth and use it to make sound judgements. NCF 2005 also emphasised the importance of critical thinking skills to deal with the demands and challenges of every-day life. So instruction in the classroom should be geared toward developing these skills. Teachers have to develop their 'teaching for thinking' approaches and integrate them into everyday teaching to create thinking classroom and developing whole school policies to create thinking schools.

But in the present context, the challenge is to develop the educational programme that enable all children to become effective thinkers (critical thinkers) or to prepare students for higher education and life-long learning.

How to Foster Critical Thinking Skills in the Classroom?

The role of teacher in developing critical thinking abilities include examining the personal qualities required of the teacher, the classroom climate and teaching practices, which support it. Teacher needs to become increasingly reflective about their own practice in order to build the values, skills, knowledge and processes of critical thinking into the subjects, which they teach. There is a need for shift in many classes, from a teacher-centred classroom to a student centred classroom in which students can be involved in collecting and analysing information, paired problem-solving, cooperative learning settings, debates, critical reporting sessions, etc. The available effective teaching techniques for stimulating critical thinking are given below for classroom practice.

    (i) *Begin class with problem or controversy:* Teacher should begin the class with a problem or controversy relevant to content which he/she is going to teach. He should involve the students in discussion and debate that tackle more than one side of an issue and required students to back

arguments with evidence and references to consequences. Then teacher should focus on assessing students to practise the following activities, i.e. think actively, carefully explore situation, viewing situation from a different perspective and supporting diverse perspectives with reason and evidence, etc.

(ii) *Questioning:* It is an important aspect in the development of critical thinking processes. Ask open-ended questions that do not assume the "one right answer". Open-ended questions also encourage students to think and respond creatively without fear of giving the 'wrong answer'.

(iii) *Provide opportunities and allow sufficient time for students to reflect:* Teacher should allow sufficient time for students to reflect on the questions asked or problem posed. Because critical thinking seldom involves snap judgments. Therefore, posing questions and allowing adequate time before soliciting responses help students to understand that they are expected to deliberate and to ponder, and that the immediate response is not always the best response. Teacher should provide sufficient opportunities for students to see how newly acquired skills can apply to other situations and to the students' own experience.

(iv) *Encourage to behave reflectively:* The most important aspect in developing a climate conducive to critical thinking is to increase students will or motivation to behave reflectively.

(v) *Building categories strategy:* Generally in the classroom students often are given and asked to memorise explicit rules for classifying information. The building categories strategy however is an inductive reasoning tool that helps students to categorise information by discovering the rules rather than merely memorising them. Such active learning results in better understanding and better retention of the concepts and related material than is possible with a more directive teaching method. Let us learn this with the help of an example i.e. distinguish plants from animals. Here students will work in two groups, i.e. animal group and plant group. Work sheets prepared in advance ask for information about life span, energy sources, motility, anatomy, etc. of several different animals and plants. Once the information is collected, it is compiled into large wall charts (one for animals, one for plants). At this moment

some questions can be posed to both groups at once: What are the similarities among the members of each group? What are the diferences between the two groups? How could the following statement be completed: "An animal is different from a plant because..." The teacher will provide appropriate feedback throughout, using open-ended question to help students identify inadequate or inaccurate categorisation rules. Finally the students are allowed to test the generalisability of their proposed rules by looking at new instances and placing them in the appropriate category.

(vi) *Finding problem:* It is an excellent group activity, in which two or more groups work on the same task independently and then come together to compare strategies. In this way each student has the benefit of exposure to several ways of solving the problem.

(vii) *Enhance critical thinking during lectures:* Critical thinking can be increased during lectures by periodically stopping and asking students searching thoughtful question about material presented to them, i.e.

- learn student's name and ask the questions of specific students.
- don't immediately answer such questions yourself, otherwise students will quickly realise this and not respond.
- allow sufficient time for students to think about their answer.
- ask factual questions, because many students have trouble with factual questions. They don't pay attention in class and know how to listen a lecture. However most basic type of critical thinking is to know how to listen a lecture actively rather than passively.

(viii) *After lecture and before class ends:* Teacher will ask students to write one minute paper on the most significant thing they learned in the class today and what single thing they still feel confused about. Teacher will get immediate feedback about what the students are learning and what they still need to understand. Technically this is an application of what is called "classroom research". It is the deliberate discovery of what and how much students is learning and of how you are teaching. This exercise obviously improves their critical thinking.

(ix) *Discussion based approach:* In this approach students are encouraged to state whether they agree or disagree with each other by giving a reason. Activities are designed as problem to create a context for thinking then students are given a challenge. Students are required to work collaboratively, to plan and evaluate their own and other's thinking strategies. Teacher then gets the children to think about their thinking by asking questions such as how did you get your answer? Rather than is your answer correct? What do you think we are going to have to think about?

(x) *Think-pair-share:* In this technique students first listen to a question/topic provided by the teacher and then think individually for few minutes. During thinking time students can list down their ideas/thoughts. After this students discuss the topic with each other in pairs for few minutes and finally these pairs share their thoughts/responses with the whole class. This technique helps students how to think or work in pairs and consequently promotes critical thinking among students.

(xi) *Practice critical thinking once in a week:* A teacher can develop critical thinking skills among students by emphasising and practise critical thinking once in a week. He can create a name for this time "Critical Thinking Time", so that students begin to examine process as well as the content of the discussion.

(xii) *Thinktrix:* Critical thinking skills rest on our ability to ask insightful and penetrating questions that get beneath the surface of a topic and reveal its complexity. The thinktrix is a device which can help students and teachers in generating questions and responses. It helps in shared metacognition in which teacher and students have a common framework for generating and organising thought as well as for reflecting upon it.

Research evidence reveals that problem solving activities, metacognitive discussion and collaborative learning fosters the development of the critical thinking through discussion, clarification of ideas and evaluation of other ideas. Odd one out teaching technique, stories for thinking, use of graphic organisers and concept maps are some other techniques, which may help to improve critical thinking skills among students. So in this way keeping these practices in mind teachers can improve students' critical thinking skills.

Activities by Students

Student's active involvement in the following activities, i.e. laboratories, home assignments, term papers, collaborative learning, etc. helps them to think critically. Students can initiate these activities by itself, which will help them to improve their critical thinking skils.

(i) *Laboratories:* Laboratories automatically teach critical thinking to some degree. Science laboratory exercises are all excellent for teaching critical thinking.

(ii) *Home assignments:* It also promotes critical thinking. Getting students to write more is best way to enhance critical thinking because writing forces students to organise their thoughts and think critically about the material. Students may develop concept map on any topic of their choice.

(iii) *Term papers:* This technique is strongly recommended as a way to improving students critical thinking skills. Here students have to acquire, synthesise and logically analyse information, and then to present this information and their conclusions in written form. This technique can be used in any math or science course.

(iv) *Concept map:* Concept maps are the tools that help students to make their thinking visible, provide opportunities to express their understanding about various concepts and help them to develop or gain insight while developing concept maps. Students can learn from this technique from an early age and many find it motivating. Concept mapping motivate us to think and try more.

As we know that all individuals process information differently and learn best through different styles. Hence collaborative learning, laboratories, home assignments, term papers, concept map, etc. provide opportunities to students to think critically, i.e. ask questions, speaking and listening each other, using the language of reasoning, judging what they and others think and do.

Classroom Climate

Researches show that positive classroom climate facilitate critical thinking abilities and all kind of learning and teaching. Now question arise in our mind that how we can organise the environment in classroom (or school) which support, enhance both teaching-learning process and critical thinking abilities? Teacher can nurture classroom as a safe place, where children ask questions freely, engage

in dialogue with teachers and peers, allow them to make errors and mistakes as it is an integral part of learning process (NCF-2005).

    (i)   *Physical layout of the classroom:* The seating arrangement in the classroom should be in such a way that students share the "stage" with the teacher and all can see and interact with each other. It will help to minimise the passive, receptive mode of many students.

    (ii)   *Visual aids:* Use of visual aids in the classroom can encourage ongoing attention to critical thought processes. For example: posting signs that say, "Why do I think that?" Is it fact or opinion? How are these two things alike? What would happen if...? Teacher should provide visual and oral experience, which allows students to make connection between new concepts and what they already know.

    (iii)   *Work or assignment:* Give some work or assignment to the students. Many students read and listen passively, simply observing information. However when students write, they cannot remain passive players in the learning game. Even simplest writing work such as summarisation of the ideas discussed in the classroom, summary of an article, requires that students make important critical choices.

    (iv)   *Provide real life problems:* Teacher should provide real life problems to students which can be studied or stimulated. Only those problems or topics should be selected which can be adjusted to the development level of students.

    (v)   *Use of critical thinking vocabulary:* The use of critical thinking vocabulary in the classroom enhances student's ability to learn.

Hence from the above discussion it is clear that positive classroom environment allow the learners to have more control over their learning, to think critically and to work collaboratively.

Teacher's Personal Qualities

    (i)   Teacher should be open minded and should encourage students to follow their own thinking.

    (ii)   Teacher should be flexible, i.e. he/she should change his/her own position when the evidence warrants, being willing to admit a mistake.

    (iii)   Teacher should provide opportunities for students to select activities and assignments from a range of appropriate choices constantly.

(iv) Teacher should analyse their own thinking processes, classroom practices and provide the reason for what they do.

(v) Teacher should be sensitive to other's feelings, level of knowledge, and degree of sophistication.

(vi) Teacher should show sensitivity to the physical elements which contribute to a stimulating learning environment through the physical arrangements and displays they provide or facilitate etc.

While teaching critical thinking, we may come across with many challenges and barriers. But teacher should keep some possible strategies in mind which may help them to nurture critical thinking skills among students i.e. motivate children to ask questions, encourage them to answer in their own words and from their own experiences, provide opportunities to observe and reflect, use real problems and issues, use small group discussions, show support for student efforts, regularly evaluate student progress, help students to create networks, be critical, distribute learning styles inventory and learn how your students learn, use classroom assessment techniques, design tests that require higher order thinking etc. So helping students to develop critical thinking skills will definitely have a positive impact on our classroom where students will participate in the learning process more thoughtful and effective manner.

Conclusion

Children learn in a variety of ways and require all kinds of opportunities during the course of their development. But such type of opportunities which is important for shaping thinking and learning is rarely provided in the classroom situation. Thrust on memorisation still persisting as an important focused area in the school situation. Critical thinking is an important aspect of quality learning, which not only help students to navigate important decision in the process of learning but move their learning beyond memorisation or passive acceptance to understanding as evidenced in many researches.

How to boost critical thinking among students? In this direction teachers should know precisely about critical thinking, importance of fostering critical thinking skills among students, strategies to promote critical thinking skills as well as methods of evaluation. It cannot develop in vacuum or in isolation. But it requires effective interaction between teacher, student and content as well as committed

efforts of teacher, student and administrative support to practise critical thinking in classroom or school regularly.

In the classroom situation teacher is the main actor to create and maintain conducive learning environment where he needs to become reflective about their own practices. He must keep in mind that not only one method will prove sufficient for developing critical thinking skills but regularly mould instruction integrating the subject contents for classroom practices. Such classroom processes or practices may help students to develop critical thinking skills. Hence from the above we can say that critical thinking should be included in the focus of schooling, which may help us to create thinking children, thinking classrooms and thinking schools. It is an important attribute of succes in 21st century.

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(1)
Pre-service Teacher Education for Emerging Diverse Educational Contexts
Perspectives, Practices and Prospects

Project Investigator
Dr. Vandana Mehra
Department of Education
Punjab University, Chandigarh

Introduction: In the era of globalisation, liberalisation and privatisation, teacher education has been viewed as a complex, multifaceted and vital activity. A clear variation among teacher education programmemes have been found both between and within countries. The study was undertaken to examine the prevailing teacher education programmes in all aspects keeping in view the emerging diverse educational contexts.

Objectives: The study aimed at examining the existing teacher education curricula in terms of its relevance to the diverse educational contexts; the existing practice of teacher education curriculum transactions; role in meeting their professional requirments; to prepare a profile of the teacher educators; to analyse the perceptions of stakeholders (teacher educators, teachers, community, etc., with regard to the prevailing teacher education programmemes, and how for the present day teacher education programmemes are able to achieve their objectives in practice.

Procedure: The present study was exploratory in nature and primary units of data collection were the teacher educators and prospective teachers from colleges of education affiliated to M.D. University Rohtak, Haryana.

Sample: The data was collected from six colleges of education, affiliated to M.D. University. The sample consisted of 104 teacher educators and 1296 prospective teachers.

Research Tools: Tools used to collect the data were: (a) status study of teacher education institution questionnaire, teacher educators profile; (b) perception of teacher educators towards teacher education programme; questionaire (c) perceptions of prospective teacher toward teacher education programme; questionnaire (d) stakeholders perceptions towards teachers education programme; questionnaire (e) instrument for classroom observation; questionnaire (f) semi-structured interview schedule (g) lesson plan rating instrument scale.

Data Collection and Data Analysis: Data were collected in 7 phases from the Department of Education, M.D. University, Rohtak; colleges of education for in-depth study; instructutional survey and classroom observations; administering questionnaire to teacher educators, prospective teacher and stakeholders side by side; conducting interiors and obtaining teaching episodes; analysis of syllabus, books lesson plans, practical file and aquestion papers, and conducting case studies.

Findings: The findings revealed that in general, most of the colleges have less than appropriate level of resources in terms of infrastructure, basic amenities, quality of teaching-learning process etc. It was found that the curriculum is not taking care of all the aspects identified by investigator and senior educationists of NCERT. Classroom observations of 56 teacher educators in six colleges of education relealed that the existing teacher education curriculum is partially equipping the trainees to meet their professional requirements. It has been found that the existing profiles for 104 teacher educators include 48 per cent male and 52 per cent female educationists, 50 per cent Ph.D. teacher educators; and resource persons etc.

The result showed that the B.Ed course is not completely appropriate in the present day context. Only a few of them used computer. The teacher eduators felt that better study material should be available and developed through workshops and seminars. Prospective teachers also felt that on the whole teacher education programme is adequate in giving theoretical knowledge, developing teaching skills, managing classroom and teaching only in real classroom situation.

Majority of the stakeholders found the teacher education programme average in preparing prospective teachers. It was found that 50 per cent stakeholders exihibited satisfaction with teachers who taught their children. Findings revealed that the B.Ed. syllabus was practice oriented. Several case studies of teachers revealed that

more stress should be laid on teaching practice than theory, number of files should be reduced; there should be internal assessment, etc. Hence these were mixed reactions on the status of teacher education.

Conclusion: The study reflects a great extent of success but not the total. So there is a need to conduct a study that would be overcoming the limitations of the study.

For a holistic view on perspectives, practices and procedures, we need to have an indepth investigation into the issue.

(2)
Case Studies of School Management of Some Low Performing Navodaya Vidyalayas

Project Investigators

M.S. KHAPARDE, ASHOK K. SRIVASTAVA AND RAMA MEGANATHAN
NCERT, Sri Aurobindo Marg, New Delhi

Introduction: Students' participation in a variety of curricular activities, the residential role of the teachers like remedial teaching, house masters or house mistress, the managerial skills of the principal in the field of curricular and co-curricular and administrative and financial areas are instrumental for the development of the personality of the students as envisaged in the objectives of the Jawahar Navodaya Vidyalaya system. The study focused on examining the way the principals of low performing schools plan and implement various activities; how teachers respond to the needs and demands of students, students knowledge and awareness about learning and role and impact of the macro level management in the success or failure of a school.

Objectives: The study aimed at studying the role and functions of the principals, teachers and other actors in planning and implementation of various activities (co-curricular and curricular, administrative and financial, etc.) in selected low performing Navodaya Vidyalayas (NVS), the management of specific relationships between and amongst various actors in these school; management of teaching-learning processes in these schools, and the management of support conditions, such as support received from the NVS, materials and resources, support and linkage with parents in selected low performing NVS.

Procedure: The study was explanatory in nature and data were collected from the two schools (NVS), namely JVS Jalgaon (Maharashtra) and JNV Bareilly (UP). The data were collected from varied sources including offices records, observations of various events and persons that were recorded in the field diary; by different categories of actors such as principal, teachers, students, parents, village head, and chairman of the VMC.

Tools: The study used school profile data sheet, profile of the principal, and teachers, sheets, interview schedule for principal, teachers, parents, questionnaire for alumni, classroom observation schedule and student's perception scale of school management as the tools to gather the data.

Data Analysis: Data were analysed and categorised quantitatively.

Findings: The findings reveal that the Navodaya School principal plays a pivotal role in the system. The principal JNV, Bareilly was showing accountability in all the activities of the school. The teachers of the JNV, Bareilly were all qualified and attended various training programmememes. Basic infrastructural facilities like electricity was not available at the time of visit because the school was recently shifted to its new campus. The study proved that the students were dissatisfied with the management of the school activities. The teachers were also dissatisfied in the day-to-day functioning of the school. The principal and teachers did not set any greater goals to achieve better results. A well built and highly centralised management structure as delineated in the constitution of the samiti governs the JNV across the country. The study concluded that parental participation and support in the academic activities and also their contribution in improving the overall performance of the school was very poor.

It was found that the principal, Jalgaon was working with devotion, punctuality, commitment and dedication. The relationship between the principal and the teachers was conductive and cordial. The principal was unable to exploit the good relationship with the teachers for the innovations and experiments in classroom learning activities to ensure the quality learning experiences to the students. Thinking about the career prospects is essential part of one's professional life and growth.

Teachers had faith in their children and also respect the students. The risk taking behaviour was not seen in the teachers. Instead of exploiting the residential nature of the school the teachers and

students seemed to be exhausted with the tight routine of the school in which all of them pre-occupied from morning to night. The medium of instruction was the main problem pointed out by the students.

Conclusion: The present study concludes that the low performing schools do not reveal the same initiative and innovations for academic excellence on the part of the principals and the teachers.

(3)
The Case of Lok Jumbish Project in Rajasthan
An ex-post facto Secondary Analysis and Qualitative Study

Principal Investigator
LALIT KISHORE, SENIOR FELLOW
Centre for Unfolding Learning Potentials, Jaipur

The Lok Jumbish Project in India includes communities at the outset in a school mapping exercise through participatory processes. It has been observed that the Lok Jumbish Project made a significant contribution to the primary educational system in the state of Rajasthan reaching a population of more than 12 million: against the proceeding backdrop. The present study attempts to get a broader view of Lok Jumbish Project.

In this ex-post facto study, the investigator attempts to get a broader view of the Lok Jumbish Project which was seen as a phenomenon. The study also tries to find that what is in the mind or perspective of the erstwhile functionaries of the project.

A mixed design of study involving secondary analysis, content analysis of available documents and interview was used. The study was conducted in three phases. The first phase consisted of selection and orientation of project fellow; survey of related research studies; access and collection of available project documents and formulations and validation of semi-structured interview schedule. The second phase consisted of abstracting the relevant litrature, content analysis of the document, and conducting the interviews and their analysis. The third phase of research consisted of writing and submission of draft report for assessment.

In order to conduct the present study, the following sources of the data of Lok Jumbish were used: (a) reports (b) records (c) academic work (d) books (e) periodicals (g) films, used. The ex-post facto study of the Lok Jumbish combines both qualitative and quantitative aspects of secondary analysis of some pertinent data after the expiry of the project.

It was found that in Lok Jumbish school mapping and micro-planning was considered as the back bone of the project and was the most prominent tool for mobilisation, improving school infrastructure and village level education planning. The management system of Lok Jumbish was participatory and decentralised. It consisted of teams and steering groups coupled with review and planning meeting for dynamism.

Findings revealed that the Lok Jumbish was a more open and autonomous system of functioning than *Sarva Shiksha Abhiyan.* In Lok Jumbish, the functionaries were either taken a deputation or on contract basis. Those who did not perform or could not adjust to work culture were sent back or left on their own. The political changes also afftected the functioning of Lok Jumbish. The autonomy of Lok Jumbish chased with vested interest were some limitations. The attempt to revamp three DIETs was a good beginning to promote transfer the good academic and governance practices to mainstream education.

The study also revealed three noteworthy features of Lok Jumbish commonly mobilisation, school mapping and micro-planning process, participatory management with periodic review and planning meetings; and gender sensitivity as a cross-cutting issue.

Finally, it has been concluded that the Lok Jumbish was a unique UEE project in Rajasthan and it was able to mobilise local communities and empower them through its school mapping and micro planning process along with gender sensitisation. The multiplicity of alternatives education initiaves with the help of NGOs was a unique feature of project.

Book Reviews

Early Childhood Care and Education

by Sen Gupta M

PUBLISHED BY PHI Learning Pvt. Ltd.
PRICE ₹ 275. PAGES 301

The book has been written in learner friendly manner with coverage of most of the dimensions of Early Childhood Care and Education (ECCE) with special reference to the children in India. It is a combination of developmental aspects of the pre-school children along with the need and processes involved in their school readiness along with some studies conducted on their behaviour. Examples have been sighted wherever needed from the national perspective covering Indian scenario. Rearch perspective on ECCE, a much desired area, has been combined with a policy framework covering various facets of ECCE. The contents of the book have been presented in a lucid, straight forward and unconventional manner. The book begins with the need, scope, and area of Early Childhood Care and Education, its aims and objectives, its integration with other stages of education, views of various Indian and western thinkers. Progress and prospects along with the initiatives taken in the direction of promoting ECCE including the policy perspectives. The prominent aspect of different policies and their programme of action has also found appropriate place in the book. Different administrative and functional structures existing in the country have also been covered in the book chapters on Growth and Development and Heal the Nutrition and Personal Safety of these clientele group children cover various important aspects of physical, social, motor, cognitive and emotional development along with the role and functions of various actors or functionaries like school teachers, parents, etc. The next chapter on the curriculum for the stage covers various activities and the essential features needed to be covered in ECCE curriculum for the all round development of the children at this stage giving the rationale and significance of these components of curriculum. Need of planning and management of various functionaries associated with ECCE along with the organisation and mainteinance of various infrastructure and records or other resources has been given in detail with a chapter devoted to each and every aspect of planning and management of a

system. However the book could have included some philosophical aspects of ECCE in greater details.

The book covers the area of different kinds of motor, social, cognitive and langage development separately with emphasis on gross and fine motor development, security, socially desirable behaviour, self concept, physical development, sensory stimulation, cognitive skills as well as development of vacabulary, listening skills, oral explanation, expressions, reading and writing readiness or for that matter school readiness programme. Here the book could have elaborated the expected values to be inculcated among kids at this level as per needs of today's world. The book ended with a detail of a number of suggested and sample activities and an exhaustive index. A few refineness on ECCE have also been cited in the book. The self learning style and the learner friendly way of writing the book gives a great strength to the book. Illustrations, its style of critical thinking on each and every aspect of ECCE and its crispness give the book uniqueness. Process of developing various skills needs more explanation. The diagrams and tables and latest developments like the NCF 2005 thinking on this important aspect and its Position Paper on ECCE (2006) gives a positive sign of updated knowledge included in the book. The book is a good collection of material on different developmental aspects of a child but school readiness programme and activities needed for each stage in more detail of ECCE could have raised the level of book to an excellent one. However, the book on the whole is a good piece of work in the field containing several unique features giving guideline to all those who are working in the area of ECCE.

N.K. GUPTA
Reader
Department of Educational Research and
Policy Perspectives
NCERT, New Delhi 110 016

Dialogue with Teacher-educators
Teaching Content, Modes and Its Nature
R.P. Singh, (2010)

PUBLISHED BY Shipra Publications, New Delhi
PRICE ₹ 850/$42 **PAGES** 282

"The present book, which is addressed to teacher-educators, is different from all others on the subject....." Thus begins the Preface of the book and sets the tone for the whole composition. Different it certainly is because of the novelty of its thoughts, the cogency of the evidence it

gives and the new interpretations it brings to light. The author's assertions is, beyond even a single speck of doubt, no mere self-eulogy but a candid statement of a fact strongly substaintiated by whatever follows thereafter. As we move forward from the crisp Preface which foregrounds the whole argument of the book, we are struck by the meticulously planned and carefully well-executed analyses in the area of the contents, modes as well as of the philolophy and nature of the whole activity called 'Teaching'. The volume seeks to posit and answer various questions that crop up in the way of teaching and sets about formulating the pragmatics of removing all the incongruities.

Divided into three parts namely 'The Issues: Researched', 'Technology in Indian Classrooms' and 'The Nature of Teaching', comprising twenty well-researched papers in all. It has a uniquely humbing impact upon the reader who feels tongue-tied in front of this marvellous exhibition of blessed intelligence, innovative thought-processes and persuasively convincing viewpoints that twist one's mind, threaten to make one unlearn whatever on has learnt till date and at the same time pave the path for one to relearn everything in a new perspective.

The first part of the book has seven papers which are all rooted in the argument that what we need today is a rethinking and reanalysis of whatever has been taught or is still being tought in our classrooms. If in the first one Professor Singh has exposed several false assumptions based on 'airy nothings' regarding colonisation, its genesis, the resons and factors responsible for the colonisation of India, various and veriegated ways in which the colonised societies are and must be studied and the parameters involved in such studies, William Beantik's tenure and Lord Macaulay's role in the formulation of the language policy during the time, the role of the colour of skin in the treatment of Indians by the British, the condition of literacy both in England and India at the time when the latter came under the British rule and the concept of India being a culturally homogeneous country, in the second, according to the author's own testimony, he has made "an attempt to test the hypothesis that caste and education are historically interrelated." (p.16). Caste, the learned scholar avers, "is like an evergreen weed that is resistant to any and every pesticide". (p.17) At the same time, however, he argues that India as a nation should feel object towards those communities their confrontees all the perils and hazards but in the name of 'caste-darma' protected and preserved as literary heritage for the benefit of posterity and made a significant contribution to the cause of keeping the rate of literacy up in our country. The third article find the esteemed professor raising pertinent questions on Sir Syed's claim

in 1868 and the conclusions of the Sachar Commission in 2006. Both these have projected Muslims as victims of the rulers, of "Hindu 'mischief' across political and social spectrum" (p. 27) and have regarded the perpetration of injustices by the dominant group as responsible for the educational backwardness among Indian Muslims. Dr. Singh scrutinises both the arguments thoroughly, delves deep into the vestiges of this delicate issue and advances the view that, to a very large extent, Muslims themselves are responsible for the deplorable phenomenon. Backwardness, opines the writer, should first be properly defined and the comparison in literacy rates must be between compatible variables, i.e. between Indian Muslims and those in Bangladesh and Pakistan – the two Islamic Republics and not between Muslims and Non-Muslims or Hindus, whom Muslims have always considered distinctly different and whom they themselves regard as "neither numerically nor religion wise compatible/comparable." (p. 34) The next chapter in this part traces the condition and position of women in Indian society through different periods of history. With utter grief and shame Prof. Singh cries out against their pathetic condition and deplores that even today they have to suffer from several atrocities and have to continue being mute-sufferers bearing male hegemony as a part of their lot. He has enumerated the efforts that have been made to improve their status, pointed out what remains to be done to educate them and has very poignantly declared that it is woman alone who can act as a catalyst for social transformation. In the fifth chapter the sagacious professor has questioned the validity of making a doctoral degree a pre-requisite for getting the job of a teacher. He pleads in favour of strengthening NET and reconsidering its frequency. Unprecedented quantitative growth in research activities, Dr. Singh regrets, has resulted in a qualitative degeneration. Dr. Singh has provided valuable guidelines for the benefit of the young researchers so that their researches become relevant, their findings useful and their conclusions acceptable. In the article that follows the author has put stress upon the fact that a good, effective teacher has to be a good communicator. This basic skill is unfortunately, more often than not, utterly neglected. The citadels of higher education which are expected to be repositories and conduits of knowledge, stand together like an 'immobile colossus', insensitive to the changing context of contemporary life, unresponsive to the challenges of the present as well as of the future. They appear to be lost in their deep slumber of 'Rip-Van-Winkle' age and have turned out to be absolutely unimaginative and irrelevant. Dr. Singh regrets that in the modern age of galloping technological advancement, when traditional

sequential learning has lost its appeal and relevance for the young learners, teachers find themselves unable to cater to the needs of the students of this 'digital' generation because of the irrelevant syllabi that the prospective teachers are made to go through. Besides diagnosing the disease the pragmatic educator has also prescribed appropriate remedies. He has suggested to start a National Resource Centre for Teacher Education. He has talked about certain future-oriented efforts that have already been rendered to provide easy access to knowledge and has exhorted the university-academics to upgrade teacher-education programme to make it suitable for a 'knowledge society'. The objective of the last, i.e. the seventh chapter in this section is to draw the attention of all towards the need for treating education as a distinct entity and for institutionalising educational provisions so that our education-system becomes responsible and vibrant and thus a tool for perpetuating cultural and material achievements and a powerful instrument for socio-economic change.

After an in-depth, soul-stirring analysis of certain theoretical matters related to the contents of teaching in Part I, in the second part Dr. Singh's study skirts around the issues related to the modes of teaching. Dr. Singh has marshalled all the available facts meticulously with a stunning clarity of perception and maturity of critical acumen. After dealing with the Indian scenario in the first two chapters of the section, Dr. Singh has, in the next, enumerated various modes, strategies and ETV programmes evolved, adopted and followed in various other countries. Chapter No. 11 focuses on Indian innovative initiatives in the field and No. 12 centers around different support systems that have been operational in India in recent years. Dr. Singh is quick to see certain short comings in the ongoing programmes, and with talent and brilliance at his command, has put forward ways to ensure quality in quantity in Chapter 13. He makes a definite statement that "there is no substitute for a good teacher." (p.165) but believes that the various burgeoning projects, the aid of internet, virtual classrooms and multi-media techniques may prove to be excellent supplements. The last chapter in this section, Chapter 15 of the book, bears the title 'Looking Ahead": From Vision to a Mission'. As a title itself clarifies, the article is devoted to a deep pondering over the future course of action. Education being a tripolar process, Dr. Singh underscores the need to identify, establish and specify a direct linkage among the triad in teaching, i.e. "the goals identified, subject or the context fixed according to the laws of the possible, and eventually the examination to ascertain that the goal has been achieved."(p. 203) The whole section bears an exhaustive and graphic study of the modes of teaching. It is a handy reference

tool, a ready reckoner, a reliable guide and is hereby strongly recommended for all the teacher-educators to read without fail in order to keep their knowledge updated regarding various technical supports which may be theirs for the asking and also for the whole world of academe to ascertain the path to be taken in order to take the bull by the horn.

In the third part of the book Dr. Singh navigates over the seemingly uneven, difficult terrain, through the hitherto unchartered territory of the nature and philosophy of teaching but successfully comes out of the troubled waters to shore up onto a solid embankment. His avowed purpose behind writing the first chapter in this part is, as he himself says "to clear up the cobwebs of ignorance regarding the use of the term 'teaching' as distinct and distinguished from several other terms... and also hopefully present an indian viewpoint." (p. 211) The next chapter has been planned as a sequence to the first and it carries forward the argument of the previous one. What do we mean by teaching? Is it an automatic process or a designed activity? Is it static or dynamic, linear or non-linear? What indelible print does it leave on our behaviour patterns? Does it get transmuted before it is transmitted? Is there any need or possibility of formulating a philosophy of education? These and various other similar queries are at first suggested by the learned author and then with an amazing competence, prudence, insight and precision he grapples with them and finally succeeds in driving away all the clouds of confusion. Without comprehending the essential points of convergence and drifting apart, it would be impossible to assess the depth or dimensions or the extent of the activity called 'teaching', It goes to the credit of Dr. Singh that he has so succinctly differentiated these terms – the one from the other – and has beautifully accomplished what origionally looked like an uphill task. Both these chapters (i.e. 16 and 17 of the book) abound in pithy, axiomatic expressions that may easily be quoted anywhere, A few such examples are noteworthy – "Teaching is...... guidance to know the truth which in its true sense is never its content" and "Teaching .... is one of the instruments of discovery of reality." (p. 212) "Teaching aims at helping an individual learn how to learn and thereby liberate himself of any authoritarian or formal setting." (p. 210) and "Teaching not unlike 'loving ' or 'hating' remains both complex and abstract," (p. 207) and again, "Education is different from and superior to teaching because 'education' is the goal and 'teaching' the instrument' (p. 224) and many others of the same nature. Chapter 18 posts a careful examination of the pre (i.e. presence of a learner, a teacher and definite body of information to be transmitted) and post (i.e. the outcomes) conditions of teaching.

One after the other the writer pours a torrent of subtle questions that threaten to make us get lost in a terrible maze but then like a true guide using the flashlight of his own exceptional knowledge which reflects a confluence of the East and the West, taking resort to scriptures, philosophy, anecdotes and tales, Dr. Singh very adroitly steers us out of the mist and the fog. What actually is the real nature of knowledge? What are its features and components? Is it possible to transmit knowledge in its totality in a true sense? Can knowledge transcend itself and assume the form of para-knowledge? What are the barriers that hinder its proper transmission? — These questions and many others of the same type have been researched here in a logical sequence and the author very wisely concludes that "..... 'good' or 'effective' teaching vis-a-vis knowledge is not the transmission of a measurable quantum but any attitude which may enable the taught to add or substract what he has learnt. Rationality, he belelives, can easily be taught but has enumerated five conditions under which this coveted goal may be achieved. Teaching, the sagacious writer reiterates in Chapter 19, is a purposive act, "a specific activity with a long range goal called rationality."(p. 252). As such he feels it incumbent upon himself to analyse and list the aims of education and to examine them one after the other. Education, he explicitly declares, does not and cannot stand apart or aloof from society and its ethos, from curriculum, from teacher and learner, so setting of appropriate achievable goals becomes as difficult a task as cleaning of the Augean stables was. The writer, however, has here provided us with highly precious directives with the help of which this seemingly impossible task of "receiving potable water out of a jungle of drain-pipes" (p. 257) would easily come within our grasp. The last chapter of the book, i.e. 'Teaching: An Analysis' stands as an epilogue. It summarises, redefines, reanalyses and re-emphasises the ideas discussed in the previous ones. Teaching as an activity results in a lot of social good, says the writer. He is certainly not blind to the fact that it may be misused but that, he believes, is a minor fact which merits no emphasis. The teacher, Dr. Singh says in the end, has to be a "seer", i.e. someone "who through his word and deed attempts to affect the life-styles of his followers." (p. 277)

What is really remarkable about the book is the author's ability to keep the interest in the work alive and kicking throughout. Across the entire study the author's scholarly prose is of a quite unusual stylistic elegance. His style is unassuming but stunningly effective. He has an astonishing ability to dive deep into the topic he explores and to bring out novel pearls that appear in a graceful prose which burns with commitment to the ideas. On the lexical level his writing

eschews the dire attritions of repetitions though on the level of ideas and thoughts we come across a few of them which perhaps are inherently unavoidable in a discourse of this nature. The writer's narrative moves unimpeded, with none of the usual clumsy, uncouth expressions that divert the attention away. His English is enormously cultivated and highly expressive and his range is sweeping. It encompasses within its jurisdiction a whole plethora of references to Eastern and Western artists, philosophers and scholars. At places we here a Chaucer whispering or a Defoe insinuating in a sarcastic tone, a Swift or a Shaw being recommended for his ability to make us see the British in their real colours or a Toru Dutt complaining against the burden of patriarchy on the shoulders of women. Plato, Aristotle, Nehru and many more call out from these pages voicing their opinions to validate the author's viewpoints or the writer himself beckons the scriptures like the Vedas and the Upanishads or gives out a clarion call to the other scholars – both Eastern and Western, both ancient and contemporary – to lend him a hand of support. He analyses the books of the other writers, holds them up for proper scrutiny, critisises them, refutes them, repudiates them or accepts them, admires them, praises them, recommends them – all this with one particular goal in his mind – to ratify his own assertions. These references and allusions have a special charms or their own and add a breath of fragrance to the already pleasing, refreshing and invigorating breeze.

The book is certainly a variable feast for literacy students. It poses a real challenge to any critic who fill his pen with vitriolic ink, wears the mantle of a superior person and decides to pick faults or suggest improvements. If shortcomings are a must to be pointed out, if at all there is a fly in the ointment, we may point out certain typographical errors here (e.g., 'India' in place of 'Indian' in the list of contents (Part 2, Chapter No. 8), 'sole' in place of soul (p. 6) or 'csomplaint' in place of 'complaint' (p. 29) and a few others related to punctuation marks. These mistakes trench upon the concentration of the reader and sound like somewhat discordant notes in what is otherwise a free-flowing violin recital. But these are certainly minor shortcomings of oversight and do not in any way mar or spoil the worth of this book which is like a treasure-trove for all the academics and especially for teacher-educators to whom it has been addressed and for whom it is specially meant.

GUNJAN CHATURVEDI
Reader
Department of English Studies and Research
B.D.K. (P.G.) College, Agra

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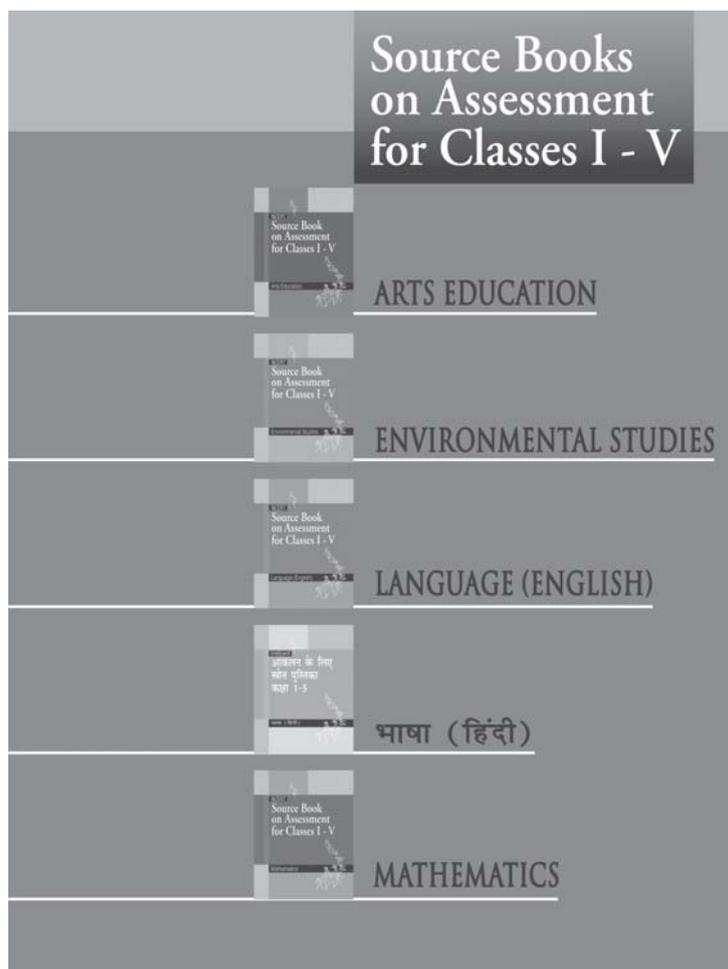
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