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A STUDY OF COGNITIVE AND AFFECTIVE COMPUTER ATTITUDES OF TEACHERS

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INTRODUCTION

No doubt that the computer is an integral part of the present education system. Once it was believed that the computer education is highly technical and can be introduced only at the higher level of education. Now, the scenario has completely changed. At present, the curriculum at the primary level itself included the computer education. A number of research studies have reported that attitudes affect perception, judgement and other cognitive process of the individuals as well as affective process like feeling, interest etc. If the teachers do not have favourable cognitive and affective attitudes towards computer, they cannot successfully integrate and transfer learning from one situation to another. As the success of the computer education primarily depends on the teachers, the planners are in need of information on attitudes that teachers possess about computers.

OBJECTIVES OF THE STUDY

The present study had the following objectives:-

1. To validate the cognitive and affective computer attitude scale using factor analysis.
2. To study the computer attitude of the teachers.
3. To study the cognitive computer attitude of the teachers.
4. To study the affective computer attitude of the teachers.
5. To study whether the teachers differ significantly in computer attitudes, cognitive computer attitude

and affective computer attitude with respect to their personal variables such as sex, age, general educational qualification, professional educational qualification, subject of specialisation (faculty) and the school related variables such as management of the school, type of the school and the board (syllabus followed).

METHOD OF STUDY

The present study adopted normative survey method.

Sample

A sample of 275 teachers were selected adopting stratified random sampling technique giving due importance to the variables related to the teacher and school.

TOOL CONSTRUCTION, VALIDATION AND ADMINISTRATION

The investigators themselves developed the present tool based on the ideas gained through research article authored by Bannon, Marshall and Fluegal (1985). The original tool consisted of 14 items, 7 items each for cognitive attitude and affective attitude. In the present study, the investigators included some more relevant items under each and finalised a draft scale consisting of 40 items. The items were then subjected to Jury opinion, the jury being three Professors, two Readers and one Senior Lecturer in Education. This scale was administered to the said sample of 275 teachers.

The items were rated on 5-point scale, i.e. Likert type response format was followed ranging from Strongly Agree (4) to Strongly Disagree (0) for the favourable items and the same was reversed for the unfavourable items. The responses were factor analysed (Principal Component Analysis). The Principal Component Analysis grouped the 40 items under 2 factors. Careful scrutiny of the factor loading revealed that 4 out of 40 items were not sound and valid. (Factor loading less than 0.35). Of the valid 36 items, 16 items were grouped under Factor-I which was named as Cognitive Computer Attitude (Sub Scale-!) and 20 items were grouped under Factor-ll which was named as Affective Computer Attitude (Sub Scale-li). The Factor-I, which had 16 items, accounted for 18.7% of variance and the Factor-ll, which had 20 items, accounted for 44.2% of variance. Thus, both the Factors I and li together accounted for 62.9% of variance. All the 16 items in Sub Scale-I namely 'Cognitive Attitude Scale' were positive in natufe. Out of 20 items in Sub Scale-M namely 'Affective Attitude Scale', two items were positive and the remaining 18 were negative in nature. (Attitude Scale with the Nature of items and Factor loading is appended). The responses given for these 36 items were taken into consideration for further statistical calculation. The final tool had the minimum and maximum possible score for Sub Scale I as 0 and 64 and for Sub Scale II as 0 and 80. The minimum and maximum score for both the scales put together (hitherto called Computer Attitude Scale) were 0 and 144. The items were scored such that high score indicated more favourable Computer Attitude.

The Reliability of the scales was established by using the Cronbach Alpha (Guilford, 1975). The Intrinsic Validity of the scales was established by taking the square root of the proportion of the true variance, i.e. the square root of the reliability coefficient. The details in respect of the scales are given Table 1.

TABLE 1
DETAILS IN RESPECT OFTHETOOLS USED

TOOL	NUMBER OF ITEMS	MAXIMUM SCORE	COEFFICIENT OF	
			Reliability	Validity
Cognitive Attitude	16	64	0.89	0.94
Affective Attitude	20	80	a.73	0.85
Computer Attitude	36	144	0.78	0.88

ANALYSIS AND INTERPRETATION

The data collected were analysed using Descriptive and Inferential Statistics.

The mean and standard deviation of the scores on Cognitive and Affective Computer Attitudes for different sub-groups based on the Personal and School related variables of the sample were calculated and are given in Table 2.

TABLE 2
MEAN AND STANDARD DEVIATION OF THE SCORES ON COMPUTER ATTITUDES

VARIABLES	COGNITIVE ATTITUDE		AFFECTIVE ATTITUDE		COMPUTER ATTITUDE	
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.
SEX OF THE RESPONDENT						
MALE	46.31	8.12	40.22	6.51	86.52	11.17
FEMALE	48.15	8.16	38.04	8.53	86.19	11.29
AGE OF THE RESPONDENT						
BELOW 35 YEARS	49.16	7.55	40.42	8.16	89.58	10.37
35 TO 50 YEARS	46.72	8.63	36.81	7.78	83.53	11.43
ABOVE 50 YEARS	44.58	7.20	41.42	5.65	86.00	10.26
DESIGNATION OF THE RESPONDENT						
mi	46.82	8.60	38.84	9.13	85.66	12.56
RGT.	48.26	7.72	38.63	6.76	86.89	9.81
GENERAL EDUCATIONAL QUALIFICATION						
GRADUATE	45.82	9.08	38.02	9.84	83.84	12.66
POST GRADUATE	48.30	7.67	39.04	7.07	87.34	10.43
PROFESSIONAL EDUCATIONAL QUALIFICATION						
GRADUATE	47.02	8.63	39.04	8.75	86.09	12.30
POST GRADUATE	48.28	7.50	38.33	6.86	86.61	9.68
SPECIALISATION (FACULTY)						
ARTS	46.93	8.65	37.55	8.27	84.49	.11.72
SCIENCE	48.03	8.08	40.55	7.44	88.57	11.03
COMMERCE	49.05	4.57	36.00	7.25	85.05	5.61
MANAGEMENT OF THE SCHOOL						
GOVERNMENT	46.51	7.67	39.13	7.32	85.73	10.75
CORPORATION	50.50	10.97	34.50	11.03	85.00	9.85
PRIVATE AIDED	46.85	7.15	38.60	5.47	85.45	8.75
PRIVATE UNAIDED	48.55	8.62	39.71	9.48	88.26	14.11
TYPE OF THE SCHOOL						
BOYS'	43.77	6.23	39.68	6.61	83.45	9.94
GIRLS'	49.32	8.90	36.84	10.06	86.16	9.81
CO-EDUCATION	48.25	8.20	38.92	7.76	87.17	11.82
SCHOOL BOARD						
STATE	47.62	8.06	38.30	7.52	85.92	9.30
MATRICULATION	48.55	8.62	39.71	9.48	88.26	14.11
CENTRAL BOARD	46.35	7.84	38.45	6.99	84.80	10.69
ENTIRE SAMPLE						
ENTIRE SAMPLE	47.56	8.98	38.73	7.99	86.29	11.23

The results in Table 1 reveal that both the male and female teachers had favourable Computer Attitude. Considering the sub scales, female teachers had more favourable Cognitive Computer Attitude, whereas male teachers had more favourable Affective Computer Attitude. As regards the age, the teachers belonging to age group below 35 years had more favourable Computer Attitude than the teachers belonging to other age groups. Considering the sub scales, the teachers belonging to the age group below 35 years had more favourable Cognitive Computer Attitude, whereas the teachers belonging to the age group above 50 years had slightly more favourable Affective Computer Attitude. As regards the designation of teachers, Post Graduate Teachers (P.G.T.) had slightly more favourable Computer Attitude than the Trained Graduate Teachers (T.G.X) and it was also found to be true for the sub scale Cognitive Computer Attitude. But in the Affective Computer Attitude both the teachers had more or less same level of favourable Attitude. Taking into consideration the General Educational Qualification of the teachers, the teachers having Post-graduate qualification had more favourable Computer Attitude than the teachers having Graduate Qualification and it was found to be same for both the sub scales also. Considering the Professional Educational Qualification, both the teachers with Graduate Qualification in Education and Post-graduate Qualification in Education had favourable Computer Attitude. Considering the sub scales it was found that the Teachers with Post-graduate Qualification in Education had slightly more favourable Cognitive Computer Attitude and the teachers with Graduate Qualification in Education had slightly more favourable Affective Computer Attitude. As regards the subject of specialisation, the teachers belonging to the Science Faculty had more favourable Computer Attitude than the teachers of Arts and Commerce Faculty. Considering the sub scales, the teachers belonging to the Commerce Faculty had more favourable Cognitive Computer Attitude and the teachers belonging to the Science Faculty had more favourable Affective Computer Attitude. As regards to the different types of management, the teachers working in private unaided schools had more favourable Computer Attitude than the teachers working in other types of management; it was also found to be true for the sub scale Affective Computer Attitude. Considering the other Sub Scale, it was found that the teachers working in Corporation schools had more favourable Cognitive Computer Attitude. Regarding the types of schools (Boys, Girls and Co-education), the teachers working in the Co-education schools had more favourable Computer Attitude than the teachers working in Boys' school and Girls' schools. Considering the sub scales, the teachers working in Girls' schools had more favourable Cognitive Computer Attitude, where as the teachers working in Boys' schools had more favourable Affective Computer Attitude. As regards the different types of Educational Board, the teachers working in Matriculation schools had more favourable Computer Attitude than the teachers working in State and Central Boards schools. The same was true in the case of both the sub scales also. In order to find out the significant difference among the different sub groups based on the Personal and School related variables of the sample, 't-values were calculated and they are given in Table 3.

Table - 3

t-VALUES FOR DIFFERENT SUB GROUPS OF THE SAMPLE WITH RESPECT TO THE SCORES ON COMPUTER ATTITUDES

SOURCE	df	COGNITIVE ATTITUDE		AFFECTIVE ATTITUDE		COMPUTER ATTITUDE	
		t	P	t	P	t	P
SEX OF THE RESPONDENT							
MALE-FEMALE	273	1.75	>0.05	2.34	<0.05	0.23	>0.05

AGE OF THE RESPONDENT							
BELOW 35 - 35-50	249	2.39	<0.05	3.58	<0.01	4.40	<0.01
BELOW 35-ABOVE 50	138	2.81	<0.01	0.72	>0.05	1.55	>0.05
35-50-ABOVE 50	157	1.30>	0.05	3.46	<0.01	1.07	>0.05
DESIGNATION OF THE RESPONDENT							
T.G.T. - P.G.T.	273	1.46	>0.05	0.22>	0.05	0.90	0.05
GENERAL EDUCATIONAL QUALIFICATION							
GRADUATE - POSTGRADUATE	273	2.17	0.05	0.84>	0.05	2.20	<0.05
PROFESSIONAL EDUCATIONAL QUALIFICATION							
GRADUATE - POSTGRADUATE	273	1.29>	0.05	0.75	>0.05	0.42	0.05
SPECIALISATION (FACULTY)							
ARTS-SCIENCE	253	1.04	>0.05	3.04	<0.01	2.87	<0.01
ARTS - COMMERCE	154	1.68	>0.05	0.88	>0.05.	35	>0.05
SCIENCE - COMMERCE	137	0.81	>0.05	2.59	<0.05	2.18	<0.05
MANAGEMENT OF THE SCHOOL							
GOVERNMENT - CORPORATION	1161	.64	>0.05	1.95	>0.05	0.32	>0.05
GOVERNMENT - PRIVATEAIDED1	720.	22	>0.05	0.54	>0.0	50.19	>0.05
GOVERNMENT - PRIVATE UNAIDED	1691	.54	>0.05	0.45	>0.051	.29	>0.05
CORPORATION - PRIVATE AIDED	1021	.54	>0.05	1.76	>0.05	0.20	>0.05
CORPORATION - PRIVATE UNAIDED	990.	80	>0.05	2.09.	051	.27	>0.05
PRIVATE AIDED - PRIVATE UNAIDED	155	34	050	.90	>0.051	.49	>0.05
TYPE OF THESCHOOL							
BOYS' - GIRLS'	952.48	<0.01	1.61	>0.05	1.34	>0.05	
BOYS'-CO-ED.	229	4.25	<0.01	0.70	>0.05	2.29	<0.05
GIRLS' - CO-ED.	220	0.72	>0.05	1.28	>0.05	0.59	>0.05

SCHOOL BOARD STATE-							
MATRICULATION	204	0.76	>0.05	1.11	>0.05	1.29	>0.05
STATE ~ CENTRAL	196	1.08	>0.05	0.14	>0.050.	74	>0.05
MATRICULATION - CENTRAL	144	1.61	>0.05	0.92	>0.051	.68	>0.05

The t-values in Table 3 revealed that male and female teachers did not differ significantly in Computer Attitude and also in sub scale 'Cognitive Computer Attitude', whereas they differed significantly in 'Affective Computer Attitude'. The teachers belonging to the age groups below 35 years differed significantly in Computer Attitude from the teachers belonging to the age group of 35 to 50 years and the same was true in the case of sub scales also. The teachers belonging to the age group below 35 years and above 50 years did not differ significantly in Computer Attitude and also in the sub scale 'Affective Computer Attitude'. Whereas they differed significantly in the sub scale 'Cognitive Computer Attitude'. The teachers belonging to the age group 35 to 50 years and above 50 years did not differ significantly in Computer Attitude and also in the sub scale 'Cognitive Computer Attitude'. Whereas they differed significantly in the sub scale 'Affective Computer Attitude'. Trained Graduate Teachers and Post-Graduate Teachers did not differ significantly in Computer Attitude and also in the sub scales. The teachers with General Educational Qualification of Graduation and Post-Graduation differed significantly in Computer Attitude and also in the sub scale 'Cognitive Computer Attitude'. But they did not differ in the sub scale 'Affective Computer Attitude'. The teachers with Graduate Qualification in Education and Post-Graduate Qualification in Education did not differ significantly in Computer Attitude as well as in the sub scales. The teachers belonging to the Arts and Science Faculty differed significantly in Computer Attitude and also in the sub scale 'Affective Computer Attitude'. Whereas they did not differ significantly in the sub scale 'Cognitive Computer Attitude'. The teachers belonging to the Arts and Commerce Faculty did not differ significantly in Computer Attitude and also in both the sub scales. The teachers belonging'to the Science and Commerce faculty differed significantly in computer Attitude and also in the sub scale 'Affective Computer Attitude'. But they did not differ significantly in the sub scale 'Cognitive Computer Attitude'. The teachers working under different management of schools did not differ significantly in Computer Attitude as well as in both the sub scales except the teachers working under Corporation and private unaided schools, who differed significantly in 'Cognitive Computer Attitude'. The teachers working in Boys' schools and Girls' schools did not differ significantly in Computer Attitude and also in the sub scale 'Affective Computer Attitude', whereas they differed significantly in the sub scale 'Cognitive Computer Attitude'. The teachers working in Boys' schools and Co-education schools differed significantly in Computer Attitude and also in the sub scale 'Cognitive Computer Attitude'. But they did not differ significantly in the sub scale 'Affective Computer Attitude'. The teachers working in Girls' schools and Co-education schools did not differ significantly in Computer Attitude and also in both the sub scales. The teachers working under different Boards of Education did not differ significantly in Computer Attitude as well as in the sub scales too.

FINDINGS

01. In general, teachers had more favourable Computer Attitude.
02. Sex of the teachers had significant influence on Affective Computer Attitude and no significant influence on Cognitive Computer Attitude.
03. Male teachers had more favourable Affective Computer Attitude.

34. Age of the teachers had little influence on Computer Attitude. ,
35. Younger teachers had more favourable Cognitive Computer Attitude.
36. Differences in the Designation of the teachers had no significant influence on Computer Attitude of teachers.
37. General Educational Qualification of the teachers had significant influence on Computer Attitude.
38. Teachers with Post-Graduation Qualification had more favourable Computer Attitude.
39. The Professional Educational Qualification of the teachers had no significant influence on Computer Attitude.
10. The subject of specialisation (faculty) of the teachers had little influence on Computer Attitude.
11. The teachers belonging to Commerce faculty had more favourable Cognitive Computer Attitude.
12. The teachers belonging to Science faculty had more favourable Affective Computer Attitude.
13. Different types of managements of schools had no significant influence on teachers' Computer Attitude.
14. The types of schools (Boys, Girls and Co-education) had little influence on Computer Attitude.
15. The teachers working in Co-education schools had more favourable Computer Attitude.
16. The teachers working in Girls' schools had more favourable Cognitive Computer Attitude.
17. The schools belonging to different Boards of Education had no significant influence on teachers' ComputerAttitude.

CONCLUSION

The Cognitive and Affective ComputerAttitude Scale developed had been tested for its reliability and validity with the help of Factor Analysis and the coefficients of reliability and validity. It measured the attitude of teachers towards computer in general and cognitive and affective computer attitudes in particular. From the findings, it may be inferred that the computer education is not so lighly technical as the people conceived of earlier. It was also found that the teachers in general lad favourable cognitive and affective attitudes towards computer. If the teachers endeavour to jevelop positive attitude towards computer they can inculcate favourable computer attitude among :heir students either directly or indirectly.

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APPENDIX
FACTOR AND FACTOR LOADINGS OF ITEMS OF COMPUTER ATTITUDES SCALE (COGNITIVE AND AFFECTIVE)

SL NO	ITEMS	FACTOR LOADINGS
	SUB SCALE-1 [COGNITIVE ATTITUDE SCALE]	
1	Computers can improve learning of higher order skills	0.637
2	Computers will improve the standard of education	0.598
3	Computers can improve drill and practice	0.614
4	Computers can create jobs which need specialised training	0.521
5	Computers will improve health care	0.501
6	Computers are useful and necessary tools	0.646
7	Computers will make learning easier	0.734
8	Computers can cater to the individual needs and ability	0.648
9	Computers will improve teaching methods	0.695
10	Computer Assisted Learning gives more scope for feed back to the students	0.705
11	Computers encourage *elective* interaction in the students	0.671
12	Computers can test the learning ability of the students	0.700
13	Computers develop creative thinking in the students	0.587
14	Computers motivate the students' learning	0.546
15	Computers sustain interest in the students through continued interaction	0.464
16	Computers create more vacancies for the technically qualified people	0.509
	SUBSCALE-2 [AFFECTIVE ATTITUDE SCALE]	
17	Computers are beyond the understanding of the typical person	0.416
18	Computers will replace low-skilled workers	0.451
19	Continued use of computers may result in obsolescence of skills among teachers	0.601
20	Continued use of computers may result in obsolescence of skills among students	0.583
21	Use of computers require technical skills and expertise	0.392
22	Use and maintenance of computers are costly	0.515
23	Computers require change in work habits	0.487
24	Errors made due to any wrong use may not be detected easily	0.485
25	It will be difficult to understand the reports generated by computers	0.610
26	Computer users become more mechanical in doing their work	0.574
27	Computer users become more dependent on it	0.477
28	More and more use of computers may result in unemployment	0.440
29	Computers will displace teachers	0.468
30	Computers will dehumanize teaching	0.696

CULTURE EDUCATION AND SCHOOLING

P. C. Mahapatra

INTRODUCTION

National Policy on Education 1986 while recommending the reorientation of the content and process of education under cultural perspective had pointed out "The existing schism between the formal system of education and country's rich and varied cultural traditions needs to be bridged. The preoccupation with modern technologies can not be allowed to severe our new generation from the roots of India's history and culture. Deculturisation, dehumanisation and alienation must be avoided at all cost. Education can and must bring about fine synthesis between change oriented technologies and country's continuity of cultural tradition."

TOWARDS A DEFINITION OF CULTURE

Culture is no doubt a comprehensive term. When one thinks about culture another word, which immediately comes to the mind, is civilization. Very often the word culture is used as a customary term applicable alike to high and low products of societies. But civilization is used as the term for a larger and richer culture, carrying on overtone of higher development of a society. Anthropologists are inclined to make a distinction between culture and civilization, restricting civilization to science and technology and culture to philosophy, religion and arts.Culture is the pursuit of perfection in all walks of life. It consists of a harmonious and balanced cultivation of all faculties in man-intellect and emotion, intuition and self perception, flesh as well as spirit. Culture implies an integrated personality. A cultured man is an integrated man. He is not divided within himself and against himself. He reconciles the universal with the particular and the claims of time with claims of eternity. Culture is a means to an end - the end being the happiness and all round prosperity of one's own country and humanity. Philosophy and religion, fine arts, nature, love and friendship are some of the channels which can irrigate human lives and reap a world-wide harvest of culture.

Components of culture can be analysed at six levels. They are: reality, subsistence, social, value, language, ethics, morality and law and the fashion. At the level of subsistence culture includes the achievement under applied science and technology. The area of social existence is concerned with the social structure and action and the whole area of human social relationship. The third level of value culture or fine or creative culture includes achievements under the fine arts, philosophy, religions, traditions, codes and customs, and play activities. Even scientific activities, which are purely intellectual belong to this category. Language, which is a fourth component of culture, serves the three levels referred to above. The mother tongue, is one of the major cultural traits that children almost invariably acquire from their parents and relatives. Multilinguism is also a basis of culture. The fifth component is ethics, morality and law. They are rooted in values. The sixth component of culture is fashion. It is dedicated to value but its values are trivial and ever changing though they have considerable social significance. It is only when one faces human activities comprehensively from different angles bio linguistic and cultural, that s/he arrives at an integrated concept of culture of any group of people.

CULTURAL RIGHTS ADOPTED BY UNITED NATIONS

International covenant Economics Social and Cultural Rights adopted by United Nations which came into force on 3rd January 1976 states that 'The right of everyone is, to take part in cultural life, to enjoy the benefits of scientific progress and its applications, to benefit from the protection of the

moral and material interests resulting from any scientific literacy, and artistic production of which he is the author[5]'. It further recommended preservation, conservation, the development and the diffusion of science and culture, undertaken to respect the freedom indispensable for scientific research and creative activity and encouragement and development of international contacts and cooperation in the scientific and cultural fields.

THE ESSENCE AND ROLE OF EDUCATION

In the national perception, education is essential for all. It has a fundamental role to play in personal and social development. It is both a world in itself and a reflection of the world at large. It is one of the essential aspect of the society. It contributes to its goals and in particular helps society to mobilise its productive energies by ensuring that required human resources are developed. The most positive among these is that of raising the people's cultural level- "preparing cultured men" and enhancing their consciousness, out of concern to create the condition for greater mass participation in democratic process.

Education has an accuiturating role. It redefines sensitivity and perceptions that contribute to national cohesion, a scientific temper and independence of mind and spirit, thus furthering the goals of socialism, secularism and democracy enshrined in our constitution. Education system is a source of human capital and social capital. Education throughout life will be based on four pillars in the twenty first century as envisaged by the International Commission on Education of 1996 chaired by J. Deiors. These are, Learning to know, Learning to do, Learning to live together and Learning to be. Due to the rapid advances made in science and technology there is a move towards worldwide community, a global village. Learning the art of living together in harmony for the global society, will be the dominating theme of the coming century and the major challenge will be rebuilding human community.

Education systems are, in fact, at stake in today's cultural crisis. To foster a democratic civic culture based on individual human rights and to encourage at the same time mutual respect for other cultures based on the collective human rights of all people around the world are the major concern today. Education in the present century will be pluralistic and multicultural based on a philosophy of humanistic pluralism. They must be generated in the educational process itself and will in turn be strengthened by it. An understanding of one's own culture in its interactions with other culture is one of the prime requisites of the progress of mankind.

INTERACTIONS OF EDUCATION AND CULTURE

Both education and culture can be defined in various ways. In relation to culture, education might be referred to as a process instilling in young people the traditionally inherited and contemporaneously renewed value and beliefs which lie at the core of culture. Education is an agent of cultural transmission, while culture provides a context of educational institutions and constitutes an essential part of education contents. Education has been placed at the core of the value order and values as the sustaining force of education. In serving the development needs of the people, both education and culture become a means to an end of development.

Development which aims at the full efflorescence of human potential all over the world is the ultimate goal of both education and culture. Education is being emphasized as vital force of development and culture as both an important means and integral component of development. In the coming years, industry will be technology-intensive and human society increasingly knowledge-intensive. Human capital, developed through education and training will assume increasingly crucial role in respect of preparing a cultured man. There is no contradiction between the developments of

International understanding which education should simultaneously strive to promote. However, politicization of educational and cultural values be taken care of.

INDIA - A LAND OF DIVERSITIES AMIDST UNITY

Genetically and culturally India is perhaps the most diverse country on the face of the earth. Indian subcontinent comprises a vast collection of people with different morphological, genetic, cultural and linguistic characteristics. Morphologically, the people of India may broadly be classified into four types Negrite, Australoid, Mongoloid and Caucasoid. Probably no where in the world existed 4694 communities including 2205 main communities, 589 major segments and 1900 territorial units. These communities have been identifying themselves in various ways-through history by territory, *varna and jati,* by occupation and now-a-days by political affiliations. The diversity in terms of linguistic traits are wide ranging. There are as many as 325 languages, 1652 mother tongues divided into five language families with 25 scripts. However, all the States are multilingual at present.

EcoculturaJ system is an outstanding characteristic of our community, no matter, what religious level attached to it. There are also extraordinary diversities in terms of cultural traits which tend to cluster at various local and regional level, in order to form cultural complex. Hindusim is not the only religion in India. In addition to its off-shoots Jainism, Buddhism, and other religions such as Islam and Christianity have also made their home in the country. It is well to remember that there are more Muslims in India than in any other countries of the world, save Indonesia. Christianity has existed in some parts of India longer than in many European countries. India has been continuing to be a land of many religions and religious sects, each enjoying a major autonomy in its own sphere.

The regions of India have been culturally distinct. The various communities share a great deal by way of language, dialect, folklore, element of materials, customs, dress, ornaments, food habits etc. But with the rapid growth of transport and communication, migration and information highway, a community today is found to be heterogeneous, its members speaking many languages, having different cultural traits and various morphological and genetic traits.Thus, the heritage of India has been built out of many components. This becomes evident when one looks at its religious, linguistic and cultural diversify. Accommodation without assimilation has been the characteristics of Indian civilization and culture. This has enabled the co-existence of a multiplicity not only of beliefs and practices but also of collective identity.

SCHOOL AS THE AGENCY OF INTERACTIONS

The Education Commission 1964-66 popularly known as Kothari Commission have clearly spelt out that "the density of India is now being shaped in her classroom". But with the rapid growth of science and technology the world came into the classroom. Therefore, the school in the formal sector of education has an important place to build a common destiny of the global village. It should provide necessary inputs and forum to foster a deeper and more harmonious from of human development and thereby to reduce poverty, exclusion, ignorance, oppression and war and to overcome tensions between the global and the local, the universal and the individual, tradition and modernity. What ever the diversity of cultures, and systems of social organisation, there is a universal challenge to reinventing the democratic ideal to create or maintain social cohesion. In this context, learning throughout life will be one of the keys to meet the challenges of the twenty first century. Therefore, schools will function as the store house of knowledge and culture, transmitting the knowledge and culture, providing scope of extension and expansion of knowledge and culture

and doing research and innovative studies on these aspects.

India is a multicultural, multilingual and multireiigious society. Every religion and State has its typical identity. This would have implication for pedagogical approaches to be followed in different context. Internationally, pedagogy is perceived not merely as a scientific instruction but as a culture or as a set of sub-cultures which reflect different context and different teaching behaviours, inside and outside the classrooms. The plural nature of Indian society along with global culture, a synthesis of East and West needs to be reflected in pedagogical approach. It should be culture specific. Instead of using one uniform and mechanistic way of a student learning, cultural practices such as storytelling, dramatics, puppetry, folk play, dance, community living etc. should become a strong basis of pedagogy. Cultural specificity should get embedded in the pedagogical practices which should be evolved for tribal, rural, urban and other ethnic groups and communities.

Further, the curricula and processes of education will be enriched by cultural context in as many manifestations as possible. Studies have revealed that painting, music and dance are the universal language. Using these languages, the cultural common sense and cultural synthesis can easily be developed both inside and outside the school. Children will be enabled to develop sensitivity to beauty, harmony and refinements. Resource persons in the community, irrespective of their formal educational qualifications will be invited to contribute to the cultural enrichment of education, employing both the literate and oral traditions of communication. If need arises, traditional modes of transmission of culture may be supported and recognised.

As stated eariier, diversity in unity is the special feature of India. The major diversities are bio-diversity, linguistic diversity and cultural diversity. The school should provide ample scope so that the oracle of Dolphi's advice to man " to know thy self" and " man understanding man" can be achieved.

CULTURE AND NATIONAL CURRICULUM FRAME-WORK

Education transmits cultural heritage to next generation. It has the mission to renovate traditional culture by doing away with superstitions and giving rise to a scientific bent of mind. It has an important role to play in affecting change in cultural value orientations in the context of changing socio-economic scenario. Therefore, school curriculum should enable the learners to acquire knowledge and help to generate and promote among them.

Appreciation of deep rooted value of education and culture.

Realisation of synthesis between local, regional, national and globai culture.

Understanding the diversities of the country and its composite cultural heritage, similarities and differences and pluralism.

Understanding the positive and negative impact of globalisation and economic liberalisation in the context of our own country.

Group as well as individual development with stress on both spiritual and material dimensions of development.

Realisation of a core of universal values, such as awareness of human rights combined with a sense of social responsibilities, value of social equality, democratic participation in decision making and government.

Inculcation of human values such as caring, cooperation, tolerance, creativity to gender equality along with obligation to environment protection and sustainable development.

Self, control, concentration through yoga and physical exercises.

It is worth noting that most of these universal values needed for the emerging youth have long been

embedded in the age-old cultural traditions of human civilization. They encompass the moral visions and ideal of truth, kindness, beauty, justice, liberty, which were elaborated long ago by the predecessors and magnificently preserved in the treasure of thoughts. The astounding communication technology which to-day encircles the globe seldom uses its tremendous potential to spread global value, culture and heritage and foster a more caring and compassionate consciousness. What is urgently needed is a creative revolution in the education and communication policies.

COURSE CONTENT

The graded course content at the school level may consists of:- (i) Human culture and cultural heritage, cultural constructs, social, cultural and scientific technological development, gender and culture, (ii) Popular culture (folk dance, music, arts etc.), plurality of language and culture, language and communication, great tradition and little tradition, cultural diversity and appreciation, multiculturalisation and mutual tolerance, (iii) Secularism, democracy, superstitions and scientific attitude, cultural history, religions, politics, philosophy and ethics and culture of the coming age. The present day individuals live in a chaotic age that is full of contradictions and confusions. The gospel of liberty, equality and fraternity backed by secularism is the social and cultural policy of India. Secularism can be described as a religion without any religiosity in it. Each religion has been assured proper protection while no religion can afford to be aggressive. Each language can grow to its full stature on the line determined by its own genius. However, while framing the curriculum relating to culture learner centred approach, specific expected learning outcome, characteristics of the learners and inter connection among various subject areas, flexibility in selection of context and learning experiences should be built in the system.

ROLE OFTHE INSTITUTION

Educational Institution has to develop suitable linkage with cultural institutions in the area where it stands.

There should be cultural heritage class with support from modern technology with close cooperation between teachers and cultural authorities.

A special place should doubtless be given to quality of imagination and creativity. Every possible opportunities for discovery and experiment in the field of culture may be extended to the school children in the field of a aesthetic, artistic, sporting, scientific, cultural and social as well as appealing introductions to the creation of their contemporaries and earlier generation.

Art and poetry may be taught in such a way that it should be more cultural than utilitarian.

Diversities of human race and at the same time an awareness about the similarities and inter-dependence may be taught through different school subjects and activities.

Small projects relating to culture can be taken up by the children under the scheme " Know your Culture". Cultural activities and social activities, field visits, preservation of monuments and environment may be taken up in a phased manner.

Artistic beauty in all forms painting, sculpture, music literature etc. should be made available equality to all. The media are integral part of the cultural environment. Mass media specially the television should play an important role to depict the whole country's cultural life.

The importance of the role of the teacher as an agent of change promoting the understanding and tolerance as well as appreciation of culture can not be ruled out. Facilities may be made available to update their knowledge and skill and opportunities may be made available for better exposure and exchange of ideas.

LOOKING AHEAD

The challenges to education is great in a world which is increasingly multicultural. With the growth of globalisation, there is a need to bring coordination between local, regional, national and world culture. As the process of globalisation becomes more immediate reality for many people, this may be a shock because it challenges the stable vision of neighbourhood, community and nation.

Modern nation should be culturally homogenous although it has ethnic diversity. Therefore,there will be a multicultural education. The truly multicultural education will be one that can address simultaneously the requirements of global and national integration and specific needs of the local communities both urban and rural settings. It will lead to an awareness of diversity and respect for others.

Living together in harmony must be the ultimate goal of education in the coming decade. The people must have the courage to think globally. A holistic educational philosophy for the twenty first century should emerge to curb the sinister forces of fundamentalism, fanaticism and exploitation through a continuing creative interface dialogues. This will ultimately help in cultivating universal cultural values imperative for global ethics.

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EVALUATION PATTERN OF THE M.L.L. IN BIHAR

Rakesh Kumar
Manoj Kumar

INTRODUCTION

The minimum levels of learning strategy is an attempt to combine quality with equity. The objectives of this strategy is to make access to education irrespective of sex, caste, creed and location. The focus of MLL is the development of competency based teaching and learning. It had been stressed that emphasis should be laid on minimum levels of learning in respect of these subjects namely languages, mathematics and environmental studies. This programme had been initiated throughout the country with the help of voluntary agencies and research institutions. The major focus of the policy formulation behind the MLL exercise is based upon equity and reduction of existing disparities. The effort is to combine quality concerns with concerns for equity keeping in view the developmental needs of children from the disadvantaged and deprived sections of the society, the dropouts, working children and girls, who constitute the majority of school going age population in this country and to whom, in all likelihood, at least for some time to come, primary education will be the only opportunity for structured learning. This basic concern underscores the approach adopted by the committee in defining the minimum levels of learning. Of the various alternatives available, the committee has chosen to state the MLLs, in terms of terminal competencies. Each competency can be further delineated in terms of sub-competencies while specifying the content inputs or while designing specific measures of learning.

MATHEMATICAL ASPECTS OF M.L.L.

MLLs may be understood through various ways. A mathematical equation may be given follows;

M.L.L. = Quality + Equity
Quality = Competency + Mastery
Hence, M.L.L. = Competency + Mastery + Equity

Competency

An intellectual power develops in a person by education for better livelihood. As battery generates electric power, education creates efficiencies in a person. Various types of efficiencies or competencies develop in a child through education.

Mastery

If a child learns everything which should be learnt by him/her, the child will be called master. The mastery may be of several categories. It depends on specific situations. A teacher must aim at 80% - 85% mastery in the class.

Equity

It is well known that the nation has the responsibility to provide the primary education to ail children, in classroom situation. There are three types of children -Slow learners, Socially disadvantaged and Gifted children The experience says that most of the children fail to achieve the mastery level learning. It has to be ensured that the primary education must be made equity based.

LEARNER EVALUATION

At the primary stage, most essential core skills and competencies are included in the curriculum. The MLL approach implies a calculated effort to include those minimum, essential and common

competencies that all children must master.But the traditional concept of "35% pass" prevalent at the middle and secondary stages of education invariably prevails at the primarystage also, which indeed is an impediment in raising the standard of learning. At least at the primary stage and in the context of MLLs, it is absolutely essential that the mastery level of learning is aimed at only when almost all children succeed well in achieving the basic skills of reading, writing, computation etc. as indicated in the MLL statement that one can be sure of substantial improvement in quality without sacrificing equity. The traditional concept of low level of expected achievement by the bulk of children should, therefore, be gradually given up and should be replaced by the concept of mastery as the expected standard of attainment for all children. If minimum essential facilities and help are given to schools and teachers, and if continuous feed back, academic guidance and remedial work are given to the learners, it should be possible for most children to reach the mastery level of achievement in basic competencies at the primary stage. Each competency constitutes an expected performance target and each cluster of competencies lands itself to unit testing and formative evaluation. Maximum advantage of this arrangement should be taken by teachers, supervisors, evaluators, textbook writers and teacher educators in instituting an integrative, improvement oriented and competency based evaluation scheme as an inextricable part of a system of basic education for all.

IMPLEMENTATION IN BIHAR

The MLL scheme has been launched in Bihar through two educational units-SCERT and Bihar Education Project (BEP) Council. Bihar Education Project Council has been established in February 1990 under the assistance of State and Union Governments. First of ail, BEP took three districts in 1991 with the assistance of UNICEF. The aim of BEP is to provide free and compulsory elementary education to all children, especially, girls and socially disadvantaged children of Bihar in the view of MLLs. BEP implemented MLLs in three districts - Ranchi (now in Jharkhand), Rohtas and West Champaran in 1991 - 92. In next academic session 1992-93, four districts - East Singhbhum, Chatra, Muzaffarpur and Sitamarhi, MLL scheme was implemented. As per the suggestions of National Evaluation Mission, the modification has been undertaken in MLL scheme under the direction and guidance of Prof. R.H. Dave. At present, the scheme is in operation in 17 revenue districts.

PROBLEMS RELATED TO THE EVALUATION PATTERN

A study was undertaken to find out the problems related to the evaluation pattern of the modified MLL in Bihar. Practicing teachers in the MLL project schools of various districts of Bihar were served a questionnaire . Five districts were taken in the sample of the investigation- Begusarai, Deoghar, Samastipur (Conducted by SECRT) Ranchi and Sitamarhi (Conducted by BEPC).

TABLE I

ITEM NO.	QUESTIONNAIRE STATEMENTS	RESPONSE PERCENTAGE YES	NO
1.	Are methods of evaluation difficult?	79.69	20.31
2.	Is continuous & comprehensive evaluation method suiting you to implement MLL?	36.19	63.81
3.	!s evaluation method time taking?	70.16	29.84
4.	Is the objective(M.L.L = Competency + Mastery + Equity) being achieved?	28.89	71.11

TABLE II

Item No.	BG		SM		DG		SCERT	
	Yes	No	Yes	No	Yes	No	Yes	No
1	46	54	89.47	10.53	40.8	59.2	59.32	40.68
2	34	66	31.58	68.42	57.14	42.86	43.22	56.78
3	86	14	78.95	21.05	67.35	32.65	77.12	22.88
4	38	62	31.58	68,42	39.82	60.18	18.38	61.66

(BG Begusarai, SM - Samastipur, DG - Deoghar, SCERT- State Council of Educational Research & Training)

Table II!

Item No.	RN		ST		BEP	
	Yes(%)	No(%)	Yes(%)	No(%)	Yes(%)	No(%)
1	33.9	66.1	91.13	8.87	56.85	43 15
2	42.37	57.63	3.8	96.2	26.91	73 09
3	54.24	45.27	83.54	16.40	65.99	34 01
4	38.98	61.02	0	100	23.55	76.65

(RN - Ranchi, ST - Sitamarhi, BEP - Bihar Education Project)

As per Table-1,79.69% teachers find the methods to be followed for doing continuous and comprehensive evaluation are difficult to adopt, but district wise analysis indicates that the teachers of Begusarai, Deoghar and Ranchi are in the favour of afirmative having percentage 54, 59.2 and 66.1, respectively. But overall result is not in favour of evaluation pattern. 63.81% teachers are not able to implement the continuous and comprehensive evaluation method. Here, single district Deoghar 57.14% teachers reported that they are able to implement the said method. Table-1 shows that 70.16% teachers fee! that for this, more time is required. Going through the two later tables, the same responses are found about timing regarding evaluation. As per table-1, overall, 71.11% teachers are of opinion that the objective of MLL scheme has not been achieved. In district wise analysis, 100% teachers have opined that there is no complete achievement of the MLL objectives i.e. M.L.L.= competency mastery + equity, according to the teachers of Sitamarhi.

FtsONGS

Working teachers in MLL project schools are not able to adopt the evaluation method as suggested or doing the continuous and comprehensive evaluation of the children as it is difficult and time taking. Even if the teachers follow the strategies as has been suggested in MLL Scheme, most of the students are not able to achieve the expected competencies.

ACTION POINTS

1. Seminars, workshops etc. based on MLL should be organized from time to time and full information, proper guidance and training should be given to the teachers.

Special workshops with the focus on continuous and comprehensive evaluation should be organized for the teachers so as to enable them to comprehend and implement the methods to 9valuate the performance of the students effectively.

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A STUDY ON REMEDIATION OF DYSLEXIA AND IMPROVEMENT OF SCHOOL EFFECTIVENESS

Ranjita Mishra
Tapati Dutta

INTRODUCTION

Dyslexia, specific reading disability, is one of the most common psychological problems which seriously impairs school achievements. The way dyslexia is defined has both theoretical and educational implications. The validity of research on children with dyslexia, and reading disabilities, in general, depends largely on the criteria used to identify subjects for study. The World Federation of Neurology stated that "Specific developmental dyselxia is disorder manifested by difficulty learning to read despite conventional instruction, adequate intelligence and socio-cultural opportunity, it is dependent upon fundamental cognitive disabilities which are frequently of constitutional origin". Despite evaluation, instrumentation, and special education programs, especially designed for the remediation of reading problems and availability of huge reading materials, reading disabilities remain as the greatest source of school failure (Strang, **1969).** According to Perfettti (1985) "A dyslexic, is a child who is normal or above average in **non**-verbal **IQ.** two years behind in reading achievement and with a reading difficulty, which is not explainable primarily by social, economic motivation or emotional factors". Developmental dyslexia **is** defined as a forxn of reading disorder found in individuals who have average or above average listening come'ehension but whose reading performance is comprised by deficient phonological skiM. According **to** Das (1996) there are dyslexic or poor readers who show specific deficiencies **in** only a limited number of intellectual or cognitive processes. The most important deficit concerns the ability to sequence, to put sounds and words in order. He identified them into three different categories ia) those who have some cultural disadvantage, (b) those who have a general cognitive deficit in only a few of their cognitive or intellectual functions. Review of literature indicates that dyslexic readers have poor phonological coding skills, short-term memory (STM) deficits and deficits in language processing. In fact, almost all the studies that have investigated the phonological aspect of developmental dyslexia agree on this point.

IDENTIFICATION OF DYSLEXIA

The child's reading performance should be significantly below the level expected on the basis of age, general intelligence and school placement. Performance is best assessed by means of an individually administered standardized test of reading accuracy and comprehension. However, in the early stages of learning an alphabetic script, there may be difficulties in reciting the alphabet, in giving the correct names of letters and in analyzing or categorizing sounds in spite of normal auditory acuity. Later there may be errors in oral reading skills like:

(a) Omissions, substitutions, distortions or additions of words or parts of words
(b) Slow reading rate
(c) False sound blending, long pause or inaccurate phrasing
(d) Reversals of word in sentences or letter within word.

There may also be deficits in reading comprehension as shown by: (a) Inability to recall facts read; (b) Inability to draw conclusions or inferences from material read and (c) Use of general knowledge as background information rather than of information from a particular story to answer questions about a story read.

There are certain behavioral characteristics, which are responsible for reading disability like; difficulties in attention, emotional problems, hyperactivity, low self-esteem, and problems in school adjustment. Identifying the dyslexic child is not an easy task. Rather it would be easier if the work has to be done collectively by the teacher, parents and psychologists. Various research results show that 15% to 30% students are poor readers or reading disabled students present in a class. Hence, reducing the prevalence of reading disability, in a way improves the school effectiveness.

Reading disability or reading difficulties are even found in the student of high IQ level. There are many children who are intelligent but not able to read, identified as having dyslexia. It is a fact that IQ does not predict poor reading ability. Many children at all levels of IQ fail to learn to read adequately in spite of getting the same instructions in the classroom as their friends. Hence, there is enough evidence of saying that IQ is not very relevant for explaining or predicting reading disability. But the truth is that reading disability is found at all levels of IQ. If the dyslexics can be identified at the initial stage and according to their problems they get the special educational instructional program, their reading ability can improve. More specifically this suggested that two types of cognitive processes are relevant for word reading: (a) those that contribute to the development of phonological and orthographic processing and (b) those that allow the successful deployment of phonological and orthographic skills. The **PASS** theory of intelligence (Das, Nagliery & Kirby, 1994) includes both kinds of processes. As it is known that, there are four cognitive functions like, Planning, Attention, Simultaneous and Successive processing. These cognitive functions collectively made a cognitive processing model called PASS, which is described as a modern theory of information processing ability. It is based on Luria's analysis of brain structures.

PASS THEORY

The recently developed PASS (Planning - Attention - Simultaneous - Successive) model of intelligence is important in understanding the mental functioning (Das, et.al.,1994; Naglieri, 1992). This model can be explained through three main components: Input, Processing and Output. The mode of input can be visual, auditory or kinesthetic. The manner of input, however, can be either concurrent or serial. Depending on how information is presented, there may be a bias in favour of one type of processing rather than other processing. Arousal-Attention is the first functional unit, which is the basic process for all subsequent processing. Simultaneous and successive coding is the second functional unit. They occur during the processing and retention of information that is received from the external environment. Simultaneous processing is involved when information is coded as a holistic pattern (seeing relationship among parts). The successive processing is involved in temporal sequencing, such that the elements of information from a chain like progression. Planning, the third functional unit is a self-monitoring, a reflective activity that integrates information provided by other units to create meaningful and adaptive behavioural responses. Planning is a cognitive function that monitors and regulates the functioning of the cognitive processes. Although the four processes described above contribute to cognitive performance, only output can be measured. Some children show a gap between what they can do and what they can know, i.e., between performance and knowledge. Knowledge base, the important component of the PASS model, includes both experiential and formal knowledge. Experiential knowledge is acquired through experience. Formal knowledge is acquired through instruction and training. All information possessing is dependent upon the individual knowledge base.

Several empirical studies have examined the relationship between PASS process and reading. Poor successive processing has surfaced as primary characteristics of children with reading problems. Intervention studies have shown improvement in reading as a result of training in successive processing. Moreover successive processing problems experienced by poor readers have not been limited to verbal materials and can persist even after the effect of short-term memory controlled for. Existing studies have also indicated that, in particular, simultaneous processing but also planning are indeed important for reading comprehension

REMEDIATION

Remediation is not instruction rather it is to help the child to overcome their difficulties. It has to be individualized. Generally it aims at ameliorating the difficulties, reducing the deficit and correcting maladaptive strategies that a learner might have. Hence, it is advisable to give remediation program at the early age to those who have reading difficulties. The improvement of dyslexia has positive effect on school effectiveness. Phonological processing training studies with young children have consistently reported positive effects on reading, particularly if they included explicit instruction in letter-sound associations (Bradley & Bryant, 1985). The problem is that the training studies have shown the largest effects in enchancing the reading skills of regular students, rather than remediating or preventing problems of at-risk students. An alternative approach to reading remediation was PASS Reading Enhancement Programme (PREP).

PASS READING ENHANCEMENT PROGRAMME (PREP)

In child development and cognitive psychology, PASS theory of intelligence has been gaining lots of popularity now a days. On the basis of this theory, the PASS reading enhancement programme was developed. This programme aims at improving the information processing strategies that underlie reading-namely, simultaneous and successive processing, while at the same time avoiding the *direct* teaching of word reading skills. PREP is also based on the premise that of the transfer of principles can be facilitated through inductive rather than deductive inference (Carlson & Das, 1997). Attention and planning are also aspects of each task. The training tasks in PREP are recommended for those with dyslexia in order to promote the same processes that are basic to reading/ spelling/ comprehension. Hence, the pathway starts with the application of PREP, the cognitive difficulties are reduced along with learning problems and consequently reading is improved. An integral part of the structure of each task is to develop strategies such as reversal, categorization, monitoring of performance, prediction, sounding and sound blending. Thus children develop their ability to use these strategies through experience with the tasks. Rather than being explicitly taught strategies by teacher, children are encouraged to become aware of their use of strategies through verbalization. Growth in the ability to use strategies and be aware of appropriate opportunities fortheir use is expected to develop overthe course of remediation.

PREP programme consists of ten tasks, which varies in content and ability on the basis of requirement of the student. Each task has two components. They are global and bridging component. The global component includes structural, non-reading tasks that require the application of simultaneous or successive strategies. This also provides the opportunity to make his or her own strategy, which facilitates the transfer. The bridging component involves the same cognitive tasks as it is in global component and provides training in simultaneous and successive processing strategies which are closely associated with reading and spelling (Das, Nagliery & Kirby, 1994)

The instructor must encourage the participants to develop their own strategy. Initially they will be trained on familiar items. Gradually, complex items are introduced. Through verbal mediation, the global and bridging components of PREP encourages children to apply their strategies to academic

tasks. Each part has three difficulties level which allows the child to progress in strategy development and for those who have successful processing strategies, they will start form their appropriate level. A criterion of 80% correct responses is required before a child can proceed to the next level of difficulty. If not, s/he requires additional training. There are poor readers, who may also be poor in other subjects in school, and they will be likely to benefited from this reading enhancement programme.

Remediation of reading and comprehension will enhance the academic performance of the children. But these need lots of attention form every field of research. Unless a child learns to read, he will not be able to do comprehension properly. In other words without reading, comprehension would not be possible. When the child learns the art of reading, s/he soon starts doing comprehension. Academic achievement of children can be known from the child's classroom performance. The classroom performance requires reading and comprehension in every subject. If a child fails to read, s/he will likely to be poor in the subject matter of each topic, which ultimately leads to poor academic achievement. Student's poor academic achievement may hampere school effectiveness. It has been reported earlier that school effectiveness has three main components like infrastructure, teacher and students. Students are most important contributing factor for school effectiveness. To improve school effectiveness, attention should be given to the enhancement procedures adopted by the teacher for student's academic improvement, which requires teacher training. Present study has an intention to remediate the poor readers or dyslexic readers through which school effectiveness can be achieved.

OBJECTIVES

The objectives of the study follows: (i) To identify the dyslexic readers .(ii)To provide them a theory based remediation programme, (iii) To study improvements in school effectiveness.

METHOD

Participants

The sample consisted a group of children referred by the teachers to The learning clinic', where the learning problems of the children were identified. Only six cases of dyslexic readers were taken for this study. All are referred from one particular school of Bhubaneswar. Their age ranges from 8 years to 12 years.

Tools

Woodcock's Reading Mastery Test Revised (Woodcock 1987)

This battery comprised of three reading measures from which only two tests were administered in this study. The reading tests are (a) Word Decoding and (b) Passage comprehension.

Word Decoding Test: The test consists of 106 words, which are arranged in the order of difficulty. Here, participants are required to read the words that appeared in the test book. The identification or decoding implies that the participants may respond correctly to a stimulus word even though the child has had a personal experience with the word. The correct response has to be recorded and the participants have to produce a natural reading of the word within five seconds. It is not assumed that the subject necessarily knows the meaning of any word correctly identified. The test is be discontinued after four consecutive failures.

Passage Comprehension: This task requires the participants to read a short passage (usually

two to three lines long) and to identify a key word missing from the passage. A blank line represents the missing word. To complete the item, a subject has to understand not only the sentence containing the missing word, but the remaining sentences as well. This requirement demonstrates that the child has comprehended the entire passage. The participant's total score is the number of correctly filled blanks. The test consists of 68 items in order of increasing difficulty. The test is discontinued after four consecutive failures. There is no time limit. The test is administered on each child individually.

Cognitive Assessment System (Naglieri & Das 1993)

Eight tests taken from the standardized version of Das-Nagliery Cognitive Assessment System were used to assess participant's cognitive level of processing.

Planning consists of two tests - *Matching Numbers* - In this task, the child has to identify and underline the two numbers that are identical in each row as fast as possible. *Planned Codes* - In this task, the child has to translate letters in to specific codes such as A=XX, B=OX. Better the strategy the faster the individual response.

Attention consists of two tests: *Expressive Attention* - In this task, the child has to identify the stimulus pictures as either large or small animals, regardless of the relative size of pictures on the page. *Number Detection* - In this task, one has to underline numbers from 1 to **6** written in a solid or hollow form.

Simultaneous Processing consists of two tests: *Non-verbal Matrices* - In this task, the whole design is presented without one of its parts; the part is to be selected from among six alternatives. *Verbal-spatial Relations* - In this task, the child has to choose, from among six alternatives, the picture that correctly answers the question read by the examiner.

Successive Processing consists of two tests: *Word Series* - In this task, the child has to repeat a series of words one after another in the order in which it was spoken by the examiner. *Sentence Repetition* - In this task, the child has to repeat sentences as spoken by the examiner.

PROCEDURE

On the basis of their teacher's observation, the children were referred to the Clinic. Initially, they were tested on the reading measures of word decoding and passage comprehension. After administering these tests, their scores were recorded and analyzed. Only six kids were taken for this experiment. Their reading scores were **betew** 26th percentile and their scores were two year behind from their age level. On the basis of the observation and the scores of reading measure, the test of CAS was administered on them to determine their cognitive profile. The test was administered individually. The Standard scores of the children were interpreted. After getting the cognitive profile, the area of the children that has to be improved was finalized . On the basis of PASS theory, there is a reading enhancement programme prepared by Das and his associates, specifically for the remediation of reading disabled children. This programme was given to these six children for 8 weeks (8 hours for each week). These children were categorized into three groups. After they received, the remedial training, they were tested again on the reading measures of word decoding and passage comprehension. Finally, the pre test scores were compared with the post-test scores.

ANALYSIS AND INTERPRETATION

Case Study I

Tiiak, age 8-0, received remediation in a group of two children. Pre-intervention test results revealed that of the four cognitive areas assessed (planning, attention and simultaneous and successive processing), successive and simultaneous processing was his areas of weakness. On the two subtests of the Woodcock's word reading, he scored 36 in word decoding and 20 in comprehension. The scores of the test indicating that at the time of pre-testing, his reading ability was also very weak. He was fickle minded and very talkative throughout the remediation. At the start of remediation, he experienced very few difficulties completing the global component of the successive and simultaneous tasks. The bridging components were more problematic for Tilak. He required highest level of prompting while reading words. By the sixth session, however, he was able to read most words with minimal or no prompting. Most important thing is that when he was able to apply his own strategies successfully, his verbalizations of these strategies were excellent. By the mid-point of the programme he could read most words from the preliminary level of the bridging tasks independently. At the next level, he started reading without any prompting. During the final sessions of the programme, marked improvements in Tilak's word reading ability to blend phonetic sounds. This was reflected in his post-test scores, which were 52 in word decoding and 33 in passage comprehension.

Case Study II

Parth, age 8-0, was part of a group of two students. In his performance on the cognitive processing tasks, weakness was apparent in ail four cognitive processing areas. His scores on successive and simultaneous processing tasks were, particularly low. His scores on the word decoding were 32 and on the passage comprehension was 18. On the phonological tasks, his performance was also extremely poor. Throughout the remediation process, Parth seemed to have difficulties in verbalizing his strategies. It was also often difficult for him to focus on tasks because he was lacking in concentration. During the initial stages of the programme, some difficulties were found with the global part of successive tasks. He had difficulties in applying the strategies and the amount of prompting he required was often inconsistent. His knowledge of letter names and sounds was extremely limited. He also required a longer period of time than most other participants to complete the tasks. By session 7, some progress had been made on the bridging components of successive and simultaneous tasks and Parth was able to read a few words with maximum level of prompting. In addition, any task that involved letters or words required extra time to complete. By the mid-point of the programme he was found reading most words from the primary level of the bridging tasks independently. At the next level, he started reading without any prompting. During the final sessions of the programme, a marked improvement in Parth's word reading ability was reflected in his post-test scores, which were 62 in word decoding and 32 in passage comprehension.

Case Study III

Chandan, age 12-2, was part of a group of two students. In his performance on the cognitive processing areas, scores on successive and attention processing tasks were particularly low. His scores on the word decoding were 40 and on the passage comprehension were 23. On the phonological tasks, his performance was also extremely poor. Throughout the remediation process, Chandan seemed to have difficulties verbalizing his strategies. It was also often difficult for him to keep attention in tasks because he was very distractible. He had difficulties in applying the strategies and the amount of prompting he required was often inconsistent. By the mid-point of the program, he was found reading most words form the preliminary level of the bridging tasks independently. At the next level he started reading without any prompting. During the final sessions

of the programme, marked improvements were found in Chandan's word reading ability. This was reflected on his post-test scores, which were 70 in word decoding and 38 in passage comprehension. After two three weeks, his teacher said he improved slowly.

Case Study IV

Soujanya, age 11-8, was part of a group of two students. In his performance on the cognitive processing tasks, weakness was apparent in all four cognitive processing areas. His scores or simultaneous and attention processing tasks were particularly low. His scores on the word decoding were 38 and on the passage comprehension was 20. On the phonological tasks, his performance was also extremely poor. Throughout the remediation process, Soujanya was very friendly. At the start of remediation, he experienced very few difficulties in completing the global component of the successive and simultaneous tasks. The bridging components were more problematic for Soujanya, He required highest level of prompting while reading words. By the sixth session, however, he was able to read most words with minimal or no prompting. Most important thing was that when he was able to apply his own strategies successfully, his verbalizations of these were excellent. During the final sessions of the programme, a marked improvement in Soujanya's word reading ability was reflected on his post-test scores, which were 68 in word decoding and 48 in passage comprehension, it was also observed that he showed personal interest to improve his reading ability.

Case Study V

Priyanka, age 10-5, received remediation along with another child in a group. Before giving remediation to her, pre-test results revealed that she was very weak in successive processing. On the two sub tests of the Woodcock's word reading, she scored 35 in word decoding and 11 in passage comprehension. She did not have proper knowledge of phonetics before remediation. She was very shy and at times she felt very nervous. At the time of first phase of remediation programme, she experienced many difficulties in completing the global task of successive processing. She required lots of prompting in many tasks of the remediation programme. By the ninth session, she was quite efficient to complete all the global as well as the bridging tasks. She also made her own strategies while she attempted the remediation task. At the mid-point of the programme, she started to read almost all the words without any help. During the final session of the program, a significant improvement was found in her ability to read. This improvement was reflected in post-test score, where she scored 57 in word reading and 30 in passage comprehension.

Case Study VI

Subhalaxmi, age 10-0, received remediation along with other children in a group. Before giving remediation to her, pre-test results revealed that she was very weak in ail the areas of cognitive processing. Her scores in attention and successive processing were particularly low. On the two sub tests of the Woodcock's word reading, she scored 38 in word decoding and 20 in passage comprehension. She also did not have proper knowledge of phonetics before remediation. She was very friendly and at times very distractible in nature. During the first phase of remediation programme, she experienced fewer difficulties in completing the global task of simultaneous processing. She required lots of prompting in many tasks of the remediation programme. By the seventh session, she was ab[e to complete all the global as well as the bridging part of the several tasks. She also made her own strategies while she attempted the remediation task. At the mid-point of the programme, she started to read almost all the words with minimum help. During the final session of the programme, a significant improvement was found in her ability to read. This improvement was reflected in post-test score where she scored 65 in words reading and 41 in passage comprehension.

From the above case studies, it is clear that if the reading problem is identified earlier, it can be improved through some remediation programme like used in the present experiment. The results indicate that there is improvement in the raw scores. In the present study, the students significantly improved on reading measures after receiving the theory based remediation programme. This improvement of student's reading ability in a way leads to enhancement to academic achievement.

CONCLUSION

Most of the teachers working at the primary level often complain about the reading problems among the children in their classes. But the teachers as well as the researchers take the problem very casually. Only recently, the psychologists and educationists could realize about importance and severity of the reading problems among the children. They also conducted research and found out the damaging effects of poor reading on various academic subjects in schools. It is accepted beyond doubts that reading and comprehension are most fundamental components, which contribute to achievements in school subjects. Recently, psychologists have found out the specific reading disabilities called dyslexia and developed tools for identification of dyslexic children. In this present PREP program, children are not taught any content but trained to use various strategies, which are involved in reading and comprehension. In the PREP program, as discussed in the case studies, children are first given training and gradually develop the capacity to use appropriate strategy independently. Hence, these training in using appropriate strategies for reading and comprehension will not only improve performances in languages but also contribute to improve performances in other subjects like arithmetic, science and environmental studies and so on.

So far as school effectiveness is concerned, in the first place, it is obvious that the student's performances in all subjects will improve through the strategy-based training. Secondly, the improved academic performances help the children at the primary level to avoid a number of psychological hazards, like lack of motivation, inferiority complex, lack of self-confidence, which are usually associated with poor academic achivements. Thirdly, the studies have revealed that psychological hazards are mainly responsible for stagnation and dropouts in the early years of schooling (especially classes one to five).As the PREP program is highly technical, the teachers have to be trained before using this programme. Remediation of dyslexia is not a new concept for research in India, but very few research works have been undertaken on dyslexia or poor reading ability. So far, whatever researches have been made, mostly they are on identification of dyslexia. It gains more popularity when, controversy arises whether they can be remediated or not? Then how? As reading and comprehension is most important contributor of academic achievement, they should not be neglected in schools. Thus, this study has practical as well as educational implications. The educational implications are the PASS reading enhancement programme can be used in the schools for the improvement of reading and comprehension ability. Every school should prepare a remediationai programme for the poor readers. This PREP programme can be useful for every one who has reading disability.

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STUDY OF NON-FORMAL EDUCATION OF THE AGE GROUP 9 -14 IN BIHAR

(Its present status, problems and possibilities)

Suresh Chandra Mehta

INTRODUCTION

Article 45 of the Constitution of India enjoins on the nation the provision of free, compulsory and universal education for children up to the age of 14 years. Despite continuous efforts in this direction, several social, economic and cultural factors have prevented the realization of the target through only formal education. A large number of children of the age group 6 to 14 years e.g. SCs/STs/ OBCs, working children and poorer sections living in rural areas are out-of-school and have remained deprived of primary education due to poverty and various physical, socio-economic, geographical and psychological reasons. Realizing, that it is difficult to achieve literacy only through formal channels, the need for opening of alternative channels of education was strongly felt. Non-formal education was assumed as an alternative strategy for supplementary formal education and was given an important place in all the sixth, seventh and eighth five year plans.

The Ministry of Education and Social Welfare, Govt, of India initiated the experimental scheme of non-formal education in 1978 in nine educationally backward states viz. Andhra Pradesh, Assam, Bihar, Jammu & Kashmir, Madhya Pradesh, Orissa, Rajasthan, Uttar Pradesh and West Bengal with the objective of providing education to out-of school children of the age group 6 to 14 years.

Through the present study, attempts have been made to evaluate the program of non-formal education (NFE) in the state of Bihar. It is an in-depth study for investigating problems faced by various field functionaries through a systematic analysis of the prevailing conditions and for exploring the effectiveness of NFE program in Bihar in reducing illiteracy and in meeting the accepted objectives, so as to suggest means and offer recommendations to improve the program. Evaluation is quite essential for future constructive action and for bringing about improvement in the quality and efficacy of any program. In the absence of adequate evaluation, any program being implemented would not prove its worth. It is only through evaluation that we can learn from our past experiences and move forward on the right lines.

STATEMENT OF PROBLEM/ RESEARCH QUESTIONS

1. What is the conceptual structure of NFE program in Bihar?
   (Definitions, salient features, aims, concepts of formal, non-formal and informal education, targets, policy of Govt, for the implementation of NFE program in Bihar)
2. What is the present status of NFE program in Bihar?
   (Objectives, environmental conditions prevailing in NFE centers, facilities and conditions planned to be provided and that actually existing, training of field functionaries, curriculum, textbooks, teaching aids, evaluation of NFE learners, enrolment and retention, reasons of illiteracy in areas where the NFE program was organized, monitoring and evaluation of running NFE centers)

3. To what extent the targets are achieved in Bihar?
4. What are the significant problems that NFE Program is confronting?
   (Problems faced by different field functionaries in the implementation of NFE program - instructors, supervisors and Project Officers)
5. What are the attitudes of NFE learners and their parents towards Education and towards the NFE program?
   (Comparing them with the attitudes of out-of-school children and their parents towards Education)
6. What are the points that affected the working of NFE centers? Why the attendance of NFE learners and their achievement were not satisfactory?
   (Identifying causes for less attendance' and 'less achievement' of learners at the NFE centers[1])
7. What can be an effective curriculum strategy for NFE centers?
   (Identifying and validating different curriculum strategies through field experimentation at the running NFE centers)
8. What were the drawbacks of the program of NFE in Bihar?
9. How can the program of NFE in Bihar be made more successful?

TOOLS AND TECHNIQUES

The following research tools and techniques were used for data collection and for identification c* an effective curriculum strategy for NFE centers:

(i) Study of related documents and literature on NFE
(ii) Interview Schedule for NFE instructors
(iii) Information Schedule for supervisors
(iv) Information Schedule for Project Officers
(v) Attitude Scales:
   Attitude of NFE learners towards Education
   Attitude of NFE learners towards NFE program
   Attitude of parents of NFE learners towards Education
   Attitude of parents of NFE learners towards NFE program
   (The Attitude Scales on 'Education' for out-of-school children/drop-outs and parents of out-of-school children/drop-outs were same as for NFE learners and parents or *NFE learners towards 'Education')*
(vi) Questionnaire: Identifying an Effective Curriculum Strategy for NFE centers'
(vii) Objective Tests (Oral-cum-Written) for experimentation of Innovated Curriculum Strategy' in the NFE centers and for measuring its effectiveness:
   Pre-Test in Language and Mathematics
   6 Tests (Test-1 to Test-6) in Language and Mathematics for 6 Rotations of the Experiment. One Test in both Language and Mathematics to be administered on NFE learners of both Experimental and Control group centers after each completed Rotation of the Experiment.
   Test-6 in Language and Mathematics to be considered as the Post-Test
   Test-7 in both Language and Mathematics (same as Test-6), to be administered again for knowing retained literacy among the NFE learners of Experimental and Control group centers.
   (Total: 8 Tests in Language and 8 Tests in Mathematics)

SAMPLE AND SAMPLING

As per 1981 census, there were 31 districts in Bihar (Tribal: 7, Non-Tribal: 24). For taking the desired sample for the present study, proportionate, stratified and multi-stage random sampling was adopted.

It was planned by the researcher to include 4 districts in the sample. Proportionately, one tribal and three non-tribal districts were to be taken.

From the 7 tribal districts, one district was selected randomly.

Now, for selecting 3 non-tribal districts from the remaining 24 districts, these districts were first ranked according to their literacy position as per 1981 census. After ranking them, 3 groups of these districts were made.

Top 8 Districts : Districts with upper literacy
Middle 8 Districts : Districts with average literacy
Bottom 8 Districts : Districts with lower literacy

From each of the above 3 groups of districts, one district was selected randomly.

Now, in the same way, from each of the above 4 districts (one tribal, 3 non-tribal), 2 blocks were randomly selected. One block from upper literacy and the other block from lower literacy was selected after ranking the blocks separately for each of the above 4 districts according to their literacy position as per 1981 census and making 2 groups of blocks - 'blocks with upper literacy' and 'blocks with lower literacy'.

(4 districts x 2 blocks each district = Total 8 blocks)

Thus, following Districts and Blocks were selected randomly for study.

SL	DISTRICTS		BLOCKS	
			UL	LL
1	Ranchi	T	Kanke	Tamar
2	Patna	NT (UL)	Bihta	Dhanarua
3	Muzafferpur	NT (AL)	Mushahri	Aurai
4	Purnea	NT (LL)	Kishanganj	Pothia

T = Tribal NT= Non-Tribal
UL = Upper Literacy AL = Average Literacy LL = Lower Literacy

The NFE projects running in the above 8 blocks were taken

(8 NFE Projects)

The Project Officers working in the above 8 NFE projects were taken. All these 8 Project Officers were administered the information Schedule personally. Besides these Project Officers, all the remaining Project Officers of the above selected 4 districts were also taken for mailing Schedules to them, to get at least 50% respondents from each of these districts. 23 Project Officers responded to the mailed Schedules.

(8 + 23 = 31 Project Officers)

3 supervisors were randomly selected from each of the above 8 NFE projects.

(24 supervisors)

6 NFE centers were randomly selected with their instructors from each of the above 8 NFE projects. (48 NFE instructors)

From each of the above 48 NFE centers, 4 learners were randomly taken, from which 2 learners were administered with the Attitude Scale towards Education, while the other 2

learners were administered with the Attitude Scale towards NFE program,
(192 NFE learners)

Similarly, from; each of the above 48 NFE centers, 4 parents of NFE learners were taker randomly, from which 2 parents were administered the Attitude Scale towards Educatior while the other 2 parents were administered the Attitude Scale towards NFE program.
(192 NFE parents)

30 out-of-school children/drop-outs were randomly taken from Kishanganj anc Kochadhaman blocks of district Purnea.

30 parents of out-of-school children/drop-outs were randomly taken from Kishangar and Kochadhaman blocks of district Purnea.

16 persons from instructors/supervisors/Project Officers were randomly taken frorr Kishanganj and Kochadhaman blocks of district Purnea for the administration of a Questionnaire on Identification of an Effective Curriculum Strategy'.

6 NFE centers of Kishanganj-cum-Kochadhaman NFE Project were taken for the experimentation of 'Innovated Curriculum Strategy along with their instructors and learners Out of these, 3 centers were treated as Experimental Group centers, while the other 2 as Control Group centers.

COLLECTION OF DATA

A. Survey:

The entire data related to field survey was collected personally through the administration c various Schedules, Questionnaires and Scales, moving from project to project and center tc center. The researcher contacted the field functionaries directly, in order to observe and fee the ground realities prevailing in the running NFE centers of 4 selected districts of Bihar unde study. Out of 31 NFE Project Officers under study, 17 Project Officers were administered the Schedules personally. The geographical boundaries of the districts were taken as per 198" census position of Bihar. At the time of data collection, the tribal district Ranchi include: Lohardaga and Gumla districts also, whereas district Purnea included Kishanganj and Araria districts. The data related to field survey was collected between the period April 1989 and Ma 1990.

S. *Experimentation:*

For validation of the Innovated Curriculum Strategy'through actual field experimentation, E running NFE centers with total 177 learners were taken. From these, 2 centers were running in Kishanganj block while the other 4 centers were running in Kochadhaman block. All the centers were running in rural areas scattered in about 11 Kms. The experimental data was collected through the administration of 8 different written-cum-oral objective Tests on NFE learners, in both Experimental and Control group centers, after each phase of the Experiment Each and every NFE learner was administered the Test in Language and Mathematics individually by the researcher himself. There were individual Test Response Sheets for eacl" learner.

DATA TREATMENT

Status data was collected from the official documents.

As the study is primarily an evaluative descriptive one, data was treated accordin: to the descriptive statistical methods and the survey report is also a descriptive on&

In the case of Attitude Scales for learners and parents, x^2 test was used for finding the significance in the difference of attitudes of concerned comparable subject groups towards Education and NFE Program.

In the case of experimental data, Analysis of Covariance was used, to find whether the difference between the Experimental Group Learners and the Control Group Learners was significant.

IMPORTANT FINDINGS

Some important findings with respect to the status of NFE in Bihar, along with comparison between the status in Tribal (T) and Non-Tribal (NT) districts, are mentioned below:

1. 75.00% centers in T district and 33.33% centers in NT districts were being organized in rooms with roof.
2. In 83.33% centers in T district and 41.67% centers in NT districts, empty jute bags were being used for the seating of learners.
3. 66.67% centers in T district and 69.44% centers in NT districts were running in the instructors' own houses.
4. The main occupation of 50.00% instructors in T district and 58.33% instructors in NT districts was cultivation.
5. 66.67% instructors in T district and 97.22% instructors in NT districts were not satisfied with the honorarium amount they were getting p.m.
6. 100.00% instructors in T district and 97.22% instructors in NT districts were not receiving the honorarium amount in time.
7. 100.00% instructors in T district and 94.29% instructors in NT district were receiving their honorarium amount through bank amount.
8. 75.00% instructors in T district and 47.22% instructors in NT districts had received 15-days' training as instructors.
9. 83.33% centers in T district and 88.89% centers in NT districts were situated near thick population.
10. 83.33% instructors in T district and 80.55% instructors in NT districts stated the need of games materials at the NFE centers.
11. 75.00% instructors in T district and 88.89% instructors in NT districts stated that the academic materials were not received in time at the centers.
12. 100.00% instructors in T district and 91.67% centers in NT districts stated that the academic materials were not in sufficient quantity at the centers.
13. 69.68% learners in T district and 68.83% learners in NT districts, who were reading in NFE centers, were without pre-education.
14. During the running period of NFE centers, only 5.81% learners in T district and 5.^4% learners in NT districts took admission into any regular or formal schools from January 1988 to December 1988.
15. 91.67% instructors in T district and 66.67% instructors in NT districts possessed 'Evaluation-cum-Progress Register' for learners of their centers.
16. Of the instructors under study (100% respondents), Attendance Register of 3 continuous months was analyzed. In T district, 80.77% learners and in NT districts, 92.59% learners attended more than 50% of the classes in NFE centers.
17. 3 months' period of NFE centers was studied. In T district, the concerned supervisors were visiting the centers only 'once' in a month, while in NT districts, the supervisors were visiting

the centers '3 times' in a month for supervision.

18. At the place of NFE centers in both T and NT districts, the top 3 reasons of illiteracy were
    Poverty
    Illiterate parents
    Children helping parents in their works
19. The range for 'Distance of nearest center from the home of supervisors' in T district was 1 to 7 Kms, while in NT districts, it was 0 to 10 Kms.
20. From the respondents (100%), average honorarium of supervisors in T district was Rs.200/ -p.m. and in NT districts, it was Rs.359/-p.m.
21. 100% respondents from supervisors were not satisfied with the honorarium amount they were getting, in both T & NT districts. All the respondents stated that it was not received in time by them.
22. 83.33% supervisors in T district and 77.78% supervisors in NT districts stated that the time taken to make up the deficiencies of academic materials at the NFE centers was 'Indefinite', if materials were not present in the project office.
23. Considering both T and NT districts together, with respect to total centers under the NFE projects, 79.18% centers were 'running centers' and 20.82% centers were 'suspended' due to lack of supply of academic materials.
24. 83.33% Project Officers in T district and 72.22% Project Officers in NT districts stated that the salary was paid to them in time.
25. 83.33% Project Officers in T district and 94.44% Project Officers in NT districts stated that they had received training concerning the organization and supervision of NFE program.

26. NFE LEARNERS WHO PASSED IN THE EVALUATION OF CENTERS, UNDER THE PROJECTS IN T AND NT DISTRICTS, TOGETHER

(Last evaluation results)

Type of Center	Total Learners	Appeared (%)	Among who appeared Passed (%)	Failed(%)
Primary Level Centers (General)*	**32,584"**	**28,821 (88.14)**	**19,928 (69.14)**	**8.893 (30.86)**
Primary Level Centers (Girls)	**12,156**	**10,496 (86.34)**	**8,148 (77.63)**	**2.248 (22.37)**
Middle Level Centers (General)*	**1,070**	**893 (83.46)**	**742 (83.09)**	**151 (16.91)**

*** General Center means for both I and Girls.**

In only 16.13 % evaluation results, the data about passed students for Primary Level Centers (General) was received with respect to Grades.

Total Learners	Appeared	Passed			
		Grade A	Grade B	Grade C	Grade D
7,699	6,851 (88.99%)	632 (9.22%)	1,481 (21.62%)	1.880 (27.44%)	2,858 (41.72%)

27. 53.85% Project Officers from T district and 75.00% Project Officers from NT districts stated that in organizing Instructors' Training Programs, they were facing difficulties in making security arrangements for female instructors.

28. 84.62% Project Officers from T district and 88.89% Project Officers from NT districts stated that finance was not received in time by their projects for running the program efficiently.
29. There was significant difference at .01 level of confidence between the mean attitude scores of Parents of NFE learners' and that of 'Parents of out-of-school children' towards Education. The Parents of NFE learners' showed more favorable attitude towards Education in comparison to the Parents of out-of-school children'.
30. Also, there was significant difference at .05 level of confidence between the mean attitude scores of 'Out-of-school children' and that of Parents of out-of-school children' towards Education. The 'Out-of-school children' showed more favorable attitude towards Education in comparison to the Parents of out-of-school children'.
31. But, there was no significant difference between the mean attitude scores of NFE learners and the 'Out-of-school children' as well as between the mean attitude scores of NFE learners and the Parents of NFE learners' towards Education.

PROBLEMS FACED BY DIFFERENT FIELD FUNCTIONARIES

Several problems were confronting the NFE program in Bihar, due to which the concerned functionaries were facing difficulties to meet its objectives and to fulfill the targets. In order to identify the problems at various levels and to know the status of NFE in Bihar, there were separate Schedules for instructors, supervisors and Project Officers. From the 4 selected districts under sample, 48 instructors, 24 supervisors and 31 Project Officers participated in the present investigation for identifying the various problems confronting the program of NFE in Bihar. The problems in the following areas were identified and analyzed. The responses from instructors, supervisors and Project Officers were analyzed and the problems were enlisted in these areas. Some of the major problems in each area are listed below:

A. Personal

- Accommodation problems faced by Project Officers, use of own conveyance by supervisors during supervision and spending own money in its repairs, no facility of drinking water and toilet at the center spending own money on materials, instructors facing problems due to centers running in their own houses, problems faced in going to Project Office, irregularities in food timings, fear of wild animals in hilly, forest and tribal areas, etc.

B. Academic

- Deficiencies of academic materials at the centers, inadequacy of seating arrangement for learners, academic materials of inferior quality supplied, less attendance of learners at the centers, lack of suitable place for centers, instructors not competent enough with the desired method of instruction, misuse of materials, unsystematic distribution of academic materials, center's time not at learners' convenience, no effective progress made by learners, etc.

C. Administrative

- Communicational problems, difficulties in collecting learners at the centers, difficulties in getting materials from the project office, instructors facing problems in organizing centers, problems related to appointment of instructors and supervisors, lack of cooperation from other Govt, departments and local community surrounding the centers, difficulties in taking work from instructors and supervisors, problems related to office management, etc.

Psycho-Social

- Learners reach the center late, tear the pages of books/ copies very soon, tease for getting more and more materials, remain careless in coming to centers, run for their homes during instruction time when some one calls them, learners who learn quickly disturb slow learners, coming to centers bare-footed, indiscipline, creating noise, habits of abusing others, more interested in games, coming to centers wearing torn and dirty clothes, etc.

Financial

- Honorarium amount less for instructors and supervisors, irregularity in honorarium payment, funds not received in time at the projects for running the program, no provision of contingency funds, feeling of job insecurity in instructors due to temporary nature of job, no system of yearly increment in honorarium, deduction of commission from the allotment amount in some banks except SBI, funds insufficient for project needs, etc.

Relational

- No good relations between instructors and supervisors, between instructors and office staff, between instructors/ supervisors and Project Officer, parents do not cooperate in sending children to NFE centers, lack of cooperation from other persons besides projec: personnel, unnecessary pressure by political and local leaders at the time of opening centers, no coordination among higher officers, etc.

Other Problems

- No incentives for attracting learners, pressure from higher officers on instructors/ supervisors for family planning work in the concerned areas, people not conscious about NFE program lack of fixed public place for NFE centers, no incentives for instructors and supervisors system of pleasing others for carrying out works, no signboard of centers, etc.

IDENTIFICATION OF CAUSES FOR ' LESS ATTENDANCE' AND 'LESS ACHIEVEMENT' OF LEARNERS (More than M + 6)

After exploring the status of NFE in Bihar and acquainting with the actual working conditions *c* NFE centers through extensive and personal field surveys and identifying hundreds of problems confronted by NFE instructors, supervisors and Project Officers that affected the working of NFE centers, it was observed everywhere that generally the attendance of learners and their achievemer was not satisfactory. A Questionnaire on Identification of an effective curriculum strategy for NFE centers' was constructed and administered on **16** active persons from instructors, supervisors Project Officers and other experienced NFE personnel for collecting their opinions about the NFE program. Because, the opinions so collected might help the researcher in identifying and determinin: a better, viable and effective strategy for the NFE centers. After the administration of above Questionnaire, the weighted scores of the causes were treated. More important causes witr summated scores above 'M + **6**' are listed below:

There is deficiency of academic materials at the centers (Books, copies, slates, pencils, etc.)	(42)
There is deficiency of Teaching Aids at the centers (Charts of books, pictorial charts, globe, etc.)	(41)
The instructors are not sufficiently trained to teach with the desired method as prescribed by the Govt.	(40)
Seating arrangement for learners is not adequate.	(39)
Learners feel problems in centers running in open place.	(38)

Functions are not celebrated at the centers. (26 January, 15 August, Literacy Day, etc.)	(37)
Slates of inferior quality are supplied at the centers.	(35)
There are no games materials at the centers.	(35)
Parents are not interested in the education of their children.	(35)
Parents/Employers keep the learners busy in their works.	(35)

(The numbers in bracket on right hand side are the summated scores for the concerned statements, maximum summated score for a statement being 48)

IDENTIFICATION OF EFFECTIVE CURRICULUM STRATEGY FOR NFE CENTERS

For the effective functioning of NFE centers, following integrated NFE model was innovated and developed. It included innovations in those areas through which the problems can be solved to a greater extent.

a. *Management of the centers*
(Facilities, provision of games/entertainment materials, etc.)

b. Academic performance of the centers
(Including organization of games, curricular and co-curricular activities, etc.)

c. Social Relations
(Including parents' interest, cooperation of owners/ local people, psycho-social problems, etc.)

d. Learners' interests and needs

The curriculum strategy for NFE centers was planned and designed carefully, keeping in it all the above considerations. Success of NFE program depends on the proper implementation of a well-formulated curriculum strategy. A good strategy must be able to attract the learners towards the NFE centers. The motivation of learners, parents and the instructor must persist and their effective and active participation for the development of NFE program must be achieved. The innovated curriculum strategy for NFE centers is briefly described below:

INNOVATED EFFECTIVE CURRICULUM STRATEGY FOR NFE CENTERS

'INTEGRATED NFE MODEL

SL	ASPECTS	WHAT SHOULD BE DONE?
1	***Personal***	Providing seating facilities to learners/ instructor Developing and maintaining good contacts with learners/ parents/ local people/ social leaders Telling benefits of literacy to learners/ parents/ local people Collecting learners at the center through cooperation of instructor/ parents/ other learners.
2	***Academic*** *"*	Removing deficiencies of instructional materials (Textbooks, copies, pencils, slates, etc.)

		Providing attractive and inexpensive teaching aids to learners (Ludo, strip- cards, posters, wooden cubes, local materials, etc.)
		Providing individual attention to all learners (Observing, checking and guiding progress)
		Teaching through 'Grouping System'
		a. *Fast learner to help slow learners*
		b. Making groups according to abilities
		(Giving different task to different groups)
		Introducing monitor/ leader system at the center (For discipline, cleanliness, academic matters, collecting learners for center, etc.)
		Allowing small children to sit with other NFE learners during instruction time
		Appreciating parents/ local people, if they wish to stand and observe the NFE class in progress (Making efforts to achieve their cooperation through interaction)
3. **Administrative**		Visiting center 5 to 6 times in a month Staying at least for one hour at the centre in each Visit.
		Guiding /training instructor while the center is functioning (Developing
		capabilities of instructor for efficiently handling the center's problems as well as improving his instruction strategies)
		Making personal contacts and interaction with the instructor, learners, parents and local people
4. **Incentives**	-	Providing incentives to instructor (on the basis of learners' performances)
		Providing incentives to learners on the basis of their good academic contests in academic, cultural and physical activities, etc.
		- Nutritional incentives (Chocolates, biscuits ets)
		- Financial incentives (25 paisa, 50 paisa etc)
		-Academic incentives (Books, copies slates etc)
		(The above incentives to be given as **prizes)**
5 ***Psycho-social"***		Sympathetic treatment at all levels with no physical punishment or harsh words (With instructor, learners, parents and local people)
		Providing games and entertainment materials to learners (Rubber ball, ring, ludo, skipping rope, etc.)
		Inviting local people, parents, visitors, other teachers, etc, to come to center and talk to learners
		Organizing cultural activities, functions and celebrating important Days at the center (26 January, 15 August, Literacy Day, etc.)
		Showing sympathy to parents and local people in matters related to death, marriage, dacoity, fire, flood, etc in center area.
		Making learners to repeat and say literacy slogans, songs, poems, etc.
		Motivating learners/ parents through showing them literacy related photographs and pictures from books, magazines, etc.

VALIDATION OF THE INNOVATED CURRICULUM STRATEGY THROUGH FIELD EXPERIMENTATION AT NFE CENTERS

The running NFE centers of Kishanganj-cum-Kochadhaman Project under District Purnea were taken for experimentation of the strategy. 2 centers were taken from Kishanganj block, while the remaining 4 centers were taken from Kochadhaman block. Out of these 6 centers, there were 2 SC centers, one Muslim center, one Tribal center and 2 General centers. The 6 NFE centers were divided into 2 groups — 3 centers in the Experimental Group (E) and 3 centers in the Control Group (C). The'Integrated NFE Model', which was innovated and developed, was tried out in

6 NFE centers - Experimental Group (3 NFE centers) + Control Group (3NFE centers)

The centers were equated with respect to **Level** (Primary Level/ Middle Level), **Clientele** (General center/Girls center), **Location** (Rural/ Urban), **Duration of center, Age Group of learners, etc.** There were 90 learners in E Group and 87 learners in C group. During the experiment, it was planned to have evaluation of learners in 2 subjects, Language and Mathematics. There were oral and written questions in each subject. For each test, in every rotation of the experiment, there was individual Question-cum-Response Sheet. Same tests were administered on the learners of both E and C groups.

EVALUATION OBJECTIVES

'To *ascertain if the strategy helps not in memorization, but in actual literacy*

"To ascertain if the strategy helps in reducing the number of drop-outs in the E group centers, getting experimental treatment, than in the C group centers, getting no treatment

"To ascertain if the learners ofEgroup centers, which got experimental treatment, achieve more in language and mathematics, than the learners of C group centers running under normal conditions as per Govt, program

"To provide feedback to the instructors of E group for their learners'attainments in language as well as in mathematics, during chain of evaluations in the experimental period

"To ascertain if the learners of E group centers retain more in language as well as in mathematics even after a gap starting from the end of strategy experimentation

EXPERIMENT

Pre-Test was administered on all learners of E and C group centers in Language and Mathematics before the start of experiment. There were 6 rotations of 20 working days each in all the centers of E and C group (Instruction: 19 working days, Evaluation: Last day). Following 4 aspects of experimental variables were considered.

(i) **Content** (with respect to previous knowledge of learners and their achievement)

(ii) **Support Materials** (improving seating facilities, supplementary books, teaching aids, games materials, etc.)

(iii) **Modeofteaching/Interaction** (teaching techniques, motivation, encouragement, teaching through games, etc.)

(iv) **Environment** (physical, social and psychological — inter-personal relations, love and affection, incentives, etc.)

The content for each rotation for both E and C group centers was same. Also, the same tests were administered on the learners of E and C group centers, at the end of each rotation. The C group

centers worked in a normal way as per the guidelines of the Govt, project. But in the **E** group centers, the innovated strategy was applied and the schedules of support materials, mode of teaching/ interaction, environment, etc. were adjusted as per the needs of the centers/ learners/ instructors etc. time to time.

First half of the experiment was conducted on learners with 3 centers in E group and 3 centers in C group. Test (3) after rotation (3) was treated as Post-Test for first half of the experiment. The second half of the experiment was done with one center each in E and C group, selected from E and C group centers respectively through randomization.

Thus, Test (4) after rotation (4) became the Pre-Test for second half of the experiment. Similarly Test (6) after rotation (6) was considered as Post-Test for second half of the experiment. Test (7) had same items in Language and Mathematics as in Test (6). Test (7) was administered after a gap of 3 months on all the learners of E and C group centers for testing retained literacy among learners.

After the end of each rotation, there was evaluation of learners in Language and Mathematics. Each learner from each E and C group center was administered the evaluation sheet individually. The achievement scores of E and C group learners were compared on the basis of Analysis o' Covariance, after each rotation so as to get continuous feedback about the effectiveness of the strategy and modifying it, if necessary.

EXPERIMENTAL RESULTS

COMPARISON OF ACHIEVEMENT SCORES OF E AND C GROUP LEARNERS IN LANGUAGE

SL	COMPARISONS & C GROUP)	CENTERS IN EACH GROUP	df	Value of t	SIGNIFICANCE
00	Pre-Test and Test (3) scores	3	127	2.73	.01 level
(«)	Pre-Test and Test (3) scores	1	39	2.48	.05 level
(iii)	Pre-Test and Test (4) scores	1	39	5.13	.01 level
(iv)	Pre-Test and Test (5) scores	1	39	3.86	.01 level
(v)	Pre-Test and Test (6) scores	1	39	3.69	.01 level
(vi)	Test (3) and Test (6) scores	t	39	2.38	.05 level
(vii)	Pre-Test and Test (7) scores	1	37	3.18	.01 level

df = degrees of freedom

COMPARISON OF ACHIEVEMENT SCORES OF E AND C GROUP LEARNERS IN MATHEMATICS

SL	COMPARISON (E & C GROUP)	CENTERS IN EACH GROUP	Idf	Value oft	SIGNIFICANCE
(i)	Pre-Test and Test (3) scores	3	127	2.89	.01 level
	Pre-Test and Test (3) scores	1	39	2.17	.05 level
	Pre-Test and Test (6) scores	1	39	3.64	.01 level
(iv)	Test (3) and Test (6) scores	1	39	3.62	.01 level
(v)	Pre-Test and Test (7) scores	1	37	3.33	.01 level

df = degrees of freedom

The results related to the validation of innovated curriculum strategy in NFE centers were highly significant and encouraging in favor of learners of E group, in both Language and Mathematics, as shown in above tables. Most of the results were significant at .05 or .01 level of confidence. It clearly indicates that the curriculum strategy, which was innovated and applied to the learners of E group centers, was successful and quite effective.

With the results achieved through this experimentation, the researcher can confidently claim that if all aspects of the strategy are kept into consideration, while dealing with the learners of NFE centers/ or any type of alternative schools, not only the attendance of learners in such NFE centers and alternative schools will increase but their achievement in various subjects will also increase. The NFE centers or alternative schools must be organized in such a way that the learners are attracted towards them. The teaching learning environment should be joyful, interesting and meaningful for both instructor and the learners. The instructor's sincerity, commitment and motivation is most important for the success of any program aimed at education of all such children, both boys and girls, deprived of any type of formal schooling.

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CAN WE IMPROVE THINKING SKILLS?

At birth, how long did we take to learn breathing? Practically, no-time!
If we are talking of 'simple breathing', it takes no-time to learn,
but learning the real art of breathing like for Pranayam can take long practice time?
Likewise, if we want to become ordinary thinkers,
we may not devote much time to learn it,
but if we want to learn the 'real art of thinking',
we must pursue the matter much more systematically.
Is it not important for us to learn the real art of thinking?
After all, human is human because s/he thinks.
Can we develop this unique gift? If yes,
Is it not too late to learn at this age of our life? May not be!
I can recall the famous saying of the Chinese Philosopher Lao-Tse:
Begin difficult things while they are easy,
Do great things when they are small.
The difficult things of the world
must once have been easy.
The great things must once have been small..
A thousand mile journey begins with ONE step.

bkpassi

TQM IN (FOR) HIGHER EDUCATION

R Prabhakar Raya

INTRODUCTION

Quality may be defined as as consistently catering to what the stakeholder/ customer of an Institution of Higher Learning [IHL] wants while reducing errors before and after its delivery to the stakeholder- say, a student, research client, project client, a governmental agency or a non-governmental organization or society at large. It is important to note that quality is not so much an outcome but a never-ending process of continuous improvement. The definition of QUALITY is discernible in the context of Higer Education. The definition of its stakeholders is not a focussed one. There are many stakeholders. Will it make job to ensure quality impossible? Not in the least. Yes, it makes it challenging. If the process of education is not challenging, what else will? TQM emphasizes detecting potential problems before they occur. Failure to prevent defects has several consequences. The following are a few of them

1. The need to inspect other people's finished work, rather than relying on the employees' own motivation and skill takes away much of the managerial time, thinking and efforts. This inspection requires extra people and resources. It creates a "police orientation" rather than "trust" orientation.
2. If another employee (a supervisor) finds errors, someone must fix the error, causing extra time and workload, or scrap it with all the accompanying waste.
3. If customers find the errors, this can cause dissatisfaction, loss of customer confidence, and, perhaps, loss of customers themselves.

ELEMENTS OF TQM

In organizations implementing TQM, customers and suppliers include relations inside the organization. A key philosophy in dealing with stakeholders is that it is they who define what quality is. The following elements need to be appreciated in understanding the concept and mechanics of TQM - considered being more akin to commercial organizations.

1. Encourage the Proper Climate, Empower Employees,
   For continuous improvement to work, management must empower employees, so that they are willing to innovate and act in an atmosphere of trust and respect. All of the other components can be in place, and TQM still fail. An employee motivated to improve service to their customers with the climate allowing them to do so is a potent combination.

2. Continuously improve and Eliminate Wasteful steps,
   To meet dynamic needs of its stakeholders, the organization itself must be dynamic. The
   • social consequences of this would appear to be minor. One caution exists, however, in eliminating wasteful steps: It can mean the elimination of positions or whole classes of work. Employees may receive this and actively resist against such moves.

3. Use the problem solving/problem prevention cycle,
   This cycle describes the steps that TQM problem solving/prevention groups use. The following are its major components.
   0 The gathering of information and its analysis before actions are taken;

- The use of brainstorming (creating possible solutions) before evaluating ideas generated; and
- Evaluation of success.

This cycle, using different terminology, is also called the Deming cycle, where its components are PDCA (Plan, Do, Check, and Act). This cycle can be used in the following contexts.

- Cross-functional teams, to clarify and refine processes that cross organizational boundaries such as resource generating project committees comprising academics and supportive administrative wings such as finance and purchases;

- Design teams, to create or change organization-wide systems. They may be formed to design employee information system, new administrative policies, procedures and practices in the context of available Information Technology [IT] enabled services.

- informal work groups working to improve their day-to-day operations; and

- Newly formed work groups to improve their interpersonal functioning in an accountable and responsive way owning their efforts and outcomes.

4. Use of Measurements to Back Decisions

As we said before, the key to success is to deliver consistently services to meet the stakeholders' needs and expectations. To find out whether we are successful, we ask them how well we are doing. In TQM, this data can be graphed. With this data, trained administrative employees (including top University/ college management), heads of the departments accountable for monitoring their colleagues' performance and such others at different levels can use it. The following inferential outcomes are feasible.

- Identification of trends, and correction of these trends, where necessary, before problems are caused;
- Diagnosis of problem solving, to find out why the problem occurred, and what can be done to prevent it from happening again.; and
- Design of new courses and programs & procedures. The use of experiments at this stage of development can identify key characteristics that can affect and optimize program or service development. These courses may be tuned for the benefit of students/ outside clients like government agencies or other corporate entities, rural women, urban slum dwellers.

-institution that uses data can avoid decisions that may force them to knee-jerk reactions to small and random changes in outcome. Statistics allow the decision-maker to tell the difference between chance occurrences and systematic factors that significantly affect program or service quality.

Long-term Thinking: Peter Drucker describes it best thus. Long-term thinking is moulding the future by understanding the consequences of what we do today. Long-term thinking requires a willingness to forgo short-term benefits that undermine future well being. Such thinking is congruent with knowing our mission and focusing on our customers, with systematic improvement, and continuing human resource development. Every day we delay in beginning to improve processes,

another day is wasted. Begin the journey today and serve as a model for others in your organization.

Commitment: Ensuring quality is not a spectator sport. It cannot be delegated to someone else. Everyone must become involved in improving and maintaining the quality of an institution.
If you think that these ideas make sense for industry but that higher education is different, be assured that many corporate leaders have responded in like fashion: "But we are different." Higher education is different, and its general conservative orientation does make it difficult. But consider the values that TQM espouses.

Importance of People: TQM reduces costs, but not in an authoritarian fashion. It has checks and balances. It empowers all the people involved and encourages less management control. Certainly valuing people is compatible with the philosophy and goals of higher education.

Need to Use Knowledge: It is surprising how faculty can become administrators and then not use what they know. For example, statisticians often do not use statistics, and scientists often do not use the scientific method. Also, most people in organizations know where problems lie in their own work processes. Let us all use our knowledge.

Continuous Improvement: What is education itself—our core mission—but continuous improvement through learning? Surely, we want to endorse that idea as a description not only of our educational goal but also of our organizations as a whole.

The National Policy on Education {1986 and slightly modified one in 1992 } and the system of higher education hold dearly such values as the importance of people, knowledge, and continuing improvement. There is, however, a need to practice what is preached in institutions of higher learning! If they do it over a long period of time - not one week or one year but over a five to ten-year period - one can see significant improvements.

Institutional researchers can and should play a leading role in this transformation. Institutions of higher education intending to go in for TQM can draw lessons from government and business ventures [Lois A. Waters], size up opportunities and obstacles on the way [Gary Bonviilian and Terry L. Dennis], understand impediments to overcome if academia is going to successfully embrace total quality management, [Walter J. Wheatley], appreciate The Campus Administrative Improvement Program [Annie B. Woolridge],There are potentially successful initiatives from US educational system where TQM seems to be yielding results:While the ranks of TQM institutions include the likes of Oregon State, Wisconsin, Minnesota, Washington, Pennsylvania, Colorado State, Harvard, Carnegie Mellon, Lehigh, Arizona State, Iowa, Kansas, Michigan and Miami,This list is not exhaustive. Several community colleges and technical institutes embraced the quality movement earlier than most of the universities. Adoption of TQM can take Several forms. Each not only differs in breadth but also in the degree of overall institutional commitment. None has been in place long enough to determine whether documented improvements will become lasting models of quality or reflect only momentary glimpses of a fleeting vision. Not all colleges and universities are discussed here; however the examples chosen do offer a sampling of the various approaches currently being employed.

Unit-wide Initiatives

In these cases, total quality management implementation is confined to special projects typically to service and support areas where success is likely and the results fairly visible. For instance,

University of Pennsylvania reduced trash removal costs and streamlined research cost recovery procedures; the University of Kansas reduced the time spent to generate a student work-study check from sixteen days to three. The Universities of Miami and Chicago have integrated TQM into their MBA curricula and into some classroom and support service functions. Student (customer) satisfaction has improved, but it may be too soon to tell whether lasting quality improvement will result.

Institution-wide, Two-year College Initiatives

In 1985, DCCC [Delaware County Community College] decided that instead of solving its problems by spending more money, it wanted to improve institutional quality by conserving resources, by improving effectiveness, by surviving increased competition via the establishment of a market niche based on quality and by increasing participation in decision making. DCCC joined the quality movement. To begin with, it educated its executive team, institutional research personnel and an implementation team in the principles of TQM. The DCCC three-pronged plan then targeted the period, 1986-1991, for its first stage. During this phase, the college implemented TQM in areas such as telephone service, academic computing, parking, student employment and facilities usage. During the second stage, 1987-1991, the college developed a TQM curriculum through which it could provide contracted training for businesses and also offered a certificate program. The certificate program—TQM Technology—is in place and DCCC supports several local industries, state agencies and federal offices through contracted service. Stage three, 1989-1996, involves implementing TQM throughout the teaching and learning process. Faculty involvement is voluntary; some experimentation is taking place; but progress is expected to be slow. Benefits to date include better problem and objective definition, improved documentation and standardization of college operating procedures, increased staff development, more teamwork and more careful planning at the administrative level. Fox Valley's [Fox Valley Technical College] initial exposure to TQM parallels that experienced by Delaware County. FVTC started offering quality courses in T985 at the request of local businesses. It then began instituting TQM practices through a quality improvement council and special problem solving teams. Most recently, FVTC cut $1.2 million (slightly over 3 percent) from its $38 million operational budget. By prioritizing programs and facilities, equipment and staff needs, TQM teams developed an operational plan that reduced the budget without personnel or program cuts. Presently, Fox Valley's Quality Institute works with other colleges that are interested in incorporating TQM into their operations.

Institution-wide, Four-year College and University Initiatives

Oregon State University. Probably the most widely publicized institutional attempts at TQM come from OSU. In 1989, with full presidential support, OSU brought in speakers and consultants (including W. Edwards Deming) and staged retreats designed to educate colleagues and to build support. In 1990, OSU took TQM institution-wide in its primary support functions (i.e., physical plant) to address specifically targeted priorities such as shortening the completion time for remodeling jobs and reducing paperwork errors. At the same time OSU developed a system for identifying and prioritizing customer needs. OSU uses break- through planning to examine what it terms "critical processes." Oregon State also makes an effort to recognize both outstanding individual and team efforts through its reward system. Cross-functional pilot projects are being developed with the intention of converting selected university committees to TQM. Some faculty members have begun experimenting with TQM in their classrooms, but to date most academicians remain suspicious. In its first successes, OSU reduced remodeling job time by 23 percent and department journal voucher errors by 94 percent. Currently, OSU hopes to successfully address the effects of massive state budgetary cuts by using TQM. Only time will tell whether it can be successful in this most recent endeavor.

State-wide Initiatives

North Dakota State University System. In 1989, the State Board of Higher Education formalized its commitment to TQM when it endorsed the North Dakota State University System "Partners for Progress Plan for 1990-1997." This first-of-its-kind plan sets 1997 TQM goals that the Board hopes will create community, ensure quality and reduce costs. The plan advocates continual quality improvement in areas related to faculty, graduates, research and public service. Minnesota State University System. One year later, the Minnesota system adopted a TQM derived "Q-7" program. Based on the state's Strive Toward Excellence in Performance (STEP) governmental program, Minnesota's move toward TQM signals its attempt to deal with financial constraints that plague the state government and the university system alike.

CHALLENGES TO TOTAL QUALITY MANAGEMENT IMPLEMENTATION

Image of the Stakeholder/ Customer:

Multiple constituencies intertwined in complex relationships force educators to grapple with the identification of just who their customers might be. Connotatively, the term, customer, conjures up visions of educational institutions as money grubbing entities where price reigns supreme. To faculty, calling students, their families and alumni customers seems crass. Academicians balk at using the term, customer, to describe students because they believe that it signals their acceptance of the assumption that the customer is always right. Defining quality under such circumstances becomes a dubious task mired in the rhetoric of customer satisfaction—a satisfaction of personal wants and self-centered desires for instant gratification.

The observation that students rarely know what they need, but rather enter an educational setting to discover just what those needs might be, bears much merit. TQM, however, does not necessarily suggest that students should hold sole proprietorship over content determination but only that they be involved as active and creative participants in the education process and its overriding purpose—the pursuit and discovery of knowledge. Quality education then results from a multi-faceted effort on the part of all constituencies—students, their families, alumni, the community and faculty.

Faculty Identity

A more subtle challenge centers on faculty identity based on discipline rather than institutional affiliation. Individual and discipline foci seem to be at odds with the cross-functional team approach to enriching an organization, which quality movements embrace. Developing an institutional culture that incorporates the pursuit of disciplinary excellence is a time-consuming endeavor that could tax but not necessarily thwart college and university governance systems.

Reward System

The reward system in colleges and universities may also be inconsistent with continuous improvement toward quality objectives. This may be especially true at research universities where most incentives reinforce time spent by faculty on research projects at the expense of teaching. However, increasingly, colleges and universities proclaim the need to improve undergraduate education, which hinges on the quality of classroom teaching. If colleges and universities claim that they need to improve the quality of undergraduate education, then colleges and universities must recognize improvements in the quality of teaching and reward them accordingly.

Tenure System

Finally, the traditional tenure system, and the unparalleled sense of security that it imparts, often discourages change by promoting the status quo. In fact, tenure systems often impede the recognition of telltale signs that herald a need for change. Looked at from a quality movement perspective, however, tenure could foster innovation and creativity by freeing faculty to take risks.

COMMON MISTAKES IN IMPLEMENTATION

Some colleges and universities rush to climb aboard the total quality bandwagon only to find disappointment and, in the end, either minimal institutional commitment to or total rejection of the concept. Five common threads run throughout most of these mishaps.

A Lack of Strong Leadership and Commitment at The Top

If top administrators remain unconvinced and uncommitted, the institution lacks the visionary leadership that facilitates, mentors and models the essence of organizational and cultural change which any movement toward continuous quality improvement demands. Strongly committed leadership can lead an institution into a culture that not only espouses educational quality but continuously works to provide it.

An Insufficient Base of Support

Institutional change based on cultural revitaiization and reconfiguration takes time and energy. If ail inspirational efforts reside with very few proponents, necessary cultural and behavioral changes may never manifest themselves. Sooner or later, no matter how worthy the cause, a lone champion wears down, burns out or simply moves to a more supportive environment.

A Failure to Recognize The Costs

Financially, the immediate costs of training, educating and reeducating administrators, staff and faculty could be substantial. Even if monetary expenditures are taken into account, the greater cost—time expended—often goes unacknowledged. Without a conscious effort to recognize this need and to provide sufficient release time for those involved, total quality efforts eventually take peripheral positions of importance or die away completely.

Too Complex Projects, Too Little Time, Too Few People

Institutions sometimes see a problem but fail to detect the underlying multiplicity of contributing events and processes. Immediacy drives the resolution process and leaves issues only partially articulated. Failure to dissect, diagnose and divide the problem in order to conquer it relegates colleges to bandaid treatments, which may temporarily relieve the symptoms but fail to cure the problem. These colleges and universities look for quick fixes to incredibly complicated situations that took years to develop. Unrealistic deadlines coupled with cursory delegation of manpower to the project suggest a failure on the part of the college to establish the problem's resolution as a top priority and a misunderstanding of what TQM is all about. Small, well-defined, visible projects lead more times than not to successful outcomes. A history of small successes lends credibility to the college's overall approach to quality improvement.

Confining Efforts to Administrative and Support Functions

If the essence of education is teaching and learning, concentrating improvement efforts on a college's administrative and support functions will only superficially affect what happens in the classroom. Unless faculty recognize a need for systematically improving the educational environment to meet

the needs of a continually changing and evolving student body, what goes on in the classroom will not change. This is not to say that all classrooms and all faculty need to change. Confining total quality efforts to administrative and support functions does, however, send a message to the public, which ultimately pays for higher education, that what goes on In the classroom is so sacrosanct that it remains untouchable. In times of financial constraints and public demands for accountability (and quality) is this the message that colleges and universities want to send?

CONCLUSION

Adopting TQM as a management system tends to channel implementation efforts into college and university administrative and support areas such as the physical plant, budgeting, admissions, registration, parking, purchasing, health and food services and the library and away from the classroom. While exposure to TQM in the university (college) setting appears to be growing, to date, most colleges and universities seem to view TQM from this management perspective. The efforts of some faculty will (and do) experiment with TQM and, the success stories need to reinforce the sanctity of the philosophy and the practice of TQM in Higher education. Current experience suggests that the acceptance of TQM as a viable, philosophical approach to improving the most crucial element of the learning environment—the classroom— remains a very long way off.

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NOTES FOR CONTRIBUTORS

Manuscripts are to be typed on one side of the paper double spaced with ample margin.

For anonymity in the reviewing process, paper title, name(s) of the author(s) and address for correspondence should be placed on a separate sheet.

The manuscript should be prepared on a word processor and be copied in a (preferebly new) floppy, in both **.doc and .rtf** via e-mail and should be sent along with the hardcopy to Dr. Sunil Behari Mohanty, Dept of Education, G M College, Sambalpur 768 004.

The manuscript if sent by e-mail should be sent to:
dkpadhi@sancharnet.in and CC to dkpadhi@dte.vsnl.netin.

An abstract of 150 words should accompany each manuscript. A manuscript should not normally exceed 6,000 words.

Reference style

Books: Banerjee, N. P.(1993) *Strategies of Educational Research.* The Associated Press, Ambaila Cantt.

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EDUCATIONAL RESEARCH IN PUNJAB

S. K. Bawa

INTRODUCTION

The Uniersities have expanded dramatically in the last century in India and have emerged as an important centre for research. University Grants Commission has been playing an important role in providing facilities and opportunities for conducting research in different fields. Therefore, research has become an important part for the future of the university, if they are to survive and prosper. On the other hand, policy makers are supposed to know and understand the complex realities of the society to make more effective policies. Universities help in giving a practical and effective shape to the educational policies through research. There are several areas with a strong research base and a focused literature. Education is one of them which has gained importance. Educational research is being carried out at doctorate level throughout the country. In Punjab, research is being conducted at M.Phil, and Ph.D. levels besides the allocation of minor and major projects by U.G.C. at individual or institution level. The central focus of educational research in Punjab are two universities namely Guru Nanak Dev University, Amritsar and Punjabi University, Patiala. The number of Ph.Ds in Education produced by the universities of Punjab till Dec. 2000 are presented in Table 1.

Table 1

Research at Doctorate Level by the Universities

University	No. of Ph.Ds
1. GNDU, Amritsar	42
2. Punjabi University, Patiala	112
Total	154

QUANTITATIVE SCENARIO OF RESEARCH AT DOCTORATE LEVEL IN DIFFERENT AREAS OF EDUCATION

Guru Nanak Dev University, Amritsar and Punjabi University, Patiala have been conducting research at doctorate level for the last thirty years. Many areas of education have been touched by the researchers. The following scenario emerged after reviewing the Ph.D. work conducted by these universities.

Table 2

Number of Studies under Different Areas

Area	Number	Areas	Number
Educational Psychology	18	Comparative Education	4
Measurement & Evaluation	5	Value Education	4
Language Education	4	Teacher Education	9
Philosophy of Education	7	Physical Education	36
Technology of Teaching	9	Vocational Education	2
History of Education	7	Special Education	3
Educational Administration	6	Adult Education	8
Religious Education	7	Media Education	2

Social Education	**3**	Population Education	**2**
Women Education	**6**	Secondary Education	**4**
Continuing Education	2	Health Education	**4**
Environment Education	**2**		

The general trend of conducting research in Punjab at doctoral level has been on the areas of educational psychology followed by technology of teaching and teacher education, whereas maximum research has been conducted in the area of physical education.

Educational Psychology

Eighteen studies have been carried out in this area with special emphasis on personality, creativity, intelligence, motivation, self-concept and behaviour problems of children. The subjects of the study were students, teacher and rural and urban adults. The psychological variables have been studied in relation to some social and demographic variables.

Measurement and Evaluation

In this area, five studies have been conducted which pertain to test construction and evaluation of different programmes related to teaching, text books and general physical fitness.

Language Education

The main thrust in this area was towards development of Punjabi language especially on vocabulary of students of different grades in Punjab. Four studies have been conducted at doctoral level in this area.

Philosophy of Education

Philosophy of Education has been touched by seven scholars in Punjab who studied Swami Vivekananda, Sri Aurobindo, Plato, Pestalozzi, Mahatama Gandhi and Iqbal. ^Moreover, human nature has also been studied as revealed by biopsychological, socio anthropological and psychological studies.

Technology of Teaching

Nine studies have dealt with technology of teaching. Effectiveness of teaching methods for teaching rural adults, Bruner and Ausubel Models of teaching of concepts in Economics, interaction analysis of teaching learning process, teaching of geography, programmed learning for biology, mathematics and home science, Inquiry training model in the development of process skills in geography, individualised and group instructional modules for teaching bio-sciences are the areas in which the doctoral work has been undertaken.

History of Education

Seven studies have been carried out in this area. History of primary education in Punjab, 10+2 system, education system in different districts of Punjab, female education in Punjab, history of adult education in Punjab, higher education in Punjab and secondary education in Punjab have been covered at micro level.

Educational Administration

Development of educational administration in Punjab, Implementation of national policies of education, welfare programmes, college administration in Punjab, administrative, financial and innovative aspects of women colleges etc. are some of the topics covered under this area. Six studies in educational administration have been conducted at doctoral level.

Religious Education

Seven studies have been covered in religious education. The researches pertaining to the educational philosophy of Guru Gobind Singh and Guru Nanak Dev ji have been conducted. Besides Bhagat Bani and ethical basis of Adi Granth have also been studied..

Social and Women Education

Nine studies have been covered in social and women education. The topics which have been dealt with are parent-child conflicts, professional institutions for women, women hockey players, female adult and non-formal educational programmes, perception of parents and teachers about behaviour problems of children, decision making pattern of women, small family norms in relation to their career plan, employment status of mother, rural women learners etc.

Continuing Education, Vocational Education, Media Education, Population Education and Environment Education

Two studies in each of the above said areas have been conducted. Attitude towards environmental education, population education, vocational education and its problems, family planning, TV. viewing behaviour etc. have been covered.

Comparative Education

In comparative studies, American and Indian students have been compared on their physical and physiological abilities. Indian and Canadian teachers have been compared on their qualities best liked by their students and student welfare programmes of different States. Physical education and sports facilities of different universities have also been compared at doctoral level.

Value Education

Four studies on value education have been conducted in Punjab. Emphasis has been laid on studying the value dimensions of teachers and students at different levels. Besides, value oriented education according to Adi Granth has also been explored.

Teacher Education

Nine researches have been conducted in this area. Development of teacher education from 1947-1990 has been studied. The focus of research has been on teaching effectiveness, attitude towards teaching profession, professional competence, impact of training programmes, personality profile of award winning and non-award winning teachers and role of academic staff colleges in northern region.

Physical Education

The major thrust area of research in Punjab remained physical education for many years. The researches have focussed on physical and motor fitness, motor abilities, motor performance, physical education programmes, coaching, facilities and problems of physical education, policies of physical education and sports in India, effect of psychological variables, training programmes, sports performance, psycho-social profile of Indian athletes, and studies on hockey, football, kabaddi, basketball and volleyball players, gymnasts and athletes. Thirty six studies have been conducted on the above said issues.

Special Education

Three research studies have covered areas - behaviour modification procedure of mentally retarded, drop outs and socio-personal and psychological traits of gifted students.

Adult Education

Adult education has received a special attention of the researchers in the recent past. The studies conducted in this area pertain to the development of learning packages for adults. Impact

of adult education programmes on the attitude of adults in relation to different socio psychological variables, TV viewing behaviour of illiterate adults, motivation of rural adults and development of adult education in Punjab.

Secondary Education

Impact of different variables to improve the academic achievement at secondary level, needs, facilities, teaching learning process and development of programmed instructional material at this level has been the main concern of the researchers.

Health Education

Studies in this area pertain to adolescents' mental health, emotional health, general physical fitness of youth of Punjab and fitness according to Ayurveda.

CONCLUSION

Though a lot of effort has been made by the researchers of the state in covering many areas of education but need of the hour is to thrust upon the interdisciplinary and practical approach to educational research in the present info-tech era for planning and development of educational activities.

Suggestions for Development of Research

1. The research should expand into fields which are either weak or non-existent at present time.
2. Centres for research should be identified and helped financially and be given facilities for carrying out the researches.
3. Publication facilities and opportunities should be made available.
4. More stress should be laid on local need based action research.
5. Stress on Inter-disciplinary approach..
6. There is a strong need to explore, modify and implement effective teaching learning methods and material.
7. The gap between basic and applied research needs to be minimised.
8. Need for training rogrammes for researchers that result in enhancing researches in different fields.
9. Strengthening of Regional, national and international networks for reporting the research findings.
10. Establishing linkage between researchers and policy makers and providing international education and comparative education.

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COMPUTER ASSISTED INSTRUCTION

Sunil Behari Mohanty

INTRODUCTION

Computer is an effective and efficient tool for varieties of purposes. It has taken a strong base in most of the areas of human activity. Its speed, reliability, accuracy and efficiency have enhanced personal productivity. (Roy 2000). Local Area Network (LAN) facilities connect various computers in a building or an area. A person sitting in a computer can take advantage of work being done or stored in another computer. Computer is a modern tool for improving the quality of teaching and learning. "Computers must be seen as part of the wider category of instructional technologies"(Salomon 1989,p.155). A teacher sitting with one computer can supervise the calculation or any other work being done by students in various computers. Wherever necessary, the teacher can give advice to the students without physically visiting them. There are portable computers that can be carried in bags and that can be used even while travelling in a bus, car, train, etc. A computer floppy of about 50 grams weight can contain a book of about 2Kg. weight or more and enables the students and teachers use textual materials more frequently and more effectively. Use of computer floppies can dispense with the practice of dictation of notes. A teacher may put his/her note typed in a computer and store the same in a floppy and make students copy out the note in their floppies. It is much economical from the point of view of time spent by teachers in dictating notes and time taken by the students in taking down notes. It provides more active learning. Its programs are versatile, and controllable. These aid to abstraction. These can represent and logically manipulate formal systems of all kinds. These have universal access to all knowledge.

Internet

The army of USA originally created Internet. In the year 1969, the Advanced Research Projects Agency (ARPA) of USA army developed an experimental four-computer network so that research scientists could communicate. In the year 1971, this project had about 2 dozen sites including MIT and Harvard University. The sites went on expanding. By 1974, there were 62 sites and by 1981 there were more than 200 sites. In 1983, the military portion of ARPA Net was taken out. However in late 1980s, the National Science Foundation of USA developed NSF net and allowed civilians access- computer scientists and UN professionals. In early nineties, some experts of the European Particle Research Center in Switzerland developed World Wide Web (WWW) which led the foundation for sharing the information by people throughout the world by making the information in computer of any place getting transmitted, displayed and printed on any computer hooked to the Internet. Since 1992, there have been varieties of developments in Internet facilities. In 1992, the World Wide Web system and soft wares were releas"ed. In the late 1993 the National Center for Super Computing Applications (NCSA) of USA released the versions of the first graphical web browser - Mosaic for Microsoft Windows, for Unix systems and for the Apple Macintosh. In August 1995, Microsoft Company introduced Internet Explorer, a browser that went into head to head competition with Netscape Navigator. In 1996, the Java, the Sun's programming language for creating Internet and Internet application was developed. Netscape, Microsoft, Apache and others released inexpensive or free web server software that made setting up feature-rich Intranets easier. Web is usually accessed via a browser, which is a computer program that has the ability to read and display web content. Two popular browsers are Netscape Navigator and Microsoft Internet Explorer. Internet sends web pages, e-mail, programs, pictures, and various kinds of computer

files through protocols. Transmission Control Protocol (TCP)/Internet Protocol www browser computer and a www server computer. However all kinds of information are not available from Internet. A high deal of information and instruction on the web may be outdated and may be of poor quality. For instance, the data on adult literacy available in the web in the month of June 2001 is not based on 2001 census data but on 1991 census data. Hence, whatever information is made available might need to be verified, just as the case with a television news or news appearing in a newspaper. Intemet can neither compete with books nor with teachers.(Singh 2001). This realization has even dawned in west. One can have Internet facilities in one's computer on payment of necessary charges to specified agencies. One requires a telephone connection for Internet. There are more than 3,500 Internet Service Providers. The agencies that provide Internet facilities include VSNL, BSNL, Sat yam, Mantram Online, etc. File Transfer Protocol (FTP) technique is utilized to get soft wares and files transferred from Internet collection and also to get World Wide Web files transferred from any computer to a server, which can make it available globally. With the help of computer one can synthesize information available in a number of different sites. There are browsers to show information in a multimedia format and linking texts, pictures, animations, etc. There are search engines to pin point an inquiry. Some of these search engines are: Yahoo, Search a lot, Google, Lycos, Infoseek, Easy search, Web crawler, Excite, One look, Hot boot, Alta vista. etc.

Rich Source of Information

Internet is a rich source of information. A teacher/student can get recent data from Internet. For instance, the textbooks on comparative education do not give recent data. The Internet can provide such information. The data regarding National Curriculum on Initial Teacher Training in UK may not be available in Comparative Education Textbooks. Getting the printed materials is a time taking affair. Getting the information through Internet is much faster. Such information can be downloaded into the computer; its print outs can be taken and Xeroxed copies can be given to students. This makes their knowledge on the comparative teacher education system more up to date. Poor standard of Internet connections make remaining connected for a longer time a problem(Prahar 2000). The cost involved in using Internet and in getting printouts may be out of reach for a student from a middle class family.

Intranet, Extranet and Telnet

Intranet is an internal company network that provides limited access to outside. It can have access to Internet but access to Intranet from Internet is not possible. It is generally created by business houses/offices for their own applications. It provides departmental, interdepartmental and company wide communications solutions. Extranet allows two or more offices or business houses to mutually share their Intranets for a particular purpose.Telnet provides opportunity to access and control programs on remote computers.

Electronic Mail (e-mail)

E-mail is the lifeblood of the Internet. It helps in interacting with the on line world at one's own pace. To have E-mail, one must have Internet connection, ;in Internet account and have E-mail program. E-mail accounts can be opened with facilities such as hot mail, rediff mail, America Online, AT&T Mail, AT&T World Net, Compuserve, FIDONETBBS, MCIMail, etc. Eudora Pro is a popular e-mail programme. Other programmes include Microsoft outlook express, Netscape messenger, Pegasus mail, Pine, etc. Good lectures can be typed in a computer and can be sent to individual students staying anywhere in the world through e-mail. When the student is free, slhe can open hislher e-mail and can go through the lecture. Information to teachers at school or college can also be sent through e-mail.

Opportunity for Improved Self Learning

There are computer programmes that provide more student centered teaching methods and more co-operative learning groups (Dwyer, 1994 and Means and Olson(1994). These are much beneficial for special needs students (Bigge 1991 , Bitter 1993 and Holzberg 1994). A student using a computer cannot be a passive learner as it can happen in case of listening to classroom lectures. Computer can operate in varied sensory and conceptual modes that facilitate varied stimuli. It provides individual tailored learning. The pace of learning depends upon the interest and ability of the learner. Thus, in case of CAI, a talented learner can learn speedily which does not happen in ordinary classrooms, where the teacher controls the pace of progress keeping in view the majority of students in the classroom. Encyclopaedias have been put into computers. Computer based programmed instruction can have both linear and branching structure. It opens up a range of possibilities in case of branching that is not normally possible in case of written materials in programmed learning format. Computer programmes can be used for knowledge generation (Trintrin 1999). Self learning is facilitated by facilities such as online dictionaries, digital encyclopaedias, manuals, handbooks, digital mats, glossaries, etc. which are available in Internet. One can learn independently at home by browsing brochures of academic and research organizations, consulting library catalogues, buying and browsing electronic journals, research reports, etc. One can have access to work done in various laboratories located at different places through Internet. One can also have access to libraries maintaining digital resources Computer conferencing was started as early as 1984. There are online courses started as early as 1985 by the OISE affiliated to the University ofToronto. There are programmes that develop procedural logic, planning skill, clarity of thinking and self-regulation. These amplify cognitive, communicational and instructional functions. Computers are used in education in a variety of ways, storage, classification, consolidation / summarization and comparison with others.

Storage of Information

A computer can store a large amount of information. A student/teacher if interested in taking abstract from various research reports has to spend a lot of time in going through different pages of publications or surveys of researches on education. A number of organizations have put their survey reports in computers, which can be accessed even without payment. In case of use of computer, one can give a command to the computer to indicate various types of researches that have been carried out by other researchers. In one minute, one can have a long list of researches conducted in a particular area. If one has time, one can sit at the computer and go through each individual research and note down necessary points. If one does not have time to sit at the computer and read directly from screen one can take out print outs of relevant researches. The surveys on researches conducted in India have been put into computers at various research documentation centers such as ICSSR. If one is interested in a particular area of research one can consult with concerned librarians for sending to him/her extract of relevant researches by e-mail or by floppy that can be sent by post. The student finds difficulty in taking down notes and making necessary addition and alteration in due course, whenever one comes across a new bit of information published in any other journal/ book or in case of information gathered from the classmates or from the teachers. Computers have the facility of cut and paste that is not possible in case of written material on papers. Hence, for a student-using computer, it is comparatively much easier and speedier for making adequate storage of the information received.

Classification of Information

A computer can classify a large number of information. If a student/teacher is interested in studying about problems affecting national integration, s/he may need data regarding communal disturbances

that are taking place in the society. The information collected from print materials -newspapers, books, journals, etc and from human sources can be stored in the computer. In case of collection of data about communal disturbances that have taken place in the previous year, one can put into computer data regarding communal clashes under the heading - date of occurrence, nature of disturbance, minor or major including homicide, State in which the disturbance took place, etc. A teacher teaching National Integration to students of teacher training colleges or students of Political Science, Education etc, can use the data so obtained. Whenever the student/teacher wants to have a total picture or a state wise picture or a month wise picture, the student can give necessary commands to the computer and the computer can give the list of occurrence in a month, state wise and so on. The students/teachers need not do manual classification by spending time. In one second the computer does the classification of the data. Take for instance, a student/teacher interested in surveying information about educational situation in a community. The data are received from each household and are fed into computer. If one is interested to know the percentage of children of working mothers attending specified category of schools- English medium schools, State schools, etc. one can get it in one second. The computer can undertake detailed analysis of any data. It helps the students/teachers to go deeper into various issues.

Improving Language Skill

There are computer soft wares which can help any student to correct one's own mistake and improve one's writing without the help of any human teacher, if a student writes any passage using the MS word package, the computer can point out the mistakes in spelling, punctuation, sentence construction etc. by underlining the concerned word or statement or part or whole of the sentence. Besides this, there are spell check and grammatical check commands in many computer packages. These can be appropriately used for correcting the material in the computer. These programs also provide options for replacement of words and sentences. The computer packages also contain thesaurus that provides synonyms and antonyms of different words. Computer packages are available for editing. The proof reading done manually may not be error free but computer assisted proof reading shall be error free as regards pointing out errors not corrected by the proof reader. Students take different notes in the classroom. The dictation given by teacher might differ while writing. The teacher might have mispronounced certain words, or the student might have wrongly heard certain words. When the sheet of paper containing the note written by the student is put into a scanner, it can go to the memory of the computer and come in the screen underlining mistakes in spelling and wrong sentences and thus, giving the student opportunity to correct the mistake and have an error free note. A student interested in comparing the note written on the basis of classroom discussion or lecture with a passage given in a textbook on the said area can use the computer facilities for comparison. The student can put the concerned page of the book in the scanner and the printed material is there on the computer screen. The student can have both the materials - handwritten note and printed text on the screen for comparison of points covered or left out. Computer also provides materials that can give you extra information on various types of issues. Online chatting is effective in improving skill of using English language (Stalin 2000). Computer based instructional materials can be cross-referenced and indexed.

Dispensing with the Problem of Carrying Book Load

Various booksellers have now put their books into computer i.e. you can access different books by sending different amount of fees to the private publisher. The publisher gives you a password number that you can use and access to the books through Internet. This makes the student to dispense with the task of collecting different books and storing them is his or her rooms for use. Students face difficulty in locating reference materials in the books. When the books are fed into computer, the computer can index all books. For instance, if 10 books written by Sri Aurobindo

have been fed into computer, and each book contains some statements regarding certain educational issues, the computer can point out various passages in different books that deal with that area. The computer has the facility of making the screen distributed into two or three or more different windows. Similar to the process of comparing two written sheets of paper, a student can compare different passages with the help of computer. The students while undertaking research, face the difficulty in calculating mean, median, mode, standard deviation, coefficient of correlation, chisquare test, etc. When data are fed into the computer, it can give specified statistical analysis of data in one minute, which a student might have taken a few hours to complete manually. Computer can also provide specified graphical representations of the data fed into it. A teacher interested in presenting the graphical representation to the class can do so by linking the computer to a projector. Thus, computer is an effective tool for saving the time of the students. The student can use the Internet for getting up to date information on different areas, which the teacher might not be aware of. For example, a student studying about the development of higher education in the country may not find development that have been taking place during this year written in the text books, but the same student can find the data by going to web site of UGC that is available in the

Internet. The government organizations make their data available free of charge in the Internet. so that the data shall have wider access. Thus, a student if has access to computer and Internet facilities, can improve one's level of learning. The teachers in their classroom use computers. A teacher need not lecture the student, may ask them to get the relevant material from the computer. The student learns independently and speedily with the help of the computer. The teacher does not have to dictate notes or to give general lecture on a specific topic. The teacher acts as a facilitator to help the student.

Development of Thinking and Related Skills

Programming is a very much effective exercise to improve skills of students not only in thinking but also in problem solving, hypothesis formulati9n, and developing techniques for testing hypotheses. LOGO was developed in USA at Massachusetts Institute of Technology. It centers on logic programming and Piagetian concepts of child development. It provides a computer based learning environment in which the students can discover for themselves most of the mathematical concepts and relationships. Seymour Papert is the creator of this program. Papert developed 'Turtle', a triangular cursor that can be moved and rotated to create a geometrical drawing.

Computer Assisted Testing

There are personality inventories that can be scored by students themselves. In case of question bank, selecting items becomes a time taking process. When the question bank is stored in the computer, the computer can sort out items as per their difficulty level, discriminating index, content covered, objectives covered, etc. It makes the long process of item selection vary much quicker. If the answers to items can be recorded with the help of a pencil or a mark that can be noted by computer scanner, the answer sheets can be evaluated by the computer mechanically in a much quicker time than a human evaluator takes. There are many instances, when human evaluators, either due to callousness or due to ignorance wrongly evaluate answers to objective type questions. Mechanical valuation by computer can take care of such grave mistakes. Computer assisted testing can set unit wise questions. The human question setter may make a mistake in covering every unit, but the computer shall not make mistake. The examining bodies spend a lot of money for payment of remuneration to question setters. If they can have unit wise question banks, a clerk can even set the question paper at a short notice. Computer assisted question setting from question bank can take care of question leakage. The computerized question setting can give a number of sets of question paper having a particular question in different serial numbers that makes it difficult for mal practice. Framing question is a difficult task. There are many instances of

grammatical mistakes and wrongly spelt words in question papers for which the tests have low content validity. If the questions can be fed into computer, they can be made free from such mistakes. Some ~imes the question setters repeat certain questions. Questions of different years can be compared easily by taking help of computer. Questions should be related to the instructional objectives. Computer can find out the relation. The teacher in preparing classroom tests can effectively utilize computer programs. The question format is available and the teacher only fills in the data to get the questions. This saves much of the teachers' time. Computer programs are much helpful in preparing blue prints for setting questions and for checking the questions. Computer assisted testing has a number of advantages, Depending on response to initial items, there can be automatic tailoring of the content of a test and also of its length. The process is known as computer adaptive testing. Computers can measure certain traits and abilities that cannot be measured by traditional methods. The process ensures financial economy. It can tell time taken in answering a question. It can score immediately. Computerized assessment can be much helpful in comparing questions of different schools. It can be helpful in comparing results of different schools, giving various statistical data regarding different examination results in respect of individual schools, schools in a region or in a district and also statistical comparison of performance of various school boards.

Drill and Practice

Computers can be used effectively for drill and practice on the concepts that have been taught by a teacher. A formula learnt in the classroom can be effectively drilled at the home with help of a computer. In case of teaching of area of triangle in Mathematics, the low achievers benefited more by CAI than by traditional method (Palaniappan 1990). CAI produced significant positive effect on the achievement on Indian Economics when compared with traditional method. Significant favorable achievement was made in the components of knowledge and comprehension but not application (Anandan 1998). CAI in drill and practice mode was more effective than CAI in tutorial mode in realizing instructional objectives in biology teaching (Meera and Balasubramanian 2000). Computer can point out the mistakes committed at the time of drill or practice. Computer programs have flash cards, work books, etc. Instead of buying printed forms of these from market, one can get them from computer and use them for practice and drill. Computers can supplement the nature study undertaken by pre-school or elementary school children by providing replica of natural surrounding/habitats with appropriate color. Pronunciation is improved speedily through use of computer programs that provide the opportunity of drill and practice. Computer provides facilities for communicative language teaching.

Computer Simulations/Animations

Computer simulations are very much useful in education, especially in case of science, engineering and medical lessons. Topics such as gaseous diffusion, gravitation, interference and diffraction patterns of light waves, motion of satellites, etc can be very well taught with the help of simulations. Animation tools provide sound and motion to individual graphic elements. Three dimensional animations e.g., Computer Aided Design (CAD) is much helpful for students of architecture and engineering. Power point presentation with the help of a projector is more effective than the presentation with the help of transparencies and Overhead projector. The animation can take form such as flying of the text from one direction to another with or without sound, appearance and disappearance of text, flying of each character with or without sound, type writer text, reverse text, etc. These help in making the presentation more colorful, especially in case of large audience consisting of students, peers, etc.

Tutorial Exercises

There are computer programs that have the ability to carry out tutorial exercises. A student might undertake a self-imposed exercise. Just as a human tutor corrects assignments in a tutorial class, the computer can also correct the assignments. The only difference is that the human tutor can take care of sentiments of the students, which the mechanical tutor in computer cannot do.

Use of Computer as a Teaching Aid

Computer has versatile use as a teaching aid. It can provide graphics along with texts and it also has got facility for emitting sound. Thus, it provides stimulus variation. It can store questions for classroom use by the teacher. It can also enable the students to evaluate their own answers in the absence of the teachers. It can draw and compare maps. The teaching techniques have been modernized with the help of gadgets such as floppy diskettes, CD-ROMs, networking via ERNET and Internet. Book study notes are now days available in CD-ROMs.

Educational Soft wares

There have been a number of soft wares for teaching with the help of computer. Student can use some of the soft wares without any type of assistance from the teacher. For instance, ALPHA letter Drop consists of programs for developing skill in language for practice. The Math blaster cieveloped by Davidson and associates consists of mathematical operations along with function and decimal skills. There are packages that can facilitate learning of music, composition editing using word processor, development of intermediate algebra competencies, etc. The Apple Grader keeps record either by grade or number. LXR Test can enter test questions, generate tests, score answer sheets, etc. Oyster can create instructional modules. Test Writer creates multi format tests. Alphabet Authors consists of drilling exercises on alphabetizing single letters through book titles. Alphabet Letter Drop develops skill in language through practices alphabetizing letters. Spelicopter provides spelling game. Academic Skill Builders in Language consists of 6 individual drills and practice packages. Early Games for Young Children consists of game formats covering addition, subtraction and number recognition. Math Sequence contains 12 diskettes for KG- 10 Grade students. The Oregon Trail of MECC(1991) allows linkages among certain subjects

Evaluation of Computer Courses in form of Packages

Course -ware evaluation methodologies include checklist, analytical (open ended) review, observation and experimentation (Levin 1989,p.153). The North West Regional Educational Laboratory of USA has developed certain guidelines for finding out the quality of a computer package, to be used for instruction purposes. So while choosing the package the teacher/student/any other user should take care of aspects such as: 1.Level of accuracy, 2.Level of difficulty, 3.Level of vocabulary used 4. Extent to which the package is free from ethnic, sex and other stereotypes, 5. Level of clarity of operational instruction, 6.Extent to which purpose is defined, 7. Level of clarity of presentation, 8. Level of difficulty in relation to the concerned level of the student, 9. Extent of availability of graphical presentation, color and sound, 10. Level of ability to motivate students, 11. Level to which the creativity of the students can be stimulated, 12. Extent of facilities for providing feedback on student responses, 13. Amount of provision for controlling the rate and sequence of presentation and reviews, 14. Extent to which the program is integrated with earlier experiences of students, 15. Extent to which learning can be generalized to an appropriate range of students, 16. Extent of provision for cues and prompts to help students to answer question correctly, 17. Extent of provision for use or access of the program menu for help or to change activities,18. Extent to which teacher can monitor the program, 19. Extent to which provision exists for safeguards against mistakes committed by student so that the program is not destroyed 20. Extent of comprehensiveness and

effectiveness of user support materials, 21. Extent of effectiveness of information displays, 22. Ease with which it can be operated independently, 23. Level of suitability for use by teachers, 24. Extent of provision against students bombing programs, 25. Level of reliability of the program for normal use, 26. Level of appropriateness in use of relevant computer capabilities.

Online Learning l Teaching

On line leaming has been advocated (Jayanti and Arul2001). There are not many expert teachers. On line learning can facilitate teaching by expert teachers, who are not available for majority of student population. The response of a student can be viewed and commented upon by all the participants of the online learning. Certain journals have provided on line access. For instance, Asia Pacific Journal ofTeacher Education mentions that its institutional subscribers can enjoy on line access in a choice of PDF or Real Page formats through a simple-to-use web interface provided by Catch Word. On line teaching and learning is just another distance education technique. Rich countries have gone for Virtual University, which is a step ahead of Open University.

LIMITATIONS OF CAI

There are certain criticisms as regards use of computer by school students. Some of these include: 1. It requires a level of abstraction that is not suitable for the students.

2. It does not provide mobility during interaction with the computer- only provides eye hand co-ordination.
3. Too much use of the computer can be harmful for the eyes.
4. In case of individual working by students, it restricts social interaction with others.
5. Pre-school children develop vocabulary through social interaction. Computers cannot be much effective for this purpose. The computer programs dealing with voice synchronization capabilities are very much costly.
6. There is not much scope for development of creativity and imaginative thinking
7. Use of computers for development of certain concepts at early childhood stage is very much costly.
8. In the classrooms, the students not only learn from interaction with teachers but also from their peers. This is not possible in case of computer-assisted learning.
9. It limits the child's activity to a two dimensional object. 10. Computer may not be helpful for the students not havjng visual skills developmentally suitable for the kind of close work and attention that some soft wares require.
11. Computers cannot replace human teacher managed classroom that can have non-verbal reinforcement, use of humor, exchange of personal feelings, between teacher and taught, etc.
12. CAL takes students away from the habit of learning from books and other printed or hand written materials, which affects development of language skills.
13. Computer assisted evaluation is not possible in case of short answer and long answer tests. 14. It also fails to evaluate essay, precis, abstracts, etc. effectively.
15. It was found helpful in teaching of Economics in case of developing knowledge and comprehension but not in case of application (Anand an 1998)

CONCLUSION

There have been attempts to have virtual universities/institutes. But these shall also need face-toface mode of interaction between teachers and taught as found in case of programmes of open universities and distance education programmes of traditional universities. Open universities have not been able to replace traditional universities; similar shall be the case with virtual universities. Computers have their use as sophisticated typewriters in schools. They are effective in preparing timetable, keeping data on students including maintenance of cumulative record card. They are

useful in referring to books available in the library. They are also useful for keeping various types *of* administrative data such as preparing pay bills, keeping personal history *of* employees, etc. Computer has brought in changes in courses. Various new content areas such as online marketing, web- advertising etc. have appeared in marketing education. Computers are effectively utilized in comparing courses. Various courses in different States at the School level can be put into the computer and can be compared. Till today, the evaluation pattern followed in different school boards for secondary or for higher secondary education vary. A school board interested to evaluate its own evaluation system can take the help *of* e-mail in collecting data and put them in computer for comparison and consolidation. This procedure can be effectively followed in case *of* courses *of* studies followed in various universities.

Computer assisted instruction is the need of the day. It should be kept in mind that it is one *of* the various modes *of* delivery *of* education. It is not the only mode. It may not suite to all teachers and all students. It has certain advantages and limitations. It is not necessary that frequency *of* computer use will be linked to commitment to learning. (Kalia, Levine and Vij *2000).* Rather certain students might find it distracting. Hence, teachers and parents and guardians need to be careful regarding giving computer to students for use. As computers promote self-directed learning, all students may not be successful in effective utilization *of* computer as a learning tool. Similarly, all teachers may not find it convenient to use computer in general and to use computer soft wares for teaching in particular. Use *of* computer in teaching learning situation no doubt is a facility that can be effectively used by rich students. CAI is a comparatively new area in India on which adequate amount *of* researches are yet to be undertaken. In order to promote CAI, computers have been provided to schools and also to teacher education institutions. Study *of* certain District Institutes *of* Education and Training reveal that the computers are yet to be taken out *of* the packets in which they were delivered to the institutions. There are not many Indian soft wares that can be used for CAI. Prof Yash Pal, recently while delivering talk at the 15th annual conference *of* AIAER on Information technology pointed out necessity *of* developing indigenous soft wares. Researches are necessary on the applicability *of* soft wares developed outside India.

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CONTENTS

A SYMBOL OF INTEGRITY: PROFESSOR R. C. DAS A CASE STUDY

B. K. Passi
S. C. Panda
H. K. Senapaty

We, present this case study by quoting a para that we had read somewhere, "How rare to find these teachers that never say too much. The clouds, the trees, the stream, the mountain all have their messages, spoken in a direct language that we can barely hear now. If we could hear these messages we would know more clearly how to move through the world in harmony with a light that could tangibly change the world."

Educational research has contributed to pertinent knowledge that has impacted on educational theory, and practice. However have these studies given us a glimpse of the practicing- researcher-educationist? Seems like a veil of anonymity, and discretion is more visible than the individual researcher, more intentional than accidental, and man is thus lost in his own contributions. If this is a truism, then does it propel the curiosity, of knowing the contributors from the perspective of others in the light of their, bio-socio-psychological environment, leading to contributions in pedagogical practice? Western educators like Dewey, Piaget, and contributions of others have been augmented in their respective fields, with the addition of a biographical backdrop, thereby illustrating a personal-professional profile that makes their dedication to work come alive from within themselves.

In India, it appears that personal identities of eminent educationists are side tracked, as though the entity is meant to be sheathed in obscurity. It is possible that the thrust of western educational system that we have so neatly adapted, makes such eminence glow lesser in comparison, despite authentic contributions. It is the philosophers who have steered the course of our educational system, and came to be revered, such as, Mahatma Gandhi, Sri Aurobindo, Jiddu Krishnamurti etc, while the professional educationists performed without pride, or praise. Honor in being a teacher-educator-researcher, seems to grant nobility, well pillared by the belief that educationists need to be self-effacing, and humble to the point of being excluded from the annals of their very own contributions.

This paper has a dual purpose of compelling research to be undertaken on the contributions of eminent educationists since we asserted our sovereignty over educational governance in a socio-cultural context, and draw pedagogical implications of their work, stemming from their personal efficacy as well.

Significant thought and practice in education is like an echo from a thinking-emoting mind. Where are these people ensconced, and how can educational case-study work, showcase them to the world out there, to the millions of teacher-educators, who teach their thought, but know little, to share about a particular thinking person. It seems like partial justice, isn't it?

Such research studies, which can reveal the minds of important personalities in the field of education, have the potentialities of influencing the future generation of our country. These personalities have left permanent imprints in their chosen fields of study, established the effectiveness of their working principles, and influenced the general environment to a great extent. They have embarked on specific path-breaking trajectories in the field of education. It is time for a curtain raiser!

Prof. Radha Charan Das, is one such person, whose contributions need to be codified in the history of teacher-education. This case study introduces the life and work of this eminent personality, a teacher of teachers, in the true sense, with an inextinguishable flame of integrity.

BORN IN A COASTAL DISTRICT OF ORISSA

Sun shone bright in Koran when a boy was born in the remote village of Beera Raghunathpur, in the district of Ganjam on March 17,1924 to a poor Brahmin family and became motherless during infancy. The uncle and aunt of Radha Charan were quite supportive of this quiet, self-determined and brilliant boy from the beginning. With their help he completed his high school education at Aska obtaining first division. He passed his I. Sc. from the college at Paralakhemundi in first division obtaining 5th rank in the university. Thereafter he studied at the Andhra University at Waltier with university scholarship for a three year honours in Physics course in the Tripos system on the lines of Cambridge university of UK which was considered as equivalent to Master degree. He then joined the Khailikote College, Berhampur, Orissa, as a Lecturer in Physics where he worked for a year 1944-45.

Someone, in other cultures of the West will keep on wondering about the why and how of such supporting environments where the uncles and aunts could support the education of children other than their own? This culture of socialization was operating in the country even during the British Empire, which tried to influence the local culture. During those times, the British ruled the country and we know that culture of rural India did not find respectable place, yet the supportive family culture was operating, why and how?

A TEACHER-SCHOLAR PAR-EXCELLENCE

Right from the beginning of his career as a teacher Dr. R. C. Das proved his excellence! After being selected by the Orissa Public Service Commission, as a lecturer in Physics from July 1945, he tought in the most famous college of Orissa, the Ravenshaw College at Cuttack. We learnt from his students that he attracted the attention of authorities and students because of his excellent teaching. His popularity was as firm as his disciplinary integrity, which soon made him an academic leader in his area of study among the faculty and students. He was selected in 1947 as a Government of

India scholar for study abroad and was deputed to Cornell University, Ithaca, New York for post gradute study in Technical Education. He obtained an MS in Education in 1948, and Ph.D. in Education in 1950 from the same university. He exhibited his excellence in Technical Education as major subject and Educational Administration & Guidance and Personal Administration as minor subjects during his MS career. His doctoral work as Analytical Study of Electrical Curricula in Technical Institutes of North Eastern States of USA, which was based on Job Analysis Matching Technique drew accolades from all over. After completing his studies, Dr. Das retuned to India, as he had a fervor desire to serve his country.

SCIENCE TEACHER-EDUCATOR BEYOND COMPARISON

Prof. Das worked as a teacher-educator in Radhanath Training College, Cuttack of Orissa from 1954 to 1957. He established his expertise in teaching Educational Psychology and Science Education. He also acted as Counselor of State Bureau of Guidance and became instrumental in preparing different educational tests. By the time the NCERT came into existence he had established himself as a good teacher-educator and researcher. He joined Regional College of Education (RCE) of NCERT at Bhubaneswar as Professor and Vice-Principal in the year 1963.

Prof. Das was an ideal teacher. His chemistry teacher, Prof. Seshadri at Andhra University inspired him, to become that ideal. This ideal teaching was translated into action particularly when he was engaged in teaching educational psychology, where he stimulated his students by citing examples from real life experiences, by adopting his unique techniques of teaching. As a teacher-educator he exuded a dynamic personality, worthy of modeling by fellow-educators. It looks that one can excel provided one adds one's own flavor to one's teaching styles and when one teaches with examples drawn from real experiences.

A RESOURCEFUL ADMINISTRATOR-EMINENT RESEARCHER

What propelled Prof. Das to become such an accomplished administrator cum researcher? We ourselves have seen him in different administrative capacities where he has shown his metal. W e checked up from Dr. Das about his quality. He told that he picked up some of this acumen from his seniors. His mentor, Prof. Kaui, first Principal of RCE Bhubaneswar was an efficient administrator, and Prof. Das emulated that quality, being indebted to Prof. J. N. Kaul in this respect. He took over as Principal of the RCE at Bhubaneswar for two terms i.e. 1964 to 1970 and 1972 to 1974 and was principal, RCE at Ajmer from 1970 to 1972. He was said to be courageous and a capable decision-maker. He was free from favoritism, partiality and coercion. Many fellow-principals of the institute emulated these exemplary qualities. He never yielded to powerful bureaucratic and political pressures, a fidelity before which many a lesser administrator is tempted to become infidel. During his tenure in Bhubaneswar, he demonstrated his uprightness on a minimum of two occasions, and preferred to be shifted from Bhubaneswar to Ajmer and New Delhi respectively. This enhanced his dynamism tremendously. He offered specific opinions for better administration of the Regional Institutes of Education. A few of these are:

1. The previous practice of appointing for the post of principal based on open selection was more effective than the present one of transfer of a professor as principal.
2. The present practice of giving responsibility of the institute immediately on becoming a professor is not very favorable.
3. The old practice of conducting conference of principals once a year in one of the institutes, and reviewing the working of each institute yielded good results.
4. Care should be taken to implement the decision taken in such conferences. The necessary follow up actions must betaken as regards its implementation.
5. Workshop on college administration for all the NCERT Professors should be organized with the assistance of an Indian Institute of Management

The term of Prof. Das as Principal lives on in nostalgic memories even today. Before joining Regional College of Education, Bhubaneswar as a Reader in Radhanath Training College at Cuttack he engaged himself in active educational research alongside teaching. During that time, he also acted as Counselor of State Bureau of Guidance, which was attached to the college, and took active part in preparing educational tests. He could provide many workable and practicable suggestions in Science Education on Problem Development Approach based on his research. He is well remembered for his contribution in finding out the differences between high schools having continuously poor and those having good results. He became well known for his penetrating educational research work in the State of Orissa before he joined RCE Bhubaneswar as Vice-principal and later as principal. He was Prof and head Department of Teacher Education of NCERT at its headquaters at New Delhi from 1974 till his retirement in 1984. In addition, he was Dean Academic in NCERT headquarters from 1978 to 1983, and simultaneously, Dean Research and Chairman ERIC from 1978 to 1981. During his tenure he provided academic leadership to educational research with great stewardship. His capability of coordinating different types of manpower and researches was rather exemplary. He completed five UNICEF projects as the central coordinator in record time during October 1980 to March 1982.

We had very close interaction with Prof. R.C.Das when he started his collaborations in microteaching between NCERT and CASE of MS University of Baroda and Department of Education of DA University of Indore. Professor M.B. Buch and his team from Baroda along with Prof R.C.Das and his team from NCERT started historic collaborations and conceptualized Indian Model of Microteaching and then implemented this innovation in various teacher education institutions in India. This is one of the rare examples of collaborative leadership which lasted for many years.

Dr R.C.Das proved his excellence as an administrator and a researcher holding additional charge as Principal, Central Institute of Educational Technology (CiET) from July 1981 to June 1983. He became successful in bringing CIET to the limelight. Many educational documentary films and various audio-visual programmes could be produced under his guidance during his short tenure. During that time, the centre produced 115 videos and telecast them through INSAT-IA and brought fame to the institute at national and international levels.

He could produce many tangible academic products and proved his excellence as a super-research supervisor in different areas, some of which are: Educational Measurement, Educational Administration, Teacher Education with special reference to Micro-teaching, Models of Teaching, Methods of Teaching Science, Creativity, Value Education and Curriculum Development.

The first educational research book authored by him was in Oriya "Shaikshika Yantra Vijnana '(Educational Technology) which was very useful for teachers and teacher-educators. Particularly, the two books produced under his guidance, Teaching of Science in Secondary Schools[1] and 'Curriculum and Evaluation', are of very high importance for teacher-educators even today. It's unfortunate that these two books are out of print now, and the NCERT should take steps to produce their reprints for the benefit of others, as these still bear significance for the pupil-teachers and teacher-educators. After retierment, he authored a book entiled "Educational Technology: A Basic Text" under UGC scheme of writing books for university level.

Besides his contributions in the field of education at the national level, his contributions at international level are also quite tangible. Some of the highlights are:

1. Led Indian delegates in an international seminar to, Sweden in August 1971 on curriculum development.
2. Was member of the delegation in the VIII International Educational Colloquium at East Berlin in April 1975.
3. Represented India in an International Seminar on Educational Research at Tokyo in March 1980.
4. Represented Government of India in the UN sponsored Seminar on Teaching about the U.N. at Brussels in April 1983.
5. Represented government of India in the International Seminar on Distance Education at Cambridge in December 1984.

Towards the end of his tenure in NCERT Prof. Das was appointed as Vice-Chancellor, Berhampur University, Orissa from October 1984 to January 1986. During his short stay there he contributed in opening several postgraduate departments and made arrangements for higher research, reforms in examination for intellectual development in the university. He also contributed to many other campus development works. But as an administrator he did not like to succumb to any unjustified demands from any corner and resigned from the post of Vice-Chancellor. A bold quality in him was, whatever he felt right he transformed it into action at any cost. He never succumbed to unjustified pressures from any quarters during his tenure and that is the most prominent essence of his uncompromising character.

He bent leniently towards teaching and research. Hence, after the tenure of vice-chancellorship, he joined Indore University from 1986 to 1987 and became active again in direct teaching and research as a UGC Professor. And, even today, he is in the field of active research, which is quite visible, when we come across research scholars working under him.

Dr. R.C.Das was closely associated with formulation of the Norms for teacher education for the use of the National Council for Teacher Education (NCTE). As a Chairman, of Eastern Regional Committee of NCTE, Prof. Das was actively involved in educational administration and research. He contributed his might to enforce the regulations of NCTE in the Eastern Region so as to give a desired shape to the teacher education programmes.

IMPLICATIONS OF THE STUDY - HOLDING UP A MIRROR

What does a case-study or biographical study like this reflect upon the minds of the readers? What implications can be drawn from the impact of such work?

1. Teacher and teacher educators are the backbone of a nation. Development of any nation is absolutely dependent on the successful implication of educational programmes in general, and teacher education programme in particular.
2. For transforming ideas-ideals-to action, teachers are required to use innovations, and versatility of media that can enhance learning.
3. Whatever may be the situation, sincerity, discipline, and truthfulness of purpose can be well integrated. Irrespective of the situation one should rise above unjustified pressure, and assert one's stance.
4. Teaching and research should aim at solving problems of real life situation. Teacher educators should conduct research even after their retirement and should accept research as a way of life, for creating rationality for development.

TO CONCLUDE - TEACHERS MAY TIRE, NEVER RETIRE

Prof. Das, is an institution by himself. We have seen this aspect of his personality while we encountered his responses and claims in the policy-meetings of the NCERT and other bodies. He would not ignore critical enquiries; rather, he would respond to them to the best possible satisfaction of the critics. He would give his fr§nk opinions whatever may be the situation, by saying that one must be sincere, disciplined and truthful.

His message is that teacher and teacher-educators are the backbone of the country. The development of any nation is absolutely dependent on the successful implementation of the educational programme in general and teacher-education programme in particular.

Any sound, successful pedagogical contribution is built upon the foundation of personal commitment, and professional expertise, which in turn influences our perceptions and comprehension about the contributions and the contributor in a holistic sense. It also enlarges our scope of viewing the person as a complete human being, not a mechanistic detached contributor because in teaching among all other professions, the teacher, teaching and the taught seem to form a triad inseparable from each other.

In the light of this view it may be necessary to reiterate that understanding pedagogy could become fascinating if one understands the person behind it, and in doing so illuminates the teaching-learning process as an integrated whole. To enable this, research case-studies could become an emerging trend

Even at the age of seventy-eight, he wants to do work on methodology of teaching value education for teacher-educators. He is leading a team of RIE, Bhubaneswar in this project and is busy in preparing modules on dilemma discussion methods of value education. As a team-member we feel privileged to be associated with him, and take pride that we have been a privileged few who have had the opportunity of a direct association with him, and in return received the blessings of a great teacher, scholar and humanistic administrator. Though we are not under his administrative control we still feel as **if** he has bound us to the job on hand because of his impacting personality. And we are happy to admit it.

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Forthcoming Conferences

11-14 September 2002, Exter
British Educational Research Association
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11-14 September 2002, Lisbon
European Conference on Educational Research
www.eera.ac.uk

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z.holbeck@qut.edu.au

1 -5 December 2002, Brisbane
Australian Association for Research in Education
www.aare.edu.au
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A COMPARATIVE STUDY OF USE OF INFORMATION TECHNOLOGY IN EDUCATION IN CANADA AND INDIA

J.N. Kapur

INTRODUCTION

I have been a visiting professor in the universities of Manitoba, Careleton and Waterloo of Canada for the last 20 years for a total period of about 4 years and I have had occasion to study the use of information technology in these universities. I have also discussed the problems about this use with authorities of Units of Higher Education in these and other universities and I have had occasion to discuss with teachers and students, the advantages and disadvantages of this use in Canada, especially during the last 7 to 8 years, when this use has become wide-spread. I am also aware of the new wave of use of information technology in education, especially by new coaching institutions, sponsored by educational business entrepreneurs. I intend to make a comparative study of the use of information technology in education in Canada and some other western countries on one side and in India on the other and suggest the direction we should take in the immediate future.

EXPERIENCES IN CANADA

1 .In Canadian universities, there is a great deal of emphasis on excellence of quality of teaching. Most of the students who go in for higher education are highly motivated and many of them spend their own hard-earned money or take loans from banks or do part-time work in order to receive higher education. They want to get the best quality of education, which they can get for the money they spend. They are highly mobile and are prepared to go to any university in Canada or USA, which has an excellent reputation for teaching.

2.The student fees, which are high, form an important part of the budgets of the universities. As such the university administrators are keen to employ only excellent teachers who can attract a good number of good students to the university. The appointments of teachers are initially made on a contract basis and these contracts are not renewed unless the teachers establish reputation for good teaching. As such every teacher puts in very hard work for teaching in order to get a confirmation or a tenure post.

3.The universities on their part are prepared to help all those teachers who are sincere about improving their quality of teaching. The senior persons in every department are ready to give advice to the younger colleagues. They are even prepared to sit in their classes at the request of the younger teachers and give them suggestions tor improving their quality of teaching or to discuss the video tapes of their teaching with them.

4. Every university has a Higher Education Unit, specifically meant to help the teachers of the university to improve their quality of teaching. These are similar, but quite distinct from our academic staff colleges. Our academic staff colleges are not specific to individual universities, but are specific to all the universities in a region. Moreover, the help from Higher Education Units is available there only for improving the quality of teaching and not for improving the quality of their knowledge of the subject, which is the object of the refresher courses in our academic staff colleges. The responsibility for increasing content knowledge is that of the teachers themselves, of their seniors in the department and of the professional organizations in different subjects, which arrange programmes to help the teachers in self-learning. Moreover, the Higher Education Units are available to the teachers throughout the year while our academic staff colleges provide training for about 4 weeks only. There are no incentives of promotion for 'attending' courses organised by Higher Education Units, except that of getting better reputation in teaching. The attendance in these courses is voluntary and teachers attend these courses in order to improve themselves in teaching rather than for improving their salaries.

S.One of the main functions of higher education units is to provide help to teachers to use modern information technology for improving quality of teaching. Every teacher there knows how to use the computer and has a personal computer in his/her office provided by the university. However, the Higher Education Unit helps him/her in preparing lessons for presentation by the power-point method, in which teacher prepare slides which they project in the classroom with the help of the computer on large screens in muiti colours. The Higher Education Units give them training in preparing the slides and the power-point presentation.

6.The Higher Education Units also help the teachers in designing the web sites for their courses. A teacher puts on the web sites of his/her course a detailed lecture - by- lecture analysis of the course. S/he also puts on the web sites the sections of the textbook, s/he is going to cover in each lecture, so that every student can come prepared to the classroom, if s/he likes. As the course proceeds, the teacher suggests additional readings from books and journals for the topics s/he is covering. The teachers some times pat the general articles on the web sites, so that all students can read these articles simultaneously. The teachers also put every week assignments to be done by the students and the dates by which they have to submit. After the assignments are submitted, the teacher corrects the assignments either himself/ herself or with the help of teaching assistants, who are provided by the university, who are usually post-graduate students or research scholars. The income, which they get from this work, helps them in paying the high fees of the university. When the number of students is large, the teacher may put up the correct answers and the detailed marking scheme on the web site and quite often the teacher asks the students to mark their own assignments. The teacher can, of course, check some assignments at random. However, it has been found that when students are on their honour to mark the assignments, their own marking is extremely fair and in this process they learn a great deal about the mistakes they make. Some times when the teacher corrects the assignments, s/he puts up on the web site the typical errors, which the students had

made, so that the students may not make the some mistakes in future. Of course the mid-semester and end-semester papers are marked by the teacher himself/herself, but the marking has been fair and a student has a right to discuss which the teacher the marks given to him/ her.

7.This system gives a great deal of responsibility to students to learn themselves; the teacher is only a facilitator. The teacher does not cover the whole textbook, but s/he discusses only the important concepts. However the teacher can ask any question from anywhere in the text-book or anywhere from the readings s/he had suggested or from whatever additional material he may have taught in the classroom, so that in spite of information technology, the teachers role remains important and the students are very attentive in listening to his/her lectures and the classroom attendance is nearly 100% in spite of there being no compulsion about it.

8.The teacher gives projects to the students and they can consult the internet for literature on the topic of the project, but they have to give full reference to the material they have got from the Internet. If they do not deliberately give this reference, it is considered a serious moral lapse.

9.If a student find a difficulty in his/her study, even at the middle of the night, s/he writes down his /her difficulty on the web site and other students are free to reply to his/her query and if no student can give a satisfactory reply, then the teacher himself/ herself puts up a reply to this query.

10.Thus, it is seen there is continuous interaction between students and between students and teachers and the atmosphere is similar to that of our ancient *Gurukula* system. The only difference is that here, because of information technology, the teacher can handle much large number of students and in spite of use of computers, s/he still has personal academic contact with all his/her students.

11.It also appears that both the students and the teachers have to put in hard work, but this hard work is considerably reduced because of the use of internet and information technology. Alternatively, we can say that the use of the Internet increases the quality of learning by an order of magnitude, for the same investment of time and money.

12.There are, some times, negative side. There are private organizations which are prepared to supply answers to assignments and are prepared to write project reports for students on payment and such transactions also take pace via the internet. However, serious efforts are being made to curb these unethical practices.

13.Every student has access to Internet and has an e-mail account, but since every student uses the Internet, the cost is not very high and the benefits are much greater.

14.For mathematics, science and engineering students, all the computers on the campus are equipped with computer algebra programmes like MATHEMATICA or

MAPLE V, which help the students in doing their calculations in very little time. However, knowing the availability of these programmes, all the text-books have been rewritten and the main job of the students is to frame the problems properly, to do the computations quickly by using these computer programmes and finally, to interpret the results. In this system, conceptual understanding is of great importance and routine manipulations are left to the computer.

15.It will be noticed that the whole system is based on cooperation between students and cooperation of teachers with students in the entire learning process. The examinations are there, but they exist to enable the teachers and students to get the feed back about the depth of learning by the students. They are also used for grading the students, but their primary purpose is to provide help in learning.

16.With the help of information technology, every student and teacher has a direct access to the library from his/her home computer. S/he can find whether a particular book s/he needs is in the library, whether it is on the shelves or it is issued to somebody and if it is issued, when it is due back. S/he can even reserve the book, so that s/he gets it as soon as it is returned to the library. S/he can also find out what are the other books and research reports in the library relevant to his/her topic of interest. S/he can also find out the other books written by the same author. This facilitates the use of library by students and teachers. The same techniques are used for finding about journals in the library. The students can even find out that if the book or journal is not in their library, then which other library in the region has the book or journal and whether their own library can get the book or journal on loan from that library or whether it can obtain a photocopy of the article of interest from that library.

17.A research scholar can also find all the research articles of his/her interest in the library by giving to the library some keywords. Thus, a few years ago when I wanted to know about the applications of the maximum entropy principle in medicine, I gave the library two keywords 'maximum entropy principle' and 'medicine' and next day I got the abstracts of about 100 articles in various journals in which articles on this application were given. I knew the names of the authors and in what problems in medicine this application was used and the software available for this application. Before information technology, it might have taken me more than 10 years to search all the journals in mathematics, statistics and medicine to search for these articles. Thus, this type of information service provided by the libraries has greatly facilitated research and has increased contacts between research workers in the same filed.

18.In the same way, a person can find our about the citations of his/her papers by authors who have made the citations and the papers and the journals in which these citations have been made, so that s/he can get an idea of the impact his/her research had made in his/her field and s/he can also establish contacts with those who are making use of his/her work.

19.This suggests a new style of learning and research. At the first stage, we have a teacher teaching all details to students and the students faithfully cramming up all the

details. At the second stage, the teacher does some teaching, but helps the students in learning the rest with the help of books and journals to which the teacher provides references. In the third stage, the learner himself/herself has to find the resources in the library and the Internet and then decide what s/he has to learn. The Canadian universities are experimenting with the second and third stages of learning and teaching, while many Indian universities are still in the first stage of learning and teaching.

20.In today's world, a person has to learn throughout his/her life and during his/her university days s/he has to be trained in how to learn himself/herself, how to search for the sources of learning in the library or the internet and how to choose the resources in the optimum manner. The new ways of learning and teaching are the ways which students will find useful in their lives in future. If the students are accustomed to spoon-feeding by their teachers, they will get bewildered when they face problems of learning by themselves in life.

SITUATION IN OTHER PARTS OF THE WESTERN WORLD

1.Though, I was a visiting professor for one year at Arkansas and Carnegie-Milion universities of USA in 1970, at that time, the term Information technology' had not even been coined. As such, I have no direct experience of the use of information technology in education in USA. However, my son is the computer expert of the State University of New York at Stony Brook and one of his duties is to help all those teachers who need his help in the use of information technology. His wife is a specialist of the university in Web-Designing for all the administrative purposes of the university. She also plays an active role in the Association of all New York State Universities for the use of Information Technology and Administration of Higher Education. This Association holds regular conferences at which papers are presented on the new problems that arise in the use of information technology in higher education.

2.I have also no direct experience of use of information technology at the school level, but I have attended some of their teacher's conferences and discussed with some of the mathematics educators. In Canada and USA, the information technology is percolating very fast at the school level. Students are using Internet, surfing on the Internet and getting a lot of information from the internet. I do not know whether they are using information technology in the classroom teaching on a big scale, but in their conferences, teachers use power-point presentations of their ideas very frequently and a large number of software programmes have been especially prepared for use by school teachers and students. I also know that the same situation holds in other countries especially in Australia where every student has a graphic calculator of his/her own and a large number of students have access to computers and Internet.

3.There are a large number of research projects on how best to use computers and information technology in teaching of mathematical subjects like calculus, differential equations, linear algebra or even school subjects and huge amount of national resources are being spent on these projects. Some of the result of these research projects can be seen in the new textbooks and the teaching strategies of science and

mathematics teachers. Similar efforts are being made in the teaching of all *school* subjects.

SITUATION IN INDIA

1.We have started late in information technology, but are proceeding fast in the country. A large number of private institutions and universities are offering diploma and degree courses in information technology and web site designing. Information technology is *also* being used in business via e-commerce. However its use in education in the universities is still in its infancy, because a large number of students and teachers do not have access to computers or Internet.

2.However, business entrepreneurs have entered on a big scale the lucrative *Held* of education namely of preparing students for competitive examinations for *entrance* into medical or engineering or management or computer education institutions or even preparing students for board examinations. This is already a Rs.3000 crores per annum industry. Many private organizations are providing interactive lessons for preparing students for these examinations and students from richer sections of society are availing of this type of instruction in a significant manner. The lessons produced are usually of good standard because of the high level of competition in this *Yield.* However, this is only increasing the urban-rural divide because most rural and some urban areas do not have enough electric power to use IT.

3.This feature highlights an important characteristics of modern Indian education system viz. that this system is meant more for coaching students for stereo typed external examinations, than it is meant as a teaching system by teachers for teaching to *then students* for improving quality of learning and teaching.

4.Even those institutions which are imparting courses in information technology are not using information technology in a significant way in their own teaching, because these institutions do not have sufficient trained staff for carrying out even normal teaching and as such they have no staff for thinking about preparing specialized internet lessons and programmes for the students.

5.Use of information technology in education has to be based on a great deal of research and private organizations bent on making quick profits are not prepared to invest even a part of their *profits* on research and development. The government is happy that private institutions are providing new professional education and it does not have the responsibility of providing *tunds* for education in the new *fields.* It would be nice of the government to use the huge saving it is making on providing education for investing in research in the use of information technology in education.

6.Most of the research in this area are being done in other countries for the special conditions prevailing in those countries. Most of this research is aimed at strengthening their present system of education based on continuous objective internal assessment by the teachers and is not directly applicable to use in the external examination system which prevails in our country.

7.Information technology provides us with a means to adopt the same system in India with all its checks and counter-checks and with full transparency increasingly made possible by information technology.

8.If we do not do that, we may find that progress in information technology will make our teachers and teaching institutions almost redundant, because students will make use of information technology resources more and more to prepare for university examinations based on ample choice of questions and not requiring any thinking or creativity. The teachers have to realize that if they do not prepare for the change over required by information technology, their services will be required less and less in actual teaching, but will be required more and more for preparing lessons for internet for private business houses, who will treat them as private employees who can be hired and fired at their will. Whether this will be in the interest of students, teachers, education and future of the country has to be decided by the teachers and the students. The public and government have also to realize the implications of this change.

9.Information technology can be a great boon to education at all level if it is used properly and wisely. It can also be a great menace, if we allow it to be used purely for private profit. We have to decide what type of use we shall make of this powerful tool at our disposal.

10.The training college teacher will have to know the use of IT in education and will have to provide this training to the future teachers.

11 The schools, colleges, universities and government have also to accept responsibility for providing computers and internet facilities, otherwise IT will only help in increasing gross inequalities in our society.

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HIGHER SECONDARY STUDENTS' ACHIEVEMENT IN PHYSICS AS RELATED TO THEIR ATTITUDE TOWARDS THE STUDY OF PHYSICS

S. Rajasekar

INTRODUCTION

The term 'AcademicAchievement' stands for the identifiable operations that students are expected to perform on the curricular materials prescribed for a course. This term has a wide connotation. It does not indicate the marks alone secured by students in tests and examinations. It represents the totality of the academic gains acquired within the school and outside it, too. It includes the gains achieved through curricular as well as co-curricular activities involving community-service oriented programmes, too. The goals of achievement fall into three categories. They are (a) Informational Goals,(b) Proficiency Goals and (c) Attitudinal Goals. By understanding a prescribed course of study, students are expected to master the essential contents of the course. Thus those bits of information mastered by the students after the completion of a course are the Informational Goals. The process of acquiring knowledge and its product come under these goals. The Proficiency Goals stand for the higher aspects of learning. Under these goals come a variety of skills, both manual and mental. Manipulative skills, problem-solving skills, evaluative skills and organizational skills come under their ambit. Proficiency Goals lead to effective thinking and action.

Thus, the informational goals and the proficiency goals conjointly contribute to the acquisition of knowledge, understanding and skills by the students who are exposed to curricular materials over a period of time. But this process of acquisition of information is not without the emotional overtones of the individual concerned. A student is likely to develop likes and dislikes towards the objects of study. These likes and dislikes come under the Attitudinal Goals. While gains under the Informational Goals and the Proficiency Goals are quantifiable and measurable, the gains under the Attitudinal Goals elude quantification and accurate assessment. Consequently, they are called "intangibles"(Dyer,1970). But these affective gains are of great importance as they underlie all human actions. But in our system of assessment of academic gains, these affective components are woefully neglected and consequently our measurement of academic achievement is far from being complete.

The higher secondary stage is a very important stage, as it forms the feeder stage for higher education, both academic and technical. The quality of education offered at this stage is bound to determine the quality of further education at higher levels. Besides acquiring knowledge in a particular branch of science, students should be made to acquire worthwhile favourable attitude towards the study of it, as attitude is a very strong motivational force enhancing learning efficiency. Several studies are available on academic achievement and attitude towards the study of a subject.

Sundararajan and Srinivasan (1990) and Sundararajan and Rajasekar(1993) have studied different factors with respect to higher secondary students' achievement in the subject and their attitude towards the study of the respective subjects. Therefore, the present study is needed and aimed to find out the higher secondary students' achievement in physics as related to their attitude towards the study of it.

OBJECTIVES

The present investigation is intended to find out:

The levels of Achievement in Physics of the Second Year Higher Secondary students,

The levels of their favourableness or unfavourableness, in respect of their Attitude towards the Study of Physics,

The significance of the difference between the sub-samples in respect of their Achievement in Physics,

The significance of the difference between the sub-samples in respect of their Attitude towards the study of Physics and

The nature of the relationship exists between their Achievement in Physics and their Attitude towards its study.

HYPOTHESES

It was hypothesized that:

There is no significant difference in the achievement in Physics between

a) boys and girls, b) Urban students and Rural students and c) Government School Students and Private School Students,

There is no significant difference in the Attitude towards the study of Physics between the aforesaid sub-samples and

There is no significant relationship between the Higher secondary students' Achievement in Physics and their Attitude towards its study .

METHOD AND PROCEDURE

As many as 821 Second Year Higher Secondary Students who had Physics as one of their eiectives in addition to Mathematics,chemistry and Biology were taken as sample from the selected eight Higher Secondary Schools in Chidambaram taluk in the Cuddalore District in Tamil Nadu by using Cluster Sampling technique. This sample consisted of 319 Boys and 502 Girls. Out of the 821 Secondary Year Higher Secondary students, 496 students belonged to Urban Schools and 325 students belonged to Rural Schools. Also the sample involved 671 students studying in Government Schools and 150 students studying in Private Schools.

The investigator constructed and standardized an achievement test in Physics for Higher Secondary Second Year Students and a Scale to measure the Attitude of the Higher Secondary Students towards the study of Physics. These two tools were administered to the entire 821 higher secondary Second Year Students, studying Physics as one of their elective subjects. The Achievement test Scores and the Attitude Scores of the entire sample of 821 Higher Secondary Second Year students and its various sub-samples were fed into the computer and their Means and Standard Deviations were calculated (vide:Table-1 and Table-2).

Table-1

The Means and Standard Deviations of Achievement in Physics

Samples and its sub-samples	N	Mean	Standard Deviation
Entire	821	25.00	8.23
Boys	319	24.96	9.15
Girls	502	25.33	7.60
Urban Students	496	23.60	6.65
Rural students	325	27.61	9.71
Government School Students	671	25.81	8.45
Private School Students	150	22.39	6.51

(Mean ranges from 22.39 to 27.61; Standard Deviation ranges from 6.51 to 9,71).
(The Maximum marks for the Achievement test is 50.)

Tabie-2

Means and Standard Deviations of Attitude towards study of Physics

Samples and its sub-samples	N	Mean	Standard Deviation
Entire	821	80.80	17.34
Boys	319	80.39	17.86
Girls	502	81.06	17.02
Urban Students	496	80.12	17.40
Rural students	325	84.85	17.24
Government School Students	671	84.80	17.21
Private School Students	150	79.80	17.98

(Mean ranges from 79.80 to 84.85; Standard Deviation ranges from 17.02 to 17.98).
(The Maximum marks for the Attitude towards the study of Physics Scale is 120).

To test the Null-Hypotheses formulated, Test of significance was used for the Achievement Scores as well as for the attitude towards the study of Physics scores and the details of the calculations are given in Table-3 and Table-4

Table-3
Significance of Difference between Means of Achievement in Physics

Sub-Samples	N	Mean	S.D	Critical Ratio	Significance at 0.01 level
Boys	319	24.96	9.15	0.60	Not Significant (df=819);(2.59)>0.60
Girls	502	25.33	7.60		
Urban Students	496	23.60	6.65	6.51	Significant (df=819);P(2.59<6.51
Rural Students	325	27.61	9.71		
Government School students	671	25.81	8.45	5.56	Significant (df=819)P(2.59)<5.56
Private School Students	150	22.34	6.51		

Table-4
Significance of Difference between Means of Attitude Towards Study of Physics

Sub-Samples	N	Mean	S.D.	Critical Ratio	Significance at 0.01 level
Boys	319	80.39	17.86	0.53	NotSignificant (df=819);P(2.59) >0.53
Girls	502	81.06	17.02		
Urban Students	496	80.12	17.40	3.83	Significant (df=819);P(2.59)<3.83
Rural Students	325	84.85	17.24		
Government School students	671	84.80	17.21	3.10	Significant (df=819);P(2.59)<3.10
Private School Students	150	79.80	17.98		

In order to find out the nature of the relationship existing between the Achievement in Physics and the Attitude towards the study of Physics, Pearson's Product Moment V was computed and it was found to be 0.520 and it was significant at the 0.01 level.

RESULTS AND DISCUSSION

In respect of the entire sample of students, as much as 56.88% of them, belonged to the high level of achievement in Physics and only 43.12% of them belonged to the low level of achievement in Physics. This shows that large numbers of the higher secondary

students have a High level of Achievement in Physics. In respect of the entire sample of students, as much as, 88.92% of them had a relatively favourable attitude towards the study of Physics and only 11.08% of them had a relatively unfavourable Attitude towards the study of Physics. This finding indicated that large numbers of higher secondary students had a favourable attitude towards the study of Physics. From the Table-3, it was found that the gender of the students could cause no significant difference in respect of their achievement in Physics. But the locale of the students and the types of schools where the students happened to study caused significant difference in respect of their achievement in Physics. Moreover, the rural students (Mean=27.61) were found to be better than their urban counterparts (Mean = 23.60) in respect of their achievement in Physics. The tranquil rural atmosphere with less number of distractions than the urban environment may be the reason for the rural students' achievement in Physics. It was found that the Government school students (Mean = 25.81) were better than their private school counterparts (Mean = 22.34),in respect of their achievement in Physics. This indicated that in respect of the present study, the selected Government schools seemed to be better than the private schools in offering instruction to the students. Generally, private schools are expected to be better than the Government schools in this regard. This indicates that whatever may be the type of management of schools, the performance of the students depends on the quality of instruction. The same trend is also found in case of attitude towards study of Physics (vide: Table-4).

CONCLUSIONS

The results of the present study lead to the following conciusions.In respect of the entire sample of the second year higher secondary students, as much as 56.88% of them belonged to the high level of achievement in Physics and only 43.12% of them belonged to the low level of achievement in Physics. As much as 88.92% of the students had a relatively favourable attitude towards the study of Physics and only 11.08% of them had a relatively unfavourable attitude towards its study. There was no significant difference between boys and girls in respect of their achievement in Physics and also in respect of their attitude towards the study of Physics.

There was significant difference between urban and rural students in respect of their achievement in Physics and also in respect of their attitude towards the study of Physics. Moreover, the rural students were found to be better than their urban counterparts in their achievement in Physics and also in their attitude towards the study of Physics. There was significant difference between Government school and private school students in respect of their achievement in Physics and also in respect of their attitude towards the study of Physics. Moreover, the Government school students were found to be better than their private school counterparts in this regard and there was significant and positive relationship between the higher secondary students' ahievement in Physics and their attitude towards the study of Physics.

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NOTES FOR CONTRIBUTORS

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VALUE BASED LEADERSHIP IN EDUCATION - A CHALLENGE FOR NEW MILLENNIUM

P. Usha Devi

PROLOGUE

The envisaging dynamic and gigantic modules of changes in each and every arena of the globe have a drastic impact on all the human life concepts leading to changes that *aiiect* in multiple dimensions in present as well as future. All these sea changes had their impects in the field of education too. All the educational organisations of each and every level *irom* levels pre-primary to university must in varying degrees consider the elements and forces of their external environment. While they may be able to do little or nothing to change these constraints, they have no *alternative* but to respond to them. There is a bi-directional relationship between education and society. Education being a subsystem of the social system, generally tends to imbibe and perpetuate the characteristics of the society that it represents and at the same time it can transform the society, provided deliberate policy interventions are made. That is why education has been accepted as a *ma\or Instrument* of *social* change in all the developed as well as developing countries. School *exists within a larger* framework of the society. The dynamics of the economic, political and cultural sphere interact in everyday activities in schools. Here *exists* the interdependence of parts in society through some functions like socialisation, transmission of *culture, personal* development, transformation and innovation and matching individual to the society. The development of a *nation* along with a conscious and productive citizenry depends upon the standards of education. To a large extent this depends upon the standards of schools and school leaders. The *ma\or contribution* of education system could be the development of capacities and capabilities to bridge *social and economic* differences and disparities among people. There has been increasing realisation of the need to adhere to the provisions of human *rights,* equality, *social* \ustice and *equity* in spheres.

VALUES - SIGNIFICANCE

Literally, value means some thing that has a price, and is precious or worthwhile. A value may be described as an emotional attitude, which motivates a person directly, or indirectly to act in the *most* desirable way preferred by him/her. Values, *therefore control* and guide human behavior. Value is a norm. It is an abiding standard or goal for values are needed for evolution and progress. Each society is characterised by well-defined, articulated values that are passed on to the members of the society. These represent what a person considers important in life, and these ideas as to what is good or worthwhile are acquired through the personal experiences of the individual. Value systems are *likely* to vary from society to society. People are primarily concerned with universal values like value of human life, freedom, justice, *truth,* non-violence etc. These values comprise the individuals philosophy of life. They make up *his'* dos' and 'don'ts, his 'rights' and 'wrongs'. ~

Values depend for stability on belief originating from facts and judgment. Values are hypothetical constructs and even motivational forces for their personality. They are classified in six categories as theoretical, economic, aesthetic, social, political and religious. They add colour to life. Absence of values can de-humanise the society. They refer to ethical side of the individual. The most valuable human possessions are health, harmony, happiness, wisdom and above all character reflecting ethical and human value. When all the values are manifested in thought speech and actions, the individual can be called a noble and enlightened person. As one thinks sincerely and constantly $o one becomes. The actions and behaviour reflect the ideas and feelings. Good individuals work not for name, fame, money, power and status but for greater work for cultivating values, for building up strong character, for wisdom so that our intrinsic value enhances. Human and ethical values constitute the wealth of character. The mental contents of good person are called moral and ethical values. They are also called divine qualities. A teacher with these values has a state of mind- equanimity. Such a person can mobilize his and other's energy and helps to accomplish wonders. If people value these values, they develop and they help others to develop these values. Others will regard you as a model for emulation. Such a personality should be a requisite for a leader. The final proof of sincerity and seriousness is compromising emphasis on integrity of character in a job. Character is not some thing a man can acquire. It he does not bring it to the job, he will never have it. if a man lacks in character and integrity - no matter how knowledgeable, how brilliant, how successful - he destroys. If he is a teacher, he destroys the most valuable resource i.e., human resource of the society. He destroys society and destroys its performance. Thus character is the second requisite of a leader.

LEADERSHIP

The word leadership has different meaning for different persons. One may l believe in the definition read long back as 'Leadership is defined as influence, that is the art or process of influencing people so that they will strive willingly and enthusiastically towards the achievement of group goals'. Leaders act to help a group to attain objectives through the maximum application of its capabilities. They do not stand behind a group to push and prod: they place themselves before the group as they facilitate progress and inspire the group to accomplish organisational goals. The effectiveness in any field of work is tied to exercising intrinsic human values both moral and ethical. These human values support the established educational system in all the internal aspects. They reduce conflicts and disputes. They enhance reputation and goodwill for the institution in particular and total educational system in general. Therefore value based, holistic and consciousness approach advocated by our ancient Indian wisdom becomes essential and inevitable all over the world, particularly in India, for all the functions like organising, communicating, leading, motivation and controlling. Thus the value-based leadership is stressed.

Value Based Leadership

There is a special role of education there is to train the character and the mind, through both moral and intellectual training. One finds today moral, ethical and spiritual vacuum. Through appropriate organisational restructuring and reforms, and the cultivation of

mind spirit and soul, there is a necessity have to evolve a design and style of educational system. India has vast human resources of creativity, adventure and enterprise. People are eager for changes, which will enable them to lead a life of fulfillment. But there is too much selfishness, corruption, nepotism and divisiveness in the society, which threaten social unity and harmony.

Man has placed exclusive reliance on potentiality of science to increase human happiness for too long a period. During the last one hundred years he has made phenomenal progress but the growth of humanism has not kept pace with his scientific achievements. It is this one-sided development, which has created great imbalance in the society. Man has saved himself from nature's restrictions but he has not succeeded in the some measure in development of his human qualities, which may bring his passions under control. Man's greatest problem continues to be man himself. The prime need of our time is to analyze and understand the causes of this pathological imbalance and take those remedial measures, which may enable man to acquire greater control over him. This requires a complete reorientation of education and educational leadership. It should be aimed at the development of integrated personalities; materialism will have to be counter balanced by spiritualism, rationalism by faith and automation by creativity. Man need not reject the gains of modern civilization. As long as the creative aspect of human personality is allowed man can make use of scientific inventions of mechanical devices without any damage to his personality. He has not yet realised the fullest potentiality of human life. When the scope of education is widened and intensified, and when it is looked upon as a life long transformation of human nature and acquisition of values, it would bring about a fresh release of spiritual energy.

Education is therefore mankind's only hope. It is only through education, that real transformation of man can take place, so that he continues to forge new bonds and widen his circle of friendship and love till the whole world becomes a family. If he continues to reconstruct the human personality, the man may break through boundaries of history, culture and religion.Value driven leadership combined with requisite skills and proficiencies can sustain enduring values for effective organisational structure. If the leaders translate the value orientation to their every day lives, they would be better leaders and can receive voluntary co-operation from their peers and juniors in the hierarchy. Japan has complied spiritualism and materialism and adopted value based holistic approach in management of organisation to neutralize the evii effects of reckless -industrialisation and to synthesise the human value into management and organisation, in the 21st century it is hoped that in education management would introduce Indian wisdom (Value Oriented Holistic Approach) for the development of effective education leaders to assure all-round growth of inner and outer human life.

TRANSFORMATION PROCESS

The transformation process of the value based leadership approach can be understood better by fig.1. The leader of the organisation should work under the threats posed by different societal factors like different characteristics of the subordinates, peers, students and other members of the society. They also do have definite impact of environmental

factors such as machine dominant society, mechanised and materialistic thoughts of people and other different work cultures. Besides above, prominent place should be given for the financial factors not secondary to any others.AII these factors determine leader behaviour, which influences the subordinates, peers qotfstudents. The leader with effective equanimity of mind can balance these external barriers with his inner strength of mind and soul. Thus he can positively manage the situations and threats posed in his way.

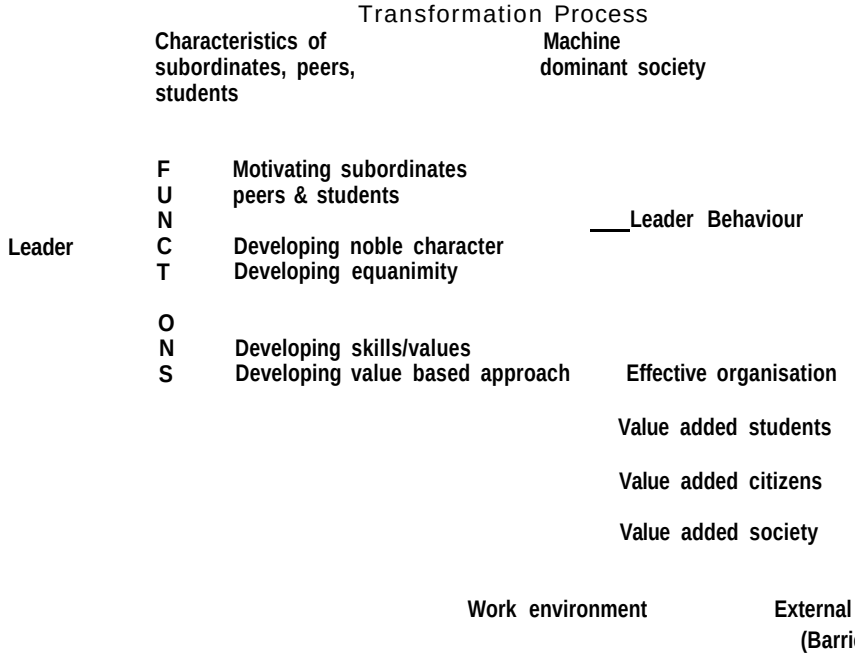
in spite of all the above factors, he has many functions and responsibilities towards the organisation as well as the society. They include

Motivating subordinates, peers and students
Developing noble character
Developing equanimity
Developing skills/values
Developing value based management approach
Developing value added students/society

Thus all these functions related to value added management puts a challenge before the leader of the organisation.

FIG.1

Transformation Process



AGENDA FOR DEVELOPING A PERSPECTIVE GUIDE FOR VALUE ADDED LEADERSHIP

Changes in Management Attitude

Top management or leaders must have firm belief in value oriented holistic management of the system. Manager is a 'Sadhak' or a worker devoted to his work as worship to the divine, They should have a strong belief in achieving human and social welfare also. Mental peace, self-contentment, harmony and consolation should be given significance than material and external accomplishments.

Guidance

Management should be guided both by mind and soul.

Management by Consciousness.

Consciousness should also be guided by power beyond mind i.e. soul/inner heart. This type of guidance may be framed as Interiorised Management[1].

Emphasis

Emphasis should be based on integrated growth, harmony, happiness and health. Complete development of man should be emphasized.

Tools

Ethics and values combined with skills should be the tools for management.

Problem Solving

Conflict resolution through integration and synthesis on stressing super ordinate common goals so that enduring harmony and unity is assured. Self-introspection, stepping-back aids for solutions should be the problem solving criteria.

Decision-Making

Brain stilling (room of silence) is the process of decision-making. By this the leader and his peer come into contact with the inner mind or higher consciousness for arriving at proper solution to their problems.

Development Process

Integrated development, whole man approach and meditation are emphasized. Human enrichment is stressed.

Approach

Noble attitudes, inner guidance, team spirit, total harmony, global good.

Growth

Co-coordinating private and public benefit.

Motivation of People

Emphasis on self-motivation by subordinates to have creative joy and autonomy.

Structure

Organic evolution, autonomous structure.

Job Satisfaction

Through innovation uniqueness, extra-ordinary results and troubleshooting.

Training

Value-oriented, holistic approach and equal emphasis on both values and skills.

Quality

Human quality, character, mind enrichment, whole-man approach, mind and matter are given equal treatment.

Management

School activities must be managed by participatory principles . Faciiitative style of sharing decision-making responsibilities on issues related to school management and administration.

EPILOGUE

Thus re-orienting the training programmes of school leaders and administrators on the above lines and reforming the curriculum on the same lines, one could succeed in attaining value based society for human welfare, Hence value oriented education leadership system is stressed to meet the challenge for the entire globe.

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STRENGTHENING THE TEACHER EDUCATION PROGRAMME THROUGH INFORMATION TECHNOLOGY

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INTRODUCTION

Teacher education institutes are bestowed upon the responsibility to train teachers and to enable them to give their best to the society. However, if one observes and evaluates the teacher education system, one may find the whole scenario of teacher education system in India trailing with enormous weaknesses. This is not a situation, which has emerged overnight. The past history of education is evident for its concern to raise questions about restructuring teacher education and redefining its quality Education Commission headed by Dr. Radhakrishnan recognized the deficiency of faculty development in India as early as in 1948-49. The Education Commission, 1964 - 66 too, laid emphasis upon teacher education and training in general, for all stages of education, reiterating that sound programme of teacher education was essential for qualitative improvement of education. National Policy on Education 1986 laid down that teacher education was the continuous process and its pre-service and in-service components were inseparable. In spite of the National Council of Teacher Education (NCTE) functionig as a statutory body since more than 5 years, teacher preparation programmes have not changed much from the past and have remained unresponsive to the emerging challenges of the present time. The contemporary models of teacher education have failed to reflect the challenges taking place in other spheres of national life. This situation of teacher education has left a wide gap in the training and needs.

EXISTING TEACHER EDUCATION SYSTEM: A CRITIQUE

The following issues are observed glaringly when looked critically at the present teacher education system:

- The present teacher education model is inadequate as regards curriculum, approaches to teacher preparation, duration of the course, transactional strategies, the teaching-learning devices, technological inputs and research in teacher education.
- It is still tradition-bound with more of theory and same old teaching practices.
- Most of the teacher education centers still practice only chalk and talk methods.
- Teacher education institutes are not equipped with advanced technology including information technology.
- Teacher education is still viewed in isolation from other factors like the social structure facilities and entry qualifications.

Teacher trainees do not possess the required aptitude.

Teacher education does not equip the teachers with the feeling of accountability, professionalism, ethics, commitment or transparency.

It lacks in corroborating the theoretical orientation with practical training.

It contains outmoded teacher notes, obsolete lesson planning models and uninteresting approaches in teaching with no proper training in teaching skills.

Student teachers do not possess the required depth in their respective disciplinary knowledge.

Methodology of teaching does not take into account the different backgrounds of people (socio-cultural).

There is no mode for regular interaction between the teachers and the teacher institutes all over India.

There is no proper dissemination of information about the research and innovations in teacher education.

It has become limited to its certification for employment.

It does not provide scope to draw out the creativity and other talents of student teachers.

- It is not paying much attention to humanistic elements, affective elements and also the hidden potential.

In spite of education being of vital significance to all sections of the people, there are signs of an emerging alienation between the school campuses and society at large. It is this dangerous trend that should be taken note of by the planners and educational administrators. In this context, here are certain seminal questions raised in the realms of teacher education.

- Can we afford to continue with the same arena of teacher education?
- Can we face the challenges of tomorrow's classrooms?
- is it not time to corroborate the teacher education system with IT at par with the existing knowledge structure?
- Is not teacher education getting isolated?
- What would be the suitable model of teacher education for tomorrow?

The above issues lead one to understand the need of creating conditions where teachers have freedom and capability to innovate, to devise appropriate methods of communication and activities relevant to the needs, and concerns of the community and present developments in the knowledge structure. Knowledge being the most important input in teacher education, information technology has to be the necessary component of teacher education. It is a well-known fact that IT and Cyber age have brought a revolutionary transformation and drifted the whole lifestyle of people. No area is left untouched with IT. One finds a global village concept with virtual realities on desktops. Information Technology has become the most potent area in the new

millennium. Sensing the job opportunities and growth prospects, students are getting attracted to IT courses and are showing their keen interests in computer applications in the course(s) they are pursuing. Computers are being speedily introduced at every level of education i.e. schools, colleges, vocational institutes, universities etc. Haryana has tied up with Tata Infotech to introduce computer education in the schools, colleges, polytechnics and industrial training institutes (ITIs) from the ensuing academic session (Rattle 2001). Recently the Government of Andhra Pradesh has made an initiative by introducing computers in education right from schools to that of higher education, including teacher education (Marunalini 2000). But, by and large teacher education has remained untouched in this direction to keep pace with time.

The reality is that the bulk of faculty currently engaged in teacher preparation are themselves not prepared to use technologies, nor have updated their knowledge in technology developments. Once again there are notable exceptions to this generalization. For most faculties in teacher education, IT is a mystery or a blur. Young students being prepared by these members of faculty, in an increasing number of cases, are somewhat knowledgeable about IT due to imports from this environment: an intellectual gap of some importance is thus being created.

Many members of faculty in teacher education institutes are yet to appreciate the use of technology for the delivery of instructions because they themselves are not exposed to the world of information technology. It is pertinent that teacher trainers should not only be acquainted with information technology, but also should be able to make better use of the information technology in the field of education. Presently there exists a great scope to develop the:

- ability to master basic IT skills/in the area of productivity, multimedia, telecommunication and classroom integration;
- ability to use multimedia as a medium for delivery of class lectures;
- ability to guide students to work collaboratively to make group presentations using IT;
- ability to enthuse students to use IT for problem solving tasks.
- ability to introduce new interactive learning package in content related courses relevant to teaching and learning;
- creation of an information newsletter and an Internet home page to reciprocate information with others, etc.

IN SERVICE TRANNING

There is need to provide in-service training to all the teachers and teacher educators with updated computer operation skills and IT know how to utilize the facilities to access updated information and solutions to their problems in their areas of specialization. The proposed IT inclusion and the affective and humanistic elements might have the following objectives:

To provide in-service training to teachers and teacher educators on computers and IT;

To incorporate all the IT facilities into teacher education model;
To extend Internet, e-mail facilities to all teachers and students in teacher education;
To provide the know-how to operate computers and Internet to all the student teachers and provide network to teacher to use the vast potential of internet connectivity

TRAINING PROGRAMME THROUGH "IT" FACILITIES

IT implies telecommunications involving a combination of computers, networks, satellites, telephones, radio, television and the like. IT resources involve not only hardware (equipment), but also, software (programmes), people, education, government and association/collaboration resources. Application of IT to education involves many disciplines related to computers in handling, processing, management, automation and communication of information in the broader cultural and economic context of a society. According the Rai & Bhattacharya of CIET, IT with reference to "technology in education", encompasses one or more of the following :

Media and Audio-Visual communication, e.g. alternative instructional delivery systems such as radio, educational television, etc.
Vocational training tools, such as CBT (Computer Based Training), CAD (computer-aided design), etc.;
Computers and computer-based systems for instructional delivery and management, e.g. CAI (Computer Assisted Instruction) etc.
Intemet/web based education e.g. not only educational information with text, graphics, video, but also, courses are offered by various web sites.

A virtual teacher education centre can be created. All the necessary skill and training can be provided in different modes on the network, it should incorporate all the available IT facilities like; tele-education, teleconferencing, floppy diskettes and CIJROMs in teacher education. Networks like ERNET and futuristic concept of bringing satellite channels directly to homes by DTH (Direct to home) service and expert talks through virtual classrooms can also be made available. Teachers may also use these facilities to update their knowledge by way of interaction with their counterparts in as well as other Indian universities and educational institutes. Their use may gain more importance when teacher is asked to teach a topic which he could not study when he was a student. Thus, information technology can help in professional development of teachers at various levels

DISTANCE MODE

The present practice of TV and other media in distance mode of education can be substituted by multimedia systems which have an extra advantage of being more interactive through GUI (Graphics User interface) which controls the response of information transfer process according to the pace of the learners. It helps in using screen as an instructor for self-learning.

RESEARCH

Information Technology, the combination of computing and data processing with communications and access to data or information - is one of the key technologies of

our age, and has had a profound effect on every aspect of modern society, including research.

Research in any discipline is an intellectual activity involving analysis, testing and experimentation, consultation of reference and other research material, communications with peers, preparation of papers and reports, and so on. For using a meaningful IT support, a researcher today has to know the following disciplines involved, but could include any or all of the following:

Personal computing: Most researchers have some requirements of Personal Computing, which including the ability to handle computational analysis; word processing and general text processing and graphics; analysis of data and planning information.

Local data and software sharing: Most researchers do not work in isolation and so have a need from within their computing environment to have access to, share and manipulate local data and databases, and to share standard software among colleagues.

Graphics and image display and analysis: in many disciplines, particularly in education, engineering and the sciences, researchers have a need for the sophisticated manipulation of image and graphics data, and require special IT resources to provide these facilities. These needs will become much more common as researchers in all disciplines begin to appreciate the benefits of being able to manipulate graphs and imagery in documents as easily as they manipulate text today.

Computer network: Researchers need sophisticated communications tools such as electronic mail and file transfer facilities to ensure rapid and timely information sharing and collaboration.

Indeed researchers require an information environment which provides in an integrated, and ideally uniform manner, the services necessary to meet all the above needs, and which delivers these services through the single window of the computer screen on the researchers' s desk. In addition, they need IT support for the administration and reporting of their research activities. A support organization is required to co-ordinate, deliver and support the researcher's information technology windows on the world.

In general IT have had a profound impact on research activities. Moreover, the pace of change in IT is accelerating with new and improved technologies available almost every day, and thus information technology will continue to increase in importance for all research activities. A few examples of the impact of IT on research activities in institutions and universities will help to make the point:

Experimental analysis and campus networks: Many experimental research groups now conduct the analysis of large number of experimental measurements, each of which may involve substantial computation on a large number of data points, using combination of the various computing resources available on **a** campus network.

International Collaboration: Electronic mail and file transfer services on national and international research networks have greatly facilitated international collaboration.

In particular, such networks have ended the isolation of many researchers in the smaller and more remote institutions.

IT is important for institution and university research, and will gain importance over the next decade. However, sufficient central and state funding must be provided to ensure that an IT services infrastructure is established, maintained and developed, to meet the research and teaching need of the institutions. Internet facilities should be made available to research students and teacher educators. All the departments should have internet connectivity. It helps in accessing information about the ongoing research in their respective fields and it also avoids overlapping.

NETWORKING OF TEACHER EDUCATION CENTERS

At par with libraries, banks and research networks like INFLIBNET, RBINET and CSIRNET, teacher education centers should also have a separate network. This shall enable them to mutually exchange information, thought, style of functioning, new strategies and experiments and innovation in their field. There will be a possibility for a standardized system of training. Teachers must be given excellent training in setting, grading papers and preparing assignments. These can be used in teacher-training networks. Excellent simulated models can be made available to access on network.

RESTRUCTURING TEACHER EDUCATION CURRICULA

In the changed information scenario, the teacher education pattern with special reference to change in syllabi is bound to happen. Teacher education curriculum needs drastic changes by incorporating all facilities available through IT. Primarily, IT can be used to be at par with the existing knowledge structure. It can be thoroughly incorporated into methodologies of teacher education. There should not be exclusive theoretical orientation in curriculum. It shall have more practically demonstrable skill and strategies in the curriculum. All possible attempts should also be made to train teachers, apart from virtual classrooms, to incorporate the necessary live interactive experiences to understand the significance of physical interaction with the child in the classroom.

Humanistic and affective hidden curriculum and an effective training to acquire all traits and qualities required in a teacher to handle human society should be included in the curriculum. Teacher education programmes can be major catalysts for educational reform by making teacher trainees and in-service teachers effectively use IT in classrooms. Teacher education must model the integration of IT throughout the teacher education programme.

CONCLUSION

More than the brick and the mortar, the real foundation of an educational institution is the quality of teaching they have, the improvement they bring about in their teaching, the intensity of their involvement, commitment to teaching profession and the efforts they undertake to update their knowledge and their capability to meet the challenges in their profession successfully. Can teacher education institutions or universitiy department of education meet the challenge? It would require a significant commitment to provide training for faculty staff and to provide resources. What may be called 'professionalization of teacher education', has now assumed importance and this

includes an understanding of the place of technology in the scheme of things. Unless substantial effort is made on the part of universities, teacher educators and trainees will be deprived of the joy of using IT.

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ENGLISH GRAMMAR AT THE SECONDARY SCHOOL LEVEL

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INTRODUCTION

Language is a form of human behaviour. Anyone using a language must use its grammar, as mere words without grammar do not constitute a language. Grammar is a sure ground of reference when linguistic habits fail us. It helps to consolidate forms and structures already learnt, to distinguish between correct and incorrect forms, to improve written work, to interpret literature, to become confident speakers and to throw some light on the nature of man (Kohii et a!., 1996, p.113). The teaching of grammar is a controversial issue even after fifty years of accumulated research evidence.The objectives of teaching grammar include effect³/4widely used for learning Grammar, but failed to attain these objectives to the optimum (Burton et al., 1975, pp.230-234). in the present day schools, teachers of English use Functional Grammar as well as Formal Grammar for teaching English Grammar. Functional Grammar, narrowly conceived, implies teaching grammatical principles in relation to faults of construction. A broader, modern variation instrumental-functional approach which emphasises on effective expression is directed for improving the child's power of expressing himself with variety, force and exactness (Hatfield, 1935, p.228). Formal Grammar or Theoretical Grammar, on the other hand, emphasises definitions, terminology and rules. Several arguments are put forth favouring the superiority of Functional Grammar over the Formal grammar (Tidyman & Butterfield, 1959, pp.32-35). But research evidence is scanty in this respect. The present study is an attempt to verify the above assumption.

OBJECTIVE OF THE STUDY

The objective of the study was to test the effectiveness of 'Functional Grammar' in learning English grammar at Secondary level.

HYPOTHESIS FOR THE STUDY

The hypothesis formulated for the study was as follows:
'Functional Grammar' is more effective than 'Formal Grammar' for learning English Grammar at Secondary school level.

DESIGN OF THE STUDY

The 'experimental method' was adopted for the study and the pre-test³4 intact classrooms were selected and one was regarded as 'experimental group' and the other 'control group'. The achievement test prepared was administered as pre-test to both the groups. The experimental group was then taught through the Functional Approach and the control group through the Formal Approach. The same achievement

test was administered as post-test to~ both the groups. The groups were compared by using paired t-test.

Analysis and Discussions

The data collected were analysed carefully so as to verify the hypothesis formulated for the study. The details of the analysis carried out are presented below under appropriate heads.

1. **Comparison of the 'Mean Pre-test Scores' of the Experimental and Control groups**

The mean pre-test scores of the experimental group (functional grammar) and the control group (formal grammar) were compared to find out whether there is a significant difference between the groups with respect to their initial performance. The comparison was done by applying the two tailed test of significance for difference between means. The data and results of the test of significance are shown in Table 1.

Table 1

Comparison of the 'Mean Pre-test Scores' of the Experimental and Control groups:

Data and Results of the Test of Significance.

Group	No. of Pupils	Mean score	Standard deviation	Critical Ratio	Level of significance
Experimental group	40	5.325	2.390	0.32	P > 0.05 NS
Control group	40	5.175	1.723		

It is clear from the analysis (vide Table 1) that the CR value obtained is not significant (CR = 0.32; p > 0.05), showing that the experimental and control groups do not differ significantly with respect to their 'pre-test scores'. This result implies that the groups under comparison are identical with regard to their initial performance in the test.

2. Comparison of the 'Mean Post-test Scores' of Pupils in the Experimental and Control groups

Comparison of the experimental and control groups with respect to the mean post-test scores revealed that there is a significant difference between the two groups under comparison (CR = 14.56; p < 0.01). Since the mean score of the experimental group (Functional Approach) is higher than that of the control group (Formal Approach), the experimental group proves to be superior to the control group which implies the superiority of the Functional Approach over the Formal Approach. The details of the comparison made in this context are presented in Table 2.

Table 2
Comparison of the 'Mean Post-test Scores' of the Experimentai and Control groups:

Data and Result of the Test of Significance

Group	No. of Pupils	Mean score	Standard deviation	Critical Ratio	Level of significance
Experimental group	40	18.450	2.298	14.56	P < 0.01
Control group	40	10.950	2.309		

MAJOR FINDINGS

The major findings that emerged from the analysis are the following:

1 .Comparison of the 'pre-test scores' of the experimental and control groups showed that the two groups do not differ significantly with respect to their 'pre-test scores', showing that the groups are identical with regard to their initial performance (CR = 0.32; p > 0.05).

2. Comparison of the 'post-test scores' of the experimentai and control groups showed that the two groups differ significantly with respect to their 'post-test scores', the difference being in favour of the experimental group, which implies the superiority of the Functional Approach over the Formal Approach, (CR = 14.56; p <0.01).

CONCLUSIONS

The results of the experiment led to the conclusion that Functional Grammar is more effective than Formal Grammar in the learning of English Grammar in Standard IX. The hypothesis formulated in this context stands valid.

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DEVELOPMENT OF HYPOTHETICAL REASONING IN RELATION TO INTELLIGENCE, COGNITIVE ENCOURAGEMENT AND ORIGINALITY

Indira Dhull
Anita Sheoran

INTRODUCTION

Jean Piaget(1896-1980) in his stage theory of cognitive development proposed four stages, which are considered qualitatively distinct from one another, even though the transitions between them are admittedly slow and uneven. The breaks in the process of growing up suggested to him that the child had at each such time completed one phase of growth and was not engaged in further phase. These four main periods or levels of development in Piaget's theory are : (a) the sensory-motor period (birth to age 2 roughly); (b) the preoperational thought period (about age 2 to 7); (c) the concrete operational period (about age 7 to 11); and(d) the formal-operational period (about age 11 to 15). The formal operational period is characterized by the ability to hypothesize i.e. to imagine the condition of a problem-past, present or future and devise hypotheses about what might logically occur under different combinations of factors. It is typically manifested in proportional thinking and a combinatory system that considers the real as one among other hypothetical possibilities. By the end of this final stage of mental development the youth is capable of all the forms of logical reasoning that the adult commands. In Piaget's system the process of cognitive deveiopment-of generating a growing complex of schemes is governed by four factors: heredity (internal maturation) ; physical experience with the world of objects (spontaneous or psychological development); social transmission (education or instruction) and equilibrium (Piaget 1973). Heredity, in Piaget's view, furnishes the newborn with the initial equipment the infant needs for coping with problems met in the world. Heredity also establishes a time schedule for new development potentials to arise at successive stages of individual's growing years. However, genetically determined internal maturation does not guarantee the materialization of the potential schemes or abilities. Their fruition depends also on the nature of the person's interaction with the environment.

Unlike many theorists, Piaget separated the child's involvement with the environment into two varieties : direct and generally unguided experience (physical experience or spontaneous development); the second factor, and the guided transmission of knowledge broadly known as education or instruction; the third factor. He, however, contended that the first of these varieties must precede the second. The fourth factor determining development called equilibrium is a coordinating force, performing the regulation and compensation among the other three factors that are needed to make the entire system of development a coherent whole. Intelligence, metaphorically, acts as a generator, which transforms raw input into usable power. According to Wechsler, Intelligence is the global capacity to think rationally, to act purposefully and to deal

effectively with the environment It is in this interaction between the structured characteristics of the environment and the active imposition of order by the child, according to Piaget arises the organization of knowledge.

The culture of the school exerts some influence on both physical and social characteristics of the learners, it is in the realm of psychological development that the school makes its greatest impact. There is little serious challenge to the contention that schooling strongly affects the learner's cognitive structures. Few traditional societies are consciously concerned with fostering cognitive abilities, that is, of consciously devising methods for forming people's thought-processes. In contrast to the task- oriented instruction imparted in traditional societies, the learning system in industrial societies stresses such constructs as classifications, rule-seeking, problem-solving, concept- formation. In other words, the school emphasizes the development of power of abstraction, that is, the ability to carry on mental processes in a relatively context free mode.

Questions about the impact of schooling on development are intertwined with the questions Berry and Daren (1974, pp 11-12) have identified as the major themes in research on culture and cognition. The interaction effect of convergent thinking and divergent thinking among students can best be studied while keeping in consideration the type of school-climate available to the child. So a need was visualized to conduct an empirical study to find out the effect of intelligence , cognitive encouragement and originality on the development of hypothetical reasoning. The interaction effects of intelligence, originality and cognitive encouragement on the development of hypothetical reasoning were studied where originality as enumerated by Guiiford (1950) is indicated by unusualness of responses, clever responses or remote associations and relationships, and cognitive encouragement implies teacher's behaviour to stimulate cognitive development of student by encouraging his/her actions or behavior.

DELIMITATIONS

I.The study was delimited to students of adolescent age group studying in class XI and XII of Senior Secondary Schools.

2. Only three independent variables viz. intelligence, cognitive encouragement and originality were taken up to study their relationship with development of hypothetical reasoning.

3. The sample of 299 students was collected from 8 Senior Secondary Schools in and around Jind city.

OBJECTIVES

The study was designed to attain the following objectives:

To study the relationship between hypothetical reasoning and the combination of intelligence, originality and cognitive encouragement.

To determine the effect of intelligence on hypothetical reasoning.

To determine the effect of cognitive encouragement on hypothetical reasoning.

To determine the effect of originality on hypothetical reasoning.

To study the interaction effects of intelligence, cognitive encouragement and originality on hypothetical reasoning.

HYPOTHESES

2. There is no significant relationship between hypothetical reasoning and the combination of intelligence, originality and cognitive encouragement.
3. There is no significant effect of Intelligence on hypothetical reasoning.
4. There is no significant effect of cognitive encouragement on hypothetical reasoning.
5. There is no significant effect of originality on hypothetical reasoning.
6. There is no significant interaction effects of Intelligence, cognitive encouragement and originality on hypothetical reasoning.

METHODOLOGY

Sample

in order to obtain relevant data in accordance with the objectives of the study, initially a sample of 498 students was taken from 8 different schools of Jind district in Haryana. In selecting the schools care was taken that those truly represented the populations. For this purpose different types of schools were taken up i.e. boys' school, giris's school, coeducational school, govt, school, privately managed school etc located in rural and urban, both types of areas. Nevertheless, consideration of cooperation of the heads of the institutions and convenience were also taken as criteria for selecting the schools, in addition, for selecting the students from a particular class, the entire section was taken as a cluster in any school. The investigator visited for the collection of data.

However, after administration of the tools of research, the investigator was left with only 299 subjects due to subject mortality during the course of administration of tools.

Tools

The tools administered to the sample were

1 Culture Fair intelligence Test by R.B. Cattell.
2 Test for Creativity in Words by Dr. Baqer Mehdi.
3 School Environment Inventory by Dr. K.S. Mishra.
4 A paper pencil test comprising ten Piaget-type tasks aiming at assessing hypothetical reasoning of subjects (developed and used by Dr. T. S. Sandhu in his factorial study of Adolescent Thought, (1980)

Statistical Design

Multiple R and Analysis of Variance: Multi-factorial Design (2x2x2)

Data Analysis

Corresponding to the first hypothesis, to study the correlation of hypothetical reasoning with the combination of Intelligence, cognitive encouragement and originality, multiple R was computed.

The value of multiple R for the effect of the combination of the independent variables of intelligence, cognitive encouragement and originality on hypothetical reasoning came out to be .366, which was highly significant. Corresponding to the Hypotheses No. 2,3,4,5 ANOVA procedures were applied to study the main effects as well as the interaction effects, of intelligence, cognitive encouragement and originality on hypothetical reasoning was found out. It was found that intelligence, cognitive encouragement and originality constituted significant main effects on hypothetical reasoning. Intelligence constituted f-ratio 13.73 significant at .01 level of significance. A look at the corresponding cell means showed that it is the higher level of intelligence that is accountable for the higher mean scores on hypothetical reasoning. Cognitive encouragement constitutes F-ratio 4.94; significant at .05 level of significance. Originality constituted F-ratip 20.89; highly significant at .01 level of significance. However, the variables intelligence, cognitive encouragement, originality and hypothetical reasoning did not interact significantly with one another.

FINDINGS

The following findings are given in the order of the hypotheses mentioned above :

Value of Multiple R: The value of multiple "FT for the combination of intelligence, cognitive-encouragement and originality was found to be significant on hypothetical reasoning. Hence Hypothesis no. 1 is rejected and it can be concluded that there exists a significant relationship between hypothetical reasoning and the combination of intelligence, originality and cognitive encouragement.

Analysis of Variance : Multi-Factorial Design (2x2x2).

A. *Main Effects*

(a) Intelligence Vs. Hypothetical Reasoning: Intelligence is found to be contributing significantly towards the development of hypothetical reasoning. Hence Hypothesis No. 2 is rejected and it can be concluded that Intelligence constitutes significant main effect on hypothetical reasoning.

(b) Cognitive encouragement Vs. Hypothetical Reasoning: Cognitive encouragement is found to be contributing significantly towards the development of hypothetical reasoning. Hence Hypothesis No. 3 is rejected and it can be concluded that Cognitive encouragement constitutes significant main effect on hypothetical reasoning.

(c) Originality Vs. Hypothetical Reasoning:Originality is found to be having significant main effect on hypothetical reasoning. Hence Hypothesis No. 4 is rejected and it can be held that originality constitutes significant main effect on hypothetical reasoning.

B. Interaction Effects

No significant interaction effects were found. Hence Hypothesis No. 5 is retained.

CONCLUSION

In nutshell, the study indicates that intelligence is significantly related to the development of hypothetical reasoning. Furthermore, cognitive encouragement dimension of school-climate is found to be significantly related to the development of hypothetical reasoning. Originality is found to be having significant main effect on hypothetical reasoning.

EDUCATIONAL IMPLICATIONS

Intelligence tests should be made use of to assess the potential level of the students. As there is a wide spectrum of students in a class; their achievement level also differs. So, suitable methodologies of teaching should be adopted to abridge the gaps between the potential level and the achievement level of the students. Teachers as well as parents should provide such a conducive environment at school and home respectively so that the child feels encouraged to study and attain higher cognitive abilities. Presentation of role models for them, appreciation and other such reinforcements should be thoughtfully provided. The spirit of healthy competition to improve upon their cognitive capabilities- should be inculcated. Such provisions should be made so that the students interested in one particular branch of knowledge should be freed from the strain of studying other compulsory subjects to which they do not feel inclined. Teachers should refrain from sole dependence on lecture method. All such approaches and techniques should be adopted that can enhance the content of originality in the power to think.Dependence on rote-memory to answer on the part of the students should be discouraged. Rather, they should be encouraged to come-up with their own ideas while answering the questions. Open-ending questions should be asked to assess the original thinking of the students.Option to specialize in a subject to which a student feels inclined should be provided after the completion of primary level of education at least, to the students who excel in that subject. Parents should desist from snubbing their children when the latter approach them with some unusual queries. Instead, reasonable and satisfactory responses should be provided. Children should not be spoon-fed. They should be allowed the freedom to think on their own, to seek guidance when necessary and to work independently. They should be involved in solving the problems of all sorts; who knows they may come up with an original idea or solution. Little efforts on the part of children should be appreciated so that they feel confident enough to express the novel thoughts.

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SOCIAL ANALYSIS OF RURAL SCHOOL DROPOUTS IN CENTRAL PUNJAB

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1. J. S. Jaswal

INTRODUCTION

Elimination of illiteracy has been one of the major concerns of Indian Government since independence as it is a serious obstacle to establishment of social order based on equality. Still the targetted goals have not been achieved which in tune lead to a very low quality of life. Census 2001 estimates 55 crore Indians to be illiterates - 55 per cent of the total illiterates of the world. There are 5, 72, 925 primary schools in India, still 32 million children in primary school age are not in schools and the dropout rates is as high as 70% on an all India basis, with rate being 74.41% for girls and 68.41% for boys.

OBJECTIVES

To study the attitude of teachers, religious/social/political heads regarding the education of children in the studied areas.

To study the effect of dropping out on the siblings.

METHODOLOGY

Sample

A sample of 100 children (50 boys, 50 girls) aged 10 and above was drawn randomly from schools in villages of Central Punjab. Fifteen teachers and 15 political and religious heads were questioned to see their attitude towards the education of children of their villages. Twenty siblings of dropouts were interviewed to see the impact of their sister and brother, having dropped out on them.

Tools

Self structured interview schedules were administered on teachers, political - religious heads of villages and siblings of the dropouts.

Data Collection

The data from the respondents ware collected personally by the investigates, after establishing proper rapport with them and clarifying their doubts about the purpose of the study.

Statistical Techniques

To make meaningful interpretation of the raw scores, the data were subjected to statistical techniques of qualitative analysis and percentages.

RESULTS AND DISCUSSION

Following tables present the results of the investigation :

Table 1
Attitude of Teachers Regarding the Education of Children

S.No.	Category	Score	No. of teachers in each category	Percentage of teachers in each category
1.	Positive attitude	18-21	3	20.00
2.	Neutral attitude	22-25	7	46.66
3.	Negative attitude	26-29	5	33.33
			15	

Table 2
Siblings Showing Effect (or no effect)
with Reference to Dropout

S. No.		Siblings	No effect	Effect
1.	Boys	11	7(63.6)	4(36.6)
2.	Girls	9	6(66.6)	3(33.3)
		20		

Values in parentheses are percentages

FINDINGS

Teachers were found to be low in their professional interest and esteem and thereby their motivation to raise the quality of education was found to be poor. This, in turn, affected the students whose interest in school could not be sustained. It was also observed that the teachers gave priority to their personal tasks and no effort was made by them to upgrade their skills for better inputs. In the absence of adequate number of teachers, entire load was transferred on the few available ones who faced difficulties in coping with large number of students and classes. This further affected their efficiency. Bhasin (1987) observed that the most important factor in teaching - learning transaction was the emphatic quality of teacher - pupil perception. Non

acceptance of teachers and students for each other prompts truancy, dropping out and undefachievement.

Results of Table 2 indicate that majority of siblings responded negatively to any sort of effect of their sister or brother having dropped out on them. This was so because the younger ones have seen the dark side and the consequences of their elders having dropped out. Among the ones who reported of positive effect of elder dropout brother on them was basically that they would also get free time to play while brother was already there to look after the household chores. Similar kind of explanation was given by the ones having sister as a dropout for it would be she who would be taking care of the daunting household tasks.

The religious, political and social leadership agreed that the children ought to be educated. However, their perception regarding stage or level uptii which education be continued varied. Majority of them agreed that sex bias be done away with and equal educational opportunities be given to both girls and boys. They viewed large family size, low social status and early marriage in case of girls as the important causes of children dropping out. Besides these, disinterest in studies and non-motivating company also forced children to discontinue their studies and while away their time. When talking about combating this menace, the leaders reported of holding guidance sessions for the children who were potential dropouts. They also talked about holding awareness camps to bring about a change in the attitude of parents and teachers regarding the need of quality education for children, especially in the light of changes in the global labour market in the view of W.T.O. norms.

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EDUCATIONAL PHILOSOPHY - A PATHFINDER

K.Om Narayan Rao

Education and Philosophy though are studied as two separate branches today cannot be demarcated in a true sense. It can be seen that education without a philosophical base and thrust is lame, and philosophy without a true educational spirit is blind. While Philosophy shows the path of liberation of human mind, Education leads to liberation. Now, Educational Philosophy as a happy blend of Education and Philosophy is an antidote to various odds and is a real pathfinder to all blockades. It generates in individuals self-control, self-discipline, develops personality and inoculates values that have a potency for the emergence of a harmonious and value-based society. To stimulate such a systematic and organized consciousness in the society is an age-old task of philosophy and hardly a few could realize this, and today Educational Philosophy takes the lamp in the dark against all odds and hardships.

If one looks into the Upanishads which are felt still relevant for this age, and try to draw the elements and the threads of educational philosophy, a basis or framework of an ethical and norm based social order can be laid. Further, the present day's specialized sciences are seen to be quite inherent in some form or the other in the teachings of the Upanishads. The Upanishads may be compared to a wheel of which the various spokes are the truths that are established by the specialized sciences. These sciences have their own limitations and the barricades that come their way are taken as the new challenges in the progress and advancement of knowledge. However, at no point of time, these sciences can describe the truths even of their own field of inquiry in a complete sense. But over a period of time, when the sociai and natural sciences emerged as specialized fields of inquiry, it was felt by many that philosophy has lost its relevance. What these people fail to see is the philosophical currents at the core of each of the specialized sciences. This is the reason why individuals turn to the specialists for guidance completely overlooking the philosophers ail the way. There is nothing wrong to approach specialists in various fields for urgent and immediate answers, but what hurts a serious student of philosophy is the non-recognition of a philosopher hidden in each of them. Anyway, without a philosophical quest, it is to be noted, no specialized sciences could have ever advanced; and the success of these sciences today may well be attributed to philosophy.

However, today the commorffeeling among many is that philosophy had already played its role in the past and there is nothing that is left for it now; 'the queen of sciences' has been dethroned (Morris 1969). Now it is Education as a discipline which in clear terms must put it before the world that philosophy is eternal and no specialized science, whatsoever, can dethrone it. As the time passes by, the demands for these sciences change platform from Engineering to information Technology, then to Biotechnology and so on. But philosophy stays on as the unmoved mover of all these changes.

Though philosophy is at the base of all sciences, but what makes one to overlook it? This is not an easy question to answer as it appears to be. Anyway, the thinkers at various times tried to answer this by putting forth the view that while philosophy aims at ultimate answers, the sciences yield immediate and practical answers which makes one adhere to these practical sciences and in the process completely overlook philosophy. And now Education as.a discipline that recognizes the relevance of philosophy, should not allow the practical sciences to go loose. It should emphasize on the metaphysical foundations and philosophical overtones underlying ail sciences; and provide a new dimension to these sciences. The faithful results in science today are largely due to the quest and lust for inquiry that philosophy provides. But the scientists today in the true sense have failed to recognize this and are in their to own mechanistic world, testing all possible combinations, without much heed to the dangers underlying their numerous conceptions and practices. At the juncture when philosophy and science are largely seen to fall apart, a befitting educational pattern, which brings them together, is the need of the day.

Science, over the years, has registered tremendous progress that today we talk of super-computers which apart from exhibiting intelligent behavior excel in perfection that no human being is capable of. In the market- place, they are valued over the human work force and seem to pose an open challenge to mankind. With their pace, steadiness, accuracy and consistency, they have rendered many as jobless. Being jobless, a segment of human beings find it really difficult to meet the bodily and economic values and needs that are essential and necessary for a normal life. In Massachusetts Institute of Technology, efforts have already been started to design computers out of the biological material that can have the sensations of touch, smell, sight, audibility, etc. An Independent Speech Recognition System (ISRS) using neural technology has recently come up which is found to be better then human beings in speech recognition. An U.S. based scientist, Dr. Ray Kurzweil, an Artificial Intelligence expert commenting on the distinction between man and machines in the chapter "When computers exceed human intelligence" of his book 'The Age of Spiritual Machines" puts forth that by the year 2020, the computers will have the intelligence nearing human intelligence and by the year 2030, the computers will have human-like consciousness with the brain power equaling about one thousand human brains bundled together. And by the close of the century, a computer will have a computing capacity of a billion times more than all human beings existent on earth. Subsequently, the fears are expressed from various quarters of a possible human invasion by these super-mechanistic toys (Rao, 2000, p.115). What can save the human society out of this possible danger is then a question mark. Only the enlightened few realize "Machines never make mankind happy and never will make" (Vivekananda,1973, p.155). They then express a feeling that modern machines are detrimental to human values and emotions. Further, the scientists are seen to overstep their limits by going for test-tube babies, genetically engineered animals, Dolly, for example, creating weapons of mass destruction and many more. These are not the positive signs of growth though they seem to be. The dangers are quite immanent in them. The Isa Upanishad clearly puts forth that those who tend to concentrate on the advancement of materialistic education and knowledge will ultimately

go the darkest and the immobile region of existence. Some serious thinkers even go on to say that all those concerned with only the bodily and external movements of material energy are in ignorance and worshipping nescience. This does not mean that one should not be materially advanced in education and technology but one should at the same time strive for a balance between the materialistic conceptions and the value-based social order. But the state of affairs in the present age is in a dangerous position finding no balance and arrangement for the advancement of an ethical and value-based education and so is the society. Hence, there are much concerns of an evolving future society.

At present, what then should be the course of action of the scientists? The scientists now should bear in mind of the possible disruptions, distractions and damages that may be caused directly or indirectly before going on for a particular scientific venture. They should have a clear vision of the outcome, both positive and negative, of given invention whatsoever. Had Einstein been in a clear vision of the destructive elements inherent in the nuclear power, he would have not put before the world the mass-energy conversion relation. But unfortunately to his dismay his idea is used to terrorise the human society. The blowing of Hiroshima and Nagasaki to ashes in seconds greatly disheartened him. The torments and disasters that resulted have not made the human society to do away with these destructive nuclear weapons. Rather, these are taken as the symbols of power and strength. Does this rate the society as developed and civilised? When the intent of barbarianism lies in the very nature of nuclearisation aimed against our own human civilisation, we are not moving forward for a peaceful and harmonious co-existence. Strictly speaking, at present probably we are missing the elements of realisation of an ethical social order. In the days to come, not far away, the relevance of the teachings of Gandhiji and Lord Buddha will be more appreciated, understood and importantly put to practice. Well! the changes will not be seen all of a sudden. No doubt, it will take time for the things to materialise for which sincere efforts are greatly needed. Now, the educationists, philosophers and more specifically Educational Philosophers must carve a path that focus on how the scientists should concentrate on all that is supportive of human race and civilisation and also ensure that no scientific method, whatsoever, contradicts Nature. Though science has celebrated innumerable moments of glory and many such moments have really enriched the human culture and civilization, but unknowingly, it has sown the seeds of its own fall. Any sprouting of these seeds is dangerous. Like light and darkness are counterparts of one another, the good and evil are necessarily connected in any evolutionary process. Every evolution of good, say for example, a scientific invention is followed by some disorder and evil, the intensity varies with time, place and circumstance. The evolution of all that is good is always welcome, but for the necessary concomitants of evil that it implies in the evolutionary order. The various inventions and discoveries in science though have to a large extent made the life easier and comfortable but at the same time some have attempted to use them for their own sake and to the disadvantage of the human race and society in general. It is these elements of discord, disharmony and evil that every advancement involves that needs a check in a true sprit. So then what needs to be done? Like the mode of liberation in Jainism wherein it is conceived that one can attain liberation only when the association

of karma with the soul is completely destroyed; and that can be achieved in two stages. Firstly, in samvara the association of karmic particles with the soul is stopped, and secondly, in nirjara the karmic particles already in association with the soul are completely destroyed. The Educational Philosophers as path-finders should at first suggest ways as to how the scientists be made conscious of their limits, and secondly, lay guidelines for reconciling all the damage that has already been done from the platform of science. Now the question is how far the calling of educationists and philosophers for certain fundamental changes in scientific inquiry and methodology actually materializes. To mould the scientists, the approach they adopt should be liberal but still an effective one. For the present and future students, a proper and befitting Educational Philosophy be made compulsory as a subject that should be normative in the true sense of the term. That is, the teaching, training or guidance in academic institution should aim not only at gathering knowledge from the information that is available from the course curriculum but also stress on the development of basic values that effectively convert knowledge to wisdom. It is only then a person whether he is a scientist, or a psychiatrist or any other specialist, would carry on his duty without much hazard to human society and infringement of human values.

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GENDER DISPARITY AND GENERATION GAP TOWARDS MODERNITY

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Sonia Chahal

INTRODUCTION

Modernisation is a process by which individual changes from a traditional way of life to a more complex technologically advanced and faster style of life. When modernization takes root in a society, it not only affects the structure of that society but also the values and attitudes that are held by members of that society. Thus, modernization is a psychological concept. Modernity is a psychological maturity which includes attitudes towards different aspects of society, nature and man. Modernization helps in the evolution of those forces and institutions which over throw the old structure or renovate it gradually. All over the world, societies registered change in different degrees. Thus, the general process of modernization is conceived of a transition from traditional to modernized societies. A number of studies have been conducted by Fieldman (1975), Sharma (1979), and Jindal (1984) on study of modernity in one way or the other. The present study is an attempt to know the gender differences and generation gap with respect to their attitude towards modernity. Thus, the following objectives were framed.

OBJECTIVES

1. To study the attitude of boys and girls towards modernity.
2. To find out the difference in the attitude of fathers and their sons towards modernity.
3. To reveal the differences in the attitude of mothers and their daughters towards modernity.
4. To explore the differences in the attitude towards modernity of the subjects belonging to rural and urban areas.

HYPOTHESES

In light of the objectives of the study following hypotheses were framed.

1. There is no significant difference in the attitude of boys and girls towards modernity.
2. No significant difference exist in the attitude of fathers and their sons towards modernity.
3. There is no significant difference in the attitude of mothers and their daughters towards modernity.
4. No significant difference exist in the attitude of rural, and urban boys and girls towards modernity.
5. There is no significant difference in the attitude of rural and urban fathers and their sons towards modernity.
6. No significant difference exist in the attitude of rural and urban mothers and their daughters towards modernity.

METHODOLOGY

Sampling

The study was conducted on a total sample of 200 subjects. 100 parents and their 100 children constituted the sample of the study. The sample was further divided into 50 mothers and 50 fathers, 50 sons and 50 daughters. The boys and girls were in the age group of 16-19 years residing in both rural and urban areas of Patiala district.

Tools

To study the attitude towards modernity of the subjects, a modernization scale by Singh and Tripathi (1987) was used. The test consisted of 32 reliable and valid items.

RESULTS

Table 1
Attitude Towards Modernity of Boys & Girls

	Boys	Girls	t	Level of Significance
Mean	139.2	137.8	0.37	P > .05
S.D*	19.57	18.032		
$S.E_M$	2.67	2.550		
N	50	50		

The results in the above table no. 1 reveal that when boys and girls were compared on the attitude towards modernization scale, the mean difference was found to be 1.4. Therefore the value of T for the impact of attitude towards modernization in relation to sex has been found to be 0.37 (P>0.55). This shows that boys and girls do not differ significantly from each other as far attitude towards modernity is concerned.

Table 2
Attitude Towards Modernity of Fathers Vs Sons

	Fathers	Sons	t	Level of Significance
Mean	131.4	139.2	1.65	P > .05
S.D	27.05	19.580		
$S.E_M$	3.826	2.76		
N	50	50		

Table 2 reveals that the mean score of the fathers has been found to be 131.4 and the mean score of sons has been found to be 139.2. Computed value of t is 1.65 which is insignificant at 0.05 level (P>0.05). Hence, there is no difference in the attitude towards modernity of fathers and their sons.

Table 3
Attitude Towards Modernity of Mothers Vs Daughters

	Fathers	**Sons**	**t**	**Level of Significance**
Mean	133.8	137.8	1.050	P>.05
S.D	19.989	18.032		
	2.827	2.550		
N	50	50		

The results presented in table 3 show that mean score of mothers has been found to be 133.8 and the mean scores of daughters has been found to be 137.8. It indicates that the attitude towards modernity is higher in case of daughters in comparison to mothers but the computed value of t is 1.050 which is insignificant at 0.05 level (P>0.05). Hence there is no significant difference between mothers and their daughters as far their attitude towards modernity is concerned.

Table 4
Attitude Towards Modernity of Rural and Urban Boys Vs Rural and Urban Girls

		Boys	**Girls**	**t**	**Level of Significance**
Rural	Mean	139	135	0.83	P>.05
	S.D	12.32	20.59		
	$S.E_M$	2.464	4.118		
	N	25	25		
Urban	Mean	139.6	139	0.118	P>.05
	S.D	20.42	14.96		
		4.08	2.992		
	N	25	25		

Table 4 reveals that the mean score of rural boys has been found to be 139 and the mean score of the rural girls has been found to be 135. Computed value of t is 0.83 which is insignificant at 0.05 level (P>0.05). Similarly for urban boys, the mean score has been lound to be 139.6 and the mean score of urban girls has been found to be 139. The computed value of t is 0.118 which is also insignificant at 0.05 level (P>0.05). Thus, no significant differences in attitude towards modernity of rural and urban boys and girls has been found. Sharma (1979) found that attitudes towards modernsation (fid not differ amongst students with urban and rural background.

Table 5
Attitude Towards Modernity of *Rural* and Urban Fathers Vs their SOns

		Fathers	Sons	t	Level of Significance
Rural	Mean	129.2	139	25	P>.05
	S.D	15.47	12.32		
		3.094	2.464		
	N	25	25		
Urban	Mean	128.6	139.6	1.453	P>.05
	S.D	31.87	20.42		
		6.374	4.08		
	N	25	25		

The table no.5 shows that mean score of the rural fathers has been found to be 129.2 and the mean score of their sons has been found to be 139. Computed value of t is 2.5 which is significant at 0.05 level (P<0.05). Similarly the mean score of the urban fathers has been found to be 128.6 and the mean scores of their sons has been found to be 139.6. Computed value of t is 1.453 which is insignificant at 0.05 ievel (P<0.05). Thus no significant differences in attitude towards modernity of rural and urban fathers and their sons have been found.

Table 6
Attitude Towards Modernity of Rural and Urban Mothers Vs their Daughters

		Mothers	Daughters	t	Level of Significance
Rural	Mean	126.2	135	1.78	P>.05
	S.D	18.35	20.59		
	$S.E._M$	3.67	4.118		
	N	25	25		
Urban	Mean	142.2	139	0.68	P>.05
	S.D	17.78	14.96		
		3.55	2.992		
	N	25	25		

The results in the table 6 show that mean score of the rural mothers has been found to be 126.2 and the mean score of their daughters has been found to be 135. The computed value of t is 1.78 which is insignificant at 0.05 level (P>0.05). Similarly the mean score of the urban mothers has been found to be 142.2 and the mean score of

their daughters has been found to be 139. The computed value of t is 0.68 which is insignificant at 0.05 level (P>0.05). Hence no significant difference in attitude towards modernity of rural and urban mothers and their daughters has been found.

CONCLUSION

The results of the present study revealed that rural and urban boys and girls, urban fathers and their sons, rural and urban mothers and their daughters did not differ on their attitude towards modernity. The possible reasons could be that they are under the strong influence of the mass media. Their exposure towards the technical advancements and the effect of societal changes are also same. In the present fast moving society, the interaction of parents has increased with their wards. Parents are much conscious about their Career building and their growth and development. They solve their problems like friends. Thus age gap do not make any significant influence on their thinking towards modernization. The results have also explored that there is significant difference between rural fathers and their sons in relation to their attitude towards modernization, though it is being felt that rural areas are also growing fast and people are accepting the changes in the society. But change in the interaction of rural fathers and their sons might be laging behind resulting in the difference in their attitude towards modernization.

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HOW CHILDREN LEARN

Stella Vosniadou

INTRODUCTION

The psychological principles described in this booklet summarize some of the important results of recent research on learning that is relevant for education. They attempt to ntegrate research coming from diverse areas of psychology, including educational, cevelopmental, cognitive, social and clinical psychology. This research has offered us new insights into the learning process and the development of knowledge in many subject-matter areas. As a result, curricula and instruction are changing in schools today. They are attempting **to** become more student centred than teacher-centred, to connect the school to real-life situations, and to focus on understanding and thinking rather than on memorization, drill and practice. Although each principle is explained on its own, all twelve principles are best understood as an organized whole with one supporting the others. As a whole, these principles are meant to provide a comprehensive framework for the design of curricula and of instruction. Indeed, they are found behind a number of innovative programmes in schools across the world today. We begin with a discussion of three principles that are widely recognized as forming the basis on which teachers should design the learning environments of today's schools; namely, learning environments that encourage students to be active learners, to collaborate with other students, and to use meaningful tasks and authentic materials. We continue with seven principles that focus on cognitive factors that are primarily internal, but also interact with environmental factors in important ways. Teachers need to take these principles into consideration in order to design more effective curricula and instruction. We end with a discussion of developmental and individual differences, and with motivational influences on learning. These last two areas are very important for learning and instruction, and—to be treated adequately—deserve to become independent booklets. We have **not** dealt with a subject that is becoming very important in the schools of today—**the** use of information and communication technology to support learning. We have **not** done so because this area is too vast and we believe that a special booklet needs **to be** devoted **to** it. In discussing each principle, we start by presenting a summary of **the** research findings and then continue describing the implications for teaching that follow from them. At the end of the booklet there is a list of references and suggested readings that provide further information on the principles that have been discussed.

1. ACTIVE INVOLVEMENT

Research **findings**

Learning at school requires students to pay attention, to observe, to memorize, to understand, to set goals and **to** assume responsibility for their own learning. These cognitive activities are not possible without the active involvement and engagement of

the learner. Teachers must help students to become active and goal oriented by building on their natural desire to explore, to understand new things and to master them.

In the classroom

It is a challenge for teachers to create interesting and challenging learning environments that encourage the active involvement of students. The following are some suggestions as to how this can be done:

- Avoid situations where the students are passive listeners for long periods of time.
- Provide students with hands-on activities, such as experiments, observations, projects, etc.
- Encourage participation in classroom discussions and other collaborative activities.
- Organize school visits to museums and technological parks.
- Allow students to take some control over their own learning. Taking control over one's learning means allowing students to make some decisions about what to learn and how.
- Assist students in creating learning goals that are consistent with their interests and future aspirations.

References: Elmore, Peterson & McCarthy, 1996; Piaget, 1978; Scardamalia & Bereiter, 1991.

2. SOCIAL PARTICIPATION

For many researchers, social participation is the main activity through which learning occurs. Social activity and participation begin early on. Parents interact with their children and through these interactions children acquire the behaviours that enable them to become effective members of society. According to the psychologist Lev Vygotsky, the way children learn is by internalizing the activities, habits, vocabulary and ideas of the members of the community in which they grow up. The establishment of a fruitful collaborative and co-operative atmosphere is an essential part of school learning. Research has shown that social collaboration can boost student achievement, provided that the kinds of interactions that are encouraged contribute to learning. Finally, social activities are interesting in their own right and help to keep students involved in their academic work. Students work harder to improve the quality of their products (essays, projects, artwork, etc.) when they know that they will be shared with other students.

In the classroom

Teachers can do many things to encourage social participation in ways that facilitate learning:

- They can assign students to work in groups and assume the role of a coach/co-ordinator who provides guidance and support to the groups.
- They can create a classroom environment that includes group work spaces where resources are shared.
- Through modelling and coaching, they can teach students how to co-operate with each other.

- They can create circumstances for students to interact with each other, to express their opinions and to evaluate other students' arguments.
- An important aspect of *soc\a* learning is to link the school to the community at large. In this way. stuaents' opportunities for social participation are enlarged.

References: Brown et al., 1996; Collins, Brown & Newman, 1989; Rogoff, 1990; Vygotsky, 1978.

3. MEANINGFUL ACTIVITIES

Research findings

Many school activities are not meaningful *since students* understand neither why they are doing them nor what their purpose and usefulness is. Sometimes school activities are not meaningful because they are not culturally appropriate. Many schools are communities where children from diverse cultures learn together. There are systematic cultural differences in practices, in habits, in social roles, etc., that influence learning. Sometimes meaningful activities for students coming from one cultural group are not meaningful to students who are coming from another cultural group.

In the classroom

Teachers can make classroom activities more meaningful by situating them in an authentic context. An example of an authentic context is one in which the activity is typically used *In real* life. For example, students can improve their oral language and communication skills by participating in debates. They can improve their writing skills by being involved in the preparation of a classroom newspaper. Students can learn science by participating in a community or school environmental project. The school can be in contact with local scientists and invite them to lecture, or allow the students to visit their laboratories. It is also important for teachers to be aware of the cultural differences of the children in their classroom and to respect these differences. They must see them as strengths to build on, rather than as defects. Children will feel differently in the classroom if their culture is reflected in the common activities. School routines that are unfamiliar to some children can be introduced gradually so that the transition can be less traumatic for ethnically diverse groups.

References: Brown, Collins & Duguid, 1989; Heath, 1983.

4. RELATING NEW INFORMATION TO PRIOR KNOWLEDGE

Research findings

The idea that people's ability to learn something new follows from what they already know is not new, but more recent research findings have shown that the ability to relate new information to *prior* knowledge is *critical tor* learning. It is not possible for someone to understand, remember or learn something that is completely unfamiliar. Some prior knowledge is necessary to understand the task at hand. But having the prerequisite prior knowledge is still not sufficient to ensure adequate results. People must activate their prior knowledge in order to be able to use it for understanding and for learning. Research shows that students do not consistently see the relationships between new material that they read and what they already know. Research also

shows that learning is enhanced when teachers pay close attention to the prior knowledge of the learner and use this knowledge as the starting point for instruction.

In the classroom

Teachers can help students activate prior knowledge and use it for the task at hand. This can be done in a number of ways.

• Teachers can discuss the content of a lesson before starting in order to ensure that the students have the necessary prior knowledge and in order to activate this knowledge.

• Often students' prior knowledge is incomplete or there are false beliefs and critical misconceptions. Teachers do not simply need to know that students know something about the topic to be introduced. They need to investigate students' prior knowledge in detail so that false beliefs and misconceptions can be identified.

• Teachers may need to go back to cover important prerequisite material or ask the students to do some preparatory work on their own.

• Teachers can ask the kind of question that helps students see relationships between what they are reading and what they already know.

• Effective teachers can help students to grasp relationships and make connections. They can do so by providing a model or a scaffold that students can use as support in their efforts to improve their performance.

References: Bransford, 1979; Bransford, Brown & Cocking, 1999.

5. BEING STRATEGIC

Research findings

Children develop strategies to help themselves solve problems from an early age. For example, when pre-school children are told to go to the supermarket to buy a list of food items, they often repeat the items on their way to remember them better. These children have discovered rehearsal as a strategy to improve their memory without anybody telling them to do so. When they go to school, children need help from teachers to develop appropriate strategies for solving mathematics problems, when understanding texts, doing science, learning from other students, etc. Research shows that when teachers make systematic attempts to teach learning strategies to students substantial gains can result. Strategies are important because they help students understand and solve problems in ways that are appropriate for the situation at hand. Strategies can improve learning and make it faster. Strategies may differ in their accuracy, in their difficulty of execution, in their processing demands and in the range of problems to which they apply. The broader the range of strategies that children can use appropriately, the more successful they can be in problem solving, in reading, in text comprehension and in memorizing.

In **the** classroom

Teachers must recognize the importance of students knowing and using a variety of strategies. The teaching of strategies can be done directly or indirectly. In the latter case, the teacher can give students a task and provide a model of the inquiry process or ask key questions. For example, in reading, teachers can explicitly show students how to outline the important points in a text and how to summarize them. Alternatively,

they can ask a group of students to discuss a text and summarize it. They can help in this process by participating in the discussion and by asking critical questions. In science, teachers can show students how to conduct experiments: how to form hypotheses, how to keep a systematic record of their findings, and how to evaluate them. It is important to ensure that students learn to use these strategies on their own and do not always rely on teachers to provide the necessary support. Teachers need to gradually fade their assistance and allow students to take greater responsibility for their learning.

References: Mayer, 1987; Palincsar & Brown, 1984; White & Frederickson, 1998.

6. ENGAGING IN SELF-REGULATION AND BEING REFLECTIVE

Research findings

The term 'self-regulation' is used here to indicate students' ability to monitor their own learning, to understand when they are making errors, and to know how to correct them. Self regulation is not the same as being strategic. People can use strategies for learning mechanically without being fully aware of what they are doing. Self-regulation involves the development of specific strategies that help learners evaluate their learning, check their understanding and correct errors when appropriate. Self-regulation requires reflection in the sense of being aware of one's own beliefs and strategies. Reflection can develop through discussion, debates and essays, where children are encouraged to express their opinions and defend them. Another important aspect of reflection is being able to distinguish appearance from reality, common beliefs from scientific knowledge, etc.

In the classroom

Teachers can help students become self-regulated and reflective by providing opportunities:

- To plan how to solve problems, design experiments and read books;
- To evaluate the statements, arguments, solutions to problems of others, as well as of one's self;
- To check their thinking and ask themselves questions about their understanding— (Why am I doing what I am doing? How well am I doing? What remains to be done?);
- To develop realistic knowledge of themselves as learners— (I am good in reading, but need to work on my mathematics);
- To set their own learning goals;
- To know what are the most effective strategies to use and when to use them.

References: Brown, 1975; Boekaerts, Pintrich & Zeidner, 2000; Marton & Booth, 1997.

7. RESTRUCTURING PRIOR KNOWLEDGE

Research findings

Sometimes existing knowledge can stand in the way of understanding new information. While this is often the case in the learning of science and mathematics, it can apply to all subject matter areas. It happens because our current understanding of the physical and social world, of history, of theorizing about numbers, etc., is the product of thousands of years of cultural activity that has radically changed intuitive ways of explaining

phenomena. For example, in the area of mathematics, many children make mistakes when they use fractions because they use rules that apply to natural numbers only. Similarly, in the physical sciences, students form various misconceptions. The idea that the Earth is round like a pancake or like a sphere flattened on the top happens because it reconciles the scientific information that the Earth is round, with the intuitive belief that it is flat and that people live upon its top. Such misconceptions do not apply only in young children. They are common in high school and college students as well.

In the classroom

What can teachers do to facilitate the understanding of counter intuitive information?

• Teachers need to be aware that students have prior beliefs and incomplete understandings that can conflict with what is being taught at school.

• It is important to create the circumstances where alternative beliefs and explanations can be externalized and expressed.

• Teachers need to build on the existing ideas of students and slowly lead them to more mature understandings. Ignoring prior beliefs can lead to the formation of misconceptions.

• Students must be provided with observations and experiments that have the potential of showing to them that some of their beliefs can be wrong. Examples from the history of science can be used for this purpose.

• Scientific explanations must be presented with clarity and, when possible, exemplified with models.

• Students must be given enough time to restructure their prior conceptions. In order to do this, it is better to design curricula that deal with fewer topics in greater depth than attempting to cover a great deal of topics in a superficial manner.

References: Carretero & Vdss, 1994; Driver, Guesne & Tiberghien, 1985; Schnotz, Vosniadou & Carretero, 1999; Vosniadou & Brewer, 1992.

8. **AIMING TOWARDS UNDERSTANDING RATHER THAN MEMORIZATION**

Research findings

AH teachers want their students to understand what they are learning and not to memorize facts in a superficial way. Research shows that when information is superficially memorized it is easily forgotten. On the contrary, when something is understood, it is not forgotten easily and it can be transferred to other situations (see also the next principle on transfer). In order to understand what they are being taught, students must be given the opportunity to think about what they are doing, to talk about it with other students and with teachers, to clarify it and to understand how it applies in many situations.

In the classroom

How does one teach for understanding? The following are some tasks teachers can carry out in order to promote understanding of the material that has been taught:

• Ask students to explain a phenomenon or a concept in their own words.

• Show students how to provide examples that illustrate how a principle applies or how a law works.

• Students must be able to solve characteristic problems in the subject-matter area. Problems can increase in difficulty as students acquire greater expertise.
• When students understand the material, they can see similarities and differences, they can compare and contrast, and they can understand and generate analogies.
• Teach students how to abstract general principles from specific cases and generalize from specific examples.

References: Halpern, 1992; Resnick & Klopfer, 1989; Perkins, 1992.

9. HELPING STUDENTS LEARN TO TRANSFER

Research findings

Students often cannot apply what they have learned at school to solve real-world problems. For example, they may learn about Newton's laws at school but fail to see how they apply in real life situations. Transfer is very important. Why should someone want to go to school if what is learned there does not transfer to other situations and cannot be used outside the school?

in the **classroom**

Teachers can improve students' ability to transfer what they have learned at school by:
• Insisting on mastery of subject matter. Without an adequate degree of understanding, transfer cannot take place (see previous principle).
• Helping students see the transfer implications of the information they have learned.
• Applying what has been learned in one subject-matter area to other areas to which it may be related.
• Showing students how to abstract general principles from concrete examples.
• Helping students learn how to monitor their learning and how to seek and use feedback about their progress.
• Teach for understanding rather than for memorization (see previous principle).

References: Bruer, 1993; Bransford, Brown & Cocking, 1999; Bereiter, 1997.

10. TAKING TIME TO PRACTICE

Research findings

Research shows that people must carry out a great deal of practice to acquire expertise in an area. Even small differences in the amount of time during which people are exposed to information can result in large differences in the information they have acquired. Cognitive psychologists, Chase & Simon (1973) studied chess experts and found that they had often spent as many as 50,000 hours practising chess. A 35-year-old chess master who has spent 50,000 hours playing chess must have spent four to five hours on the chessboard from the age of 5 every day for thirty years! Less accomplished players have spent considerably less time playing chess. Research shows that the reading and writing skills of high school students relate to the hours they have spent on reading and writing. Effective reading and writing requires a lot of practice. Students from disadvantaged environments who have less opportunities to learn and who miss school because of work or illness will not be expected to do as

well at school compared to children who had more time to practice and acquire information.

In the classroom

Many educational programmes are designed to increase one's exposure to learning situations preferably at an early age. Here are some recommendations for teachers that can help students spend more time on learning tasks.

• Increase the amount of time students spend on learning in the classroom.
• Give students learning tasks that are consistent with what they already know.
• Do not try to cover too many topics at once. Give students time to understand the new information. •
• Help students engage in 'deliberate practice' that includes active thinking and monitoring of their own learning (see sections on self-regulation).
• Give students access to books so that they can practice reading at home.
• Be in contact with parents so that they can learn to provide richer educational experiences for their children.

References: Bransford, 1979; Chase & Simon, 1973; Coles, 1970.

11. DEVELOPMENTAL AND INDIVIDUAL DIFFERENCES

Research findings

Research shows that there are major developmental differences in learning. As children develop, they form new ways of representing the world and they also change the processes and strategies they use to manipulate these representations. In addition, here are important individual differences in learning. Developmental psychologist Howard Gardner has argued that there are many dimensions of human intelligence other than the logical and linguistic skills that are usually valued in most school environments. Some children are gifted in music, others have exceptional spatial skills (required, for example, by architects and artists), or bodily/kinesthetic abilities (required by athletes), or abilities to relate to other people, etc. Schools must create the best environment for the development of children taking into consideration such individual differences.

In the classroom

The following are recommendations for creating the best environment for the development of children, while recognizing their individual differences:

• Learn how to assess children's knowledge, strategies and modes of learning adequately.
• Introduce children to a wide range of materials, activities and learning tasks that include language, mathematics, natural sciences, social sciences, art, music, movement, social understanding, etc.
• Identify students' areas of strength, paying particular attention to the interest, persistence and confidence they demonstrate in different kinds of activities.
• Support students' areas of strength and utilize these areas to improve overall academic performance.
• Guide and challenge students' thinking and learning.

• Ask children thought-provoking questions and give them problems to solve. Urge children to test hypotheses in a variety of ways.
• Create connections to the real world by introducing problems and materials drawn from everyday situations.
• Show children how they can use their unique profiles of intelligence to solve real-world problems.
• Create circumstances for students to interact with people in the community, and particularly with adults who are knowledgeable and enthusiastic about the kinds of things that are of interest to the students.

References: Case, 1978; Chen et al., 1998; Gardner, 1991; Gardner, 1993.

12. CREATING MOTIVATED LEARNERS

Research findings

Motivated learners are easy to recognize because they have a passion for achieving their goals and are ready to expend a great deal of effort. They also show considerable determination and persistence. This influences the amount and quality of what is learned. All teachers want to have motivated learners in their classrooms. How can they achieve this? Psychologists distinguish between two kinds of motivation: extrinsic motivation and intrinsic motivation. Extrinsic motivation results when positive rewards are used to increase the frequency of a target behaviour. Praise, high grades, awards, money and food can be used for that effect. Intrinsic motivation is when learners actively participate in activities without having to be rewarded for it. The child who likes to put together puzzles for the fun of it is intrinsically motivated. An important characteristic of intrinsically motivated learners is their belief that effort is important for success. Teachers can influence students' determination to achieve by their behaviour and the statements they make.

In the classroom

Teachers must use encouraging statements that reflect an honest evaluation of learner performance:
• Recognize student accomplishments.
• Attribute student achievement to internal and not external factors (e.g. 'You have good ideas').
• Help students believe in themselves (e.g. 'You are putting a lot of effort on math and your grades have much improved').
• Provide feedback to children about the strategies they use and instruction as to how to improve them.
• Help learners set realistic goals. It is also important to:
• Refrain from grouping students according to their ability. Ability grouping gives the message that ability is valued more than effort.
• Promote co-operation rather than competition. Research suggests that competitive arrangements that encourage students to work alone to achieve high grades and rewards tend to give the message that what is valued is ability and diminish intrinsic motivation.

• Provide novel and interesting tasks that challenge learners' curiosity and higher-order thinking skills at the appropriate level of difficulty.

References: Deci & Ryan, 1985; Dweck, 1989; Lepper & Hodell, 1989; Spaulding, 1992.

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