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The purpose is to provide a forum for teachers, teacher-educators, educational administrators and research workers; to encourage original and critical thinking in education through presentation of novel ideas, critical appraisals of contemporary educational problems and views and experiences on improved educational practices. The contents include thought-provoking articles by distinguished educationists, challenging discussions, analysis of educational issues and problems, book reviews and other features.

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# JOURNAL OF INDIAN EDUCATION

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## EDITOR'S NOTE

A teacher is expected to play multifarious roles in the society. Earlier, people used to see a teacher as a guide, friend and philosopher. However, presently, in the constructivist paradigm, school education is expecting the teachers to facilitate student's learning rather than acting as a person who delivers information. A teacher needs to prepare his/her students to become role models for the society. Expectations from teachers can be realised only if we prepare teachers to understand children within their socio-cultural contexts and to provide opportunities to students to question their own beliefs without being judgemental.

The present issue of the *Journal of Indian Education* includes articles related to various aspects of teacher education viz., effective teaching methods and approaches in teaching, etc. Sound content knowledge and teaching skills are the key factors which make teaching effective. Articles by Rashida Kapadia and Ramakant Mohalik focus on this aspect. Kanak Sharma describes the importance and significance of concept mapping method over conventional teaching method in learning Organic Chemistry by the students of the higher secondary level.

Highlighting the role of play and play way method at the elementary level, Rajani M. Konantambigi reports that play way method as a teaching strategy is still not operational in majority of primary schools in Maharashtra. The importance of developing and bringing out innovative assessment practices at higher secondary stage is advocated by Jayalekshmi S. and Celine Pereira.

This issue includes an article by Zoya Hasan which examines multiple perspectives of Indian Democracy and how it responds to the challenges of inequalities. Research paper by Narendra Kumar and Rajive Kumar presents the relationship between psychological stress and achievement of science students of Jawahar Navodaya Vidyalayas. Whereas Messeret Assefa's paper found class size and lecture-centered method as major factors affecting academic achievements of students at the secondary schools in Ethiopia. Another article by Pankaj Das explores the nature and effects of school absenteeism as an obstacle in the educational development of children at the primary and upper primary level in rural parts of India.

Virendra Pratap Singh in his paper presents an analytical overview of schooling facilities at the secondary stage in India. This study depicts the comparative picture of schooling facilities based on the sixth and seventh All India School Education Surveys.

The issue concludes with a review by Abhishek Singh of the book *Right to Education and Revitalising Education* written by J.C. Aggarwal and S. Gupta. Journal of Indian Education welcomes feedback and suggestions from readers and contributors.

*Academic Editor*



# Metacognition in Relation to Teacher Competencies as Perceived by Students of Different School Types

RASHIDA KAPADIA\*\*

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## Abstract

*This work is aimed at studying and comparing metacognition and perceived teacher competency of secondary school students. Data was collected from Class IX students of different school types i.e., SSC, ICSE and CBSE schools across Greater Mumbai. Results show that students of all the school types, SSC, ICSE and CBSE, consider that their teachers are equally competent. They consider their teachers to possess social, technical as well as affective competencies. Analysis was done for total and component-wise scores for metacognition and perceived teacher competency. A significant, direct, positive correlation was found between total metacognition and total teacher competency scores. Component-wise analysis revealed technical competency component of teacher competency to be a strong and significant predictor of all the components of metacognition for total sample and for SSC and ICSE students. This indicates that the teachers' communication skill, evaluation ability, classroom management, mastery over content and ability to organise information is related to metacognition of students. The need for competent teachers for supporting student's metacognition is endorsed.*

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## Introduction

The role of teacher in the teaching-learning process can be understood well through the following quote by Immanuel Kant in his famous *Pedagogy* which highlights the importance of

good teachers as, 'Man can become man only by education. He is nothing but what education makes him. It is to be noted that man is educated only by men who have themselves been educated. Hence lack of discipline and

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instruction on the part of some men makes them in turn bad educators of their pupils'. Teachers are expected to play the role of agents of social change and modernisation. The teacher of the future is expected to perform the roles of planned organiser of curricula, innovator of educational ideas, practices and systems. The role of teacher would have to be shaped in the light of the changing demands on the school. Since school learning takes place in a social context, teachers must obviously be concerned with group and social factors that impinge on the learning process. Presently, learning to live together is one of the four pillars which UNESCO wants the various countries of the world to build their edifice of education on. Teachers need to understand the concept and be aware of the various techniques and strategies that would help children develop collaboration and synergy and through them tolerance. Anderson and Ching (1987) suggest that a teacher education programme should be based on the three goals of teacher knowledge, teaching skills (both pedagogical and interpersonal) and teacher feelings and self-awareness. Thus, imply the presence of social, technical and affective competencies in teachers as a necessary tool for student development.

While discussing the aims of education, the national focus group constituted by NCERT recommends, "It is very important that school teaching and learning takes place in an environment that is aesthetically pleasing. It is also essential that children take an active part in

creating such an environment for themselves". While Piaget stresses on children constructing knowledge by transforming, organising and reorganising previous knowledge. Vygotsky's emphasis is on knowledge construction through social interaction with others. Education thus increases skill or acquisition of knowledge and understanding as a result of training, study of experiences. To this end a large part of educational endeavour involves teaching general skills and strategies that can be applied to a variety of problems and learning situations. Put differently, strategy instruction should include a metacognitive component. Metacognition, thus, broadly defined is knowledge that a person has of his own cognitive processes (Husen and Postlethwaite (Eds.), 1985). Metacognition can be defined as the conscious awareness of one's own cognition and the conscious control of one's own learning (El-Koumy, 2004). Metacognition plays an important role in communication, reading comprehension, language acquisition, social cognition, attention, self-control, memory, self-instruction, writing, problem-solving, and personality development (Flavell, 1979).

### **Need of Study**

It is evident from the report of the *National Curriculum Framework* of 2005 that education is in a state of flux. The goals of school education have been steadily changing with changing times. In an era where the focus of education is preparing global students, it is unfortunate that our classroom practices have remained

as traditional as ever. This requires to be changed. Teachers should focus on student's development and understanding of their own thought process. In the past few decades in India, research on teaching focused on teacher or the students. In recent years, there is a shift in the focus to the process of interaction (instruction or learning). The cognitive processes are emphasised through multi-way interaction of content, teacher, students and teaching-learning material and teaching competency. The ability to think or the cognition domain has been focused upon regularly. While, the ability to regulate one's own thinking and be able to self assess the extent and utilisation of one's own cognitive abilities, would possibly inculcate lifelong learning among the students. It is also suggested under the principles that form the basis of brain-compatible teaching by Caine and Caine (1991), that Learning always involves conscious and unconscious processes i.e., students need time to process 'how' as well as 'what' they've learned. In other words, students need to be aware of their own thought process. Teachers need to inculcate in their students self-regulation skills and thereby make them help themselves. Review of related literature showed that students with high achievement were more aware of their learning and thinking processes. Metacognitive awareness, therefore, serves a regulatory function and is essential to effective learning because it allows students to regulate numerous cognitive skills. Thus, it can be conclusively said that metacognition

is important for the development of lifelong learners. An important factor that can bring about this change in the student is his teacher. A student interacts with the teacher as a person and not someone who is just efficacious or well behaved in class. The teacher has an overall influence on the student, including her interaction even after class hours. Competent teacher is thus necessitated. A need for wholesome understanding prompted the inclusion of social, technical and affective competencies of a teacher in the present research.

#### **Aims of the Study**

1. To study and compare metacognition and perceived teacher competency of secondary school students on the basis of their school types.
2. To ascertain the relationship between metacognition and perceived teacher competency of secondary school students on the basis of their school types.

#### **Design of the Study**

The descriptive method was used for the study and comparisons were made between the school types (SSC, ICSE and CBSE) and correlations ascertained. Data was collected from 920 Class IX students from all three types of schools situated in the Greater Mumbai region. Due representation to type of schools was given through stratified sampling technique.

#### **Tools Used**

The Inventory of Metacognitive Self-Regulation (IMSR) by Howard et al.

(2000) to measure metacognition for 12-18 year olds was used. The IMSR, a 32 item self-report inventory, measure five factors related to metacognitive skills in the context of problem-solving: knowledge of cognition, objectivity, problem representation, subtask monitoring and evaluation. The IMSR uses a five-point Likert scale. The IMSR has been normed with this age group (9th graders) and there is published reliability and validity data to support it. A self prepared teacher competency tool including 54 items; on technical competency, on social competency and on affective competency was used. This tool also included 5 point response scale ranging from never to always (Kapadia, 2009).

### Results after Analysis

Differences between means were calculated using the t-test and ANOVA; correlation between variables through simple correlation coefficient ( $r$ ) and multiple regression analysis ( $R$ ); and standard error of difference between Fishers'  $Z$  were ascertained. The analysis of the study is reported under three headings:

#### 1. Difference in Metacognition on the basis of school types

No significant difference for the total metacognition scores between SSC, ICSE and CBSE students was obtained. This indicates that total metacognition of students studying in SSC, ICSE and CBSE schools do not differ. Metacognition is thus an all-pervasive ability. This shows that students belonging to different school types possess metacognition to the same extent.

However a significant difference was seen when the scores of SSC, ICSE and CBSE students were tested component-wise for metacognition. This indicates that SSC, ICSE and CBSE students significantly differ in their knowledge of cognition ( $F=3.46$ ,  $p=0.03$ ), objectivity ( $F=6.43$ ,  $p=0.00$ ), problem representation ( $F=3.29$ ,  $p=0.03$ ) and subtask monitoring ( $F=4.53$ ,  $p=0.01$ ). However they did not differ on the evaluation component of metacognition.

A subsequent t-test and mean scores showed that CBSE students scored better than SSC or ICSE students. In other words, CBSE students surpassed the SSC and ICSE students at objectively thinking about their learning as it proceeds ( $t=2.57$ ,  $p=0.01$ ), understanding the problem fully before proceeding to solve it ( $t=2.57$ ,  $p=0.01$ ) and at monitoring the choice of learning strategies ( $t=2.57$ ,  $p=0.01$ ) and completing each subtask ( $t=2.57$ ,  $p=0.01$ ). It was also clear that ICSE students were better at knowledge of their cognitive abilities than SSC students ( $t=2.57$ ,  $p=0.01$ ), while SSC students were better than ICSE students at objectively thinking about their learning as it proceeds ( $t=2.57$ ,  $p=0.01$ ).

#### 2. Difference in Perceived Teacher Competencies on the Basis of School Types

No significant difference for total as well as component-wise teacher competencies scores for SSC, ICSE and CBSE students was obtained. This indicates that SSC, ICSE and CBSE students do not differ in their perception of total teacher competencies or of components of teacher competencies.

3. Correlation between Metacognition and Perceived Teacher Competencies: is discussed as

- a) Correlation between total metacognition and total teacher competencies scores.
- b) Correlation between total metacognition and components of teacher competencies scores.
- c) Correlation between components of metacognition and components of teacher competencies scores.
- a) Correlation between Total Metacognition and Total Teacher Competencies Scores

A significant, positive, direct and substantial relationship between total metacognition and total teacher competencies scores was obtained for SSC ( $r=0.53$ ,  $p=0.00$ ), ICSE ( $r=0.38$ ,  $p=0.00$ ) and CBSE ( $r=0.29$ ,  $p=0.00$ ) students. A significant difference between the coefficients of correlation of total metacognition and total teacher competencies at 0.01 level was obtained for SSC-CBSE group of students only ( $Z= 2.81$ ). The correlation between total metacognition and total teacher competencies was stronger for SSC students ( $r=0.53$ ) than for CBSE students ( $r=0.29$ ).

Table 1

**Simple Correlation and Multiple Regression Analysis for Correlation between Total Metacognition and Components of Teacher Competencies on the Basis of School Types**

Components of Teacher Competencies	Group	Metacognition	
		<i>r</i>	$\beta$
1. Social Competency	SSC	.474**	.001
	ICSE	.352 **	.017
	CBSE	.210 **	-.263
2. Technical Competency	SSC	.548 **	.457**
	ICSE	.406 **	.369**
	CBSE	.393 **	.692**
3. Affective Competency	SSC	.473 **	.116
	ICSE	.331 **	.028
	CBSE	.220 **	-.108
Multiple Correlation R	SSC		.553**
	ICSE		.406**
	CBSE		.439**
R <sup>2</sup>	SSC		.306
	ICSE		.165
	CBSE		.193

N (SSC) = 433; N (ICSE) = 287; N (CBSE) =200 \*\* Correlation is significant at 0.01 level.

b) Correlation between Total Metacognition and Components of Teacher Competencies Scores

A significant positive, direct and low to substantial correlation between total metacognition and components of perceived teacher competencies was seen for SSC, ICSE and CBSE students (Table 1). Significant multiple correlations (R) for total metacognition and components of perceived teacher competencies for school types was also obtained. This strongly supports the conclusion that all the components of teacher competencies are related to metacognition of students. The standardised regression coefficients ( $\beta$ ) revealed technical competency as the only significant predictor of total metacognition for SSC, ICSE and CBSE students.

A significant difference for correlation coefficients was obtained between total metacognition and all components of teacher competencies for SSC-CBSE group of students (Social competency,  $Z=3.48$ , at 0.01 level; Technical competency,  $Z=2.2$ , at 0.05 level; Affective competency,  $Z=3.47$ , at 0.01 level). A significant difference was also obtained between total metacognition and, technical competency ( $Z=2.35$ , at 0.05 level) and affective competency ( $Z=2.22$ , at 0.05 level) for SSC-ICSE group of students. The coefficients of correlation show that for SSC students there is a stronger correlation between metacognition and components of teacher competencies than for ICSE or CBSE students. The SSC students differ in their correlation with both ICSE and CBSE students.

Table 2  
**Simple Correlation and Multiple Regression Analysis for Correlation between Components of Metacognition and Components of Teacher Competencies on the Basis of School Types**

Components of Metacognition	Group	1 Knowledge of Cognition		2 Objectivity		3 Problem Representation		4 Subtask Monitoring		5 Evaluation	
		r	$\beta$	r	$\beta$	r	$\beta$	r	$\beta$	r	$\beta$
1. Social Competency	SSC	0.33**	.021	0.28**	-.013	0.44**	.071	0.37**	-.010	0.30**	-.047
	ICSE	0.16**	.008	0.24**	.012	0.23**	.030	0.26**	-.064	0.29**	.076
	CBSE	0.22**	-.00	0.02	-.305	0.14*	-.223	0.15*	-.230	0.17*	-.143
2. Technical Competency	SSC	0.37**	.321**	0.35**	.349**	0.48**	.304**	0.44**	.438**	0.34**	.242**
	ICSE	0.17**	.138	0.28**	.265*	0.28**	.330**	0.32**	.332**	0.31**	.212*
	CBSE	0.31**	.426**	0.13	.294*	0.28**	.527**	0.32**	.625**	0.30**	.511**

3. Affective Competency	SSC	0.31**	.052	0.27**	.018	0.44**	.150	0.35**	.018	0.33**	.186*
	ICSE	0.15**	.042	0.23**	.014	0.19**	-.085	0.26**	.055	0.27**	.046
	CBSE	0.19**	-.13	0.09	.112	0.15*	-.076	0.15*	-.148	0.17*	-.113
Multiple Correlation R	SSC		.381**		.351**		.494**		.444**		.364**
	ICSE		.181*		.287**		.293**		.323**		.319**
	CBSE		.326**		.204*		.327**		.377**		.333**
R <sup>2</sup>	SSC		.145		.123		.244		.197		.132
	ICSE		.033		.082		.086		.104		.102
	CBSE		.106		.041		.107		.142		.111

N (SSC) = 433; N (ICSE) = 287; N (CBSE) = 200 \*\*Significant at 0.01 level. \*Significant at 0.05 level

c) Correlation between Components of Metacognition and Components of Teacher Competencies Scores

A significant positive, direct and low to substantial correlation between components of metacognition and components of perceived teacher competencies scores was obtained for SSC, ICSE and CBSE students (Table 2). Significant multiple correlations (R) for components of metacognition and components of perceived teacher competencies for school types was also obtained. This

strongly supports the conclusion that all the components of metacognition are related to components of teacher competencies. The standardised regression coefficients ( $\beta$ ) revealed only technical competency as the significant and strong predictor of every component of metacognition for school types. Interestingly results revealed that for component of objectivity, affective competency emerges as a significant predictor along with technical competency for SSC students.

Table 3

**Difference between Coefficients of Correlation for the Components of Metacognition and Components of Teacher Competencies on the Basis of School Types**

Components of Metacognition	Group	1 Knowledge of Cognition		2 Objectivity		3 Problem Representation		4 Subtask Monitoring		5 Evaluation	
		r	Z	r	Z	r	Z	r	Z	r	Z
1. Social Competency	SSC	0.33	2.35*	0.28	0.65	0.44	3.13**	0.36	1.43	0.30	0.13
	ICSE	0.16		0.24		0.23		0.26		0.29	
	SSC	0.33	1.39	0.28	3.13**	0.44	3.83**	0.36	2.67*	0.30	1.62
	CBSE	0.22		0.02		0.14		0.15		0.17	

	ICSE	0.16	0.64	0.24	2.37 **	0.23	0.97	0.26	1.29	0.29	1.40
	CBSE	0.22		0.02		0.14		0.15		0.17	
2. Technical Competency	SSC	0.37	2.87 **	0.35	1.04	0.48	3.00 **	0.44	1.83	0.34	0.39
	ICSE	0.17		0.28		0.28		0.32		0.31	
	SSC	0.37	0.81	0.35	2.78 **	0.48	2.78 **	0.44	1.62	0.34	0.46
	CBSE	0.31		0.13		0.28		0.32		0.30	
	ICSE	0.17	1.61	0.28	1.72	0.28	0.00	0.32	0.00	0.31	0.10
	CBSE	0.31		0.13		0.28		0.32		0.30	
3. Affective Competency	SSC	0.31	2.22*	0.27	0.65	0.44	3.66 **	0.35	1.30	0.33	0.78
	ICSE	0.15		0.23		0.19		0.26		0.27	
	SSC	0.31	1.51	0.27	2.20 *	0.44	3.71 **	0.35	2.55 *	0.33	1.97*
	CBSE	0.19		0.09		0.15		0.15		0.17	
	ICSE	0.15	0.43	0.23	1.50	0.19	0.43	0.26	1.29	0.27	1.18
	CBSE	0.19		0.09		0.15		0.15		0.17	

N (SSC) = 433; N (ICSE) = 287; N (CBSE) = 200 \*\* Significant at 0.01 level. \* Significant at 0.05 level  
 r = Pearson's Coefficient of Correlation. Z = Difference between Coefficients of Correlation

Difference between coefficients of correlation for components of metacognition and components of teacher competencies for different school types was significant for only certain components within some groups of students. The results showed that for the components of metacognition which differed significantly with certain components of teacher competencies, SSC students have a stronger correlation than ICSE or CBSE students. And CBSE students show a stronger correlation than ICSE students only for objectivity and social competency (Table 3).

As discussed previously for correlation between total metacognition and components of teacher competencies, the above results for components of metacognition and components of teacher competencies also show a stronger correlation between metacognition and teacher

competencies for SSC students than ICSE or CBSE students. The results are thus robust and unambiguous.

### Conclusion and Suggestions

- For metacognition on the basis of school types

The total metacognition of students did not differ on the basis of school types. However students of different school types differed on the basis of components of metacognition. This is possible, as students of different school types are exposed to different learning environments and taught by different teachers. Therefore, certain components of metacognition may be favoured in some school type while not in the other.

Students of CBSE School possess better metacognition than SSC or ICSE students. The above result indicates that both SSC and ICSE schools should assess the reason for their students falling behind CBSE



students in metacognition ability. Besides, many differences exist between the three school types. The researcher observed that the difference in curriculum could be important for difference in metacognition of CBSE students as compared to the other school types. Both the SSC and ICSE curriculum should be revised regularly and changes that support student's metacognition should be included. Updated syllabus and a challenging curriculum including several co-curricular and extracurricular activities mark a distinction between CBSE and SSC as well as ICSE schools.

- For perceived teacher competency on the basis of school types

Results show that students of all the school types, SSC, ICSE and CBSE, consider that their teachers are equally competent. They consider their teachers to possess social, technical as well as affective competencies. They perceive that their teacher motivates them, is approachable, is tolerant towards them, is unbiased, organises information for presentation, possesses content mastery as well as communication skills, is open to new ideas, appreciates and understands their feelings and has good self-esteem. This reveals that even though students study in different school types, their perception of their teacher is the same. The Indian culture reveres the teacher. This is possibly imbibed by the students even today. This could be the reason for getting such a result on analysis. Keeping this result in mind, teachers should introspect and improve their competencies.

- For correlation between metacognition and perceived teacher competency

A positive and direct relationship between total metacognition and total teacher competencies scores was obtained on the basis of school types. This indicates that teacher competencies would aid in improving metacognition of students. Thus, enhancing students' metacognition necessitates involvement of competent teachers.

The SSC students show a stronger correlation than CBSE students between total metacognition and total teacher competencies, possibly because; the SSC students are more dependent on their teachers than ICSE or CBSE students. The SSC school teachers should therefore rise to the occasion and enhance their competencies.

Technical competency was seen to be the only significant predictor of total metacognition as well as for each component of teacher competency for SSC, ICSE and CBSE students. This indicates that the teachers' communication skill, evaluation ability, classroom management, mastery over content and ability to organise information is related to metacognition of students. This implies that the way in which the teacher transacts the curriculum is strongly related to students' metacognition.

Another interesting result revealed from multiple regression analyses is that for component of objectivity, affective competency emerges as a significant predictor along with technical competency for SSC students. This reveals that teachers who are open to new ideas, have compassion,

possess self-esteem and are aware of their feelings, influence the ability of students to evaluate, i.e., double check their problem-solving process to see if it is being done correctly. In other words, teachers perceived to possess affective competency, support similar behaviour in students. The teacher with affective competency is more

compassionate; as a result the student feels at ease and does not feel scared to admit his mistakes. A mistake occurred can be corrected by trying to reflect and finding out the cause of the mistake. This helps the student to assess his own problem-solving process, furthering the development of metacognition in students.

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# Pedagogical Content Knowledge and Classroom Teaching of Mathematics Teachers at the Secondary Level

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## Abstract

*The present study was conducted to compare the pedagogical content knowledge and classroom teaching of mathematics teachers in relation to sex, qualification and experience and to find out the relationship between the pedagogical content knowledge and classroom teaching. The investigator adopted descriptive method. The tools consist of self-developed test on pedagogical content knowledge of mathematics and observation schedule for assessing classroom teaching of mathematics teachers. The study found that (i) There is no significant difference in pedagogical content knowledge and classroom teaching of male and female mathematics teachers. (ii) There is a significant difference in pedagogical content knowledge and classroom teaching of mathematics teachers in relation to qualification and experience. The teachers having higher qualification and teaching experience found having better pedagogical content knowledge and classroom teaching. (iii) The pedagogical content knowledge and classroom teaching of mathematics teachers is positively related both with respect to total sample and sub groups. Implication of the study is that teacher education institutes may think of enriching the Teacher Education curriculum incorporating adequate specific content that will help trainees to develop pedagogical content knowledge and educational authority may consider pedagogical content knowledge as criteria for the recruitment of teachers.*

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## Introduction

Mathematics is an important subject of learning at the secondary stage. Developing children's abilities for Mathematisation is the main goal of

mathematics education (NCF-2005). It helps learners in acquiring decision-making ability through its applications to real life both in familiar and unfamiliar situations. It predominately

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contributes to the development of precision, rational and analytical thinking, reasoning and scientific temper. Mathematics teaching at the secondary stage aims at developing the student's resources to think and reason mathematically to pursue assumptions to their logical conclusion and to handle abstractions. It helps students to acquire skill of representing data in the form of tables, graphs and to draw conclusions from the same. At this stage, the students begin to perceive the structure of Mathematics as a discipline. Highlighting the vision, the NFG on teaching of mathematics (NCERT, 2006) states that 'school mathematics takes place in a situation where:

- Children learn to enjoy mathematics
- Children learn important mathematics. (Equating mathematics with formulas and mechanical procedures does great harm).

Children see mathematics as something to talk about, to communicate, discuss among themselves, to work together on. Making mathematics a part of children's life experience is its best mathematics education possible.

- Children pose and solve meaningful problems.
- Teachers expect to engage every child in class: settling for anything less can only act towards systematic exclusion, in the long run. (*NFG on Teaching of Mathematics*, NCERT 2006, pp-2-3).

Teacher plays an important role in developing students' abilities for Mathematisation. They must create a stimulating atmosphere; the teacher must possess desire, passion and

patience to facilitate the learning of others. An effective teacher of Mathematics needs to help in removing the fear and anxiety that Mathematics represents to so many students. For an effective teacher, one must have content knowledge, pedagogical knowledge, contextual knowledge, technological knowledge and pedagogical content knowledge. The pedagogical content knowledge has a significant role to play in better classroom teaching. Therefore, all teachers should have pedagogical content knowledge in their subject.

The term pedagogical content knowledge was introduced by Shulman in 1986. According to him, it is a knowledge formed by the synthesis of three knowledge bases: subject matter knowledge, pedagogical knowledge and knowledge of context. Pedagogical content knowledge was unique to teachers and separated, for example, a science teacher from a scientist. It is as a set of special attributes that helped someone transfer the knowledge of contents to others (Geddis, 1993). It include the most useful form of representation of these ideas, most powerful analogies, illustrations, examples and demonstrations, in a word the way of representing and formulating the subject that make it comprehensible (Shulman, 1987, p. 9). Furthermore, in a practical way, pedagogical content knowledge included those special attributes a teacher possessed that helped him/her guide student to understand content in a manner that was personally meaningful. It is an understanding of how particular topics, problems or

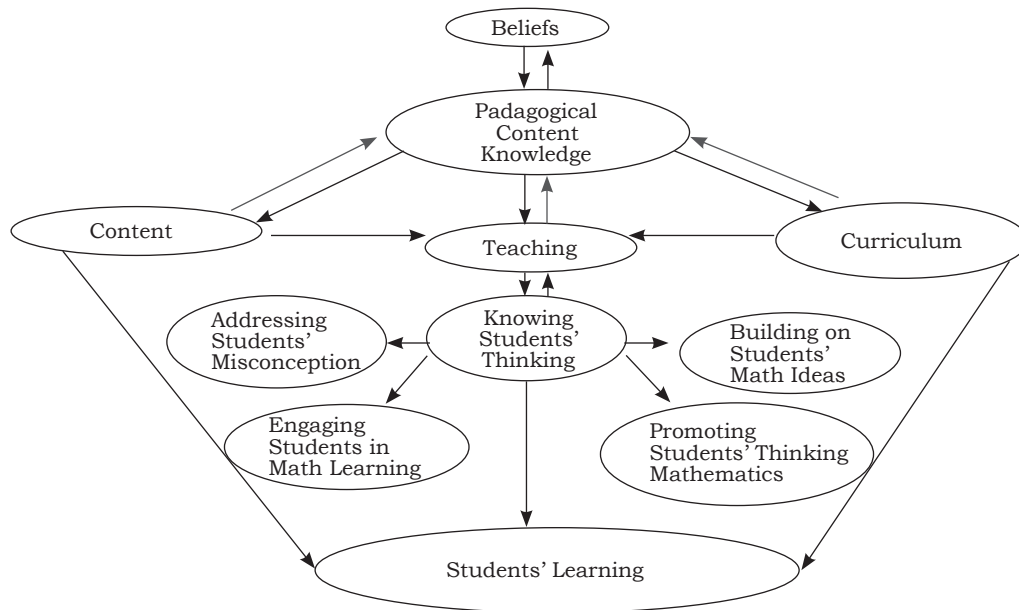


Fig. 1: Network of pedagogical content knowledge (adapted from Kulum and Wu, 2004)

issues are organised, presented and adapted to the diverse interest and abilities of learners and presented for instruction (Shulman, 1987, p. 8). Kulum and Wu (2004) reported that pedagogical content knowledge has three components: Knowledge of content, Knowledge of curriculum and Knowledge of teaching. It is integration and interconnection of these three types of knowledge as presented in figure 1.

The main responsibility of teacher is to teach, thereby make students understand concepts of mathematics. Classroom teaching behaviour is another very important factor for successful teaching and learning. It refers to behaviour and activities of teacher inside the classroom. It includes different skills of the teaching

such as organising activities, assigning project and assignments, questioning, explaining, blackboard writing and using teaching aids etc. It is the process that brings the curriculum into contact with students and through which educational goals are to be achieved. The quality of classroom teaching is a key to improve students' learning. The pedagogical content knowledge and classroom teaching are related to each other as sound pedagogical content knowledge helps in better classroom teaching.

### Need of the Study

Pedagogical content knowledge of teachers is very essential for effective teaching and learning. Majority of classroom teachers lack substantial subject knowledge, the knowledge

of what to teach, and how to teach the subject matter. Because of lack of pedagogical content knowledge of teachers, students are underachieving or not performing well in mathematics. This is also reflected in students' poor results in examinations. The poor performance could be due to a number of reasons but one of the important reasons is lack of mathematics pedagogical content knowledge of school teachers. The pedagogical content knowledge of teachers reflects how far h/she is capable of bringing improvement in the quality in terms of students' higher achievement. Pedagogical content knowledge illustrates how the content matter of mathematics is transformed for communication with learners. To teach Mathematics at secondary stage the teacher need to understand the mathematical concepts and also the methods to execute, so that it can help the students to map their own ideas, relate one idea to other and redirect their linking to create powerful learning.

Pedagogical content knowledge and classroom teaching is an important variable of research in education.

Adedoyin, O. O. (2011) found that pupils perceived that mathematics teachers' in-depth pedagogical content knowledge has an impact on their academic performance. It is recommended that teacher training colleges should incorporate in their curriculum in-depth mathematics pedagogical content knowledge for Mathematics teachers in order to be effective in the classroom and thereby improving pupils learning outcomes and academic performance in Mathematics.

Yusminah and Effandi (2010) reported that the PCK of these three teachers were mediocre level. Due to their lack of conceptual knowledge, these teachers failed to deliver the related concepts of functions accurately and clearly in class. Sara (2010) found that there is a relationship between teacher pedagogical content knowledge and students' standards of learning scores in geometry and measurement. Joyce, S. (2009) suggests that teachers with insufficient SCK will probably have limited PCK, although the two are not entirely dependent on each other. In cases where teachers' displayed low levels of SCK and PCK, their learners were more likely to perform poorly and their results often indicated similar misconceptions as displayed by their teachers. Lianhua (2009) reported that there was a gap between the teachers' pedagogical content knowledge and their teaching practice. M. K. Jussi and Pekka Heikkinen et al., (2009) revealed that good content knowledge has positive influence on student-teachers' PCK and thus on effective teaching. Content experts became conscious of students' conceptual difficulties better than content novices. It is very difficult for a content novice to recognise students' misconceptions because of his/her own misconceptions. Krauss, S. et al., (2008) show that mathematics teachers with an in-depth mathematical training (i.e., teachers qualified to teach at the academic-track Gymnasium) outscore teachers from other school types on both knowledge categories and exhibit a higher degree of cognitive connectedness between the two knowledge categories. Turnuklu,

Elf. B. and Yesildere, S. (2007) found that having a deep understanding of Mathematics knowledge was necessary but not sufficient to teach mathematics. This finding pointed out the connection between knowledge of mathematics and knowledge of mathematics teaching. It is suggested that primary mathematics teachers should be educated both from “Mathematics knowledge” and “pedagogical content knowledge” aspects. Heather et al., (2005) found that teachers’ mathematical knowledge was significantly related to student achievement gains in both first and third grades, controlling for key student and teacher-level covariates. Shuhua et al., (2004) indicated that Mathematics teachers’ pedagogical content knowledge in the two countries differs markedly, which has a deep impact on teaching practice. Jan, H.D.V. et al., (1998) identifies teaching experience as the major source of PCK, whereas adequate subject-matter knowledge appears to be a prerequisite. The effects on teachers’ PCK of participation in an in-service workshop and conducting an experimental course in classroom practice are reported.

### **Objectives**

- To compare pedagogical content knowledge of mathematics teacher in relation to sex, educational qualification and experience.
- To compare the classroom teaching of mathematics teacher in relation to sex, educational qualification and experience.
- To find out the relation between pedagogical content knowledge and

classroom teaching of Mathematics teacher.

### **Hypotheses**

There is no significant difference in pedagogical content knowledge of mathematics teacher with regard to sex, educational qualification and teaching experience.

There is no significant difference in classroom teaching of mathematics teacher with regard to sex, educational qualification and teaching experience

There is no significant relation between pedagogical content knowledge and classroom teaching of mathematics teacher.

### **Operational definition of key terms used**

**Pedagogical Content Knowledge** included those special attributes a teacher possessed that helped him/her guide student to understand content in a manner that was personally meaningful. It is an understanding of how particular topics, problems or issues are organised, presented and adapted to the diverse interest and abilities of learners and presented for instruction.

**Classroom Teaching** refers to behaviour and activities of teacher inside the classroom. It includes different skills of the teaching such as organising activities, assigning assignments and projects, questioning, explaining, using blackboard and teaching aids.

**Qualification** is the teacher’s educational achievements in terms of academic and professional degree. For the present study, it is divided

into two types such as teachers having qualification of (i) B.Sc. with B.Ed., (ii) M.Sc with B.Ed.

**Teaching experience** is the professional teaching practice of a teacher in terms of years. For the present study the experience is considered at two levels such as (i) Less than 10 years of teaching experience. (ii) More than 10 years of teaching experience.

### Procedure

The present study is a descriptive survey. The sample consists of 60 mathematics teachers randomly selected from CBSE-affiliated secondary schools of Eastern Odisha (undivided district of Baleswar, Cuttack and Puri). Equal weightage was given to sex, qualification and experience in selecting sample.

The tools consist of self-developed test on pedagogical content knowledge of mathematics having 50 marks and observation schedule having 120 points for assessing classroom teaching of mathematics teachers.

The test on pedagogical content knowledge consists of 50 multiple choice items based on secondary school mathematics curriculum. The content validity of the test is ensured by taking expert opinion and trying out on 10 secondary school mathematics teachers. The test re-test reliability of the test is .68 with seven days gap. The observation schedule consists of 40 items based on different skills of teaching with five point scales, 1 indicates lowest and 5 indicate highest. The validity of the observation schedule is ensured by taking expert comments and tried out with secondary school teachers and test-retest reliability is .73. The collected data are analysed by using mean, SD, t test and correlation.

### Analysis and Interpretation

The first objective of the study is to compare pedagogical content knowledge (PCK) of mathematics teacher in relation to sex, qualification and experience. For this, investigator calculated t value of obtained score which is presented in table 1.

Table 1  
**t value of math teachers in pedagogical content knowledge**

Group	Category	N	Mean	SD	df	t	Result
1	Male	30	35	4.5	58	.784	Not Significant
	Female	30	33	7.6			
2	B.Sc. B.Ed	30	28	5.67	58	17.77	Significant
	M.Sc. B.Ed	30	40	3.24			
3	Below 10 Yrs	30	30	6.59	58	3.297	Significant
	Above 10 Yrs	30	38	5.42			

Table value: 2.00 at 0.05 level and 2.66 at 0.01 levels.



Table 1 indicates that calculated  $t$  value (.784) for pedagogical content knowledge of male and female teacher is smaller than table value (2.00). So there is no significant difference in pedagogical content knowledge of male and female mathematics teachers. The table also indicates that calculated  $t$  value for pedagogical content knowledge of teachers having B.Sc. B.Ed. and M.Sc. B.Ed. qualification and having experience of below 10 years and above 10 years is significant.

Table 2 reveals that the calculated  $t$  value (1.735) for classroom teaching of male and female mathematics teachers is not significant at 0.05 levels. The same table also indicates that  $t$  value for classroom teaching of mathematics teachers having different qualification and experience is significant at 0.01 levels. Hence the null hypothesis 'there is no significant difference in classroom teaching of mathematics teachers in relation to qualification and

Table 2  
**t value of math teacher in classroom teaching**

Group	Category	<i>N</i>	Mean	<i>SD</i>	<i>df</i>	<i>t</i>	Result
1	Male	30	88	4.76	58	1.735	Not Significant
	Female	30	84	6.82	58		
2	B.Sc, B.Ed	30	75	6.57	58	10.180	Significant
	M.Sc, B.Ed	30	97	4.66	58		
3	Below 10 Yrs	30	80	3.38	58	5.591	Significant
	Above 10 Yrs	30	92	7.28	58		

Table value: 2.00 at 0.05 level and 2.66 at 0.01 levels.

So the null hypothesis is rejected at 0.01 levels. Hence it can be inferred that there is a significant difference in pedagogical content knowledge of mathematics teachers in relation to qualification and experience.

The second objective of the study is to compare classroom teaching of mathematics teachers in relation to sex, qualification and experience. The investigator calculated  $t$  value of obtained score, which is presented in Table 2.

experience' is rejected at 0.01 levels. So it can be said that teacher having different qualification and experience display different classroom teaching practice.

The last objectives of the study are to find out correlation between pedagogical content knowledge and classroom teaching of mathematics teachers. The investigator calculated correlation both for total sample and group-wise, which is given in Table 3.

Table 3  
**Correlation between pedagogical content knowledge and classroom teaching**

<i>Group</i>	<i>Category</i>	<i>N</i>	<i>r</i>	<i>Result</i>
1	Total Sample–Pedagogical Content Knowledge	60	.76	High correlation
	Total Sample–Classroom Teaching	60		
2	Male–Pedagogical Content Knowledge	30	.67	Marked correlation
	Male–Classroom Teaching	30		
3	Female–Pedagogical Content Knowledge	30	.72	High correlation
	Female–Classroom Teaching	30		
4	B.Sc. B.Ed.–Pedagogical Content Knowledge	30	.57	Marked correlation
	B.Sc. B.Ed.–Classroom Teaching	30		
5	M.Sc. B.Ed.–Pedagogical Content Knowledge	30	.64	Marked correlation
	M.Sc. B.Ed.- Classroom Teaching	30		
6	Below 10 yrs–Pedagogical Content Knowledge	30	.58	Marked correlation
	Below 10 yrs–Classroom Teaching	30		
7	Above 10 yrs–Pedagogical Content Knowledge	30	.73	High correlation
	Above 10 Yrs–Classroom Teaching	30		

Table 3 indicates that pedagogical content knowledge and classroom teaching of mathematics teachers is positively related both with respect to total sample and sub groups. So it can be said that pedagogical content knowledge contributes towards better classroom teaching. This result is supported by Adedoyin, O. O. (2011), Talley, Sara (2010), M. K. Jussi and Pekka Heikkinen et al., (2009), Heather et al., (2005) and Shuhua, A. et al., (2004).

### **Major Findings**

There is no significant difference in pedagogical content knowledge of male

and female mathematics teachers at 0.05 levels.

There is a significant difference in pedagogical content knowledge of mathematics teachers in relation to qualification and experience at 0.01 levels. The teachers having higher qualification and teaching experience have better pedagogical content knowledge.

There is no significant difference in classroom teaching of male and female mathematics teachers at 0.05 levels.

There is a significant difference in classroom teaching of mathematics teachers in relation to qualification and experience at 0.01 levels. So it can

be said that teachers having higher qualification and experience display better classroom teaching practice.

The pedagogical content knowledge and classroom teaching of mathematics teachers is positively related both with respect to total sample and sub groups.

### **Educational Implications**

The study has several implications for educational practice. All teachers should possess adequate pedagogical content knowledge in respective subject as it will help them for better teaching, thereby improving students' academic performance. Teachers should take personal interest to develop pedagogical content knowledge in their subject. Similarly the educational administrator and planners may take initiatives for organising in-service training programmes in the form of workshops, lectures and discussions relating to pedagogical content knowledge. The teacher education institutes may think for adding contents in teacher education curriculum that will help trainees to develop pedagogical content knowledge. The educational

authority can consider pedagogical content knowledge as criteria for recruitment of teachers. The study may create awareness among educational researchers about the pedagogical content knowledge as variable of research. Large scale research can be undertaken at national level and for other subjects.

### **Conclusion**

The pedagogical content knowledge is one of the significant aspects of effective teaching and learning. To be effective teacher, one should possess content knowledge, pedagogical content knowledge and technological knowledge. The study found that pedagogical content knowledge has positive relationship with classroom teaching. In other words, teachers having good pedagogical content knowledge can teach better than teachers having poor pedagogical content knowledge. Therefore steps should be taken at individual level, teacher education level and educational administrators' level for improving pedagogical content knowledge of teachers.

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# Effect of Concept Mapping Strategy on Concept Retention and Concept Attrition in Organic Chemistry

KANAK SHARMA\*

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## Abstract

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*This paper reports on a quasi-experimental study which was conducted to compare the effect of Concept mapping strategy and Conventional teaching method on concept retention and concept attrition among Class XII science students in Organic Chemistry. For this reason the achievement test scores in Organic Chemistry of the Class XII science students from an English Medium school at Varanasi (U.P.), affiliated to CBSE who were taught "Ketone" in Chemistry course either using Conventional teaching method (Control Group or Group A) or Concept mapping strategy (Experimental Group or Group B), were analysed. The results of the present study indicates that Concept mapping strategy is significantly more effective than the Conventional method in the improvement of achievement in Organic Chemistry, concept retention in Organic chemistry and for preventing concept attrition (retention loss) in Organic Chemistry.*

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Organic Chemistry is one of the major branches of chemistry which is being studied by those who desire to join professional courses such as Medical, Engineering, Agriculture, Pharmacy, Environmental Sciences, Earth Sciences and Home Science.

Generally like any other science, at all the stages of education viz., primary, secondary and tertiary, Organic Chemistry is also being taught mainly

through conventional methods. However, students of the 21st century find it very difficult to engage themselves in the learning of Organic Chemistry through traditional methods of teaching in view of changing learning needs have changed in this digital age (NCREL, 2003). Hence a reform in the teaching and learning of Science, in general, and Organic Chemistry, in particular, is needed which can help students to learn more effectively.

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In schools, Chemistry classes at 10+2 level are conducted to achieve mastery of the textbook content, including exercises of the end of chapter in a textbook, textbook assignments and examinations. Many students who are considered successful in conventional classes are not successful when it comes to solving problems in newer contexts. At times, students who have mastered solving end of chapter problems have a weak grasp of basic concepts and are unable to apply what they know to new situations.

The common problem in Chemistry is that even if students do well in examinations they still may fail in solving basic textbook problems, which is a sign of rote learning (Pendley *et al.*, 1994). Owing to its nature, Chemistry is often full of abstract concepts. It may lead to extensive misconceptions among students. If there is lack of hands-on-experience and intense interaction, one area of focus for improving scientific literacy is changing the way science is taught in the classroom. Chemistry is considered as a difficult subject among the natural science. It has been observed that learners tend to depend on memorisation of concepts and mechanisms of Chemistry instead of applying their rationale and reasoning. Such learning is rarely consolidated and easily forgotten. There is a need to bring improvement in teaching Chemistry which provide easy explanations of principles so that students become interested in Chemistry and do not develop "Chemo phobia" when later faced with systemised and scientific explanation of phenomena.

One way to fulfil this is to use Concept Mapping as a teaching strategy. Concept mapping is a method to visualise the structure of knowledge. Since the knowledge expressed in the map is mostly semantic, concept maps are sometimes called semantic networks. Often it is claimed that concept mapping bears a similarity to the structure of long-term memory. Instead of describing all concepts and their relations in text, one may choose to draw a map indicating concepts and relations in graph or network. Visual representation has several advantages. Visual symbols are quickly and easily recognised and this can be demonstrated by considering the large amount of logos, maps, arrows, road signs, and icons that most of us recall with little effort. Visual representations also allows the development of a holistic understanding that words alone cannot convey, because the graphical form allows representations of parts and whole in a way that is available in sequential structure of text (Lawson, 1994).

Concept mapping which is based on Ausubel's theory of meaningful verbal learning is currently a favourite subject of research in the western world. Concept maps are diagrammatic representations which show meaningful relationships between concepts in the form of propositions which are linked together by words, circles, and cross links. Concepts are arranged hierarchically with the super ordinate concepts at the top of the map, and subordinate at the bottom which are less inclusive than higher ones. "Cross links" are used to connect different

segments of the concepts hierarchy which indicate syntheses of related concepts, a new interpretation of old ideas, and some degree of creative thinking.

In Chemistry, the use of Concept maps has been widely investigated. According to several studies (e.g., Cardellini, 2004; Francisco *et al.*, 2002; Markow and Lonning, 1998; Nicoll *et al.*, 2001; Osman Nafiz, 2008; Pendley *et al.*, 1994; Regis *et al.*, 1996; Stensvold and Wilson, 1992), concept maps help Chemistry learning both in classrooms and in laboratories. According to Francisco *et al.*, (2002) and Nicoll *et al.* (2001), Concept maps are a useful learning tool in Chemistry. Concept maps can improve understanding of chemical concepts and help build connections among abstract concepts. Concept maps can also be used as misconception-correction tool. Concept maps bind concepts with linking words that help students see connections among them and organises the knowledge hierarchically, based on scientific knowledge (Francisco *et al.*, 2002; Nicoll *et al.*, 2001).

There is however, an apparent dearth of studies in Organic Chemistry on it. According to Lopez *et al.*, (2011), "Concept Maps carry the potential to illuminate misconceptions and enhance instruction and learning, this need is especially pronounced in difficult yet widely required courses such as Organic Chemistry".

Since the subject of Organic Chemistry occupies an important place in the school curriculum, there is a need to probe the effectiveness of Concept mapping strategy. Hence,

the investigator has selected Concept mapping strategy to find out its relative effect on student's achievement, concept retention and concept attrition in Organic Chemistry.

### Objectives

1. To study the effectiveness of Concept mapping strategy in comparison to the Conventional method in terms of achievement in Organic Chemistry.
2. To study the concept retention in Organic Chemistry of students being taught through Concept mapping strategy and by Conventional method over a period of time after the termination of treatment.
3. To study the concept attrition in Organic Chemistry of students being taught through Concept mapping strategy and through Conventional method over a period of time after the termination of treatment.

### Hypotheses

**H<sub>0</sub>1:** There is no significant difference between the achievement in Organic Chemistry of students taught through Concept mapping strategy and students taught through Conventional method at the 0.01 level of significance.

**H<sub>0</sub>2:** There is no significant difference between concept retention in Organic Chemistry of students taught through Concept mapping Strategy and students taught through Conventional method at the 0.01 level of significance.

**H<sub>0</sub>3:** There is no significant difference between concept attrition in Organic

Chemistry of students taught through Concept mapping strategy and students taught through Conventional method at the 0.01 level of significance.

### Design and Sample of the Study

The study was quasi-experimental in nature where Pre-test and Post-test Non-Equivalent Groups Design was used. The sample of the present study comprised of 60 science students studying in two intact sections that is 'A' and 'B' of Class XII of an English Medium school at Varanasi. Out of

### Tools Used

9 Concept maps of one concept from selected one unit of Organic Chemistry syllabus prescribed by the C.B.S.E. Board.

Mixed Group Test of Intelligence (Hindi Version) by Dr P.N. Mehrotra, Verbal and Non-verbal Test was used for equating both the groups i.e., experimental and control groups on the basis of their intelligence scores.

An Achievement test consisting of 25 multiple-choice questions based on one concept from selected one unit of

Table 1

**Mean, S.D. and 't' values obtained on Intelligence test by Experimental Group and Control Group**

Group	N	Mean	S.D.	df	't'	p
Experimental Group	30	52.23	5.24	58	1.60	> 0.05
Control Group	30	54.65	6.35			

these two sections, section 'A' was randomly assigned as the experimental group ( $n_1=30$ ) and other section 'B' as the control group ( $n_2=30$ ) for the study. To eliminate the initial variability of intelligence in both the groups, the students were measured on general mental ability test employing, a Mixed Group Test of Intelligence by Dr P.N. Mehrotra. t-test was applied to find out the difference between intelligence test scores of both the groups. Results have been given in Table 1.

Table 1 reveals that "t" value of 1.60 for intelligence scores was not significant at the 0.05 level of significance. It meant that significant difference does not exist between the intelligence of both the groups.

Organic Chemistry syllabus prescribed by the C.B.S.E. Board for Class XII science students was developed by the investigator to measure the students' achievement, concept retention and concept attrition in Organic Chemistry. In this test each question carries one mark. The achievement test served as both Pre-test and Post-test (Post-test I and Post-test II).

### Classroom Experiment

The experiment was conducted in the four steps given below:

#### **Step 1: Administration of the Pre-tests**

Firstly, intelligence test and achievement test were administered



to the students of both groups i.e., experimental group and control group.

### **Step 2: Experimental Treatment**

Both the groups' viz., experimental group and control group were taught by the investigator herself so as to avoid teacher variable—the experimental group was taught through Concept mapping strategy, while the control group was taught through Conventional method. Same concepts were taught to both the groups.

### **Teaching of Experimental Group**

The group was exposed through Concept mapping strategy. The investigator introduced one concept of selected one unit namely Ketone through 9 concept maps regarding various aspects such as preparation, properties, reactions and interconversions, which were developed with the help of students by the investigator on the blackboard.

Figure 1 to 9 at a glance present, how concept namely Ketone was introduced to the experimental group through concept maps in an effective manner.

### **Step 4: Delayed Post-testing**

After a gap of six weeks from the treatment achievement test was administered again as Post-test II to students of experimental group and control group for measuring their concept retention and concept attrition.

### **Analysis and Interpretation of the Data**

#### **Effect of Concept Mapping Strategy on Achievement in Organic Chemistry**

**H<sub>0</sub>1:** There is no significant difference between the achievement in Organic Chemistry of students taught through Concept mapping strategy and students taught through Conventional method at the 0.01 level of significance.

It is evident from Table 2 that mean gain achievement scores of experimental group is significantly higher than that of the control group and 't' value is significant at the 0.01 level of significance. Therefore the null hypothesis H<sub>0</sub>1 stating that "there is no significant difference between the

Table 2

**Mean<sub>Gain</sub>, S.D. and 't' values obtained on Pre-test and Post-test-I in Organic Chemistry by Experimental Group and Control Group**

Group	N	Mean Gain (Post-test I - Pre-test)	S.D.	df	't'	p
Experimental Group	30	6.10	2.02	58	3.18	< 0.01
Control Group	30	4.43	2.03			

### **Step 3: Experimental Treatment**

After completion of the instructional treatment achievement test was administered as Post-test I to students of experimental group and control group for measuring their achievement.

achievement in Organic Chemistry of students taught through Concept mapping strategy and students taught through Conventional method at the 0.01 level of significance" is rejected. Meaning thereby that there is a

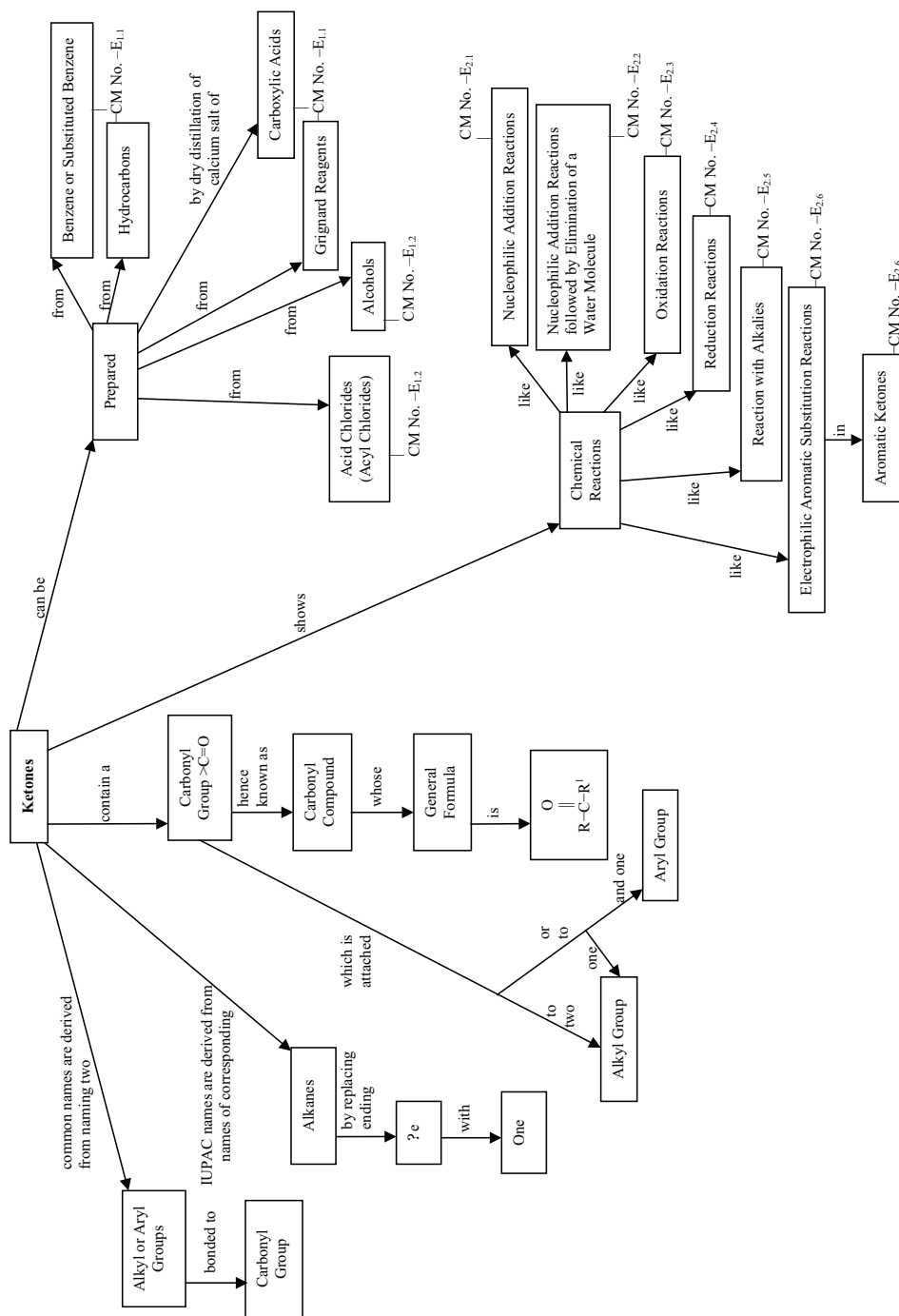


Fig. 1



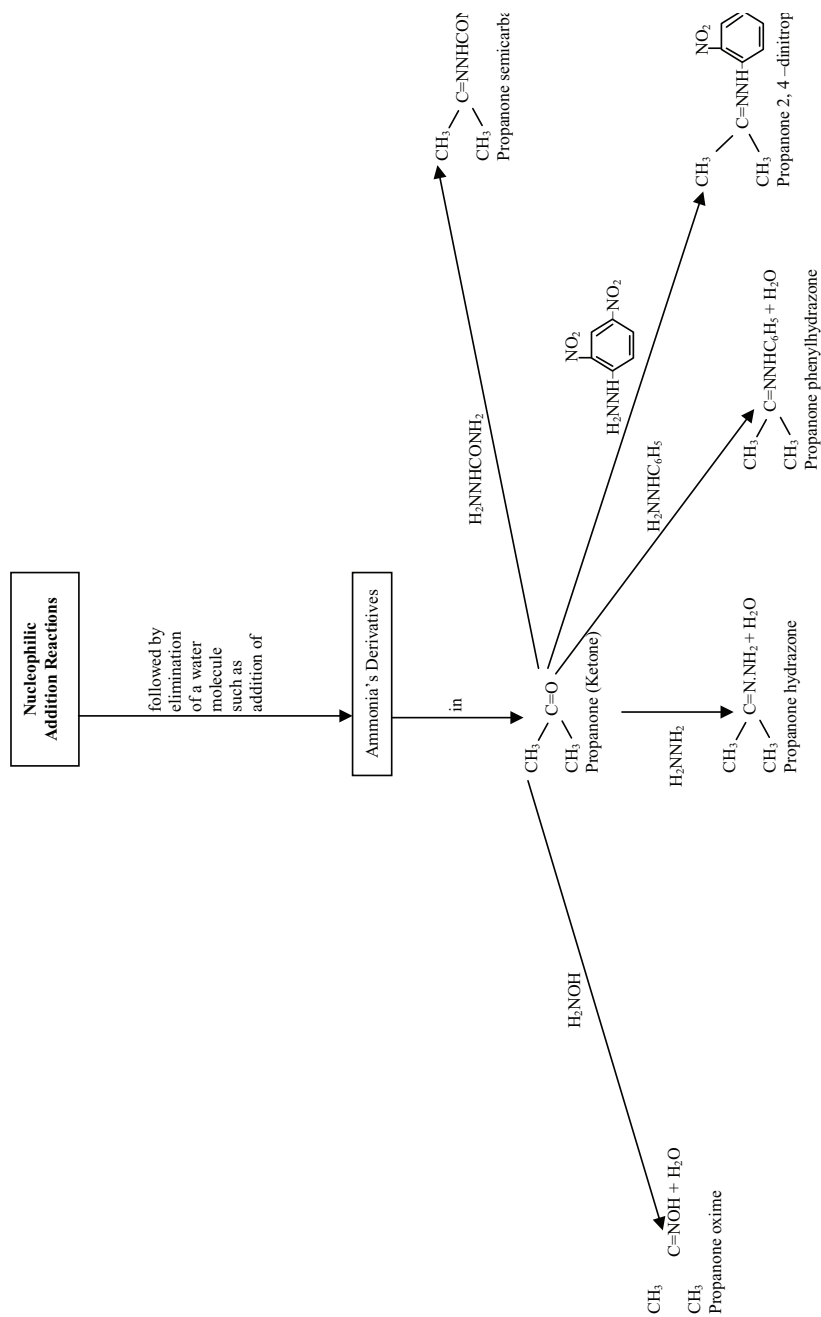


Fig. 3

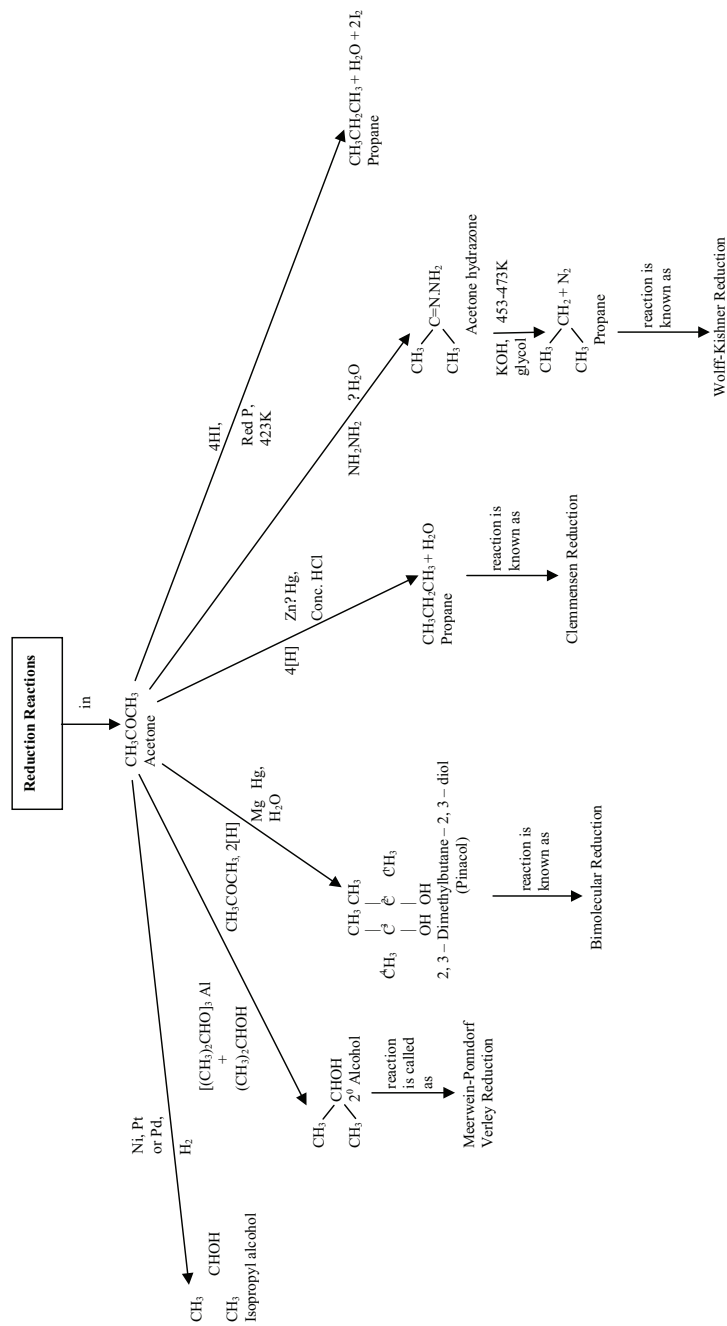


Fig. 4

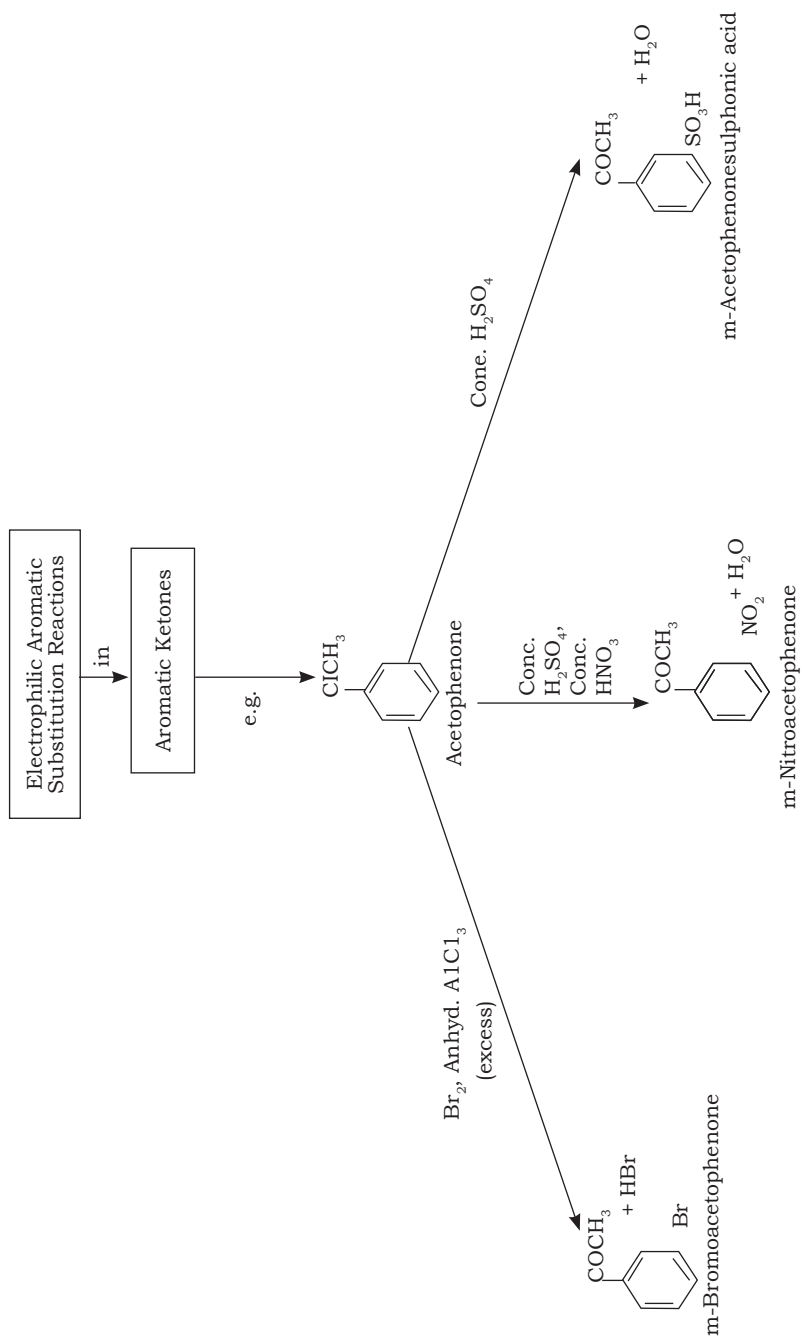


Fig. 5

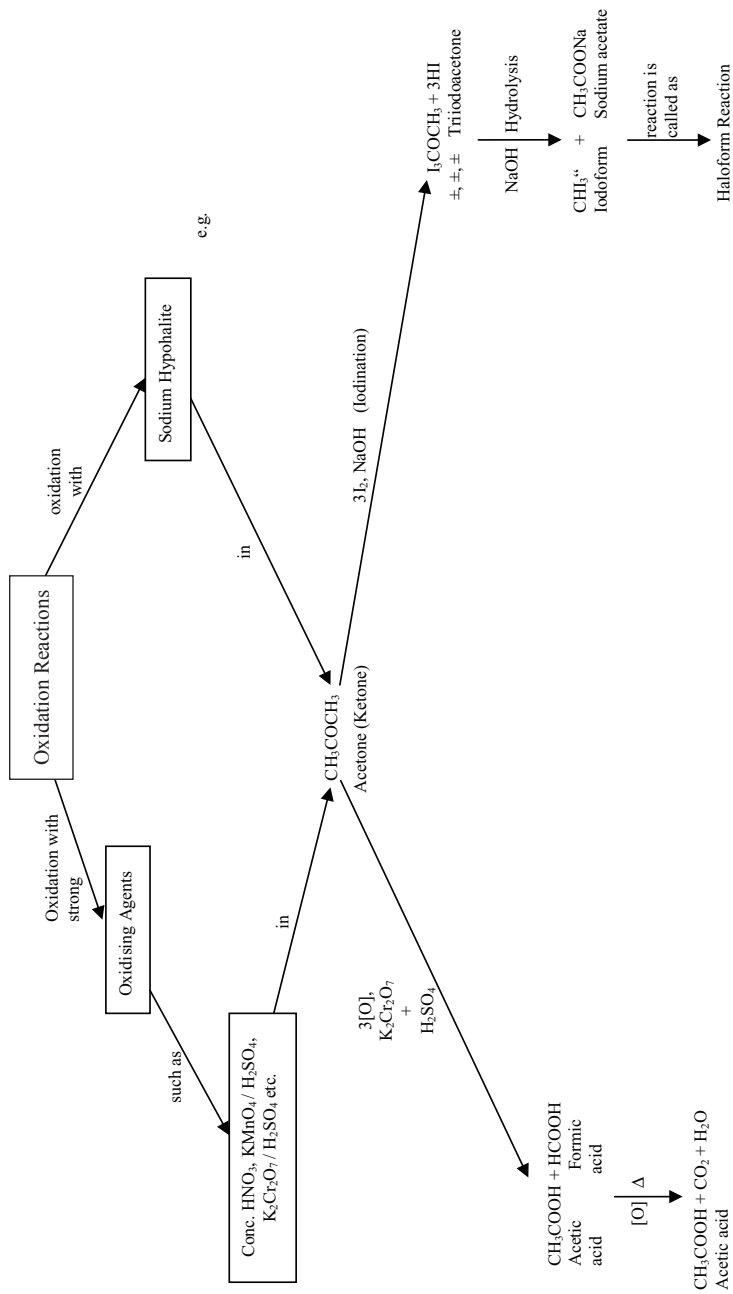


Fig. 6

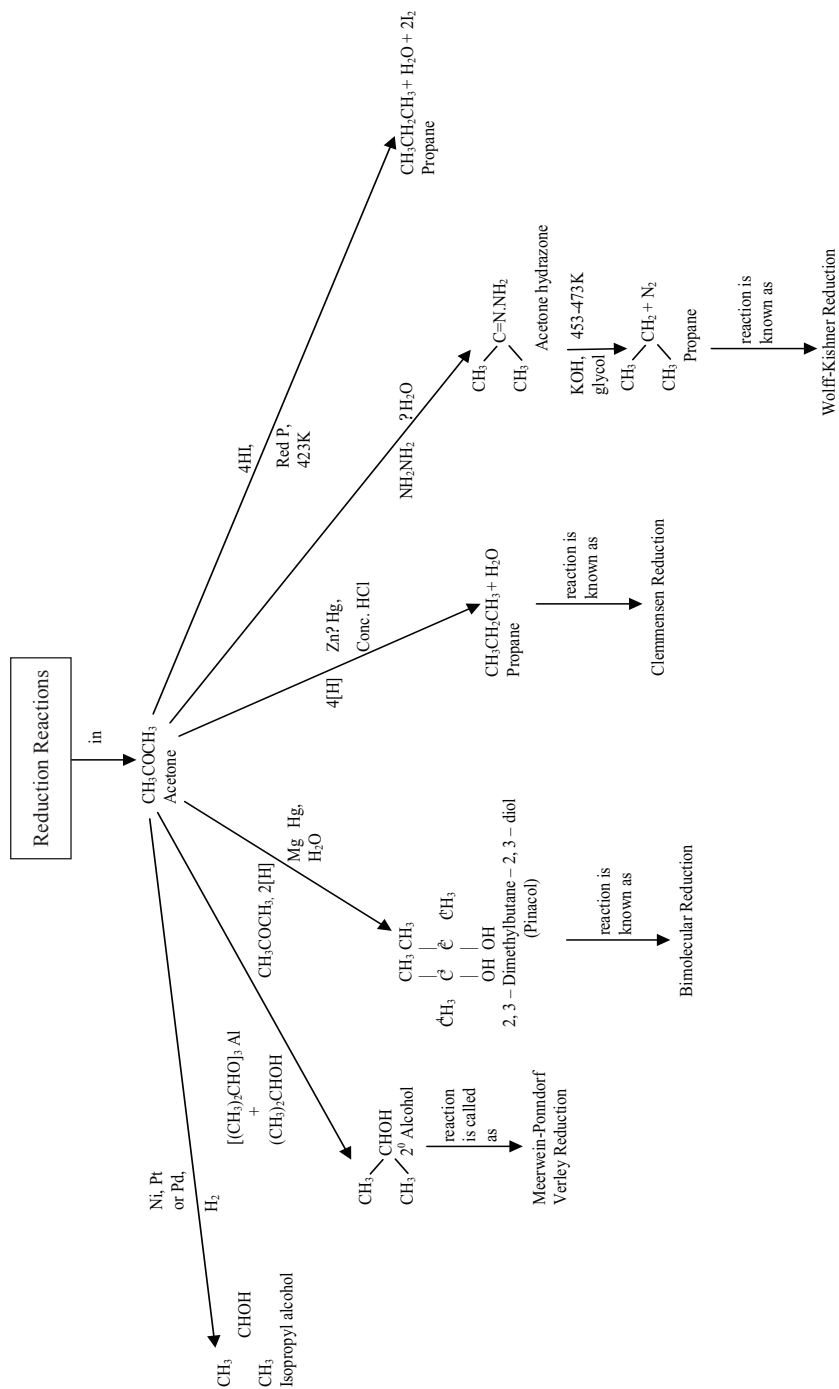


Fig. 7



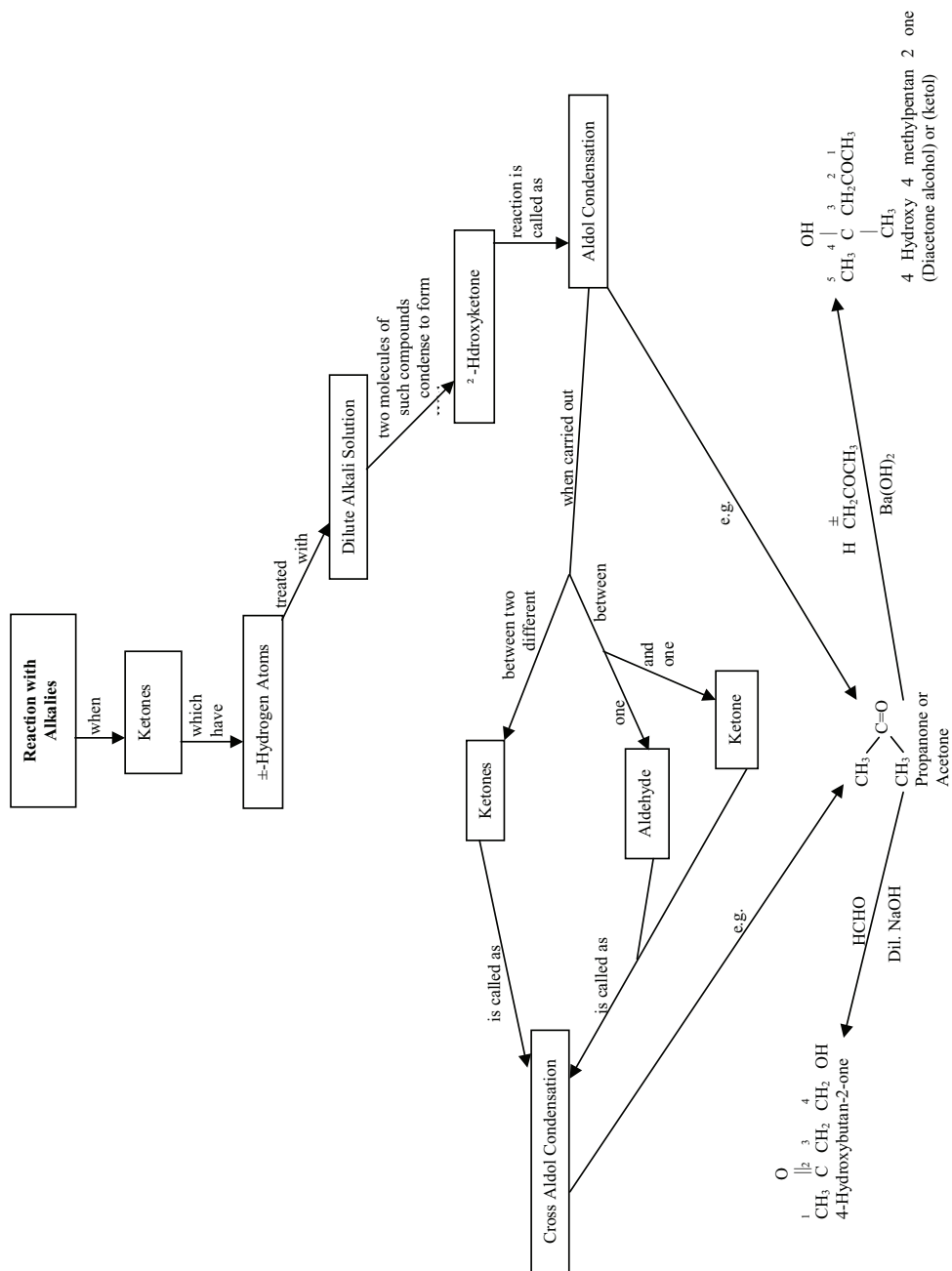


Fig. 8

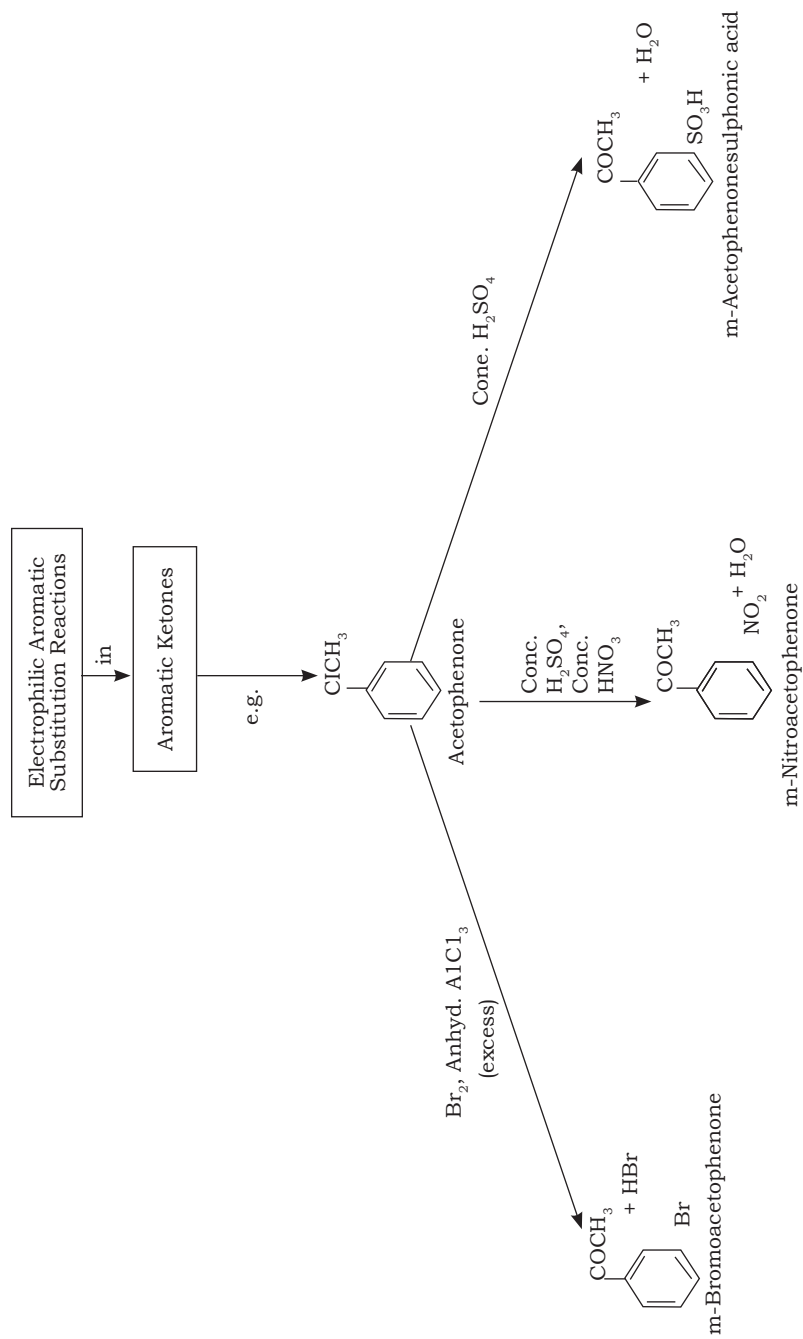


Fig. 9

significant difference in the mean gain achievement scores of students taught through Concept Mapping strategy as compared to those taught through Conventional method. On the basis of this result we can say that Concept Mapping strategy is significantly more effective than the Conventional method for improving achievement in Organic Chemistry.

### Effect of Concept Mapping Strategy on Concept Retention in Organic Chemistry

**H<sub>0</sub>2:** There is no significant difference between concept retention in Organic Chemistry of students taught through Concept mapping strategy and students taught through Conventional method at the 0.01 level of significance.

It is clear from Table 3 that mean concept retention gain scores of experimental group is significantly higher than that of the control group and the 't' value is significant at the 0.01 level of significance. Therefore

the null hypothesis H<sub>0</sub>2 stating that "there is no significant difference between concept retention in Organic Chemistry of students taught through Concept mapping strategy and students taught through Conventional method at the 0.01 level of significance" is rejected. Meaning thereby that there is a significant difference in the mean concept retention gain scores of students taught through Concept mapping strategy as compared to those taught through Conventional method. On the basis of this result we can say that Concept mapping strategy is significantly more effective than the Conventional method for concept retention in Organic Chemistry.

### Effect of Concept Mapping Strategy on Concept Attrition in Organic Chemistry

**H<sub>0</sub>3:** There is no significant difference between concept attrition in Organic Chemistry of students taught through Concept mapping strategy and

Table 3

**Mean<sub>Gain</sub> (Retention), S.D. and 't' values obtained on Pre-test and Post-test-II (Delayed Post-test) in Organic Chemistry by Experimental Group and Control Group**

Group	N	Mean Gain (Retention) (Post-test II – Pre-test)	S.D.	df	't'	p
Experimental Group	30	4.76	2.10	58	8.20	< 0.01
Control Group	30	1.2	1.10			

Table 4

**Mean<sub>Attrition</sub>, S.D. and 't' values obtained on Post-test-I and Post-test-II (Delayed Post-test) in Organic Chemistry by Experimental Group and Control Group**

Group	N	Mean Attrition (Post-test I – Post-test II)	S.D.	df	't'	p
Experimental Group	30	1.36	0.98	58	5.73	< 0.01
Control Group	30	3.50	1.78			

students taught through Conventional method at the 0.01 level of significance.

It is apparent from the result in Table 4 that mean attrition values (retention loss) of control group is significantly higher than that of experimental group and the 't' value is significant at the 0.01 level of significance. Therefore the null hypothesis  $H_0$  stating that "there is no significant difference between concept attrition in Organic Chemistry of students taught through Concept mapping strategy and students taught through Conventional method at the 0.01 level of significance" is rejected. Meaning thereby that there is a significant difference in the mean attrition values (retention loss) of students taught through Concept Mapping strategy as compared to those taught through Conventional method. On the basis of this result we can say that Concept Mapping strategy is significantly more effective than the Conventional method for preventing concept attrition (retention loss) in Organic Chemistry.

### **Discussion of Results**

The study by Lagowski (1990) asserted that retention of concepts was related to the kind of activity involved during teaching. He reported that students usually retained 10% of what they read, 26% of what they heard, 30% of what they saw, 50% of what they saw and heard, 70% of what they said and 90% of what they said while doing a task. This indirectly implies that the extent of attrition of concepts (retention loss) is also dependent on the kind of activity performed during the task of teaching.

The results of the present study indicates that Concept mapping strategy is significantly more effective than the Conventional method in the improvement of achievement in Organic Chemistry, concept retention in Organic Chemistry and for preventing concept attrition (retention loss) in Organic Chemistry.

The above results are in tune with the findings of Okebukola (1990), Rao (2004), Ahuja (2006), Gupta (1999), Yekta Z. and Nasrabadi A. (2004), Ling and Boo (2007), Wisher, Curnow and Seidel (2001) and Semb and Ellis (1994). The results of the present study stand reinforced and validated on the basis of findings of other researches cited above. Whereas Jay (1995) did not find significant difference between experimental and control group mean scores on an achievement exam and has reported results inconsistent with the results of the present study. Bantanur (2007), Chiou (2008) and Aparna (2002) have also found this strategy to be superior to Conventional method.

### **Conclusion**

Taking the result into consideration, it may be concluded that the Concept mapping strategy has a positive effect on the achievement and concept retention in Organic Chemistry of students belonging to experimental group. This strategy is also significantly more effective for preventing concept attrition in Organic Chemistry of Class XII science students when compared to the Conventional method. From a student's view, concept mapping strategy encourages them to think

independently, produces more self-confidence and provides an increased awareness of findings connections between different topics. Teachers reported that Concept mapping assisted students to become active learners and organised theoretical knowledge in an integrative manner or conceptual framework (Boxtel *et al.*, 2002; Harpaz *et al.*, 2004). Hence there is a need to include Concept mapping strategy with the constructivist basis as one of the major approaches to teach Organic Chemistry in our schools. Use of Concept Mapping strategy as a main route of teaching or as a complementary strategy for traditional teaching method may improve the students' achievement in Organic Chemistry and knowledge retention capability.

### **Implications of the Study**

#### ***Implications for Students***

Concept mapping strategy as an instructional method would be helpful to raise the achievement levels of students. Besides adding to the clarity of concepts, concept maps will lead to the formation of strong linkages

with related concepts. Thus Concept Mapping strategy would be helpful to the students for enhancing retention of concepts in their cognitive structure. It would also be helpful to the students for preventing concept attrition (retention loss). During the preparation of Board exams and other competitive exams Concept maps can also be used by the students as revision tools.

#### ***Implications for Teachers***

Concept maps would also be helpful for the subject teachers to identify the causes of under-achievement among students and to remedy them. It would also be helpful for the teachers to organise their curriculum systematically and present it effectively. Teacher can also use concept maps as misconception correction tools. From students' constructed concept maps teachers can diagnose students' understanding of concepts and can identify the existing misconceptions. Once misconception in students' cognitive structure are diagnosed, remedial teaching in this direction can also be done by using Concept maps.

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# Play and Playway Method in the Elementary Grades

## Is It Really There?

RAJANI M. KONANTAMBIGI\*

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### Abstract

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*In spite of the role of play in the overall development of children and role of play way method in the learning of children, it has been a neglected realm in teaching-learning at the elementary level of education. However the Mumbai Municipal Corporation, drawing directly from the recommendations of the Ramamurti Committee experimented with the Joyful Learning method (playway approach to teaching-learning) in the District of Amravati and expanded the teacher training to the lower-primary school teachers in 1997. As a part of a larger study exploring the adjustment of children to formal schooling on entry into Grade I, classroom processes were studied to understand what of the Joyful Learning programme would get implemented. Nine schools from a ward in Mumbai, to represent the different types of schools formed the sample. It was observed that more than half of the schools in the study did not have play space. There are shifts in the school system, in almost all the schools. It is a six-hour a day for the children and 8-hour a day for the teacher. There was no free play in the schedule, though there was physical education. While a number of teachers did make efforts in scheduling some activities for experiential learning, it was not possible for all of them to do so. The activities were implemented more to ward off boredom and sleep. Most teachers did have a holistic understanding of what play way method meant. Issues that need to be addressed in formulating policies and in teacher training have been pointed out.*

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### Introduction and Review

In the last few decades play in children has drawn attention of various disciplines, more so of developmental psychology, child development, comparative psychology

and anthropology. It has acquired the connotation of “the business of childhood”. Theoretical positions on play in children have been expressed earlier (for an exhaustive review of the theories and conceptualisation, see

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Rubin, Fein and Vandenberg, 1983). More recently Frost, Wortham and Reifel (2001) have comprehensively reviewed the literature and have attempted to pin down the characteristics of play. Play as a means of learning/higher order thinking in childhood, and as a platform for learning social and other skills for adult life predominate the theories. Klugman and Fasoli (1995) have attempted to define play, as there is a need for a common understanding of play if it is to be encouraged in various settings of childhood. Play way method has been the dominant means of transacting the curriculum in the kindergarten and nursery years. The Play Way method incorporates the characteristics of play and has been found to be effective in the early school years. Recognising these characteristics, the Government of India, Ministry of Human Resources Development reviewed the education policy of the country (Committee for Review of National Policy on Education, 1990), which has come to be called the New Policy on Education, 1986 (NPE, 1986) Ramamurti Committee Report. The Government of Maharashtra, along with UNICEF implemented certain aspects of the report in the elementary schools of Amravati district in Maharashtra. The package has been called *Amravati Zilyatil Ananddayee Prakaalp* (Joyful Learning Experiment of Amravati District). It was also implemented in the municipal schools of Greater Mumbai in 1997. A study was conducted to understand the process of transition and adjustment of pre-school children to Grade I.

This paper highlights teachers' understanding of Joyful Learning (JL) package, and what was implemented in the classrooms. Initial sections of the paper details the theoretical understanding of play, comparison of play and learning, and how it gets transformed according to child's context. The next section describes the study in detail. The paper concludes with implications for teacher training and classroom practice.

The fun and frolic associated with children's play, taking place predominantly more during the span of childhood, when the child does not contribute in economic terms to the family has made parents and other adults in society to view play as frivolous. Play is characterised by the active involvement and action initiation by the child. It fulfils a need or needs of the child, is generally filled with fun and pleasure, is self-perpetuating, and it involves the mental faculties (Klugman and Fasoli, 1995). According to Vygotsky (1978) it takes places in the zone of proximal development and therefore contributes to various kinds of learning, has a social flavour and fulfils needs of the child. Piaget posits play as an assimilative process in cognitive development of the child. Gregory (1997) views play as a powerful means of communication by the child and as having a role in the adaptive process. This not only provides an alternative theoretical position on play, but has implications for using play as a therapeutic means (Frost, Wortham and Reifel, 2001). The psychoanalytic position views play as an adaptive mechanism of childhood

in dealing with the pressure/stress caused by societal limitation. Fantasy brings control to the child's world, and the learning is transferred to other real world contexts.

Bruner and colleagues have put but together various theoretical positions and literature on play (Bruner, Jolly and Sylva, 1976; cited in Frost, Wortham and Reifel, 2001). One of the predominant themes has been of play as a problem-solving activity. Play as cooperative and competitive social interactions, learning sex roles, cultural acquisition, language and scope for creativity are viewed as other functions of play. The activity encompasses the entire life contexts of the child. According to Bruner play is a foundation for problem-solving and thinking. Play separates the action (doing something) from contexts in which they normally take place; separates it from knowing "it". This psychological separation frees the mind for experimentation and paves the way for trying alternative solutions to the problem. These can then be practiced in the real world. The psychological separation could be resulting in relaxation that results when anybody plays, be it the child or the adult.

The nature of play tells us that it is all encompassing, it aids cognitive development, has emotional and social value for the child, mostly it is a pleasant activity, self-indulged/initiated; it is also creative and constructive in nature (providing further scope for understanding spatial relations in the real world). Furthermore, when play creates anxiety it can be discontinued.

One could compare this with learning, and see what it has to reveal, because society, in the form of parents and legislators (to a lesser extent, the teachers), wants the child to learn and not play. Learning as any textbook or treatise on learning will say is a permanent change in behaviour as a result of practice or experience. Practice and experience is provided by the physical and social world around the child. Social provision is in terms of who interacts with the child and how the learning material is presented to the child. Further, the child is put in formal or contrived situations "to learn" by the adults. It becomes other directed, and when it is other directed it becomes extrinsically motivated. Extrinsically motivated behaviour/learning requires incentives. Formal systems, like the school then try to provide incentives.

In formal systems of learning, because a lot of learning is made extrinsic, and if learning material is not presented in a way to nurture the child's curiosity, learning is hampered. However, when the child engages in play, such a problem does not exist. Child can explore and take initiative to learn. Driven by curiosity, he or she can direct one's learning. Exploratory, self-directed, opportunity for hands-on learning and adults to aid/explain in the learning process (intervening in Vygotsky's zone of proximal development) is what aids learning. School education is a platform for learning; it is later in the adult world that the child can practice what he or she is learning. Play is also such a platform, and therefore makes a strong

case for teaching through the playway method. Through the years various efforts in this direction have been undertaken, both at the pre-school level and the elementary school level. However the practice has been more characteristic of pre-school years than of the elementary school years in the Indian context.

Trends in nursery/pre-school education have been directed by the works of Kindergarten, Montessori, Dewey, Froebel and others. In the Indian setting Montessori Method, and *Tarabai Modak's Shishu Vihar* approach have been in operation. More recently Emlio Reggio's ideas are in operation in Italy (Gardner, 2000), and are being imported to the U.S. also (Gardner, 2000). At elementary education level guidelines and critiques of the system by John Holt (1972), Bloom (1987), Comer (The Comer process of education; Mahalomes, 1999), Howard Gardner (2000) have directed the elementary education programme. In the Indian setting, Bhadeka's *Diva Swapna* (1991), Eklavya's Hoshangabad Science Programme for middle school, Eklavya's *Prashika* – the Primary Education Programme (Agnihotri, Khanna and Shukla, 1994), *Ananddayee Prashikshan Prakaalp*, (Amravati's District, Maharashtra's experiment, 1997) have been some of the pointers.

Edward Fiske (1999) has discussed a number of school innovations that emphasise a child-centered exploratory approach. Comer's school systems have documented the success, again of the child-centered, hands-on, exploratory methods in the teaching-

learning process (Mahalomes, 1999). More recently the concern of child psychologists, child development professionals and educationists has been on the trends in play in children, especially the urban children. Children are playing less (Kirn and Cole, 2002). Children are watching more television than playing (Gardner, 2000). This is true of Indian urban children too. The concern is one of creating more scope and space for play in the lives of children. In Mumbai, play space for children is limited, play parks and open spaces are few and far between (not close enough to the homes) and poorly maintained to seriously promote play in children (Balu, 1996). Such a situation prevails in spite of national efforts. In the 1980s, a conference on play and children's development was held, and issues on environment for children's play and its implications (Chowdhury, 1984), planning and organising play in children (Chiam, 1984), and even the how to revive traditional games (Thakkar, 1984), were discussed.

The concern for play has also emerged because the play and/or recess time has come down or does not exist in the school time-table. The economics of the situation, parental beliefs and understanding of play, need for more instructional time and safety concerns, have forced play out of the school time-tables (Dale, Corbin and Dale, 2000). A review of need for recess in the U.S. schools by Jarrett (2002) says that recess has gone out or schools are planning to abolish it in approximately 40% of the schools. Maxwell, Jarrett and Roetger (1998) conducted a qualitative study to see

how children view recess and why it is necessary for them. Fourth graders pointed out that a physical education class, being teacher-directed does not fulfil their need. They need recess to 'charge back', 'relax their brains', 'get their energy out', and 'blow off steam'. They needed recess because they could choose their activities, they could choose their playmates, and that showed "respect for children" – a right to their own time similar to what their parents and teachers had! Recess has shown to have salutary effects on the classroom learning, concentration and behaviour of children. Recess still exists in the Indian schools, but in the urban (e.g., Mumbai) time-table it is 30 minutes; in this 30 minutes the child has to eat too. This is lower in comparison to a generation ago when it was 45 minutes, and there was invariably a free play period for about twice a week in addition to the physical exercise time (which was teacher-directed). The reduction in school time in India is because of increasing population and the pressure it creates on the school resources. There are two shifts of about 5 and a half to 6 hours each in the school.

Child development professionals and child psychologists seem to have a daunting task in the face of the economics of the situation, and have to cry hoarse to bring home the point that play is indeed essential for the learning process and for need fulfilment of children. Jeanne Goldhaber's (1994) article "If We Call It Science, Then Can We Let the Children Play?" Goldhaber describes the case of a kindergarten teacher first being bogged down by

no-time, no-resources situation, to overcoming the hurdle to convert the science session into a play session. The teacher in question was able to cull out the similarities in a play situation and a science exploration session. Advocates of exploratory, hands-on experiences situated learning, learning for doing are either not heard or are heard inadequately. John Holt, Bruner, Bloom, in the 1960s, Howard Gardner in the 1980s, Kuroyanagi's Toto Chan (1982) – narration of Tomoe Guken's experiment in Japan, Perkins (1991), and more recently Comer Maholmes (1999) have presented strong rationale or have actual examples to prove how learning, the exploratory, playway method can take place. In the Indian context, Eklavya's *Prashika* programme (elementary school experiment in the public school systems in parts of Madhya Pradesh: Agnihotri, Khanna and Shukla, 1994) was successful in its techniques, but had to be withdrawn as parents protested against the playway method. They said that they wanted their children to study and not play. So the Government withdrew the programme. School Systems everywhere are experimenting and demonstrating to the State how an effective means to learn can work.

In the Indian context too, the pre-school is relatively a place for play, recreation and some preparation in terms of listening skills, learning alphabets and numbers. Not so the school years. Taking the child-centered perspective, the present study was conducted to understand children's adjustment to Grade I (Konantambigi, 2000). This paper is a part of the larger

study on transition and adjustment of children to Grade I. The broad context and rationale for the study is briefly explained, and the focus for the present paper is laid out.

A study was conducted to understand children's adjustment to Grade I. Grade I in the schools system of India gets to be more formal and structured than the kindergarten or the nursery years. The expectations from significant others in the child's life get formal too. The school set-up, the classroom, the activities and the behaviour of the teachers like-wise, tends to become more formal. There is a shift from informal activities, like playing, singing, dancing and indulging in art work, to a more "serious", academic work, written work, answering questions, etc. Vis-à-vis behaviour too there are likely to be more formal expectations, e.g., sitting quietly for long hours. It is not uncommon to hear parents tell their 6 year-olds, 'you are in first grade now. You have to become serious...'

Developmentally the child's reasoning is different, s/he does not as yet think like an adult. S/he has yet to develop visual eye/hand co-ordination which will facilitate child/s looking and writing (especially copying complex patterns – alphabets, numbers – from the blackboard), (Lefrancois, 1990). The child is learning more from doing rather than understanding from reading. The teaching methods, however, tend to be focused on abstract thinking and more adult-like approaches.

The Department of Education, Government of Maharashtra introduced *Ananddayee Shikshan Prakalp*

(method of Joyful Learning) in Mumbai. All teachers in the early elementary Grades from I to IV had to undergo this training. This intervention was therefore incorporated into the study. Joyful Learning (henceforth referred to as JL) was put together on the basis of Committee for the Review of National Policy on Education Policy 1986, (Ramamurti Committee Report, 1990). Other recommendations were, no formal evaluation, "examinations" for children, and not to burden the child with written and other material and not make the school bag heavy, evaluations were to be informal, and were to be incorporated in the day-to-day interactions. JL was first experimented in certain schools of Amravati District, Maharashtra, India (*Unicef and the Amravati Zilla Parishad Vibhag*, Maharashtra, 1997). The aims of JL approach have been to make school learning a joyful experience. For this purpose, Vygotsky's theory and methods which support a child-centered approach have been included in the training. Situated learning, moving from the known to the unknown, use of playway method, extensive use of attractive visual materials, using means of recreation and hands-on experience in the learning process have been included in the package. The first training was for 2 weeks. The inclusion of JL prior to the collection of data for the present study made it mandatory to examine what of JL the teachers would practice in the classroom. Of particular interest was in seeing how teachers conceptualise "playway method". Curiosity in this regard has emerged because of the commonly aired views

on play by adults in different contexts of parent-child interactions and child care workers (personal observations and experience).

### **Methodology**

#### ***Population and sample of the study***

A north-eastern suburb of Greater Mumbai was chosen as sample, it was convenient to visit the sample a number of times. Since the study was qualitative, accessibility of the sample was a significant factor deciding the locale of sampling.

Marathi and English medium coeducation schools catering to lower middle, middle and upper middle class families were chosen. The criteria of schools to be a part of the sample was set, and then the schools were chosen using the simple random method. Random number table was used for the purpose. A total of 9 schools were included in the study. In all there were about 62 aided schools (Municipal), and 40 unaided schools, and out of the unaided schools, very few were private schools for low income group children. In the study about 8.8% of schools in the suburb were covered. Children in Grade I (one of the divisions in a school was chosen, some with morning shift and some with afternoon shift) were included in the study as transition to formal schooling was one of the aims of the study.

#### **Measures in the study**

The objectives of the study dictated that I look at the processes in the classroom throughout the year. This included interviews of the teachers and

repeated observations of the classroom processes (teacher-child interactions included). One of the objectives was to examine the process of the curriculum transaction, and the manner in which the teacher's perceive it. The methods of enquiry were primarily qualitative in nature. (In the larger study, the focus was on home school transition and the child's adjustment and performance). Parent interviews vis-à-vis adjustment of children, teacher's academic and non-academic evaluation of children, PTA meeting observations and child's IQ were the other dimensions of the study.

Interview guidelines were drawn up, and subsidiary questions and probes were used to elicit the required information. To understand what and how of the Joyful Learning experiment, questions were included to know what was learnt by teachers at these training programmes, what were the strategies in use, what the teachers thought about the joyful learning approach, how did it compare with the old method, etc. The attitudes towards the new method, their understanding of children, and their learning would determine the effectiveness of new training and approaches. Since the JL was just being introduced, it was believed that the old approach, methods, and attitudes would not change overnight, but it was important to understand the perceptions of the teachers towards the new approach.

#### **Procedure**

Prior permission was sought from the Education Department of the Municipal Corporation and schools

and a pilot study was conducted. Three teacher interviews and three observations were spread over the academic year, the first one being within 15 days of the commencement of the academic year. Teacher interviews were conducted predominantly by a research assistant after brief training and observations were done by the principal investigator. Inter-observer reliability was established by involving 2 research assistants and observations were recorded by all for 3 different schools for a period of one hour each.

Another method was used to cross-validate the observations. Broad categories of my observations were provided to two field specialists of the Institute, along with the objectives of research and three samples of the observations (as well as the interviews). They were asked to denote the categories that mentioned in the data samples provided. The observation was of a narrative style. The classroom environment in terms of physical structure, ventilation, light, pleasantness of the room, decorations in the room, and seating arrangement of pupils was recorded and so were the physical characteristic of the school. A general format for the observation was prepared. There had to be the mention of starting time, finishing time, and date of observation, activity in progress, the narration, any specific comments, elaborations and explanations. The last three could be added immediately after the observation hour.

### **Data analysis**

Qualitative analyses as suggested through the works of Strauss and his

colleague were utilised (Strauss, 1987, Strauss and Corbin, 1991). Systematic treatment of the data through open coding (developing coding memos), axial coding to see what themes hang together (developing conceptual maps), developing a case study of each school, and finally comparing the cases were the main steps in analysis.

### **Findings of the Study**

Physical characteristics surrounding the schools and the activities in the schools reveal the background information that defines the schools. This section will highlight the physical conditions under which the schools functioned, including the availability of space for indoor and outdoor play and the nature of activities going on in the classrooms. Teaching strategies used by the teachers and its relation to children's behaviour, with a special focus on playway method, and the teachers' comparisons of old and the new (JL) approach, some parent opinions and apprehensions about JL will form the bulk of the findings.

### **Physical setting of the school**

In rural and tribal areas of India, the schools are very likely to be in pleasant surroundings, and also have scope for play. There is bound to be space for outdoor play; at times this may not be immediately adjacent to the school. In the urban areas, especially of a metropolis this facility is not given. So also, adequate toilet and drinking water facilities may not be present. The following information from the nine schools in the study provides an idea of what prevailed in our schools (Table 1).

Table 1  
**Physical Features of Schools**

<i>Features of the School</i>	<i>No. of schools</i>
<b>Location of the School</b>	
In Pleasant surroundings (Pvt. Schools)	5 schools
Not very pleasant	3 schools
Unpleasant surroundings (Situated in a slum)	1 school
<b>Playground Facility</b>	
Good space Available (but play not feasible)	2
Some playing space (schools with horizontal structures)	2 (Municipal Schools)
No play space (vertical school structure)	5
<b>Hygienic Conditions</b>	
Poor hygienic conditions around and in the school	1 Municipal School
Poor hygienic practices	2 Municipal Schools
<b>Lighting</b>	
Adequate	8
Need for better lighting	1
Inadequate	0
Ventilation Adequate	9
<b>Description of the indoors</b>	
Well painted and decorated with posters/charts = Very pleasant	1
Decorated with posters and charts = Pleasant	4
Well painted only = Pleasant	2
Not well painted, no posters	2
Scope for indoor play/activities	4
No scope for indoor play/activities	5
Adequate space for free indoor activities or in the building	2
Multiple classes in one room	1
Total Schools (N=9)	9

Most private schools in the study were in pleasant and clean areas. Only one municipal school was situated with a lot of garbage, open drains running around it; spaces around it were used to even defecating. In this school certain parts of the schoolstank with the smell of urine. This was situated in a slum. The other two municipal schools and a private school in the study were gray, unappealing structures - there was no proper painting of the walls and during monsoons, one school faced a severe problem of leakage.

Pleasant surroundings and hygiene in the schools seemed to go together. The municipal schools together with drab surroundings also tended to have poor hygiene practices. The toilets and their surroundings meant for children stank of urine even though there was adequate water supply. In the other schools, such situations were not observed.

Five out of the nine schools in the study did not have playgrounds, and 2 of these same schools did not have a facility for outdoor activities. The



other 3 schools could have exercise sessions and yoga. The above 5 schools in question were private schools. One private Marathi medium school had a huge playground close-by. The playground was dominated by older adolescents and young adults who indulged in playing cricket and the teacher said that therefore young school children could not feel safe and were therefore not allowed to play in the same premises.

A private English medium school and a private Marathi medium school had big classrooms, and there was scope for free movements, singing and

dimensions of the class (see Table 2). Floor space per person in the classroom is also indicated in Table 1.3.

The Joyful Learning Scheme advocates *yogasanas* (yoga) and physical exercises. More than half of the schools could not seat and accommodate the children comfortably, let alone provide space for activities like dancing, exercises and *yogasanas*. Such activities could then be perceived as an imposition on the schools, could be performed perfunctorily; increasing the burden of teachers without the requisite output, and in the long run reduce the morale.

Table 2  
**Number of children in the schools and the floor space availability**

Municipal Schools				Private English Medium School				Private Marathi Medium Schools			
Sh No.	No. of Chn	Room Size (in ')	Space per Ch (sq. ft.)	Sh No.	No. of Chn.	Room Size (in ')	Space per Ch. (sq. Feet)	Sh No.	No. of Chn.	Room Size (in ')	Space per Ch. (sq. ft)
1	43	17'x17'	6.7	5	40	10'x12'	3.0	3	78	15'x20'	3.8
2	42	12'x12'	3.4	8	60	12'x15'	3.0	4	43	18'x20'	8.4
7	43	10'x15'	3.5	6	50	15'x15'	4.5				
				9	63	16'x16'	4.1				

Note: Sh = School, Chn = children, Ch = child, sq ft = square feet and ' = Feet

dancing. Two of the municipal schools did not have adequate classroom space. The space could also have been utilised for small-group activities, or alternate sitting arrangements, facilitative of more face to face interactions between the teacher and the children. Though space was utilised for exercising or yoga, it was not put to maximum use.

An idea of space availability for children would perhaps be clear on looking at the data on number of children per class, and the physical

Playground facility, facilities for play and recreation is a rare commodity in the metropolis of Mumbai. This suburb was no exception. Only two schools had the facility, and they were not elite schools.

#### Activities in the classroom

The following chart provides the two predominant trends that prevailed in activity patterns. Though there were individual differences across the teachers (schools) and one

could say whether the activities were predominantly abstract, very academic-oriented or activities like

had the right understanding. As the techniques relate to a teaching strategy, this aspect is dealt within

### Chart — School and activity patterns

<p><b>Municipal Schools and the PMM* for LSES*</b></p> <ul style="list-style-type: none"> <li>• Activities of singing, dancing, teaching numbers and alphabets through the means learnt in the Joyful Learning programme.</li> <li>• Less time spent on disciplining.</li> <li>• Celebrations of festivals.</li> <li>• No outdoor activities.</li> </ul>
<p><b>English Medium Schools ( and one PMM )</b></p> <ul style="list-style-type: none"> <li>• Emphasis on academic activities using routine methods.</li> <li>• Emphasis on writing.</li> <li>• Teacher checking the work of children. Some time spent on nitty-gritty.</li> <li>• Little use of visuals.</li> <li>• Not much indulgence in singing and dancing.</li> <li>• Some exercises, and yoga, some extra-curricular activities.</li> <li>• A little more time spent on disciplining (Larger classrooms).</li> <li>• No outdoor activities.</li> </ul>

\*Note: PMM - Private Marathi Medium School, LSES - Low Socio-Economic Status Group

only singing and dancing took place, the reporting is done for two schools.

The Municipal schools are directly under the control of the education department and we perhaps therefore saw teachers implementing the new activities recommended. However as individuals, there were differences in the interest and effectiveness with which the activities were implemented, and how often were they implemented. There were individual differences in the preferences for activities and the techniques used in conducting them. Following is drawn by comparing what teachers had said about playway method:

- For most teachers singing and dancing meant the playway method. Only the teacher from School no. 4, private Marathi Medium School,

the appropriate section.

- Shortage of space is a major challenge. Four schools took children for field trips, and there was some activity related to planting trees (as a part of their curriculum on environmental studies).
- Yet again, one noticed that most schools had some extra-curricular, and art and craft activities, which are essential for various aspects of development in children. However, the activities had the focus of completing the tasks and doing the work neatly rather than emphasising the process and learning involved in these activities. In a couple of schools these activities it seemed were institutionalised. The teachers' (School No. 5 and 8) were particular about what colours

were to be put on the pictures! One of the teachers was very aggressive about it, and provided negative reinforcement to the defaulters. Again individual differences were noted. Teacher of School No. 4 was totally enthusiastic, child-oriented, innovated activities, and taught in the JL approach recommended. A couple of teachers were good in implementing the activities, but did not have in-depth understanding of children's learning. Yet others were rooted in the old approach, which was teacher-directed and concentrated on academic teaching; they taught using the rote learning method most of the time. One class had 78 children in the class and the teacher spent most of the time disciplining the children. Some of the time was spent on correcting the notebooks of children (nit-picking all the while on, 'Why there was no date?' 'Why is it written on page so and so?'), giving instructions, copying from the blackboard and scolding children for various misdemeanours. In contrast to these glum proceedings, there was a change in this classroom itself, when the art teacher or the school headmistress were there (replacing the teacher about once a week) for drawing work or to tell stories. Here children were relaxed and enjoyed themselves. (*Field Notes of School No. 3*).

- In other schools, time was not taken up with disciplining activities like in School No. 3, but they were not as child-oriented as School No. 4 either. There was some pattern (see Chart).
- It was observed that children did not concentrate on the task on hand if they did not know how to go about it and, in all probability, when they felt diffident for some reason or the other. Lack of tasks, or when they finished their tasks and waited for the teachers to check on their work, did they get into other activities which could become noisy and disruptive for the teacher to carry on her tasks. It could, at times, disrupt the neighbouring classes.
- Another significant finding regarding physical activity relates to the restlessness in children. Certain teachers observed that toward the end of the day, or at times immediately after lunch, children could not concentrate; got restless too. Therefore, one teacher said, she schedules the activities in such a way that everyday there are some extra-curricular/art/craft kind of activities, especially after lunch. Teachers of school 9 and 4 also reported that they took care of the schedules so as to make the entire day interesting. Exercising them on and off, got children to shake off their sleep, boredom and restlessness, the teachers said. To quote, "... during the day of about 6 hours in the classroom, the teacher also needs a break, it gets very tiring otherwise. Mondays I do not have a break and the children do not have any extra-curricular activities. To avoid this chaos I call in a teacher to sing bhajans (devotional songs) for the children." (*Field Notes of School 8*). Almost all

schools used exercises and singing which were performed by children with gusto (especially by the boys), “to ward off lethargy”, was what the teachers reported.

Most teachers admitted to focusing on reading and writing, (especially the English medium schools and a private Marathi medium school), as the parents told them that they want their children to learn them. Moreover, these teachers were in a way convinced that the children coming to their schools, *meant for middle and upper income groups (my addition)*, had already indulged in activities involving materials in K.G., they knew their alphabets, and it was not relevant for them.

### **Teaching strategies**

A dimension to the use of particular teaching strategies has to do with classroom strength. Almost all teachers reported that teacher to child ratio should be 1:40, otherwise classes became unwieldy; and that they were capable of managing 40 children well was in it commendable. One teacher of school No. 3 was found exasperated with 78 children.

Teacher in school No. 8 did not verbally express her exasperation with 60 odd children in the classroom, but she seemed to be in a hurry to complete the tasks, and egged the children on to complete the tasks. Her brusque behaviour in various actions,

not taking time to explain, bore testimony to the pressure she felt in handling the class. Teacher of school 9 did mention and said that the new learning methods (the Joyful Learning approach) require fewer children to a class. She especially mentioned evaluation to be exhaustive as specific questions are to be asked to the child, and after this tiring process, one had to make sure that the child learnt and moved on to higher competency levels. It was also observed that a lot of her time was taken up with correcting children’s work (so also of the teacher of school 8).

Almost all teachers spoke about the role of visual aids in enhancing learning in children. Only about 3 schools used them actively.

Exploring teachers’ teaching strategies and recording the observations revealed their awareness regarding what helps children learn or how children learn (Table 3). The findings are interesting in the sense that awareness or knowledge does not translate into action and certain actions of the teachers could aid children’s learning. Some of the knowledge seems to be from the JL approach, especially the strategy on teaching in an integrated way, providing hands-on experience to children, the relationship of audio-visual aids to memory and small group activities. However the message of playway method *per se* has not percolated to most in the sample.

Table 3

**Awareness and/or lack of awareness about teaching strategies**

<p><b>Awareness of</b></p> <ol style="list-style-type: none"> <li>1. Committing something to memory, i.e., by-hearting something, or/and being able to rattle off the contents of a textbook were no indications of being able to read. (School No. 7).</li> <li>2. What constitutes a demonstration (equipment may not necessarily be used). (School No. 8), School Nos 1, 2, and 4.</li> <li>3. The integrating functions of audio-visual aids in strengthening memory (School No. 2), No.4, No.6; and other school teachers, did not appreciate it enough to put them into practice.</li> <li>4. Teaching in an integrated way rather than separating subjects taught in the classroom. (School No. 2; School No. 4).</li> <li>5. Creation of small groups of children, based on their learning capacities, to further assist in their learning. (School No.2; School No. 4, teacher was aware, but expressed difficulty in carrying it out).</li> <li>6. Playway as a recreation technique only (all schools except school no. 4), or used to teach alphabets and numbers.</li> <li>7. Hands-on experience, games and play were enjoyed the most by children. Activities kept children focused and out of mischief.</li> </ol>
<p><b>Lack of awareness of</b></p> <ol style="list-style-type: none"> <li>1. What constitutes rote learning? Most teachers who practised the rote technique believed that they made children understand by explaining rather than by making them by heart something.</li> <li>2. The entire process of children's learning (except teacher of school. No. 4).</li> <li>3. What teacher efforts are required for effective teaching (Except teacher of school No. 4).</li> <li>4. The meaning of playway method in its entirety.</li> </ol>

**Discussion and Conclusion**

Situating learning in an environment, organising for play for the sake of letting children play and using games to increase insights into learning and engaging children continuously in the classroom require settings which provide for clean spaces, some ventilation, light and a pleasantness which will enthuse the participants to

action. The experience and research findings both reveal that unpleasant environments can depress students, and make students inactive. Similarly, crowding results in aggressive and non-helping behaviours. Play and activities recommended by the Education Department cannot be conducted in more than half of the schools in the study. A number of

our Municipal schools presently do have these facilities. But one cannot be sure that the situation will prevail for long. The condition of parks and playgrounds has been found to be poor (Balu, 1996). As issues stand today, children have reduced facilities for play in Mumbai. It is a privilege if housing complexes have some space for play. How many can afford to utilise paid services is the question. Education planners, policy makers and the concerned stakeholders need to address these issues. However, one can enhance management of the schools in such a way that the schools are pleasant settings to be in.

Reflections on play, observations of children at play and theoretical positions on play beg the point that play needs to be encouraged in children for a variety of reasons (health as well as psychological development). More than half of the schools in the study did not have play space. This concern assumes more significance given the facts of television viewing and playing. Studies on television viewing by children in India (NIPCCD, 1987) and elsewhere in the world (Bloom, 1987; Kirn and Cole, 2002) reveal that urban children play less and watch more television per week.

Resource crunch and the population problem, especially in urban India, have made the school day shorter. There are shifts in the school system, in almost all the schools of Mumbai. It is a six hour day for the children and 8-hour day for the teacher. School time table was viewed while looking at activities of the classroom. There was no free play in the schedule, though there was

physical education. What goes out of the time table is the play time. This is akin to what is happening in the U.S. too (Jarrett, 2001). The beneficial effects of physical exercise and activity were pointed by teachers themselves in this study. Complementary to this finding is one by Dale, Corbin and Dale (2000) which revealed that children's activity levels did not increase after a day in school without play and exercises.

While a number of teachers did make efforts in scheduling some activities, it was not possible for all of them, and everybody concerned did not make all the efforts. All systems are not in place. There is space crunch, either because they share the classroom with another class and/or the size of classroom is too small (in comparison to the strength of the class) to conduct activities. Under such circumstances, the activities are not done in the required manner. This gives a message to the children that these are things to be done for the sake of doing, and that they are not serious. Cynicism could develop.

Strength of the classrooms (and multi-level grades in one classroom, especially in our rural areas) has been mentioned as an impediment to playway, activity based learning. Perkins (1992) says that generally a hue and cry is raised about maintaining high teacher-student ratio. In schools with size of classrooms varying from 20 to 40 pupils not making a difference to teaching effectiveness has also been reported (Eggen and Kauchak, 1991). He has compared certain educational outcomes in the American (USA) schools and those in China and Japan. He is

of the view that teacher-student ratios has also to be seen in the context of time available for teachers' lesson plan preparations, time for them to reflect on their classroom practices. Chinese and Japanese teachers were more effective in larger classrooms because they had honed their skills by more preparation and reflection to impart better "understanding". Administrative duties within the education system and outside ate into the teaching time of the teachers in the study.

The activities were implemented more to ward off boredom and sleep; not for making learning experiential, more so in the private schools. Unaided schools tried to do mostly what they had been doing (one English medium school had already adopted a number of strategies suggested by JL) – some activities were incorporated to show the observers that changes had been instituted. Activity-based approaches were seen as being appropriate for the pre-schools and because the education system has no way of enforcing certain standards in the private schools, the implementation of an approach or method boils down as to who controls the purse strings.

The new approach or the Joyful Learning programme needed to rationalise the workload and provide other logistics support if there is to be change. Of significance have also been teachers' comprehension of why evaluation and how of evaluation. Issues, duration and effectiveness of training programmes and their follow-ups need to be addressed.

While elaborating on the strategies used, almost all the teachers spoke

about the playway method. When explored what this playway method is they (except teacher from school no. 4) said that it is to sustain a child's interest, to make them like school, and for this purpose games and songs were formed a part of the activities. The understanding of the technique seemed limited to the method's usage of holding children's attention, and creating a playful environment to be in. But as a strategy it involves knitting syllabi into play activities so that new concepts are learnt or old ones assimilated as children play. Forming teams and giving points/rewards to the winning team would be an example of helping assimilation of some learned facts. Similarly material has to be carefully chosen, rules set up or so that children explore new concepts as they are asked to play a game. Joyful Learning has introduced the technique, but the teachers (at least in the study) do not appreciate the meaning in its entirety. Furthermore, knowledge did not translate into practice and there could be a number of reasons. The reasons could range from practical aspects of classroom management, strength of the classroom, leadership and many a times to the basic social psychology that could unfold in organisational setting (from dyadic interactions resulting in limiting one's performance to dynamic leadership and organisational practices with employees).

Some of the schools were able to implement the JL approach to an extent, and include certain hands-on activities for children. Playway method as teaching strategy could not become

operational in most schools. It has been about 10 years now since the implementation of the Joyful Learning Programme, there needs to be a more thorough review. Implementation of Ramamurti Committee's recommendations hinged on the understanding of playway approach. A paradigm shift in understanding how children learn, and the value of play in the entire process needs a plan of action which is systematic and sustained. Teachers from the unaided schools and the parents from the lower Socio Economic Status (SES) backgrounds seem to have certain beliefs about how learning and play are distinct and that how one cannot be mixed with the other, and they also have apprehensions regarding the new method. Parent's beliefs and can go a long way in instituting change in education practices and negative influences could be perpetuated without adequate understanding of the teaching-learning processes by the parents (Mahendru, K. of Eklavya, personal communication, 2005).

Issues could be more compounded when there is no consensus on what constitutes playing (Frost, Wortham, and Reifel, 2001; Klugman and Fasoli, 2000). Time and efforts need to be sustained in bringing about educational change. What Perkins (1992) has to say about change in this regard is very relevant. Sustaining change, making the teachers accept new method/strategy and making it a part of their repertoire of teaching strategies is an arduous task; needs to be very systematic, and the momentum has to be sustained till it is internalised. Croll, Abbott, Broadfoot, Osborn and Pollard (1994) also have a

similar suggestion. Various checks are suggested. One important component according to Perkins is not adding on to an already burdened schedule and activities of the teacher. Looking at some of the teacher feedback in this study it appears that our systems do not attempt to reduce the burden of the teachers. Some teachers complained repeatedly about this in the study.

There is another dimension to the issue of knowledge and its practice in the classroom setting. Some teachers in the study were aware but did not practice what they knew. A few were not able to realise that they did not "know" that they were using the rote-method. In the overall context of the school system, it seems that knowing is not enough. Teacher training has to aim at the issue of not just the cognitive dimensions but also at the affective and conative dimensions. Affective issues can become significant in bringing about the desired results, as in the case of teachers of School No. 4 and 2. The teachers need to strongly feel about implementing the knowledge that possess they and how they will implement it. It brings forth the issues of motivations and sensitivities of teachers and what does the education system function by. If these issues are not addressed by the system, individuals interested in the teaching and learning so that children retain what they learn, there is a need to strategise by interested educators/teachers, and like Jeanne Goldhaber (1994), we need to ask our policy makers and education administrators, "...if it is education, can we let our children play?"



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# Assessment Practices in Constructivist Paradigm at the Higher Secondary level in Kerala

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## Abstract

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*The purpose of the study is to bring out innovative practices in assessment at the Higher Secondary Level. This study is aimed at developing the principles of assessment that suits the needs of the students of higher secondary classes and identifying the learning-teaching processes, the method of assessment (both formative and summative) and the procedure for recording the assessment results from the point of view of a specific context. A survey method was conducted by using the tools such as questionnaire, interview schedule and Focus Group Discussion points. The population consists of teachers, students and principals of higher secondary schools of Kerala. The sample consists of 50 teachers of commerce, 500 students of commerce and 10 principals of higher secondary schools. Observations regarding the study are that the commerce teachers themselves experimented in real classrooms on selected themes in business studies subject in selected schools. The relationship of learning outcomes, assessment task and assessment criteria were clearly established. The findings of the study proved that the principles of assessment developed to suit the needs of higher secondary students in Kerala context is very appropriate and the methods of assessment and its recording are effective and practicable at the higher secondary level according to critical pedagogy and constructivist approach.*

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## Introduction

The aim of education has to be in tune with the needs of the society. In the 21<sup>st</sup> century society needs creative

people who take part actively in the production process.

Education at the higher secondary level is very important as it is the

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terminal stage of school education. Education at this stage is diversified so as to form a foundation for those who opt for higher studies and those who opt for employment. The quality of education depends largely upon the quality of instruction provided in the classrooms. Learning should relate to realities and should facilitate application of knowledge in a given context when situation demands. So there should be a shift from 'content' to 'processes' of learning. This calls for a drastic shift from teacher-centred approach to learner-centred approach.

#### **Need and significance of the study**

Kerala has initiated curriculum reform at school level based on constructivist paradigm during 1997. The activity based, process oriented and learner-centred approach to learning has been followed in Kerala. But at the higher secondary level the curriculum has not been changed according to this approach. Only pedagogy has been changed emphasising on the constructivist approach. As part of introducing grading in 2005, Continuous and Comprehensive Evaluation was introduced at the higher secondary classes. But only partial effect was attained due to the reason that the curriculum has not been changed according to this approach. As part of CCE, continuous evaluation (CE) and term end evaluation (TE) are carried out and CE is added with TE for calculating the grade of the individual subjects. Still the strategies and evaluation carried out in higher secondary classes has to be improved a lot to attain

perfection. NCF 2005 proposed a shift in the approach to learning focusing on constructivist approach which believes that a child should construct his/her own knowledge. Based on NCF 2005, Kerala Curriculum Framework 2007 was formulated emphasising critical pedagogy and constructivist approach to learning in a more scientific manner. According to this approach, curriculum and assessment are organised around the idea that a person in the habit of looking for answers to the following five questions, when presented with a novel situation will use his/her mind well (Apple and Beane, 1995).

1. How do you know what you know? (Evidence)
2. From whose point of view is this being presented? (Perspective)
3. How is this event or work connected to others? (Connection)
4. What if things were different? (Supposition)
5. Why is this important? (Relevance)

Learning according to this approach should relate to the child's experiences of life which are directly linked to the problem faced by the society. The classrooms should provide spaces for authentic dialogues among students and between teacher and students. Learning demands development of higher order thinking skills and life skills.

Assessment has to play a significant role in driving students' learning appropriately (Knight, 1995). Learning is a continuous process and evaluation should be an integral part of this process. Assessment through diverse experience ensures an all round development of students and help the teacher to make

a comprehensive assessment of the various skills of the students.

The purposes of assessment are:

1. to assist student learning by providing appropriate feedback on performance
2. to measure students' achievement objectively against the learning outcomes of the units
3. to provide a reliable and consistent basis for the recommendation of an appropriate grade
4. to assist teachers in evaluating the effectiveness of their teaching

The curriculum revision according to KCF 2007 has reached Class X in 2010. Kerala has initiated curriculum reforms this year at higher secondary level according to NCF 2005 and KCF 2007. At this point of time, a study was conducted in selected schools to trace out the practicability of adopting this approach to learning, various learning strategies and assessment in commerce classes to the fullest spirit.

#### **Objectives of the study**

1. To identify the challenges of assessment at the higher secondary level
2. To develop the principles of assessment that suits the needs of the students of higher secondary classes.
3. To list out the learning-teaching processes, the method of assessment (both formative and summative) and the procedure for recording the assessment results from the point of view of a specific context
4. To trace out the difficulties faced while implementing CCE in real classrooms.

#### **Methodology**

Survey method was conducted by using the tools such as questionnaire, interview schedule and Focus Group Discussion points. The sample consists of 50 teachers of commerce, 500 higher secondary students of commerce and 10 principals of higher secondary schools.

Tools and techniques used for the study

1. Questionnaire
2. Interview with the principal
3. Focus Group Discussion with higher secondary teachers
4. Focus Group Discussion with parents and students of selected schools

#### **Observations**

1. During vacation training given to teachers, the concept of critical pedagogy and constructivist approach were dealt with in various sessions. An exercise on the organisation of curriculum of commerce subjects through an analysis of social issues existing in students' locality and the pedagogic issues from the students' real life experiences and identification of slots where this approach can be used in full spirit were done.
2. The commerce teachers themselves experimented in real classrooms on selected themes in business studies subject in selected schools
3. The relationship of learning outcomes, assessment task and assessment criteria were clearly established
4. Spontaneous learning took place among students according to this approach

## **Conclusions based on objectives**

### ***I. Challenges of Assessment at the Higher Secondary Level***

1. The demand of the 21st century is that the people should be innovative, creative, critical in thinking and should have problem solving skills
2. Knowledge, skills and attitude are essential for a career, so it has to be looked into the provision of opportunity to the learners to enhance them and to the assessment as to whether these components are assessed
3. Development of multiple skills is the need of the hour and so the curriculum should provide space for the development of the generic part of the subject and the customised part to suit specific contexts. Assessment regarding these aspects by the concerned experts has to be done
4. It is essential to assess all the domains of the taxonomy such as cognitive, psychomotor and affective domains
5. A scientific system of grading is demanded in this century, which removes the minute discriminations among the learners and this helps to make assessment on criterion basis and to offer chances to the learners to their optimum development
6. Construction of knowledge through collaborative learning, co-operative learning, inquiry based learning and community based learning is expected from learners' part. So the challenge of assessment from

'product based' to 'both product and process based' assessment is there

7. Assessment made by the teacher alone is to be replaced with the assessment by peers, students themselves and the teachers together
8. Before giving the assessment task, the assessment tools and the assessment criteria have to be discussed and finalised with the learners so that a clear transparent assessment can be done and this is the demand of this century

### ***II. Principles of Assessment***

It is recognised that high quality assessment practices are the important elements of the student experiences and that the outcomes of assessment influences students' lives. Here lies the responsibility for ensuring the quality and reliability of assessment very seriously. The following are the principles followed for making an assessment at higher secondary classes.

1. *Assessment should be reliable*  
Reliability refers to the need for assessment to be accurate and repeatable. This requires clear and consistent processes for the grading and recording.
2. *Assessment should be valid*  
Validity ensures that assessment tasks and associated criteria should effectively measure student attainment of the intended learning outcomes.
3. *Information about assessment should be explicit and accessible*

Clear, accurate, consistent and timely information on assessment tasks and procedures should be made available to students

4. *Assessment should be inclusive and equitable*

Inclusive and equitable assessment ensures that tasks and procedures do not disadvantage any group or individual

5. *Assessment should address the aims and outcomes of the subject/ discipline based on its nature*

Assessment tasks primarily reflect the nature of the discipline or subject and also ensure that students have the opportunity to develop a range of generic skills and capabilities

6. *The amount of assessed work required should be manageable*

The scheduling of activities and the amount of assessed work required provide a reliable and valid profile of achievement without overloading teachers or students

7. *Formative and summative assessment should be included in each term*

Formative and summative assessment should be incorporated in each term to ensure that the purposes of assessment are adequately assessed.

8. *Feedback should be an integral part of the assessment process*

Students are entitled to feedback on all formative and summative assessment tasks. The nature, extent and timing of feedback for

each assessment task should be clear to students in advance

9. *A variety of assessment types should be included in a subject*

Variety in assessment promotes effective learning and allows a range of intended learning outcomes to be appropriately assessed. Varied assessment tasks support a range of approaches to learning.

### **III. Learning-teaching processes, method of assessment and the recording of assessment results on the basis of a specified unit 'Marketing Management' in Business Studies subject**

**(a) Learning-teaching processes:** the learning-teaching processes of this unit is organised around the social issue 'Consumerism' and the themes 'markets, its influence on marketers, consumers, manufacturers and the society. The strategies used for classroom transaction include:

1. Case studies
2. Community projects
3. Seminars
4. Debates
5. Conduct of social intervention programmes
6. Development of posters
7. Development of models
8. Conduct of exhibitions
9. Surveys
10. Market research
11. Assignments

### **(b) Method of Assessment and its Recording**

1. The teacher prepared a comprehensive plan of teaching the

unit, which contains the learning outcomes in terms of concepts and process skills especially higher order thinking skills, and the slot for life skills. It also has a space for writing feedback and assessment of the learners. The teacher will write this column after each sub-unit is taught. Corresponding to this, the teacher keeps a diary in which one page is provided for each student and writes the progress of learning of the students. The teacher can do it properly because one teacher has to teach only in one or two classes having strength of 40-50 students.

2. The formative assessment consists of performance assessment and the portfolio assessment. The reflections of the students in the learning teaching process, the involvement of students in the group work, peer assessment, self assessment, and teacher assessment were considered for performance assessment and feedback will be given for students' progress of learning. The teacher notes down the feedback in his/her diary. It is done on the basis of the rubrics developed in consultation with the students, scoring guides and the test items used for classroom transaction. This is practicable as it is thoroughly understood by the teacher and the students. The portfolio assessment includes the assessment of the student's portfolio. A portfolio is a collection of products, a student developed as part of learning. Freedom is given to the learners to

select best two works in each term to be kept in the portfolio. Along that, teacher's reflections and student's reflections were also being kept. While going through the portfolio, the teacher asks some questions based on the work. At the end of each term, by considering the performance assessment and the portfolio assessment, the teacher assigns the score of formative assessment and records in the report. The recording of scores and grades of learners need to be done by the teachers only at the end of each term

3. The summative assessment is done by conducting a term end written test which measure higher order thinking skills. The test is designed keeping in view the weightage of content, objectives and the type of questions and a blueprint. This is constructed in accordance with Revised Bloom's Taxonomy developed by Anderson and Krathwohl (2001) which suits the constructivist paradigm. The score of the summative assessment is also recorded in the report.

Example of a question, testing the cognitive process skills such as 'analyse, evaluate and create' to be included in achievement test in the constructivist paradigm is given below:

- Q1. Ravi, along with his friends decided to manufacture a new brand of soft drinks. A good design of packaging is needed for promoting the product in the competitive market. In your views, design a package for the



drink by considering the following aspects.

1. Protection and safety of the product
  2. Information aspect
  3. Promotion aspect
  4. Customer convenience aspect
  5. Environmental aspect
  6. Societal aspect
4. The ratio of summative assessment and formative assessment for the subject Business Studies is 80:20. For giving grade in the nine point scale for each subject both assessment scores are added and grades were given accordingly.
  5. Separate assessment tasks were not given for assessing life skills. The slot for the development of life skills is integrated with the scholastic part. But it is graded separately by following direct grading system. It gets cumulated for the whole period of higher secondary course.

6. The effectiveness of CCE can be ensured by establishing the relationship between learning outcomes, assessment tasks and the assessment criteria.

#### **IV. Difficulties faced while implementing CCE in real classrooms**

1. The school system having fixed periods of one hour
2. Absentees on account of doing other jobs in case of students coming from poor social background
3. Negative attitude of teachers.
4. Inability of the teachers to act as co-learner, researcher, social integrator and facilitator
5. Absence of healthy rapport among the authorities, teachers and the students of the school
6. Lack of textbooks integrating content with pedagogy for all subjects
7. Non-utilisation of library and ICT facility available in schools

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# Democracy and the Persistence of Inequalities\*

ZOYA HASAN\*\*

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## Abstract

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*Democratisation in former colonial states has been inconsistent and erratic. India's success in building a vibrant democracy remains unequalled in the post-colonial world. Indian democracy has endured and has been widely admired, not the least because it is one of the poorest countries in the world in terms of per capita income or it is the world's largest liberal democracy. Indian democracy has succeeded against considerable odds: low income, widespread poverty, and illiteracy. Disparities remain widespread; in fact, there was evidence of widening inequalities since the introduction of economic reforms in the early 1990s along a variety of dimensions: rural-urban, region, class and community. The overall failures are manifest in areas such as employment, public education, public health, and the provision and maintenance of public services. This article examines India's democratic experience and how it responded to the challenges of inequality. It does not offer a comprehensive account or stocktaking of India's democratic experience and its impact on inequalities or the broader relationship between democracy and development. More specifically, it examines the interface between politics and equality, and attempts to situate social and economic inequalities and the process of development in the context of the transformation that has taken place in the past two decades, to explore the interaction between the two processes and assess its impact on inequalities. While discussing the relationship between democracy and inequalities, the focus is on state capacity or what has been done to reduce inequalities and poverty while also paying attention to how inequalities influence Indian politics and how the latter impacts the struggle against inequalities. It raises the broader question of how such dramatic inequalities could persist in a democracy in which voters create pressure for improved outcomes. How do we explain the persistent gap between the outcomes that people expect and the government's capacity to improve their well-being?*

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The success of India's democracy has evoked much interest not the least because India is one of the poorest countries in the world in terms of per capita income or perhaps it is the world's largest liberal democracy. Indians aren't alone in celebrating their success story scripted by marrying political freedom with economic progress. New Western accounts speak glowingly about a rising India which can counterbalance China.<sup>1</sup> India is indeed rising for the aspiring as well as already privileged classes and their inordinate longing for wealth and fame, and their ambition for recognition of India as a Great Power. On the other side, there are huge inequalities of income, wealth, consumption, access to education, health care and dignified employment. This raises the broader question: how such dramatic inequalities could persist in a democracy in which voters create pressure for improved outcomes. The larger issue is the relationship between democracy and development. In India, the two can be seen as functionally related, that is each process supports the other.<sup>2</sup> The logic of democracy and development are not seen to be asymmetric. But how do we explain the persistent gap between the outcomes that people expect and the government's capacity to improve their well-being?

What follows is not a comprehensive account or stocktaking of India's democratic experience and its impact on inequalities or the broader relationship between democracy and development or democracy and equality. The paper attempts to situate social and economic inequalities and the process

of development in the context of the transformation that has taken place in India in the past two decades and to explore the interaction between the two processes since the early 1990s. While discussing the issue of democracy and inequalities, the focus is mainly on the state's capacity to reduce inequalities and poverty while also paying attention to how inequalities influence Indian politics.

India remains by far the largest democracy in the world, with almost 600 million voters, larger than the electorates of Japan, Western Europe and North America combined. India's success in building and consolidating a vibrant democracy remains unequalled in the post-colonial world.<sup>3</sup> Democracy has not only survived, but has thriven and been institutionalised. The democratic process has deepened, drawing historically disadvantaged groups into the political system. This has ensured that the political actors do not come only from the traditional upper-caste social elite although they continue to have a disproportionate presence in public institutions and influence over policy-making.<sup>4</sup>

The key to the success of India's democracy lies in its political inclusiveness. It is one of the few countries in the developing world that took up the challenge of building an inclusive democracy in a diverse, multilingual and multi-religious society. It is a democracy whose Constitution has given primacy to social equality and justice as a cardinal principle of governance. The freedom struggle and the social reform movements prepared some of the ground for social equality,

in the sense that they delegitimised the most egregious forms of oppression that characterised the Hindu society. However improbable it might have seemed in 1950, the trend towards greater social equality is unmistakable.

The effort to pursue equality has been made at two levels. At one level was the constitutional effort to change the very structure of social relations. Practicing caste and untouchability was made illegal. Allowing religious considerations to influence state activities was not permitted. At the second level was the effort to bring about economic equality. But in this endeavour the right to property and class inequality was not seriously curbed. Moreover, the placement of the demands for economic equality into the Directive Principles of State Policy indicated clearly that the political elite did not conceive of serious intervention to check economic inequality. Nevertheless, a discourse of economic uplift was part of the process of development and legitimisation of the postcolonial state. But this discourse did not translate into a consensus on active state intervention to bring about greater equality, except the abolition of intermediary rights in the rural sector. Thus, the references to economic equality in the Constitution, in the Courts or political platforms remained basically rhetorical. Besides, in the legal and the political arenas, much of the constitutional and state efforts were directed against social inequality and not against poverty. Disadvantage and lack of opportunities is seen as unjust treatment of whole communities like lower castes, religious

minorities and tribal communities which in time become actors and agents against social inequality. If poverty is defined as deprivation/inequality the resentments expressed through democratic mobilisation are not always against poverty per se, but against social injustice and political exclusion. Modern Indian politics has not witnessed a struggle against poverty but against historical disadvantage. People who participate in such mobilisation are poor, but the basis and self-identification for their participation and action is not poverty, but social discrimination. Hence, the focus has been on caste-based injustice rather than against poverty in a universal sense. People are acutely conscious of their own deprivation but completely indifferent towards parallel situations and demands emanating from others who may be equally poor and disadvantaged.

The first two decades of democracy were elite dominated, with low levels of participation, competition, and high levels of centralisation and regional disparities. The next two decades were more competitive, with higher political participation, and an increase in non-electoral participation and greater federalisation through the emergence and growth of regional parties. Defying democratic theory, a great participatory upsurge has marked democratic politics. Since the early 1990s, India's plebeian orders have participated noticeably more in elections than its upper and middle classes. Thanks to the democratic upsurge, previously marginalised groups entered the political arena in large numbers,

contributing to a change in the pattern of representation and a shift in the balance of political power in governments and legislatures. These trends have been doubtless helping to make democracy more inclusive with democracy steadily chipping away at hierarchies and moving downwards. This is nothing short of a democratic revolution.

A brief comparison of the caste composition of national and state legislatures today with the situation soon after Independence reveals significance of the democratic revolution. In the 1950s, India's national politics was dominated by English-speaking and upper-caste urban politicians who constituted two-thirds of the Lok Sabha.<sup>5</sup> Even the lower-level political leadership tended to come from the upper castes in north India.<sup>6</sup> The last two decades have witnessed a major increase in the number of lower caste legislators and senior civil servants in influential government positions. This process of greater inclusion can be described as the 'transfer of power' from the upper castes to the lower castes with major political consequences for the restructuring of political power. At the turn of the 21st century, lower-caste chief ministers are no longer rare. The logic of one person, one vote in free and fair elections has put power in the hands of the more numerous lower castes. This trend signals a social transformation that is giving voice to previously marginalised groups, and helping them to gain access to the political system.

While Indian democracy has seen a transfer of power from the upper

castes/classes to the middle ranks, this has not resulted in power sharing with those at the bottom of the social structure. Nor has it facilitated any significant distribution of wealth and income; rather the vigour of electoral democracy and high levels of participation can obscure a growing concentration of power among political and economic elites. The key issue is the failure of the politics of redistributive justice to provide amelioration in the material conditions of the vast majority of people mired in poverty and economic misery. In other words, the strength of participatory democracy has not been matched with egalitarian economic development.<sup>7</sup>

This is so even though both development and democracy have been declared as integral to the project of the Indian state after Independence. Until 1991, there was a broad consensus on the role of the state as a crucial player in the development process. State-led capitalism and state intervention in various ways were seen as essential for a self-reliant pattern of development. This model did deliver some tangible benefits to the broad mass of the population through various kinds of development projects, the construction of the public sector, and the provision of public services such as health, education and transport.<sup>8</sup> However, this model was structurally limited owing to the inability of the state to address the most basic form of inequality in the countryside. Even with declarations of commitment to land reforms and curbing concentration of economic power, relatively little was done to redress asset and income inequality.

With the advantage of experience we can now see that policy measures, such as land reform that could have widened the social base of development were never likely to take place.<sup>9</sup> No major land redistribution occurred after Independence which is not to say that there were no land reforms at all, but the net result of those reforms was to eliminate very large landholdings, to give ownership rights to the richer tenants, to create on the whole a more homogeneous class of land owners, but not to break land concentration: the proportion of land accounted for, say, by the top 15 per cent of landholdings remained unchanged. Attempts at land reform were thwarted by the landed interests because of their penetration of the Congress party, control over the local bureaucracy, their clout in the arena of state politics and the legal constraints imposed by the constitutionally guaranteed rights to property.

Similarly, private asset concentration in the industrial sector was never seriously challenged. India's industrial growth did not create enough jobs to make a dent in the growing numbers of poor. The incapacity to diffuse growth among a much wider population contributed to industrial stagnation and restricted the stimulus for domestic demand in rural areas for manufactured items of mass consumption.<sup>10</sup> From the highly unequal distribution of benefits and assets, it is clear that Indian society was dominated by a ruling coalition of business interests, large landholders and the bureaucratic elite. Although the overall power of

these classes was not curbed at the same time the broad-based interests of the people could not be completely overlooked. The solution was found in a politics of accommodation, which was strong on rhetoric and weak on substance in terms of outcomes for the poor and the dispossessed. The Congress party mastered this political strategy which helped Congress governments in the first few decades after Independence to return to power. But in the longer run this also required some redistributive effort to translate political accommodation into tangible legislative programmes. This was completely absent until recently when the capitalist advance necessitated government intervention to neutralize the huge vulnerabilities of the poor with regard to basic needs, especially livelihoods.

Over time the state in India has shifted from a reluctant capitalist state to a strongly pro-capitalist state with a clear and conspicuous dominance in the relative power of the corporate sector.<sup>11</sup> This dominance has been achieved through an alliance of the corporate sector with the state and bureaucracy. Though the state continues to negotiate between conflicting interests, the autonomy of the state has declined as it gets increasingly intermeshed with the corporate sector.<sup>12</sup> The bureaucracy which in the past was operating social interventions of the developmental state has gone over completely to the side of the corporate class. Significantly, the corporate sector exercises considerable influence over both central and state governments,

not through electoral mobilisation but through political parties, bureaucracy and the print and electronic media.<sup>13</sup> There is a virtual consensus among all parties as regards rapid growth led by private investment. At the federal state level the dismantling of the licensing regime has opened up huge competition among state governments eager to attract capitalist investment, both domestic and foreign. This means that as far as the party system is concerned it does not matter for the corporate sector which party or combination of parties come to power at the Centre or in the states.<sup>14</sup> This is evidence of the major transformation that has taken place in the structure of power in recent years.

Further evidence of corporate-class domination comes from the neglect and stagnation of agriculture; per capita food consumption has fallen, and thousands of indebted farmers have committed suicide. But this is a domain which has a large number of people and huge deprivation and poverty, and yet it has been ignored in the past few years. Both rural and urban poor, with their livelihoods under threat from the advancing forces of corporate capital, are dependent upon direct government support for their basic needs. This challenge lies at the heart of the massive controversies in India today with regard to acquisition of land for industry and plunder of natural resources by the corporate class with the help of bureaucrats and politicians.

Clearly, a significant change has taken place in thinking about development as faster economic growth

and in the translation of development objectives mainly through high growth since the early 1990s. This has significant implications for the politics of equality in India. On the one hand, economic growth led by private investors and helped by a state–capital alliance has fuelled growth making India among the fastest growing economies in the world. On the other hand, concentration of economic power in the corporate sector has further contributed to widening rural–urban, regional and sectoral inequalities. Even as many Indians have benefited from rapid economic growth of the past quarter century, the process of growth has bypassed the vast majority of the population.<sup>15</sup> The highly educated Indians have benefited from opportunities arising from opening of the economy and globalisation, especially restructuring of industries, and the new growth areas of services and Information Technology Enabled Services. These opportunities have mostly benefited the better-educated sections, while things have got worse for the majority of the rural population and a significant part of the urban population.<sup>16</sup>

Inequalities arise from a basic asymmetry between growth of the national product and the source of income of the majority, which is agriculture.<sup>17</sup> India's growth model is not geared to creating productive employment. Large-scale employment is the key to poverty alleviation but this might not happen under the service-led model of growth. The share of service sector and manufacturing has grown rapidly but the share of labour

force in agriculture remains high. Most of what job growth there was came in a handful of industries such as hotels, restaurants, finance and insurance. India's services-led growth depends on skilled manpower which we're yet to produce on a mass scale. Employment in the organised sector has stagnated in the face of high rates of growth while employment in the unorganised sector has increased but not enough to absorb the rise in population.<sup>18</sup> The highest growth sectors are construction, trade, advertising, telecom and road transport. In all these sectors, what counts is privileged access to natural resources and the national commons, most critically land, mining leases, property development rights, construction permits and spectrum allocation, which is at the core of the government's discretionary powers. Many of the new billionaires have used political patronage and influence to corner these resources.<sup>19</sup>

This pattern of economic growth is disequalising and results in concentration of wealth amid impoverishment. Hence, India has the dubious distinction of having some of the richest people along with a very substantial number of the poorest people.<sup>20</sup> Hundreds of millions of people are steeped in extreme poverty.<sup>21</sup> India's much talked about economic transformation illustrates the disconnection between GDP and social progress. The basic paradox is that GDP has been growing fast, but governments have not succeeded in translating accelerated growth into inclusive development. Instead of accelerated growth positively impacting

human development indicators it seems faster GDP/per capita growth begets slower growth in human development.<sup>22</sup>

The implication of poor human development and rising inequalities is impoverishment and insecurities which afflict some sections more than others resulting in acute discontent and violent clashes from time to time.<sup>23</sup> The growing numbers of underemployed and casual workers offer a steady source for recruitment of young men and women, by extremist religious movements and by Maoist revolutionary groups in the tribal belts of West Bengal, Orissa, Jharkhand, Chattisgarh, and Maharashtra who are fighting to overthrow the state through violence.

These inequalities have been intensified by large-scale corruption. Scandals and corruption are not new to India. The state exchequer has been the medium through which large-scale transfers have been made to the capitalist group and it is the most important instrument of accumulation for this class.<sup>24</sup> This occurs because of a high level of tolerance for tax evasion, actual reduction in tax rates and a variety of lucrative contracts, and most recently even through privatisation of public assets.<sup>25</sup> Indeed, disregard for the laws of the land including those relating to taxes was an important dimension of the capitalist development process. So, corruption and using the state as a means of accumulation is not new but the scale and ubiquity of corruption has intensified since the 1990s giving rise to fears of the growth of crony capitalism. The



processes vary from sale of spectrum and the mobilisation and/or disposal of land and mining resources or purchases made as part of large public expenditures. The new dimension is the open business-politician-bureaucrat collusion bordering on a corporate takeover of government, and the growing plunder of natural resources. The belief that surplus accumulation among state personnel and business groups is occurring at a rapid pace is strengthened and also the belief that the individual politicians elected to parliament and state legislatures reporting huge increase in asset holding over time.<sup>26</sup>

This is hardly surprising because in India there is considerable acceptance of corruption, inequality, poverty and low levels of human development among a vast section of the population, especially in rural areas. "The socio-political interests that allow the persistence of gross inequalities have ensured that public policy which would deliver basic benefits to the entire population was not made a priority."<sup>27</sup> These policies in the Indian context would include: agrarian reform, food procurement, education, employment creation through public works, anti-poverty programmes, changes in governance through decentralisation and some devolution of resources. However, policy implementation when it occurs has not been universal in terms of actual effects. Beneficiary-oriented anti-poverty programmes are directed to specific target groups. Since the 1990s, these are particular caste groups and exclude the poor from minority communities who need these benefits just as much as the lower castes.

Compared to the past when the Congress party was not expressly committed to any economic strategy, after 1991 it is quite strongly committed to the strategy of rapid capitalist growth. The Congress-led United Progressive Alliance (UPA) government which first came to power in 2004 and again in 2009 firmly believes that the rapid march towards equity will depend upon achieving much higher growth of 9–10 per cent over a long period. Policymakers emphasise high growth on grounds that everyone benefits from this; above all, it provides resources for the war on poverty. At the heart of this model was the belief that attainment of growth and equitable development are both important, but promoting both would take longer, in the meantime, growth has to be given immediate priority. Growth is privileged over equity, and this is justified on the ground that it provides resources for social welfare programmes, whereas prioritising equity at the expense of growth leads to the redistribution of poverty. Hence, in a tradeoff between rapid growth and the pace of redistributive equity, rapid growth has to be given priority if we are to redistribute prosperity, rather than redistribute poverty.

The BJP's defeat on the slogan of India Shining in the 2004 parliamentary elections forced the Congress to reframe its policy priorities. Although the business-driven growth model underpinning policy-making saw no change, the Congress shifted the balance of policy from growth to inclusive growth as the centre piece of several of its interventions. This

necessitated a change in the balance between market and state in favour of a better mix between the goals of accumulation and redistribution. Therefore, within a few months of assuming office, the UPA government crafted a number of centrally-sponsored government schemes designed to improve opportunities for those excluded from India's growth story, especially the rural poor and minorities. Starting in 2004 and in response to the pressures of democratic competition and coalition politics, the Congress-led UPA government began to shape a new "welfare politics" through the introduction of rights-based legislation and large number of centrally-sponsored schemes for social welfare. High on the government's agenda of greater inclusiveness were actions to address disparities in access to education, health care, water and other public services that are necessary for people's well-being. In terms of sheer number of policies and legislations, UPA's focus on social welfare was impressive, indeed, unprecedented. Central budgetary outlays on such programmes have risen significantly under the UPA-1 government higher than that under previous governments and perhaps higher in relative terms than anywhere else in the world. Taken together these schemes and social legislations mark a significant departure in policymaking and indicate an attempt to bridge the growth-equity divide.<sup>28</sup>

The experience of UPA-1 from 2004 to 2009 shows that there is room for government policies to provide direct benefits to people who are unable to

meet their basic needs. There is the range of government policies aimed at reversing the effects of this process. This could be in the form of anti-poverty programmes or guaranteed employment in public works or subsidised food under the Public Distribution System (PDS). All these can be regarded as direct intervention to contain the excesses of inequalities. The National Rural Employment Guarantee Act (NREGA) was by far the most significant initiative undertaken by the UPA government. It was an important step towards the work security of poor rural households, given that employment as a legally enforceable right has not been granted to the citizens of any other country in the world. Of all the policy initiatives, NREGA, which is demand driven and gives 100 days of employment a year to a single individual from every household, was important because it is India's first law to codify employment rights in a legal framework and, like the Right to Information Act has begun to set an example in a global context.

However, the attempt to reconcile the goals of growth and redistribution through centrally sponsored schemes has its limitations. It faces considerable difficulty in the new political context of federalisation as a substantial number of social policies are either specifically state government subjects or are concurrently under both state and central governments. A substantial number of concerns which are particularly important from the standpoint of equality such as land reforms, education, health, and rural infrastructure are either specifically

state government subjects or are concurrently under central and state governments. The central government can devise schemes, issue guidelines for implementation and allocate funds but the implementation is in the hands of states. This in turn means the effects and implications vary under different political regimes in different states.

Even though outlays on poverty alleviation and social sector have increased, low levels of human development and high levels of inequalities persist. Outcomes are non-commensurate with outlays. The real issue with these programmes is that they are not implemented properly. Beyond the quantum of money spent little attention is paid to the delivery mechanisms or the quality of spending. The intended beneficiaries of these public programmes are completely dependent on the bureaucratic delivery mechanism over which they have no control.<sup>29</sup> The present machinery under which centrally-sponsored schemes are delivered by hundreds of mutually insulated systems of delivery set up by central government ministries, which jealously guard their turf, consumes the bulk of outlays. Convergence of these schemes at the delivery point would have a multiplier effect for the beneficiaries.<sup>30</sup> In short, the actual effects of the social programmes may not yield results outside of a participatory development process. Inclusive growth without inclusive governance remains an unreachable goal.

If the objectives of poverty reduction are to be realised then the very content and the direction of the growth process

may have to change, or at the very least, a different set of organisational and institutional arrangements have to be adopted at the national and state level for the delivery of these programmes. The prospects of this happening are not encouraging. Under the new economic policy regime the scope and compass for stepping up deliberate redistribution is limited. This is in part because the state's capacity to implement pro-poor policies has always been limited, but more so because the new ruling alliance is essentially a state-business alliance for growth which favours big business and private sector based development. The more economic growth was led by private investment the more the benefits accrued to the rich. It is this activist role of the state in favour of business groups that has further contributed to inequalities.<sup>31</sup> Moreover, initial egalitarian conditions and a more labour-intensive model of development which could have been important components of combining growth with redistribution are missing in India.<sup>32</sup>

In the 1980s, the singular merit of our democracy lay in providing space for political contestation and an opportunity for expression of rights and claims, most significantly among the historically disadvantaged groups, especially the lower castes among them. In the 1990s, democracy had to contend with the rise of Hindutva forces using extra-parliamentary movements and religio-communal politics to redefine Indian identity in majoritarian terms. In the first decade of the twenty-first century, it has had to contend with growing economic and regional

disparities and inequalities, creating in the process two economies. Indian democracy has raised the question of both social equality and majoritarian dominance. Its thrust has been read to support the demand of lower castes for equality of treatment. When the connection between democracy and disadvantage is made, the major form of government intervention to alleviate poverty and deprivation often centres on identity-based groups defined by demographic or social characteristics, and not the problem of poverty or conflicts between rich and poor in general. In most cases, policymakers press for equality for groups organised on the basis of caste or resentment against regional deprivation, and not equality for all communities or individuals in civil society.<sup>33</sup> The politics of equality is thus more concerned with external rather than internal equity, that is to say equality between caste groups rather than equality amongst group members, and rather more between some groups than all the disadvantaged groups.<sup>34</sup> The big losers in this process are the minorities who are excluded from this group-based discourse of development. The sharpest casualty is that the idea of equality in a more encompassing sense has fallen on bad times and the language of markets and individual aspirations seen through the prism of identity has assumed greater importance than public interest and accountability.<sup>35</sup> Politicians and policymakers have shifted political attention from equity and public goods for the poor to facilitating private investment.

The significance of UPA-1 lay in striking a balance between contending interests even as it took some crucial decisions and pushed through important rights based legislations. A new agenda based on rights and entitlements, which include the Right to Information, Right to Work, Right to Education and the proposed Right to Food Security, represents a landmark shift in the Indian approach to issues of welfare and human development. There are real questions as to whether the blending of growth and welfare attempted by the first UPA government is feasible under the UPA-2 and the political-institutional structures of the state and the capitalist growth model it promotes. Under a largely Congress-dominated UPA-2 elected in 2009, calibrating the growth-equity equation appears much more difficult in view of big money making greater and greater inroads into the corridors of power. As is clear from data on the rising net worth of MPs elected in 2009, the dominance of the rich is getting more and more consolidated in the legislature and decision-making apparatus. The increasing monetisation of the political process backed by a state-business alliance at the apex makes the prospect of a basic shift in towards a more equitable policy regime more distant than before.

What has added some redistributive thrust to the growth model is that the rhetoric of social justice is deeply embedded in Indian politics even though concrete achievements have been rather limited. India is a vibrant democracy; politics, mobilisation, institutions and policy frameworks

matters; pressures of democratic politics do intervene to restrain rising and emerging inequalities. A strong virtue of India's democratic set-up, howsoever, electorally driven it may be is that it is premised on the recognition of basic rights and entitlements and there is a growing awareness of these rights and entitlements among the poor, thanks to the widening reach of the political discourse of democracy. Sections of the electorate appreciate the greater power of political institutions which can take decisions that affect everyday and long-term distribution of opportunities. The possession of democratic rights has been a powerful weapon against poverty and an antidote to the rush

to deny the importance of inequality. Greater political participation has led to a sharper sense of inequity and an attempt to use politics to rectify it. The fact that the poor and the marginalised groups have been vigorous in exercising their franchise, far more so than the affluent and well-to-do middle classes, is testimony to the sense of empowerment that, in their perception, democratic practices have brought them. The need of UPA-1 to change course, and accommodate broader social interests of the poor to secure their political support, is the strongest indication yet of these pressures. India's poor continue to press their case for redistribution and egalitarian strategies of growth.

#### NOTES

1. Many observers in the West have begun to worry about the threats posed by the rise of India and China as evident from the remarks of Michel Rocard, a former Prime Minister of France. He shared his concerns about the place of France and the United States in the new world order with the American ambassador in Paris in October 2005. "Speaking of the growth of India and China, along with all the other challenges confronting US and France", the leaked Wikileaks cables quotes him as saying: "We need a vehicle where we can find solutions for these challenges together—so when these monsters arrive in 10 years, we will be able to deal with them." Quoted in Siddharth Varadarajan, 'Eastern promise, Western fears', *The Hindu*, 25 January 2011.
2. Sudipta Kaviraj, 'Dilemmas of Democracy and Development in India' in Adrian Leftwich (ed.) *Democracy and Development: Theory and Practice*, Polity press, London, 1996.
3. See essays in Francine Frankel, Zoya Hasan, Rajeev Bhargava, Balveer Arora, (eds) *Transforming India: The Social and Dynamics of Democracy*, Oxford University Press, New Delhi, 2000; Atul Kohli, (ed.) *The Success of India: Democracy*, Cambridge University Press, Cambridge, 2003, Niraja Gopal Jayal (ed.) *Democracy in India*, Oxford University Press, New Delhi, 2001.
4. Christophe Jaffrelot and Sanjay Kumar, *Rise of Plebeians: The Changing Face of Indian Legislative Assemblies*, Routledge Taylor & Francis Group, New Delhi, 2009.
5. Ashutosh Varshney, 'Is India Becoming More Democratic' *Journal of Asian Studies*, February, 2000. Also see his, 'Why Democracy Survives', *Journal of Democracy*, July 1998.

6. Ibid.
7. Atul Kohli, Introduction, *Democracy and Development: From Socialism to Pro-business*, Oxford University Press, New Delhi, 2009.
8. Deepak Nayyar, 'Democracy and Development' in Niraja Gopal Jayal, op.cit.
9. Francine Frankel, *India's Political Economy*, Oxford University Press, Revised Edition, New Delhi, 2005.
10. Jayati Ghosh, 'Social Policy in Indian Development' UNRISD, Geneva, November 2002.
11. Atul Kohli, 'Politics and Redistribution in India', <http://Princeton.edu/kohli/Politicspercent20andpercent20Redistributionpercent20in%20India.pdf>
12. Partha Chatterjee, 'Democracy and Economic Transformation' in India, *Economic and Political Weekly*, 19 April 2008, p. 56.
13. Ibid.
14. Ibid.
15. Jayati Ghosh, 'Income Inequality in India', *Counter Currents. org*, February 17, 2004.
16. Ibid.
17. Aseema Sinha, 'Globalisation, Rising Inequality, and the New Insecurities in India', [www.apsanet.org/imgtest/TaskForceDiffIneqDevSinha.pdf](http://www.apsanet.org/imgtest/TaskForceDiffIneqDevSinha.pdf), Downloaded on 25 January 2011.
18. Ibid.
19. Ibid.
20. The ratio of billionaire wealth rose from less than one per cent of GDP in the mid-1990s to 23 per cent in 2008, and was 14 per cent in early 2010, after a fall and recovery. The private wealth of billionaires has surged dramatically from less than one per cent of GDP in 1997 to 23 per cent in 2008. As a share of GDP it is close to Russia and Saudi Arabia, even while India's level of per capita income is much lower than that in those countries. Sunil Khilnani, 'The Blurred Horizon', *Outlook*, 10 January 2011.
21. By contrast, China has been able to move people out of extreme poverty within just a generation, which has no parallel in any other country in the world history. Pranab Bardhan, *Awakening Giants: Feet of Clay: Assessing the Economic Rise of China and India*, Oxford University Press, New Delhi, 2010, pp. 90–103.
22. Mani Shankar Aiyar, 'The Dilemma of Development and Democracy in India', Centre for Media Studies, Lecture delivered at Nehru Memorial Museum and Library, New Delhi, 24 November 2010.
23. In 2008, attacks on Hindi-speaking and Biharis broke out in Mumbai. The immediate context for the violence was recruitment by railways for Class II and Class IV jobs. These applicants were prevented from taking tests by the local youth from Maharashtra. Indian Railways and other public sector undertakings are seen as providers of jobs coveted by the educated unemployed.
24. Jayati Ghosh, 'Social Policy in Indian Development', UNRISD, Geneva, November 2002.

25. Ibid.
26. C.P. Chandrasekhar, 'Capital gains', *Frontline*, 17 December 2010.
27. Jayati Ghosh, 'Social Policy in Indian Development', op.cit.
28. *The Hindu*, 5 June, 2006.
29. Mani Shankar Aiyar, 'Dilemma of Development and Democracy', op.cit.
30. Ibid.
31. Atul Kohli, 'Politics and Redistribution in India', op.cit.
32. Ibid.
33. Sudipta Kaviraj, 'Dilemmas of Democracy and Development in India', p. 130, op.cit.
34. Ibid.
35. Aseema Sinha, 'Globalisation, Rising Inequality, and the New Insecurities in India', op.cit.

# Psychological Stress and its Relationship with Achievement of Science Students of Jawahar Navodaya Vidhyalayas

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RAJIVE KUMAR\*\*

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## Abstract

*This study attempts to assess the psychological stress and its relationship with achievement among senior secondary science students of Jawahar Navodaya Vidhyalayas. A sample of students was randomly selected from different Jawahar Navodaya Vidhyalayas of Meerut province. They were administered Psychological Stress Scale for Science Students developed by researchers themselves which measures 12 dimensions of psychological stress. Results show that the examination and achievement have been emerged as the major factor causing stress, while health as the least causing factor for stress. Negative and significant correlation with achievement was observed for all dimensions of psychological stress except science teachers and society.*

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## Introduction

Senior secondary school years should be a new and interesting experience, but many demands and rapid changes can make it one of the most stressful times of the life. Students of this stage face increasing amounts of schoolwork, a rapidly changing curriculum, assignment deadlines and a series of exams. They worry about selecting careers and post schooling programmes. They have to balance their schoolwork with their hobbies,

sports and daily life. They have conflicts with friends, siblings, parents and have to adjust themselves with other environmental demands. Further, Science students have many obstacles to overcome in order to achieve optimal academic performance as compared to humanities students. A number of researches have been done looking at the correlation of many stress factors that science students experience and the effects of stress on their academic performance. The studies carried out

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with medical students show that in the academic area, heavy work load, examinations and meeting deadlines for assignments were the most common causes of stress (Evans and Fitzgibbon, 1992; Kohn & Frazer, 1986). This is further supported by Ratana Saipanish (2003) who conducted a study on 686 medical students in the Faculty of Medicine; Ramathibodi Hospital, Thailand. Test or exam anxiety is one of the main causes to academic stress and most university students seem to be more emotionally vulnerable due to examinations. Anxiety from exams has a debilitating effect on students' performance (Fisher, 1994).

Most of the time, science students complain of dwelling in between their efforts for better achievement and teacher's and parent's expectations. Most of the studies in different responses to stress have been carried out in dental, medical, nursing, university and college students (Helmets, et al.1997, Henley 1998, Sinha et al. 2000, Kuruppuarachchi et al. 2002, Polychronopoulou, Argy and Divaris, Kimon 2005). Many scholars in the field of behavioural science have carried out extensive research on stress and its outcomes and concluded that the topic needed more attention (Ellison, 2004). The researcher have found out that there is not much research conducted in our local universities particularly in Western U.P. itself pertaining to this issue with regards to the students of remote areas studying in Jawahar Navodaya Vidhyalayas. Therefore, it is timely to conduct a research to examine this particular issue as findings

from the present study would benefit various stakeholders in the country in planning and conducting necessary programmes for the students so that stress-related factors could be reduced and better academic performance could be achieved by the students. In the present study, the researchers have attempted to study psychological stress and its relationship with achievement of science students studying in Jawahar Navodaya Vidhyalayas of Meerut province.

### **Objectives**

1. To study the contribution of psychological stress on achievement of science students of Jawahar Navodaya Vidhyalayas.
2. To study the relationship between psychological stress and achievement of science students of Jawahar Navodaya Vidhyalayas.

### **Hypotheses**

1. There is no significant contribution of psychological stress on achievement of science students of Jawahar Navodaya Vidhyalayas.
2. There is no significant relationship between psychological stress and achievement of science students of Jawahar Navodaya Vidhyalayas.

### **Method**

The descriptive survey method has been used for the present study. In the present study all those steps and characteristics have been adopted which have described to be essential for the descriptive method of research by several authors.

### Participants

In this study, science students officially enrolled in 12<sup>th</sup> standard were taken from Jawahar Navodaya Vidyalayas running in Meerut province. Using simple random sampling, 100 science students were selected. Out of 100 science students only 82 students were finally taken because 18 students did not fill the scale properly.

### Material and Procedure

To achieve objectives of this study Psychological Stress Scale for Science Students (PSSSS) developed by the researchers was used to measure psychological stress of science students. It was structured around 12 dimensions of psychological stress i.e. curriculum transaction in science, content of science, infrastructure for science, science teachers, peers, workload in science, examination and achievements, home and family environment, vocational aspiration, health,

communication problems and society. Thus, PSSSS is a 96 – items scale with a Likert type responses format (5 = Always, 4 = often, 3 = sometimes, 2 = rarely, and 1 = never). Reliability of the scale was determined by split-half method and was found 0.96. Achievement in science of the students was considered as the marks obtained in science in 12<sup>th</sup> class board examination.

### Results

To study the nature of psychological stress, its all dimensions and achievement of all science students (N = 82), mean, and standard deviation (S.D.) were calculated. To find out the contribution of psychological stress and its all dimensions on achievement, Simple and stepwise regression analysis was done. To find out the relationship between psychological stress and achievement of science students of Jawahar Navodaya Vidyalayas, Pearson product moment correlation coefficients were calculated.

Table 1  
**Statistics showing the nature of distribution of psychological stress and achievement of science students of JNV (N= 82)**

<i>Psychological Stress Dimensions</i>	<i>Mean</i>	<i>S.D.</i>
Curriculum Transaction in Science	24.268	5.808
Content of Science	22.122	6.187
Infrastructure for Science	23.512	7.745
Science Teachers	25.927	6.974
Peers	22.756	6.856
Workload in Science	22.866	7.168
Examination and Achievement	26.415	6.532
Home and Family Environment	23.366	7.441
Vocational Aspiration	24.610	7.575
Health	21.439	8.579
Communication Problems	22.488	7.671
Society	23.646	7.426
Total Psychological Stress	283.415	61.700

Table 2  
**Statistics showing the nature of achievement of science students of JNV (N= 82)**

<i>Variable</i>	<i>Mean</i>	<i>S.D.</i>
Achievement	120.573	24.816

It is evident from Table-1 that means of the different dimensions of psychological stress were found to vary from 21.439 to 26.415 which is of moderate level. It is also depicted from Table-1 that mean of total psychological stress score of all students was found to be 283.415 which was of moderate level. Further mean stress score of the students was found to be greater on the psychological stress dimension-*examination and achievement* in comparison to all the other

dimensions, where as the lowest mean stress score of science students was on the psychological stress dimension-*health*. It means that science students of Jawahar Navodaya Vidhyalayas were found to be more stressed due to examination and achievement in comparison of other dimensions and least stress due to its dimension *health*. Table -2 shows that mean of Achievement scores of science students of Jawahar Navodaya Vidhyalayas was found to be 120.573.

Table 3  
**Summary of regression analysis for contribution of dimensions of psychological stress on achievement of science students of JNV**

<i>Step</i>	<i>Constant</i>	<i>Variable Contributed</i>	<i>Beta</i>	<i>Adjusted R<sup>2</sup></i>	<i>Percentage Contribution</i>
1.	160.145	Content of science	-0.4460	0.1889	18.89**
2.		Content of science Vocational Aspiration	-0.3138 -0.2617	0.2309	23.09**

\*\* p < 0.01

It is evident from Table 3 that the contribution of psychological stress dimension content of science on achievement in science was 18.89%. Combined contribution of stress dimensions content of science and

vocational aspiration was 23.09%. All contributions were significant at 0.01 level. Contribution of other dimensions of psychological stress on achievement was not significant at 0.05 level.

Table 4  
**Correlation between psychological stress and achievement of Jawahar Navodaya Vidyalayas students (N = 82)**

<i>Variables</i>	<i>Mean</i>	<i>S.D.</i>	<i>Product</i>	<i>Correlation</i>
<i>Achievement</i>	120.573	24.816	-----	-----
Total Psychological Stress	283.415	61.700	2747749	-0.433**
Curriculum Transaction in Science	24.268	5.808	236196	-0.317**

Content of Science	22.122	6.187	213173	-0.441**
Infrastructure for Science	23.512	7.745	226425	-0.383**
Science Teachers	25.927	6.974	253330	-0.212
Peers	22.756	6.856	221277	-0.266*
Workload in Science	22.866	7.168	220717	-0.367**
Examination and Achievement	26.415	6.532	256450	-0.354**
Home and Family Environment	23.366	7.441	226291	-0.312**
Vocational Aspiration	24.610	7.575	236919	-0.415**
Health	21.439	8.579	205926	-0.346**
Communication Problems	22.488	7.671	218858	-0.223*
Society	23.646	7.426	232187	-0.106

Table 4 clearly indicates that achievement of JNV science students was negatively and significantly correlated with total psychological stress and its dimensions-curriculum transaction in science, content of science, infrastructure for science, workload in science, examination and achievements, home and family environment, vocational aspiration, health at 0.01 level. Negative and significant correlation was also found with stress dimensions-peers and communication problems at 0.05 level. But achievement was not significantly correlated with psychological stress dimensions-science teachers and society at 0.05 level. It means that achievement of JNV students is significantly and inversely correlated with total psychological stress and its all dimensions except science teachers and society.

### Conclusion

It is apparent from the findings of this study that science students of Jawahar Navodaya Vidhyalayas were found to be under stress in the process of studying science. Out of

the 12 dimensions that have been considered for taking as factors responsible for causing psychological stress, the dimension *examination and achievement* has been emerged as the major factor causing stress. The reason behind this is that Science students as compared to arts students are always pre-occupied with their performance in examination because science subject is comparatively difficult to grasp and understand. There is a consistent pressure on students mind to secure maximum possible marks in exam. This is seen by the general perception where even if a student achieves 90% marks, it is not considered good enough. Janet et al. (1994) found that 86% of the subjects reported their top stressors to be examination, 62% subjects said that stress they experienced strengthened their commitment to their professional education. Science teachers, Infrastructure for science, curriculum transaction in science, workload in science and society have also been emerged as major causing factors of stress among science students. The stress resulting due to the dimension

health is the lowest out of the twelve dimensions. The senior secondary stage is developmentally characterizes as late adolescence. Their developmental needs at this stage needs for greater autonomy and independence. Contribution of stress dimensions-content of science and vocational aspiration was found to be significant, while all other stress dimensions were not found to have significant contribution. Negative and significant

correlation with achievement has come out for all dimensions of psychological stress except two dimensions science teachers and society. These finding may be understood in the context of the fact that psychological stress always depress the memory of a person which results in poor concentration and poor learning. This finding is supported by the earlier findings of Crystal (1994), Singh and Broota (1995), and El-Anzi and Ohayed (2005).

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# Major Factors Affecting Students' Academic Achievement in the Secondary Schools

## The Case of Addis Ababa, Ethiopia

MESSERET ASSEFA\*

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### Abstract

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*The purpose of this article is to examine the major factors affecting student's academic achievement in secondary schools of Addis Ababa, Ethiopia. Quantitative and qualitative approaches were used to investigate the research problem. For the quantitative part a survey questionnaire with four main parts dealing with factors i.e. self concept, class size, school size and teaching effectiveness were used as a parameter. Interview and focus group discussion (FGD) were used to collect qualitative data. The sample population of this study encompasses a total of 300 first cycle (9-10) secondary school students and 27 teachers from six secondary schools in six sub cities of Addis Ababa. The six secondary schools were chosen in view of the fact that they reflect the diverse school setting and personal characteristics of learners and teachers in the entire secondary schools of Addis Ababa spread in the 10 sub-cities. The findings showed that the formidable challenge, the class-size, is represented by higher level of discipline problem and the prevailing mode of instruction in their classrooms, which is lecture-centered method, where the students' role was reduced to note-taking and listening to instructor's explanation. Based on the findings, it is suggested that an awareness program on active learning approach should be given due considerations to help the teachers develop the characteristics that assist them achieve the expected goal.*

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### Background

It seems highly likely, however, that the factors affecting performance of students in high schools are basically dependent upon the quality

of education accessible. For instance, how well students are taught and how much they learn, can have a vital impact on how long they stay in school and how regularly they attend.

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Furthermore, whether parents send their children to school at all is likely to depend on decision they make about the quality of teaching and learning provided at the high school level.

Arguably, the overriding importance of high school education lies in helping learners achieve their own economic, social and cultural objectives to become a good citizen. Concomitant to this, the supply of quality education at the high school level helps create a more egalitarian social fabric where its leaders are committed to a better service. Apart from augmenting the development of their creativity and emotional maturity, high school practice will acquaint them with the skills, knowledge, values and attitudes necessary for responsible, active and productive citizenship. Far more than others, the success or failure of achieving these educational outcomes is specifically important to those who practice it.

Accordingly, with respect to quality, the Ethiopian education and training policy MOE (2002) duly emphasised the need to improve the low quality of education through improving instructional resources, teachers' quality, educational management and financing.

On the other hand, the education sector development program envisaged the improvement of quality of instruction in secondary schools through a review of the curriculum aimed at incorporating relevant contents and better assessment practices to enhance student performance standards: rehabilitation of science laboratories; training and recruitment of qualified teachers; and expansion of

in-service training opportunities MOE (2005)

Currently, the Ethiopian secondary schools education is divided into four years of two cycles TGE, (1994 pp.14-15). The first cycle (grades 9-10) is designed to provide general education which prepares students for specific training and field work. Whereas, the second cycle (grades 11-12) is designed to prepare students for higher education. This study focuses on examining notable factors that affect students' academic achievement in the first cycle (9-10) secondary education in Addis Ababa. Therefore, this study attempts to sort out and analyse the many determinants of high school students' academic achievement in Addis Ababa focusing on the factors decisive for the students' school performance in the broader sense of attaining educational achievement as per his/her potential. Informed by their prevalence in many studies of academic achievement, the four major factors influencing students' academic achievement - level of self-concept, level of class size, level of school size and level of teacher's effectiveness in teaching have been examined in this research work.

In understanding the idea of self-concept, the growing consensus among the different authors is to consider it as an aspect of personality having a multi-dimensional nature. Among these scholars, Marshs Partker and Smith (1983) propose a hierarchical and multi-faceted model of self concept in which there exists one general factor and several specific ones, the latter including academic self-concept. For Sanchez (2000) academic self-concept



is at the base of future school success or failure, having been formed starting in early childhood education from peer contact and teacher attitude and expectations.

Self concept, as a component of personality development, has its own nature and peculiarity. Several researchers for instance Siavetson et.al, (1976) cited in Garma and Elexpurn, (1999) have tried to specify the nature of the term self-concept. To this end, they looked at its multidimensional nature characterised by a hierarchical organisation (a general self-concept and specific self-concept). As we go lower on the hierarchy, self concept becomes more specific and more susceptible to change; the different facets of self-concept become more differentiated among themselves with age and experience. Self-concept includes both descriptive as well as evaluative aspects.

In the majority of cases, the negative effects from class-size related academic achievement factors is attributed to large class atmosphere rather than to the smaller ones. Describing the extent of the limitation from large-class size Little and Thompson (1983) state that pupils can fall behind in the school work or experience academic failure where large classes do not permit the teacher to give personalised or individual attention to the pupils.

With regard to failure to cope with the school work, the atmosphere prevailing in large class learning often entails lack of clarity of purposes, lack of opportunity to discuss, inability to engage in independent study and get motivated.

By the same token, in large classes individualised instruction is believed to be very much hindered. Little and Thompson (1983) argue that the setting of large-classes compels teachers to resort to lecture centered instructional method manifested by limited teacher-student classroom interaction. The defining feature of such instructional method being little or no group discussion, oral communication between students and teachers is minimised, the assignment of written class-room exercise become less frequent and when assigned receives less attention.

As to the impact from school size, research studies consistently mentioned that positive effects of small school size are much bigger than large ones. Besides better academic performance, the benefit of small schools in general has been tied to other useful outcomes which help boost the overall academic achievement of students. In accordance with this, Barker and Gump (1964) stated that small schools have a role in increasing students' sense of belongingness and improved teacher attitude towards their work and relationship with staff.

This improved teacher attitude is often manifested through higher levels of cooperation between teachers, better relation with school administration and more positive attitudes towards teaching Stockyard and Mayberry (1992). By contrast, no research finds large schools superior to smaller schools in academic achievement Cotton (1996). On the other hand, the commonest forms of academic achievement limiting factors attached

to large schools are depersonalisation, negativism, alienation and ultimate truancy and dropouts Garbrino, (1997); discriminatory environment for minority students and those of low socio-economic status and those who are academically marginal Barker and Gump, (1964;); Fowler and Walberg, (1991)

With regard to teacher effectiveness, the teacher must have good knowledge over the substantive concept of the course to be taught and skilled in using appropriate instructional model as well as in classroom management.

Elliot (2003) saw teaching as a four-phase activity, namely, a curriculum planning phase, an instructing phase, a measuring phase, and an evaluating phase. To wisely generate a curriculum for teaching, the teacher must be considerate of the goals of teaching and clear formulation of more specific objectives. The teacher must also select subject matter suitable for achieving these goals. Actual instruction engages constructing, using and changing instructional plan and tactic to assist high school students perform well.

To measure learning outcomes, a teacher must select or create appropriate measurement strategy and then categorise and examine the resulting data. Finally, to make an appraisal of the whole teaching affair, or some selected part of it, a teacher must stand back with measurement data at hand and make balanced human judgments. These comprise judgments about the correctness of objectives, and subject matter, the usefulness of the actual instruction, and the validity and reliability of the

measurement strategy used to assess learning.

### **Research Objectives**

In order to guide the research process, the researcher formulated the following research objectives

1. Identify the factors that affect the performance of students at secondary level.
2. Suggest a solution for the identified problems.

### **Research Design**

Strauss and Corbin (1990:17) define the concept of research design as “the plan for the study, providing the overall framework for collecting the data, outlining the detailed steps in the study and providing guidelines for systematic data gathering”. Further, they made comparison between research design and an architectural blueprint which plans on organising and integrating results in a particular end-product. In line with the definitions, in this study the research design guided the researcher to follow a certain pattern in the research of the problem. This refers to all the decisions the researcher made in planning the study, not only what type of design to use, but also the sampling, sources and procedures for collecting and analysing the data. In this context, this study utilised a mixed method design.

### **Data Analysis and Interpretation**

According to Yin (1994:102) data analysis consists of examining, categorising, tabulating, and recombining the evidence to address the initial research questions

of the study. The collected data were reviewed sentence by sentence to get a complete picture of the phenomenon and then coded.

The questionnaire items were tallied and tabulated in tables in accordance with the related issues and prepared for the analysis of data. The data were computed using percentage. On the other hand, the data collected through interviewee and focus group discussions were analysed qualitatively.

### **Ethical Consideration**

For the purposes of this study, ethical issues relating to human participation and data collection were taken into account. Prior to the questionnaire and FGD, the participants were given explanatory statements which, amongst other things, outline the purpose of this study and the aims. Maintaining privacy is an important consideration in a study of this nature. Each participant was assured that no data or information from the questionnaire and FGD would be exposed as a particular individual's thoughts and feelings.

### **Population and Sample**

The population of this study was grade 9-10 public high school students in Addis Ababa. The majority of high schools in the entire ten sub-cities share a more or less similar attributes in terms of management system and infrastructural facilities. Thus, in order to ensure that the samples reflect certain characteristic relevant to the study, 300 hundred students from six high schools and from the ten

sub-cities (i.e. Arada, Lafto, Kirikos, Ledeta, Yeka and Bole) were selected on purposive sampling method. Apart from this, the researcher has made prior assessment as to the availability of contact persons and willingness of approached students to fill out questionnaires. Three hundred questionnaires were dispatched. Except for the two, (two questioners were discarded because they are not properly managed by the respondents) all of the dispatched questioners were properly administered.

Table 1  
**Final Portrait of the Respondents**

<i>High Schools And Sub- Cities</i>	<i>Grade 9</i>	<i>Grade 10</i>
Tikure Anbesa ( Arada)	24	25
Ginbot -20 (Lafto)	25	25
Misrak Atekalay (Kirikos)	25	25
Baclha Abanefso (Ledeta)	25	25
Kokebe Tsibah (Yeka)	24	25
Dr. Adiss Alemayehu (Bole)	25	25
Total	148	150

Table 1 reveals the perception of respondents towards the influential factors determining their academic self-concept record. "Poor motivation in problem-solving" was perceived by majority of the respondents as the most important factor determining their academic achievement (see Table1). This is essentially related to the conspicuous absence of teaching-learning process accommodating reflective practice and critical thinking. Growing bodies of scholars agree that a teaching learning process focused on the critical thinking of students and conducted through the reflective

## Discussion

### Self concept

Table 2  
**Self Concept as Limiting Factor for School Achievement**

		<i>Lower attitude in one's social acceptance</i>			<i>Less motivation in problem-solving</i>			<i>Believing that I am outcasted by my class-mates</i>		
		N=153	N=95	N=99	N=104	N=91	N=150	N=194	N=102	N=143
		L	M	H	L	M	H	L	M	H
Achievement	Low	48 (68.57)	17 (24.29)	5 (7.14)	34 (48.57)	26 (37.14)	10 (14.29)	57 (81.43)	11 (15.71)	2 (2.86)
	Middle	93 (53.14)	54 (30.86)	28 (16.00)	64 (36.57)	70 (40.00)	41 (23.43)	119 (68.00)	42 (24.00)	14 (8.00)
	High	12 (22.64)	24 (45.28)	17 (32.08)	6 (11.32)	14 (26.42)	33 (62.26)	18 (33.96)	11 (20.75)	24 (45.28)

practice of the teachers is better suited for improved academic achievement Paul, (1993); Schon, (1983); Larrive (2000). As to critical thinking, Paul (1993) recommends the creation of a school environment where students maintain creative thinking through curiosity. According to him, creative thinking through curiosity can be realised within an intellectually rigorous teaching-learning atmosphere i.e. a classroom interaction where the teacher's mind could stimulate his/her students with questions and further questions and that students could see the teacher's mind is at work.

In teaching learning process, reflective practice refers to the process in which the teacher studies his or her own teaching methods and determines what works best for the students. It involves the consideration of ethical consequences of classroom measures on learners.

The appeal of the use of reflective practice for teachers is that as teaching and learning is complex, and there is no single right approach, reflecting

on different versions of teaching, and reshaping past and present experiences will lead to improvement in teaching practices. Schön's reflection-in-action assists teachers in making the professional knowledge that they will gain from their experience in the classroom an explicit part of their decision-making.

As Larrive (2000) argues, reflective practice moves teachers from their knowledge base of distinct skills to a stage in their career where they are able to modify their skills to suit specific contexts and situations, and eventually to invent new strategies. In implementing a process of reflective practice, teachers will be able to move themselves and their schools beyond existing theories in practice. Further, Larrive (2000:P.293) concludes that teachers should "resist establishing a classroom culture of control and become a reflective practitioner, continuously engaging in a critical reflection, consequently remaining fluid in the dynamic environment of the classroom"

Seen against the above discussed theories, the reality on the ground depicts the near-absence of reflective practice and critical thinking in most sessions of the concerned classrooms. Judging from the responses provided by students who participated in the FGD, the existing mode of teaching-learning process within the concerned classrooms has little to offer in terms of critical thinking and reflective practice. To this end, the students emphasised the virtual absence of a classroom atmosphere capable of promoting learning academic curiosity.

In this connection, it was stressed that the kind of questions in teacher-student exchange has overwhelmingly been centered on the rehearsal and explanation of already established theoretical facts. Whether in theoretical lessons or that involving quantitative concept, the questions put to students often expect answers providing mere restatement of what has been said by the instructor with regard to the issue.

Further explaining on what this means, the students stated that if their answer involves a reinterpretation of the issues concerned, the whole answer will not qualify as a valid response no matter how much it is sound. In particular, it was said that addressing mathematical problems through a formula having different set of calculations than that taught in the classrooms or contained in the textbook is considered by teachers as a wrong one. It was emphasised, despite the fact that the formula the student employed is sound and to come to the right solution and that he or she is ready to defend his approach through

tangible reasons and evidences, the teachers will give little consideration to the student's explanation.

On top of this, students in the FGD complained of teachers' reluctance to supply them with a reasoned analysis on how the evaluation of the arguments and rationales of the student in assignments and subjective type exams were weighted. On the other hand, while sharing the concerns raised by the students, teachers in the FGD blamed passiveness and language problem on the part of students. In line with this, the teachers contended that the teacher-centered teaching learning process experienced by the students in lower classes have enduring consequence of shaping learners' mind as mere receiver rather than critical thinker. Besides this, the very poor level of understanding of the English language (which is the medium of instruction) was taken as another challenge preventing students from having intellectual curiosity in reading and discussion.

In the mean time, veteran teachers who participated in interview contended that the challenge from poor teacher-effectiveness is actually ascribed to the problem of both students and teachers. According to them, the culture of teacher-centred teaching methods, which students have been exposed for years, has pushed them towards an academic mentality favouring authoritarian classroom setting over a vibrant, and student-centred one. At times, FGD participants claimed, the students took such instructional methods as group discussion and on the spot presentation as suspect classroom

mechanism where the teacher who is not prepared or is anyway bored to teach the session has crafted as a means of by-passing the classroom session.

In the same vein, the culture of teacher-centered method is claimed to have a significant share in reducing teacher commitment to invoke students' critical thinking and conduct reflective practice. Nonetheless, as to the lower level of reflective practice on the part of teachers, the FGD participant teachers, emphatically argued that the issue has to do with lack of teaching experience. As such, the teachers in the concerned classrooms, the majority of who are young and fresh university graduates have little to offer in terms of transmitting theoretical concepts with flavour of a real life experience.

As can be seen from Table 2, disciplinary problems are rated as the most influential limiting factor in academic achievement. Furthermore, teachers in FGD showed concerns with respondents' claim of putting disciplinary problems as the biggest challenge in working for improved level of academic achievement.

### Class Size

Further, the concerned students and teachers have also commented that the class size driven incidence of higher level classroom indiscipline is attributable to large number of student population. Both the students and teachers confirmed that the student population in the respective sections number anywhere 70-75. According to them, this number is large enough to ignite wide scale classroom indiscipline and severely limits student-student and student-teacher classroom interaction. In an attempt to verify the large class size claim of students and teachers, the researcher examined relevant materials dealing with the principles and trends of pupil-teacher ratio (PTR)

In this respect, the standard set for the pupil-teacher ratio for national secondary schools is 40 while the current PTR in first cycle secondary schools (9-12) is 51 students (Solomon Araya, (2008). Solomon also claimed that the target set for pupil-section ratio at secondary level was 60 students. Measured against this national standard, the average number

Table 3  
**Class Size as a Limiting Factor for School Achievement**

	<i>Lack of knowledge over subject matter</i>			<i>Lack of interest in teaching</i>			<i>Mode of Instruction</i>		
	N=163	N=75	N=60	N=82	N=73	N=143	N=30	N=39	N=229
	L	M	H	L	M	H	L	M	H
Low	46 (65.71)	18 (25.71)	6 (8.57)	30 (42.86)	20 (28.57)	20 (28.57)	16 (22.86)	13 (18.57)	41 (58.57)
Middle	101 (57.71)	46 (26.29)	28 (16.00)	21 (12.00)	43 (24.57)	95 (54.29)	11 (6.29)	21 (12.00)	143 (81.71)
High	16 (30.19)	11 (20.75)	26 (49.06)	8 (15.09)	10 (18.87)	28 (52.83)	3 (5.66)	5 (9.43)	45 (84.91)

of 70-75 students in the concerned classes is large in terms of both pupil-section and pupil - teacher ratio. On the other hand, a study conducted on active learning approaches in some schools of Ethiopia identified that large classes of more than 70 students per section is one of the biggest challenges in the implementation of active learning approaches Birhanu Moges, (2010)

The impact from disciplinary problems during structured learning sessions, as a crucial factor affecting students' academic achievement, was addressed from two perspectives-student misbehavior and class-room management.

With regard to student misbehavior, most of focus group discussion (FGD) participants underlined that the overwhelming degree of challenge from learners' indiscipline, often got manifestations through teasing and other misbehaviors during classroom discussions and examinations.

In line with this, the majority of the students complained about scornful

or otherwise belittling attitudes which used to be thrown on their ideas. By way of illustration, it was claimed that most students laugh at or mock somebody, who asks or responds to a question with halting English language (which is the medium of instruction in the secondary schools of the nation).

Further, they recalled innumerable occasions where students were ridiculed after taking the floor and presenting the details of their assignment or moved to the black board for demonstrating a class work exercise. Similarly, the majority of teachers participating in teacher's focus group discussions held student misbehaviors and miss conduct as the number one reason for class room level indiscipline of the worst kind. According to them the problem usually surfaces when a misbehaving student remains defiant to respect teacher's request for his / her attentive follow up of a particular teaching - learning session.

Table 4  
**Level of School size as Limiting Factor for School Achievement**

		<i>Creates boredom from too many student population</i>			<i>Gives room for discipline problem</i>			<i>Limits class room interaction</i>		
		N=106	N=93	N=99	N=57	N=91	N=150	N=53	N=102	N=143
Achievement		L	M	H	L	M	H	L	M	H
	Low	40 (57.14)	21 (30.00)	9 (12.86)	28 (40.00)	23 (32.86)	19 (27.14)	18 (25.71)	29 (41.43)	23 (32.86)
	Middle	59 (33.71)	64 (36.57)	52 (29.71)	21 (12.00)	57 (32.57)	97 (55.43)	30 (17.14)	55 (31.43)	90 (51.43)
	High	7 (13.21)	8 (15.09)	38 (71.70)	8 (15.09)	11 (20.75)	34 (64.15)	5 (9.43)	18 (33.96)	30 (56.60)

As to school size related factors, the item in Table 3 indicates that “encouraging higher discipline problem” was rated as the major challenge by most of the respondents (see Table 3). Furthermore, many of the respective secondary schools management personnel emphasised that the change from shift system to the whole day teaching has given rise to an increase in the population of students in the school. According to them, this scenario has created inhospitable school learning atmosphere through the encouragement, though inadvertently of more space for incidents of discipline problem.

Explaining on the manifestation from large school size driven indiscipline, focus group discussion (FGD) participating students and their counterpart from the teachers’ category stressed the odds from diverse set of learner behaviours. To this end, the large school population is said to have resulted in the emergence of highly heterogeneous student characteristics pretty difficult for proper management. On the other hand, Auduc (1994:51) pointed out that heterogeneity within the school student population can be evident from the following realities.

1. Widely differing levels of school performance.
2. Particular kinds of personal relations and know – how
3. Culturally and linguistically diverse life style
4. Different religions

As far as students are concerned particular kind of personal relation and

differing levels of school performance are considered as the notable features of student heterogeneity fuelling discipline problems. In the context of personal relationship traits, the majority of FGD female students, who claimed to be rather decent and passive recalled numerous instances where their attempt to study at the school library faced an enormous challenge from male students. Explaining the point, such category of FGD student participants recalled frequent cases where pieces of hard-core pornographic images were inserted into their belongings (books and hand bags) whenever they briefly left their seats, for example, when going to the circulation section. Yet male students having a somewhat strict religious morality reported frequent cases of teasing from other students known for their taste of fashionable class and freaky style.

Turning to heterogeneity related impact on academic performance, the FGD participating students who have high academic performance record expressed discomfort from frequent causes of student indiscipline. Generally, these categories of high performance students complained about the offensive treatment from the less performing students on account of their reluctance to consenting to exam copying (cheating).

In fact, it has already been established that the notions of youth culture, in most cases, actually punish those students who wanted to excel academically. Arends, (1997). Salvin (1984) in Arends noted that “students



often do not value their peers who do well academically, while they do value their peers who excel in sports..... this is so because sports (the team, the school, the town), while academic success benefits using grading on the curve or any competitive grading or incentive system, any individual's success reduces the chances that any other individual will succeed.

the same amount of material in the same way and at similar pace.

Accordingly, the basic elements of a lecture-centred approach characterised by "firm discipline, attention to order and procedure and lecture-centered curricula" Duffy and Kirkely (2004) have created a tight atmosphere where students' voice was highly suppressed by an all-rounded dominance of the

### Teacher Effectiveness

Table 5  
Level of Teacher Effectiveness as Limiting Factor for School Achievement

Achievement		<i>Lack of knowledge over subject matter</i>			<i>Lack of interest in teaching</i>			<i>Partiality in treatment of student</i>		
		N=163	N=75	N=60	N=82	N=73	N=143	N=30	N=39	N=229
		L	M	H	L	M	H	L	M	H
Low	46 (65.71)	18 (25.71)	6 (8.57)	30 (42.86)	20 (28.57)	20 (28.57)	16 (22.86)	13 (18.57)	41 (58.57)	
Middle	101 (57.71)	46 (26.29)	28 (16.00)	21 (12.00)	43 (24.57)	95 (54.29)	11 (6.29)	21 (12.00)	143 (81.71)	
High	16 (30.19)	11 (20.75)	26 (49.06)	8 (15.09)	10 (18.87)	28 (52.83)	3 (5.66)	5 (9.43)	45 (84.91)	

As can be seen in Table 4, poor teacher effectiveness is attributed to the mode of instruction being used. In relation to this, it was noted during class-room observation that the predominant mode of instruction used to be teacher- centred where as student- centered or active learning is minimal at best and nil at worst. Thus, it was learnt that invariably all class sessions were taught wholly through direct instruction by the teacher, the students for the larger part remaining passive and being expected to stick to

teacher. Moreover, there was a fairly large gap between the goal intended to be achieved by a lecture-centered approach of direct-instruction mode and the various instructional models of student-centred teaching approaches.

Along these lines, the lesson in direct instruction consists mainly of presenting information to students and modeling particular skills in a clear and efficient manner (classroom instruction and management)while direct instruction enables teachers to

promote student learning of procedural knowledge, straight forward declarative knowledge and study skills classroom instruction and management Arends, (1997). By contrast, the various aspects of active learning are meant to help students think, solve problems and to become autonomous learners.

Ethiopian education policies and implementation strategies encourage active learning or student-centred approach that include discussion methods, discovery learning, cooperative learning, inquiry learning, problem-based learning and the development of critical thinking MOE, (2002). In realising such policies, however, various scholars emphasised that lecturer's attitudes affect the effectiveness of the implementation of active learning / student-centred approach Zan and Martino, (2007:157-168); Lea et al, (2003:321)

In this study the majority of FGD members (teachers) on this pedagogical issue, generally agreed on the significance of active learning in promoting critical thinking and problem-solving ability of students far better than lecture-centered approaches.

Nonetheless, they also claimed that lack of a conducive atmosphere to implement active-learning (student centered approaches) has prevented them from translating their attitude regarding the importance of active learning in to practice. The major factors hindering the proper implementation of active learning were said to be constitutive of the compactness of classroom setting and large number of students, time limitations blocking

the active involvement of students in teaching among others.

Compactness of classroom setting was explained in terms of students' seating arrangement. Accordingly, teachers claimed that the classroom seating arrangements do not allow them to employ active learning approaches. In fact, classroom observations have also revealed that seating arrangements are "making students sit in rows facing the teacher and the blackboard" an arrangement which encourages only one-way communication and discourages students from talking to each other.

Besides this, most teachers indicated that whenever an attempt was made to involve students in group-discussions or any other form of cooperative learning, a lot of noise broke out which also disturbed the classroom session in adjacent rooms. Parallel to this, large class size was also blamed for curtailing problem-based teaching as it reduces the chance of individualised supervision from teachers—still another problem attributed to the class size. This caused a huge burden during the assessment and evaluation of student exams and assignments.

The other factor considered as a challenge for conducting problem-based and cooperative learning was the brevity of instructional sessions. In the light of this, it was argued that, more often than not, conducting group discussions and/or allowing students to demonstrate skills proved to be demanding in that it consumes the whole period without imparting basic theories and principles.

In addition, the deeply entrenched familiarity with the culture of lecture-centered teaching approaches on the part of teachers and students as well as the lack of special training (on active learning approaches) for the former has exacerbated the problem. The net effect of the said inconveniences, as the respondents reflected, was the high level of adverse impact from low problem solving capacity in their bid to attain better academic achievement.

Responses to questionnaire item for 'teacher effectiveness' revealed that the item "instructional practices" was considered by most respondents as a major academic achievement limiting factors. Further, FGD participating teachers agreed to the ratings of student respondents. Accordingly, FGD member teachers emphasized that failure to apply a variety of instructional practices represents a major challenge hindering effective teaching and or improved academic achievement.

As such, students in the FGD explained that invariably each and every classroom session was conducted through lecture-centered teaching method where the students' role was little more than listening and note taking. In this context, the students underscored that getting an opportunity for group discussions or a possibility where they experience other modes of active learning/student-centered instructional approach was negligible.

### **Findings**

1. In Table 1, the data showed that students' constraint with regard

to academic self-concept was highly related with low level of problem solving ability. The results showed that the existing low level of problem solving ability was a consequence of classroom teaching learning atmosphere devoid of critical thinking and reflective practice. As to critical thinking, it was claimed that the inclination towards lecture-centered methods has given rise to authoritarian classroom environment where students' academic curiosity was severely curtailed. On the other hand, reflective teaching practice was said to have been hampered by abysmal level of relevant real life experience on the part of the teachers.

2. The data in Table 2 revealed that the most important challenge was higher level of discipline problem. In this regard, FGD participating students and interviewee teachers agreed that the large number of students have contributed towards an uncontrolled level of classroom misbehaviors. The respondents from both categories stressed that the large class size has hindered appropriate classroom management to control behaviors. On the other hand, while the impact from reduced interaction was considered as another serious problem from large class, responses from FGD participating students and teachers underscored its serious consequences in the scale of discipline problem and the adverse impact of large class size in limiting teacher-student interaction.

3. Considering school size, Table 3 indicates that huge number of student population was said to have been involved in elevated degree of discipline problems. The large sizes of the school, according to FGD participating students, have given room to diverse kinds of student misbehaviours which distracted their attention while reading in the libraries. Similarly, responses from school management personnel underlined that the large school size, both in terms of numerical increase and heterogeneous student background has negatively affected the chances of student academic achievement.
4. The data in Table 4 showed that teacher effectiveness has been highly affected by the mode of instruction being practiced. In this context, FGD participating students complained that the dominant mode of instruction in their classrooms was lecture-centered method where their role was reduced to note-taking and listening to instructor's explanation. On the other hand, teachers blamed large number of students and compact classroom setting as the biggest reasons for having little or no active learning or student centred classrooms.

### **Conclusions**

From the findings of this study, one can draw varying degrees of implications on student academic achievement through the analysis of

the data received. Some school-related characteristics were highly rated by the students to indicate that these characteristics have the strongest effects on their academic achievement than the other characteristics not so highly rated.

In this regard, it is worth noting that these highly rated characteristics are related in that the effect of one leads to the other. Comparing the items contained in the four tables, those attributable to teacher effectiveness have been rated "High" by majority of the students pointing out that the quality of teaching is the factor with the greatest impact on students' academic achievement. Based on the insights from the discussion, it is reasonable to argue that the negative trends seen in other school-related and personal characteristics traced their roots from this characteristic of the school.

Thus, with regard to school-related characteristics, a teacher assigned to teach in large classroom and burdened with overload of teaching schedule is, arguably, less capable to give personalised attention to his/her pupils. His/her ability to undertake effective classroom management and ensure appropriate discipline is therefore undermined, again for the same reason. Similarly, the kind of teaching atmosphere mentioned greatly limits the teacher's opportunity to involve in problem-based teaching. This in turn, will result in a situation where the student lacks both the will and commitment to exercising problem-solving skills thereby forcing them to experience low levels of academic self concept.

Given this disappointing reality, the need to create a school and classroom atmosphere where teachers can undertake their tasks to the best of their ability cannot be overruled. In addition, of primary importance, at least in the short term, is that of promoting teachers' pedagogical competence. Accordingly, teachers should be well accustomed to appropriate and creative methods of classroom management via in-service training. Such trainings would possibly be focused on familiarising

teachers. The major features of active learning (student centred) and skills of classroom management will assist them to appropriately discipline their pupils, particularly towards accommodating student heterogeneity.

Finally, it can be said that, without prejudice to the need of reforming the academic setting, the inputs focusing on teachers' competence may serve as powerful weapons to improve the possibilities of academic achievement by the high school students concerned and their counter-parts across the nation.

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# School Absenteeism among Children

## Reflection on Schooling from Rural India

PANKAJ DAS\*

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### Abstract

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*School absenteeism is one of those close factors which hamper the process of child's smooth schooling and educational development in the country. The ambit of school absenteeism is a broad one which includes school phobia, school refusal, post registration absence and psychological absence, etc. However, any form of school absenteeism directly or indirectly pushes the child towards downward mobility in the educational ladder of the society. And this phenomenon persists in many of the government schools in the rural pockets of India. Thus, the whole idea or notion of access to education as a fundamental right for these children comes as a major challenge due to the persistence of the high rate of absenteeism in the schools of the country sides. Then what absenteeism really means and how it is interwoven with child schooling along with other associated factors, this present micro study was an attempt to explore the nature, magnitude and complexity of school absenteeism and its impact on schooling in the rural India.*

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### Introduction

Educational success and achievement of children is the greatest embarkment of schooling process in the democratic country where education is considered as a fundamental right of children at the early stage of human life. The recent enactment of Right to Education Act, 2009 guarantees all the children in the age group of 6-14 years to have free and compulsory education to complete the elementary cycle of education in a

child friendly school atmosphere. This type of historic enactment with the help of government's vigour and strong political commitment to its national development indicates as one of the major stepping stones in achieving the goal of universalisation of elementary education (UEE) as well as *Education for All*. However, school absenteeism on the part of children jeopardises the aforesaid goals of national development. School absenteeism in

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large scale hampers the process of not only good schooling but it also poses a major challenge to the children to successfully complete the basic cycle of elementary education. The tendency of school absenteeism among the children is one of the important factors strongly associated with early dropout from the schools. Further, the tendency of long absenteeism in school is considered a major predictor of dropping out in many instances. It is realised that the persistence of long absenteeism among the children often tends them to do poor performance and repeating the grade and put them in the failure category of students and finally compel them to leave the schools. The research indicates that irregular attendance and temporary withdrawals can both be precursors to dropping out (Grant and Hallman, 2006; the PROBE Team, 1999 cited in Hunt, 2008). The child seems to be not attending school regularly due to many reasons i.g., emotional difficulties, lack of interest in education, ill-health, labour requirements, distance to school, bad company; dissatisfaction with school, home circumstances, etc. It is also observed that the incidence of absenteeism or rate of absenteeism among students varies across social groups depending upon their school and home factors.

#### **The context and the study area**

The present study was located in the state of Chattisgarh which is one of the backward states in respect to educational indicators and exhibits high infant mortality rate in India next to Madhya Pradesh and Odisha.

Dongargaon block of Rajnandgaon was taken as a site of the present study. The study was carried out in a cluster of 11 villages of Dongargaon block comprising 23 schools in this area. Majority of schools in this area are situated within the villages where every child can get access to schooling and these schools are well connected with the pucca roads of the National Highway. The socio-demographic picture of Rajnandgaon as well as Dongargaon block indicates that majority of children belonged to other backward classes (OBC) category.

#### **Research Methods and Design of the Study**

The research design for the present study is analytical in nature. The method of Survey was used for this study. Data collection was done through structured questionnaire, informal discussions, school roster data which includes fields like name, age, grade, caste, father's name, caste, economic status of family, presence in the school on the day of visit, attendance and absent more than seven days of the previous month of the data collection and their classroom performance etc.

The sample consists of 223 children who remained absent for more than 7 days in a month (previous month of data collection of study) from 23 selected government schools of sample area. Out of these, 135 were male and 88 were female children. The coverage area of the present study and sample schools in this study were the same as taken for Consortium for Research on Educational Access, Transitions and Equity (CREATE)



Project of NUEPA. The major objective of the present study was to analyse the magnitude of absenteeism among the elementary government school children of Rajnandgaon district of Chattisgarh and their schooling pattern in their rural context. No doubt, an attempt was made to address the phenomenon of absenteeism in government schools in the present context particularly, in rural parts of India through this small micro study.

#### **Nature of Absenteeism and Children Schooling: a Glimpse from the Study Area**

The perspective of appropriate schooling behaviour describes that children should be regular and attentive very much in their physical presence in the schools, take active participation in classroom activities and perform well in the school's assessment scales and existing norms. Thus, regular schooling takes an important place in the lives of those children who are consistently attending schools without any long break or gap from the schools. The long break or absence from the schools make these children vulnerable to complete the particular cycle of schooling and put them at risk. Many research studies have established the fact that long

absenteeism is positively correlated with the failure of the child in school. For instance in one of the study the results show that higher attendance is related to high achievement and low attendance to low achievement for children of all backgrounds (Epstein and Sheldon, 2002). The phenomenon of school absenteeism is a regular feature in most of our government schools in the rural pockets. A large scale study carried out in Indian context revealed that only about 65 per cent of the enrolled students at the elementary stage in rural areas attended school regularly with about 28 per cent attending irregularly and 7 per cent attending only occasionally. According to the study, the proportion of irregularly and occasionally attending students is a matter of great concern in the rural parts of India (Jha and Jhingran, 2002).

In the present study area, the persistence of long absenteeism among the elementary grades is widely observable across caste, class and gender. The nature of data collected from the children who remained absent for more than 7 days in the previous month of data collection from the field describes the extent and nature of absenteeism across all social denominators.

Table 1  
**Overall Rate of Long Absenteeism in Gender-wise in Study Area**

	<i>Male</i>	<i>Female</i>	<i>Total</i>
Absenteeism > 7days	135 (16.01%)	88 (10.14%)	223 (13.04)
Total Students	843	867	1710

The Table 1 shows that overall children absent rate in the schools registers in all the sample schools was 13 per cent. It is also clearly visible from

the given table that male absentees accounted were higher than the female absentees in respect to absenteeism for more than 7 days.

Table 2  
**Rate of Long Absenteeism in School-wise**

	<i>Male</i>	<i>Female</i>	<i>Grand Total</i>
Primary Schools*	91 (65%)	48 (35%)	139 (62%)
Upper Primary Schools**	44 (52%)	40 (48%)	84 (38%)
Total	135 (60%)	88 (40%)	223

\* Include classes from I-V

\*\* Include classes from VI-VIII

The table 2 clearly depicts that the persistence of long absenteeism in primary schools which was higher than the upper primary schools in Dongargaon block. Male children had accounted more than female children

within the primary schools in regards to long absenteeism. Similarly, at upper primary level, the same situation was found. The number of male children was more than female children who remained absent for more days in schools.

Table 3  
**Absenteeism in Social Category-wise**

<i>Category</i>	<i>Male</i>	<i>Female</i>	<i>Total</i>
SC	59%	41%	7.62%
ST	41%	59%	13%
OBC	60%	40%	76.68%
General	67%	33%	2.69%

The nature of school absenteeism among children was found across all social groups starting from Scheduled Castes, Scheduled Tribes, and Other Backward Classes to General category. However, the degree of absenteeism varies among these social groups. Among all the social groups the OBC children were the most vulnerable in respect to absenteeism in the study area (Table 3). And within this group,

male children who remained absent higher in classes than female children and as counted as more vulnerable group. Next to OBC, the ST and SC children remained absent more days in schools. The results also showed that the children in the general category were found to be less irregular in their schooling behaviour as compared to the children of other social groups within the survey locality.

### The Socio-economic Contexts of Absentees

Considering the importance of children's household and socio-economic background such as the household incomes; parental education and the family environment

it was found that these factors play an important role in affecting their participation of schooling. Data was collected from the families of these absentees which threw light on the schooling behaviour.

Table 4  
Economic Background of Absentees

<i>Economic Category</i>	<i>Male</i>	<i>Female</i>	<i>Total</i>
BPL	64%	36%	66.00%
Non-BPL	55%	45%	36%

In the analysis of absentees' economic context of the households, it was found that 64 per cent of children who remained absent for long times in school belonged to BPL households and only 36 per cent of children who remained absent for long in schools were from non-BPL category. Moreover, male children were accounted higher in number than female Below Poverty Line (BPL) list. This is clearly evident from the Table 4, which reveals that

majority of children in this area belonged to the BPL households and that might have affected their school participation. Even when the monthly incomes of households of these absentees were analysed it was found that almost all the absentees were from the family incomes of less than ₹ 3000 and a very few absentees were from the family incomes of more than ₹ 3000 per month.

Table 5  
Parental Educational Background of Absentees

<i>Father Education</i>	<i>Mother Education</i>					
	<i>Illiterate</i>	<i>Primary</i>	<i>Upper Primary</i>	<i>High School</i>	<i>Hr. Secondary</i>	<i>Above +2</i>
Illiterate	18%	1%	2%			
Primary	19%	18%	1%			
Upper Primary	7%	8%	5%	1%		
High School	4%	4%	3%	1%		
Hr. Secondary	5%	1%	3%		5%	5%
Above +2		5%		5%		1%

The Table 5 describes the parental educational background

of absentees and its relation to the rate of absenteeism in the study

area. There was a strong correlation between parental education and the rate of absenteeism. The Table 5 demonstrates that the proportion of absentees declined substantially with the increase in the level of education of parents. The chances from long absenteeism decreased more for the children of parents whose qualification were more than 10<sup>th</sup> or 12<sup>th</sup> grades. Further it was noticeable that the children whose parents were with upper primary education accounted

for less proportion (8 per cent) to total absentee as compared to those with illiterate parents.

**Schooling, Absenteeism and Self-esteem**

Keeping the existing literature in view which depicts that there exist a strong relationship between behaviour pattern of school absenteeism and self-esteem, in the present study it was attempted to measure and analyse the effect of self esteem on their schooling behaviour among absentees.

Table 6  
**Relationship between Absenteeism and Self esteem**

<i>Nature of Self Esteem</i>	<i>Long Absenteeism</i>
Low Self esteem	85%
High Self esteem	15%

In fact in order to assess the self esteem among absentees in the given area of study a standardised *Rosenberg*

*Self-esteem Scale* was used. In this scale 10 items were answered on a four point scale ranging from strongly

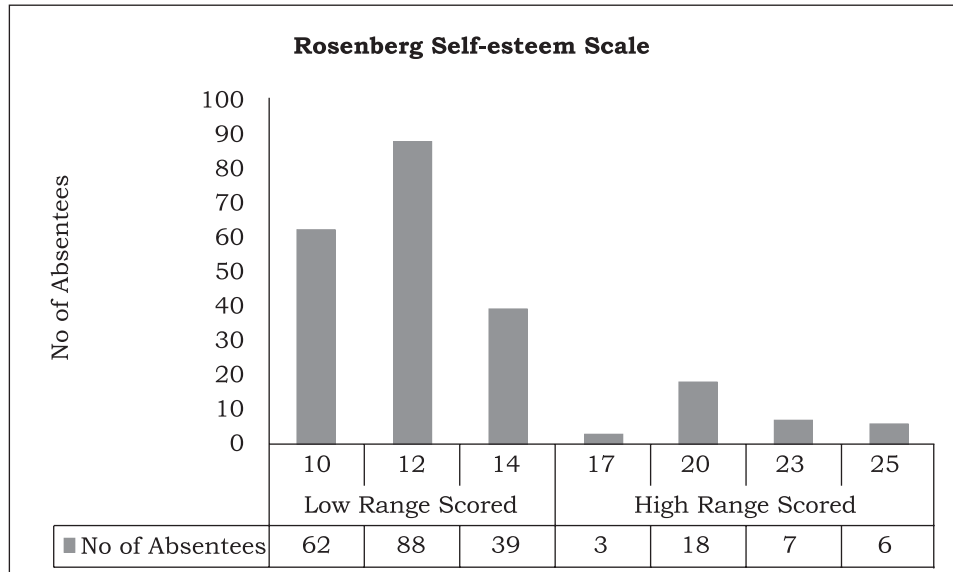


Fig. 1

agree to strongly disagree. The scale generally has high reliability: test-retest correlations are typically in the range of .82 to .88, and Cronbach's alpha for various samples are in the range of 0.77 to 0.88. The scale ranges from 0-30; with 30 being the highest score (each item ranges from 0-3). The higher the score, the higher was the level of self-esteem. Generally the score ranging in between 15-25 were within the normal range and scores below 15 suggested low self esteem.

The figure-1 shows that there were 62 absentees had scored 10, 88 scored 12, 39 scored 14, 3 scored 17, 18 scored 20, 7 scored 23 and 6 scored 25 on the Rosenberg's Self esteem Scale. The overall results shows that 188 absentees (85 per cent) had scored in the range between 10-14 on the scale had low self esteem and 34 absentees (15 per cent) scored in between the 17-25 on the same scale had high self-esteem. Thus majority of absentees had low self esteem and this might be considered as one of the strongest factors which deterred them from school participation for long periods of time.

#### **Chain of Absenteeism, Poor Performance, and Self Esteem**

It was found from the study that around 78 per cent of absentees showed their performances as very poor in the school of the last annual examination register. At the same time the results showed that only 22 per cent absentees scored or performed average in the previous annual examination. Also, majority of absentees having poor performance had low Self esteem

and only a few absentees had high Self esteem. Thus, the strong association between children absent behaviour with their poor performance along exhibited by low self esteem posits a chain of cyclical relationship of schooling which ultimately put them at in the category of permanent exclusion from the school. In simple terms, it can be concluded that that majority of absentees not only performed poorly but they are also having low Self-esteem which eventually pushed them to frustration and embarrassment in the class and promote emotional and physical withdrawal tendencies thereby putting them in vulnerable group of dropping out. Thus exhibiting the chain of cyclical relationship between children absenteeism, poor performance and their low self esteem it links the line of mediation between these risk factors and eventually put the absentees in the process of exclusion from the school. Further the studies also supported this finding which emphasises that in pursuant to academic failure, children's low Self-esteem is a central mediator of their inappropriate schooling behaviour, i.e. school absenteeism which ultimately puts them at risk and then leads to final withdrawal from the school system (Bernstein and Rulo, 1976).

#### **School as a Structural Space and Rate of Absenteeism**

The school as a structure of both physical and academic atmospheres strengthen the existing school management and school planning both in terms of academic inputs and outputs. Improvements due to existing physical infrastructure like

the provision of facilities such as toilets, nature of school building, and provision of drinking water, electricity, adequate number of classrooms, etc also directly or indirectly play a significant role in reducing the rate of absenteeism among children. It was found that there were a few schools in the study area where the rate of absenteeism was found very high. And when the analysis of these schools were done with certain parameters against the persistence of the phenomenon of high absenteeism among children, then it came to our knowledge that these schools did not have good buildings, toilets, provision of drinking water facilities and electricity and adequate number of classrooms, etc. However, majority of these of schools did have provision for proper academic facilities like they did have adequate teacher pupil ratio as per the existing school norms.

### **Discussion and Conclusion**

The micro study was done in 23 government schools in Dogargaon block of Rajnandgaon district of Chhattisgarh. The study more explicitly described and explored the pattern, nature and degree of school absenteeism among the elementary grade children in the study area. The major objective of the study was to understand the actual schooling of children in government schools of rural India through the behaviour of school absenteeism.

From the analysis, it was found that the behaviour of school absenteeism was very high in all the government schools within the area of study irrespective of caste, class and gender.

The overall rate of absenteeism across these denominators in the study area was 13 per cent which is considered very high when we think at the present context the goals of UEE and RTE Act.2009 in regards to active participation of children in the school activities. In fact persistence of high rate of absenteeism in the government schools of rural areas pose a great challenge to our conceived notion of the massive development of elementary education of government schools in rural parts of India. The study also shows that both boys and girls are equally vulnerable to long absenteeism in these sample government schools.

Children enrolled in primary schools were affected more due to the persistence of the phenomenon of the absenteeism. Also the rate of long absenteeism was higher in primary grades than in the upper primary grades. Nevertheless, the conditions of upper primary schools were not much better off to primary ones. The situation is almost same and buildings are dilapidated in both types of schools.

Children from socially backward communities and economically deprived groups are easily trapped in or exhibited mostly the inappropriate school behaviour whether it is poor performance, school absenteeism or low self-esteem. No doubt, the nature of school absenteeism among children was found across all social groups. The OBC children were the most vulnerable in respect to absenteeism in the study area. And within this group, Male children remained absent higher than Female children. Next to OBC, the ST and SC children had remained absent more

days in schools. Majority of children almost 66 per cent in this area were belonged to the BPL households and that badly affect their school participation. Also parents' educational status plays a major factor of children schooling behaviours. And the analysis of parental educational background and its impact on children schooling behaviour of absenteeism clearly establishes the fact that there is a strong correlation found between these two. The proportion of absentees declined substantially with the increases in the level of education of parents and vice versa.

Moreover, children's behaviour of school absenteeism is more or less affected by their psychological well being. Because majority of absentees had low self esteem and this deter them from the school participation for long. Further, the results of the study, pointed out that majority of absentees having poor performance had low self esteem and only a few absentees who had high self esteem. Thus by creating a chain of cyclical relationship between children absenteeism, poor performance and their low self esteem it links the line of mediation between these risk factors and putting the absentees in the category of future dropouts. However, school's physical and academic infrastructure has also

contributed the extent and magnitude of absenteeism among children.

Some major steps need to be taken both at individual and institutional levels to combat the problem of school absenteeism among the children studying in the governments schools in the rural pockets of India. Some concrete strategies should be taken wholeheartedly to address this issue in a larger context of school education and children's right to schooling. Many strategies are planned out in government policies, documents or programmes even in the latest NCF-2005 and RTE Act, 2009 that how to create a child friendly, conducive and joyful atmosphere so that the children who are studying in the schools by themselves feel that they can actively participate in school activities wholeheartedly. However, just only chocking out the plans in these documents for child to take active participation in school activities and stay less number of time absent in school will not going to solve the problem of school absenteeism until we really implement these strategies. Then how effectively and accurately we can implement these strategies in practice depend upon our true commitments and genuine interests to children's future for their better tomorrow.

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# Secondary Stage Education in India

## An Analytical Overview

VIRENDRA PRATAP SINGH\*

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### Abstract

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*The present study has analytically overviewed the secondary stage education based on the recent past educational surveys. It provides tangible comparisons pertaining to secondary stage education on the schooling facilities in rural areas, schooling facilities in habitations predominantly populated by scheduled castes and scheduled tribes, schooling facilities in villages, secondary schools, secondary sections in the schools, enrolment in Classes IX and X, science laboratories and computer education, guidance services, pre-vocational courses, secondary stage in oriental schools following general system of education, schools admitting children with disabilities and enrolment taking place in India. The study utilises secondary data collected during recent successive two surveys, namely, sixth and seventh on school education conducted by the National Council of Educational Research and Training under administrative and financial control of the Government of India.*

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### Introduction

In a democracy, it is the people who ultimately decide major issues of policy. It is obvious that there can be no intelligent decision without acquaintance with facts. With the growing condensation of space and time, relations between countries and peoples are becoming continually

closer. Modern democracy, therefore, demands that the people at large must have knowledge not only about their own country, but also of the world in general. It is largely the function of secondary education to meet this demand of democracy. Elementary education seeks to provide the basic information and skills needed for

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survival. Higher education seeks to expand the boundaries of knowledge, and is often an end in itself. Secondary stage education provides knowledge of the world and also serves as the connecting link between elementary and higher education (secondary and tertiary). In India, as in many other countries, secondary stage schools are the main source of supply for teachers in elementary schools. Secondary stage schools also prepare students for higher secondary and tertiary education, especially for universities and institutions of higher learnings. Besides, this is the stage which in all countries marks the completion of education for a large majority. All these factors make secondary stage education crucial in the educational programme of a democracy. The issue of secondary education after independence has been overviewed by Kabir (1955), then the Education Secretary of Union.

In most contemporary educational systems of the world, secondary education consists of the second years of formal education that occur during adolescence. It is characterised by transition from the typically compulsory, comprehensive primary education for minors to the optional, selective tertiary, "post-secondary", or "higher" education (e.g., university, vocational school) for adults. Depending on the system, schools for this period or a part of it may be called *secondary schools, high schools, gymnasiums, lyceums, middle schools, colleges, vocational schools and preparatory schools*, and the exact meaning of any of these varies between the systems.

The exact boundary between elementary and secondary education varies from country to country and even within them, but is generally around the seventh to the tenth year of education. Secondary education occurs mainly during the teenage years. The States/UTs, namely, Andhra Pradesh, Assam, Goa, Gujarat, Karnataka, Kerala, Maharashtra, Meghalaya, Mizoram, Orissa, Dadar and Nagar Haveli, Daman and Diu and Lakshadweep in India follow the class structure VIII-X of three years other than the national pattern of class structure IX-X of two years for secondary education in terms of years or academic sessions.

While the importance of secondary education in a democratic education society is thus beyond question, and it is widely recognised that purpose of secondary education is to give common knowledge, and to serve as a bridge between elementary and higher education in preparing young persons of the age group 14-18 years for entry into either higher education or vocational education, or to train directly to a profession [Singh (2002) and Singh (2004)].

### **Quantitative Data Items Covered on Secondary Stage Schooling Facilities**

Keeping in view the importance of secondary education as described earlier herein, the All India Educational Surveys have enumerated information on various aspects of secondary education/stage. The information vis-à-vis data items covered during educational surveys are normally based on the policies and programmes of the public authorities having

affairs with the Union of India to answer the general public, more precisely a layman, to understand in uncomplicated term how secondary education is developing/ changing in the country.

Based on the recently conducted seventh survey, this paper will provide information in ensuing paragraphs on schooling facilities in rural areas, schooling facilities in habitations predominantly populated by scheduled castes, schooling facilities in habitations predominantly populated by scheduled tribes, schooling facilities in villages, secondary schools, sections, enrolment in Classes IX and X, computer education and science laboratories, guidance services, prevocational courses, secondary stage in oriental schools following general system of education, enrolment and teachers, schools admitting children with disabilities and enrolment (NCERT, 2002).

The survey data are processed and analysed by simple statistical approach to provide an analytical overview on the secondary school education that has been taking place in India in recent years. The present study is based on the secondary data on school education collected during sixth survey

and seventh survey [NCERT (1998) and NCERT (2007)].

We shall, now, present our major findings regarding salient features of the secondary education and temporal comparison thereof on above mentioned key parameters associated to secondary school education in the country. It will certainly provide the necessary areas of intervention to be undertaken by the public authorities in achieving the yet to be proposed goals of education for all.

#### **Availability of the Secondary Stage Schooling Facilities in Rural Habitations**

Availability of schooling facilities in rural area is measured by a set of indicators concerning access on the basis of rural habitations (Singh, 2006). As per available criteria based on first survey report, 35.9 per cent habitations are having facilities of secondary schools/sections within a walking distance of eight km, including 0.54 per cent habitations having such facilities within habitations itself in the rural areas. Table 1 provides the statistics based on seventh survey in regard to habitations served by secondary sections and population served by secondary sections with respect to the distance criterion.

Table 1

#### **Habitation and Population in Rural Area According to Availability of Facilities for the Secondary Stage in Various Distance Slabs, 2000**

<i>Distance (in km)</i>	<i>Habitations Served by Secondary Sections</i>		<i>Population Served by Secondary Sections</i>	
	<i>Number</i>	<i>Percentage</i>	<i>Population</i>	<i>Percentage</i>
1	2	3	4	5
With a secondary school/section in the habitation	69,991	5.79	15,97,02,950	20.55

With a secondary school/section in the neighboring habitation within a distance of 2.0 km	3,45,347	28.55	19,76,44,848	25.43
With a secondary school/section in the neighboring habitation within a distance of 2.1 to 4.0 km	3,45,275	28.55	19,53,68,270	25.14
With a secondary school/section in the neighboring habitation within a distance of 4.1 to 5.0 km	1,24,535	10.30	7,24,29,630	9.32
Sub-total (up to 5.0 km)	8,85,148	73.18	62,51,45,698	80.43
With a secondary school/section in the neighboring habitation within a distance of 5.1 to 6.0 km	76,570	6.33	3,99,12,361	5.14
With a secondary school/section in the neighboring habitation within a distance of 6.1 to 8.0 km	98,510	8.14	4,90,02,223	6.30
Sub-total (up to 8.0 km)	10,60,228	87.66	71,40,60,282	91.87
With a secondary school/section in the neighboring habitation at a distance of more than 8.0 km	1,49,293	12.34	6,31,57,341	8.13
Total	12,09,521	100.00	77,72,17,623	100.00

In year 2002, the seventh survey has enumerated 12,09,521 habitations with a population of 77,72,17,623 people, which provides a growth of 14.04 per cent in habitations and 17.82 per cent in population as compared to the sixth survey conducted in year 1993 in the country.

It provides information that secondary schools/sections are available in 69,991 habitations (5.79 per cent), thereby covering 20.55 per cent population, whereas same is available up to 5.0 km to 8,85,148 habitations (73.18 per cent) befitting to 80.43 per cent population in the country. In

addition, 10,60,228 habitations (87.66 per cent) are served by secondary schools/sections with coverage of 91.87 per cent population within a distance up to 8.0 km. The seventh survey also provides information that 1,49,293 habitations (12.34 per cent) having a population of 8.13 per cent does not have an access of schooling facility within eight km in the country which requires an attention of public authorities in the country.

Table 2 presents the per centage of habitations and population in them served by secondary sections in different population slabs as per findings of the

seventh survey. It is observed based on sixth survey statistics that there is an overall increase in terms of per cent points for habitations and populations in them served by secondary sections over different population slabs and distance criterion from the habitations over space and time.

Based on population slab criteria, it is found that maximum rural people of India that is 18,98,97,783 are falling in the population slab of 1000-1999 with 1,39,987 habitations providing access of secondary stage to 12.83 per cent within habitations and 92.19 per cent habitations up to eight km. In respect to population served by secondary stage, Table 2 affirms that nearly 13.71 per cent population within habitations and 92.29 per cent population up to eight km are served by the secondary sections in the country.

The population slab of 2000-4999 next in line consists of 17,19,01,726 rural people of India staying in 60,424 habitations have an access of secondary sections within habitations for 34.84 per cent and up to eight km in 94.82 per cent habitations. The secondary sections serve population-wise 37.29 per cent population within habitations and 95.08 per cent population up to eight km.

**Availability of Secondary Stage Schooling Facilities in Rural Habitations Predominantly Populated by SCs**

Table 3 provides schooling facilities in habitations predominately populated by SCs and population in them according to availability of secondary stage schooling facilities within various distance slabs at the time

Table 2  
**Percentage of Habitations and Population Served by Secondary Sections in Different Population Slabs, 2002**

Population Slab	No. of Habitations in the Slab	Population of Habitations	Percentage of Habitations Served by Secondary Sections		Percentage of Population Served by Secondary Sections	
			Within Habitation	Upto 8 km	Within Habitation	Upto 8 km
1	2	3	4	5	6	7
5000 & above	10,238	8,18,11,702	65.10	97.62	70.18	97.97
2000-4999	60,424	17,19,01,726	34.84	94.82	37.29	95.08
1000-1999	1,39,987	18,98,97,783	12.83	92.19	13.71	92.29
500-999	2,45,781	17,12,50,490	4.91	90.18	5.14	90.29
Below 500	7,53,091	16,23,55,922	1.63	85.28	2.06	86.59
Total	12,09,521	77,72,17,623	5.79	87.66	20.55	91.87

of seventh survey in year 2002. As described elsewhere in the literature (NCERT, 1998), a habitation has been considered pre-dominantly populated by SCs, if 50 per cent or more of its population belongs to SCs.

It is evident from Table 3 that at the time of seventh survey, 1,74,700 habitations are predominantly populated

by SCs with count of 9,41,52,716 people, thereby registered a growth of 44.96 per cent in habitations and 74.38 per cent in population as compared to sixth survey in the country. Out of total habitations, 5,613 habitations (3.21 per cent) predominantly populated by SCs covering 9.95 per cent population have access to secondary

Table 3  
**Habitation Predominantly Populated by Scheduled Castes and Population in them according to the availability of the Secondary Stage Schooling Facilities within Various Distance Slabs, 2002**

<i>Distance (in km)</i>	<i>Habitations Served by Secondary Sections</i>		<i>Population Served by Secondary Sections</i>	
	<i>Number</i>	<i>Percentage</i>	<i>Population</i>	<i>Percentage</i>
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
With a secondary school/section in the habitation	5,613	3.21	93,72,379	9.95
With a secondary school/section in the neighboring habitation within a distance of 2.0 km	57,025	32.64	2,98,09,822	31.66
With a secondary school/section in the neighboring habitation within a distance of 2.1 to 4.0 km	53,509	30.63	2,71,05,671	28.79
With a secondary school/section in the neighboring habitation within a distance of 4.1 to 5.0 km	17,675	10.12	92,38,805	9.81
Sub-total (up to 5.0 km)	1,33,822	76.60	7,55,26,677	80.22
With a secondary school/section in the neighboring habitation within a distance of 5.1 to 6.0 km	10,773	6.17	51,11,287	5.43
With a secondary school/section in the neighboring habitation within a distance of 6.1 to 8.0 km	12,864	7.36	60,20,419	6.39
Sub-total (up to 8.0 km)	1,57,459	90.13	8,66,58,383	92.04
With a secondary school/section in the neighboring habitation at a distance of more than 8.0 km	17,241	9.87	74,94,333	7.96
Total	1,74,700	100.00	9,41,52,716	100.00

stage schooling facilities within the habitations, whereas same is available to 1,33,822 habitations (76.60 per cent) providing access to 80.22 per cent population within a distance of 5 km in the country. Moreover, 1,57,459 habitations (90.13 per cent) are served by secondary schools/sections with coverage of 92.04 per cent population within a distance up to 8.0 km. The remarkable finding of seventh survey reveals that 17,241 habitations (9.87 per cent) having a population of 7.96 per cent, does not have an access of schooling facility within eight km in the country – calling an attention of public authorities engaged in drafting the policy and programme proposals on secondary education for all in the country.

Table 4 presents the per centage of habitations predominantly populated by SCs and population in them served by secondary sections in different population slabs. In comparison to sixth survey, it is found that there is an overall increase in terms of per cent

points for habitations and populations in them served by secondary sections over different population slabs and distance criterion from the habitations, and does not require a specific mention herein. Accordingly, it is found that habitations predominantly populated by SCs and population in them based on population slab criteria is maximum for the population slab of 500-999, and that is 37,256 habitations with a population of 25,799,421 people are served by secondary section in terms of per cent points for 3.53 per cent within habitations and 91.13 per cent habitations up to eight km, respectively. In respect to population served by secondary section, nearly 3.69 per cent population within habitations and 91.19 per cent population up to eight km are served by secondary section, respectively in the country. The population slab next in the line is below 500 having a population of 2,49,19,949 rural people staying in 1,13,575 habitations predominately populated by SCs

Table 4

**Habitation Predominantly Populated by Scheduled Castes and Population in them Served by Secondary Sections in Different Population Slabs, 2002**

Population Slab	No. of Habitations in the Slab	Population of Habitations in the Slab	Percentage of Habitations Served by Secondary Sections		Percentage of Population Served by Secondary Sections	
			Within Habitation	Upto 8 km	Within Habitation	Upto 8 km
1	2	3	4	5	6	7
5,000 & above	643	48,57,558	45.57	97.82	49.80	98.22
2,000-4,999	5,482	1,49,73,290	21.69	93.94	23.60	94.08
1,000-1,999	17,744	2,36,02,498	8.38	92.78	8.90	92.86
500-999	37,256	2,57,99,421	3.53	91.13	3.69	91.19
Below 500	1,13,575	2,49,19,949	1.17	89.16	1.48	89.71
Total	1,74,700	9,41,52,716	3.21	90.13	9.95	92.04

have an access of secondary sections within habitations for 1.17 per cent and up to eight km in 89.16 per cent habitations. Population-wise 1.48 per cent population within habitations and 89.71 per cent population up to eight km are served by secondary sections.

**Availability of Secondary Stage Schooling Facilities in Rural Habitations Predominantly Populated by STs**

A habitation has been considered predominantly populated by the STs, if 50 per cent or more of its population

Table 5  
**Habitation Predominantly Populated by Scheduled Tribes and Population in them according to the availability of the Secondary Stage Schooling Facilities within Various Distance Slabs, 2002**

<i>Distance (in km)</i>	<i>Habitation Served by Secondary Sections</i>		<i>Population Served by Secondary Sections</i>	
	<i>Number</i>	<i>Percentage</i>	<i>Population</i>	<i>Percentage</i>
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
With a secondary school/ section in the habitation	6,660	2.74	76,12,617	9.15
With a secondary school/ section in the neighboring habitation within a distance of 2.0 km	48,483	19.95	1,74,30,858	20.94
With a secondary school/ section in the neighboring habitation within a distance of 2.1 to 4.0 km	59,540	24.50	2,03,46,340	24.44
With a secondary school/ section in the neighboring habitation within a distance of 4.1 to 5.0 km	25,927	10.67	89,04,935	10.70
Sub-total (up to 5.0 km)	1,40,610	57.87	5,42,94,750	65.23
With a secondary school/ section in the neighboring habitation within a distance of 5.1 to 6.0 km	17,636	7.26	54,70,389	6.57
With a secondary school/ section in the neighboring habitation within a distance of 6.1 to 8.0 km	27,073	11.14	81,01,111	9.73
Sub-total (up to 8.0 km)	1,85,319	76.27	6,78,66,250	81.53
With a secondary school/ section in the neighboring habitation at a distance of more than 8.0 km	57,674	23.73	1,53,75,493	18.47
Total	2,42,993	100.00	8,32,41,743	100.00



belongs to STs as cited elsewhere in the literature (NCERT, 1998). The seventh survey provides information in regard to habitations predominantly populated by STs and population in them according to availability of secondary stage schooling facilities within various distance slabs, and same is depicted in Table 5. The referred Table based on seventh survey in year 2002 records that 2,42,993 habitations are predominantly populated by STs with a population of 8,32,41,743 people, henceforth documents an upward increase of 24.78 per cent in the counts of habitations and 29.82 per cent in population with respect to sixth survey in year 1993 in the country. Out of total habitations, 6,660 habitations (2.74 per cent) predominantly populated by STs covering 9.15 per cent population have access to secondary stage schooling facilities within the habitations, whereas such schooling facilities are available to 1,40,610 habitations (57.87 per cent) providing access to 65.23 per cent population

within a distance of 5 km. On the other hand, 1,85,319 habitations (76.27 per cent) are served by secondary schools/ sections with coverage of 81.53 per cent population within a distance up to 8.0 km vis-à-vis recording statistics that nearly 23.73 per cent habitations predominately populated by STs and 18.47 per cent population in them are not served by the secondary stage schooling facilities within a distance up to 8.0 km – Needs to be redressed by the public authorities concerned on this behalf in the country.

Table 6 summarises the habitations predominantly populated by STs and population in them served by secondary sections in different population slabs along with per cent points based on distance criterion, namely, within habitations and up to eight km. Also, there has been an overall increase in terms of per cent points for habitations and populations in them served by secondary sections over different population slabs and distance criterion from the habitations akin to

Table 6

**Habitation Predominantly Populated by Scheduled Tribes and Population in them Served by the Secondary Sections in Different Population Slabs, 2002**

Population Slab	No. of Habitations in the Slab	Population of Habitation in the Slab	Percentage of Habitations Served by Sec. Sections		Percentage of Population Served by Sec. Sections	
			Within Habitation	Upto 8 km	Within Habitation	Upto 8 km
1	2	3	4	5	6	7
5000 & above	264	19,94,759	54.92	88.64	56.66	88.75
2000-4999	2,230	61,23,168	35.87	89.10	37.50	89.19
1000-1999	9,917	1,30,20,435	16.06	87.95	17.10	88.14
500-999	33,534	2,25,69,049	5.53	83.12	5.89	83.36
Below 500	1,97,048	3,95,34,332	1.15	74.35	1.60	76.75
Total	2,42,993	8,32,41,743	2.74	76.27	9.15	81.53

previously illustrated aspects on such issues either in this paper or elsewhere in the relevant survey reports. It is appropriate to mention here that habitations predominantly populated by STs and population therein based on population slab criteria is found maximum for population slab of below 500 with 1,97,048 habitations having population of 3,95,34,332 persons. These habitations are served by secondary section in terms of per cent points that are 2.74 per cent and 76.27 per cent points within habitations and up to eight km, respectively. Besides, the population served by secondary section within habitations and up to eight km is reported 1.60 per cent and 76.75 per cent, respectively in the country. Subsequently, population slab 500-999 is next in the line with 33,534 habitations with a strength of 2,25,69,049 rural people predominately populated by STs have an access of secondary sections within habitations for 5.53 per cent and up to eight km in 83.12 per cent habitations, respectively. This population slab

is reportedly providing access to secondary sections to 5.89 per cent rural people within habitations and 83.36 per cent rural people up to eight km, respectively.

### **Availability of the Secondary Stage Schooling Facilities in Villages**

The seventh survey has collected information pertaining to availability of secondary stage schooling facilities in villages according to proportion of SCs and STs Populations within villages. Table 7 and Table 8 provide the distribution in this regard.

It is evident from the referred Tables that total number of villages is 5,86,986 in the country, and 67,167 villages (11.44 per cent) out of these total villages are having facilities for secondary stage schooling facilities in the country at the time of seventh survey in year 2002. For temporal comparison with sixth survey conducted in 1993, it is observed that there has been a marginal increase of 521 villages, henceforth, recording a growth of 0.09 per cent in villages,

Table 7

### **Villages According to Proportion of Scheduled Caste Population and Availability of the Secondary Stage Education Facilities within them, 2002**

<i>Proportion (in %) of Scheduled Castes in Villages</i>	<i>Total No. of Villages</i>	<i>Villages Having Facilities for Secondary Stage Education</i>		
		<i>No. of Villages</i>	<i>Col. 3 as % of Col. 2</i>	<i>Col. 3 as % of of its Total</i>
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
Zero	1,57,745	8,847	5.61	13.17
1 - 25	2,77,411	44,828	16.16	66.74
26 - 50	96,691	10,415	10.77	15.51
51 - 75	29,032	1,909	6.58	2.84
More than 75	26,107	1,168	4.47	1.74
Total	5,86,986	67,167	11.44	100.00

whereas availability of secondary stage schooling facilities have been increased in 15,777 villages, thus accumulating a growth of 30.70 per cent in villages having facility available for secondary stage schooling in the country.

As per Table 7, the seventh survey disseminates that among 67,167 villages having availability of secondary stage schooling facilities within them, 44,828 villages (66.74 per cent) have SCs proportion between 1-25 per cent.

referred villages constitute 45.05 per cent of total number of villages having secondary stage educational facilities. Further, 29,049 villages (43.25 per cent) with STs proportion between 1-25 per cent are having secondary stage schooling facilities within them. Considering the facilities in villages with different STs proportions, it is observed that per centage of villages having such facilities is found highest (22.23 per cent) in respect of villages

Table 8  
**Villages according to the Proportion of Scheduled Tribes Population and availability of the Secondary Stage Education Facilities within them, 2002**

Proportion (in %) of Scheduled Tribes in Villages	Total No. of Villages	Villages Having Facilities for Secondary Stage Education		
		No. of Villages	Col. 3 as % of Col.2	Col. 3 as % of its Total
1	2	3	4	5
Zero	3,26,821	30,260	9.26	45.05
1 – 25	1,30,650	29,049	22.23	43.25
26 – 50	36,812	3,690	10.02	5.49
51 – 75	28,860	1,914	6.63	2.85
More than 75	63,843	2,254	3.53	3.36
Total	5,86,986	67,167	11.44	100.00

Considering the facilities in villages with different proportions of SCs, it is observed that the per centage of villages having these facilities is the highest in respect of villages having SCs population between 1-25 per cent. However, this per centage is found to be lowest (4.47 per cent) for villages where SCs proportion is more than 75 per cent.

Table 8 discloses that out of 67,167 villages having availability of secondary stage schooling facilities within them, 30,260 villages are without STs Population. These

having STs proportion between 1-25 per cent, and is obtained lowest (3.53 per cent) for villages having STs proportion more than 75 per cent in the country.

The secondary schools including higher secondary schools having secondary sections by area and management are presented in Table 9. It is obvious that secondary stage educational facilities exist in all secondary schools in the country. Thus, there are 90,741 secondary schools including 39,934 higher secondary schools having secondary

sections making a total of 1,30,675 secondary sections at the time seventh survey in year 2002 as compared to 67,241 secondary schools including 21,674 higher secondary schools having secondary sections making a total of 87,238 secondary sections at the time of sixth survey in year 1993. This change, therefore, indicates a growth of 34.95 per cent in secondary schools including a growth of 84.25 per cent in higher secondary schools having secondary sections making an average growth of 49.79 per cent in secondary sections. It is evident from Table 9 that almost two third and one third of secondary sections of the schools are with the rural and urban areas, respectively in the country.

It is also apparent from Table 9 that nearly more than two thirds (69.44 per cent) of secondary sections are the part of secondary schools, and remaining less than one third (30.56 per cent) are the part of higher secondary schools.

### Secondary Sections in Schools

Besides, among 90,741 secondary schools, the distribution by type of schools reveals that 86.73 per cent schools are co-educational, 8.96 per cent are girls', and 4.31 per cent are boys' secondary schools at the time of seventh survey in year 2002. In addition, it is found at the time of seventh survey that 70.06 per cent of secondary schools are in rural area and remaining 29.94 per cent schools are in urban area, thereby it indicates an increase of secondary schools in urban area by 2.95 per cent points with respect to sixth survey in the country.

Management-wise secondary sections run by the government and local body schools are 45,271 and 11,301 which together constitutes 43.29 per cent of the total number of secondary sections in seventh survey, and shows a declining trend of 4.17 per cent points with respect to sixth survey. Besides, private aided schools

Table 9  
**Management-wise Schools having Secondary Sections, 2002**

Area/ Management	Secondary Schools				Higher Secondary Schools Having Secondary Section	Total
	Boys	Girls	Co-ed.	Total		
1	2	3	4	5	6	7
Rural	2,040	4,297	57,239	63,576	20,794	84,370
Urban	1,871	3,837	21,457	27,165	19,140	46,305
Total	3,911	8,134	78,696	90,741	39,934	1,30,675
Government	2,108	3,385	25,098	30,591	14,680	45,271
Local Body	3,06	786	8,875	9,967	1,334	11,301
Private Aided	974	2,714	20,214	23,902	14,858	38,760
Private Unaided	523	1,249	24,509	26,281	9,062	35,343

with secondary sections increased from 33,210 in sixth survey to 38,760 in seventh survey thereby inclining a trend of growth of 17.23 per cent, and on the other hand private unaided schools with secondary sections increased from 12,624 in sixth survey to 35,343 in seventh survey with an increasing trend of growth of 179.97 per cent in the country – an impact of new economic policy adopted by the public authorities on privatization of education sub-sector in the country.

### Enrolment in Classes IX and X

As illustrated elsewhere in this paper, two different patterns consisting of Classes VIII to X of three years, and Classes IX-X of two years for secondary stage of education, are the patterns followed in the country. For the sake of uniformity, this section confines to Classes IX and X so far as enrolment at the secondary stage is concerned based on the ISCED classification (Singh and Raju, 2006).

Table 10 asserts sex-wise enrolment in Classes IX and X by area and management in year 2002. The total enrolment in Classes IX

and X has increased from 1,52,19,392 in sixth survey in year 1993 to 2,18,88,898 in seventh survey in year 2002, and it has recorded a growth of 43.82 per cent. In seventh survey, 57.59 per cent of total enrolment in Classes IX and X belongs to rural area and remaining 42.41 per cent to urban area, of which 58.49 per cent are boys and 41.51 per cent are girls in total enrolment in Classes IX and X in the country.

Similarly, total per centage of girls in enrolment in Classes IX and X has increased from 36.47 per cent in sixth survey to 41.51 per cent in seventh survey, and has depicted numerically a growth of 5.04 per cent points. However, the seventh survey also records that per centage of girls enrolment in rural and urban area have been 38.96 and 44.98 per cent which are on higher side in terms of per cent points as compared to sixth survey resulting an increase in enrolment of girls to secondary sections of schools vis-à-vis reducing the gender disparity in the country.

In seventh survey, the management-wise total enrolment in Classes IX and X

Table 10  
**Management-wise Enrolment in Classes IX and X, 2002**

<i>Area / Management</i>	<i>Boys</i>	<i>Girls</i>	<i>Total</i>	<i>Percentage of Girls</i>
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
Rural	76,95,335	49,11,345	1,26,06,680	38.96
Urban	51,06,664	41,75,554	92,82,218	44.98
Total	1,28,01,999	90,86,899	2,18,88,898	41.51
Government	41,63,866	29,83,063	71,46,929	41.74
Local Body	8,46,074	6,92,834	15,38,908	45.02
Private Aided	50,46,711	37,02,030	87,48,741	42.32
Private Unaided	27,45,348	17,08,972	44,54,320	38.37

has been 32.65 per cent in government, 7.03 per cent in local body, 39.97 per cent in private aided and 20.35 per cent in private unaided schools having 41.74 per cent, 45.02 per cent, 42.32 per cent and 38.37 per cent of girls enrolled in these schools in Classes IX and X under secondary sections. These management-wise figures in respect to enrolment in Classes IX and X are exhibiting an overall increase in comparison to sixth survey.

The sex-wise SCs enrolment in Classes IX and X by area and management as collected during seventh survey in year 2002 is presented in Table 11. Accordingly, the total enrolment for SCs in Classes IX and X has gone up from 20,87,669 in sixth survey in year 1993 to 33,69,517 in seventh survey in year 2002, therefore, SCs enrolment in Classes IX and X have recorded an impressive growth of 61.40 per cent, which is more than the overall growth of total enrolment as mentioned under preceding paragraphs in this paper in the country.

Among the SCs students in seventh survey, 61.91 per cent of total SCs

enrolment in Classes IX and X are from rural area and remaining 38.09 per cent are from urban area, of which 60.51 per cent are boys and 39.49 per cent are girls in total SCs enrolment in Classes IX and X, respectively in the country. Similarly, total per centage of girls' enrolment in Classes IX and X has depicted a growth of 7.18 per cent in terms of per cent points from sixth survey to seventh survey. In addition, it is evident from the seventh survey statistics that per centage of girl's enrolment in rural and urban area has been 36.97 per cent and 43.59 per cent, and is on the increasing trends as compared to sixth survey resulting an increase in enrolment of girls in secondary sections of schools.

While considering the management-wise total enrolment in Classes IX and X of the seventh survey, it has been observed that 36.36 per cent in government, 8.48 per cent in local body, 39.50 per cent in private aided and 15.66 per cent in private unaided schools having 40.67 per cent, 41.53 per cent, 39.37 per cent and 35.76 per cent of girls enrolled in these schools

### SCs Enrolment in Classes IX and X

Table 11  
Management-wise Scheduled Castes' Enrolment in Classes IX and X, 2002

<i>Area / Management</i>	<i>Boys</i>	<i>Girls</i>	<i>Total</i>	<i>Percentage of Girls</i>
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
Rural	13,14,791	7,71,267	20,86,058	36.97
Urban	7,24,054	5,59,405	12,83,459	43.59
Total	20,38,845	13,30,672	33,69,517	39.49
Government	7,26,873	4,98,215	12,25,088	40.67
Local Body	1,67,095	1,18,672	2,85,767	41.53
Private Aided	8,07,019	5,24,107	13,31,126	39.37
Private Unaided	3,37,858	1,89,678	5,27,536	35.76

under secondary sections. These management-wise figures for enrolment in Classes IX and X are presenting an overall increase in per cent points with respect to sixth survey.

As per seventh survey, the enrolment of STs children in Classes IX and X by area and management is given in Table 12. As per sixth survey, there are 7,98,813 STs children enrolled in Classes IX and X in year 1993, and it has shot up to 12,32,174 STs children as per seventh survey in 2002, thus has demonstrated a growth of 54.25 per cent, which is more than the overall growth of total enrolment as mentioned under earlier paragraphs in this paper.

The total STs enrolled children in secondary sections under seventh survey consist of 61.39 per cent boys and 38.61 per cent girls. Out of total STs enrolled children, the children enrolled in rural area are 74.21 per cent, whereas 25.79 per cent children are enrolled in urban area under secondary sections. Similarly, total per centage of girls in enrolment

in Classes IX and X has depicted a growth of 6.51 per cent in terms of gain in per cent points from sixth survey to seventh survey. It is also clear that per centage of girls enrolment in rural and urban area have been 36.98 per cent and 43.32 per cent, and are on the increasing trends as compared to sixth survey resulting an increase in enrolment of girls to secondary sections of schools, especially in rural areas.

In secondary section, the management-wise total enrolled STs children are obtained nearly 48.08 per cent in government, 6.53 per cent in local body, 32.65 per cent in private aided and 12.74 per cent in private unaided schools having 36.54 per cent, 39.66 per cent, 41.71 per cent and 37.96 per cent of girls enrolled in these schools in Classes IX and X under secondary sections. These management-wise figures for enrolment in Classes IX and X are presenting an overall increase in terms of per cent points with respect to sixth survey in the country.

### **STs Enrolment in Classes IX and X**

Table 12

#### **Management-wise Scheduled Tribes' Enrolment in Classes IX and X, 2002**

<i>Area / Management</i>	<i>Boys</i>	<i>Girls</i>	<i>Total</i>	<i>Percentage of Girls</i>
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
Rural	5,76,300	3,38,120	9,14,420	36.98
Urban	1,80,099	1,37,655	3,17,754	43.32
Total	7,56,399	4,75,775	12,32,174	38.61
Government	3,75,957	2,16,482	5,92,439	36.54
Local Body	48,525	31,893	80,418	39.66
Private Aided	2,34,523	1,67,816	4,02,339	41.71
Private Unaided	97,394	59,584	1,56,978	37.96

### **Science Laboratories and Computer Education**

The science and computer education has become an integral part of the school curriculum at the secondary stage of education since 10+2+3 system of general education has been adopted, which has also got momentum in the country in view of the recent national curriculum frameworks pre- and post- era of 2002 (NCERT, 2005).

Accordingly, 85,099 schools in seventh survey is having science laboratories in comparison 52,105 schools in sixth survey and provides a growth of 63.32 per cent, of which 69.84 per cent schools in year 2002 are having adequate science laboratories at secondary stage in the country. Out of total schools having facility for science laboratories, 49,654 schools in rural and 35,445 schools in urban area are having science laboratories. Further, these area-wise reported schools are having adequate science laboratories in 60.62 per cent rural and 82.75 per cent urban schools with respect to total number of reported schools in the country.

Management-wise distribution of adequate science laboratories in government, local body, private aided and private unaided schools have been found nearly 50.16 per cent, 49.24 per cent, 76.49 per cent and 85.04 per cent, respectively with respect to total number of schools reported with science laboratories at secondary stage, and reveals that schools run by private managements are providing better facilities in comparison of public (government and

local body) managements in terms of adequacy of science laboratories in the country.

The public authorities are committed to accelerate the use of information technology in schools by integrating computers in school education. Through this initiative, we are preparing our children to be successful in today's technology-led world. To impart computer education in schools that has necessarily been an admitted demand of the society in an information technology based era, it is being provided in several thousand schools in a very successful and professional manner. This has contributed to the development of human resources especially for the information technology and information technology enabled service sectors. Accordingly, the seventh survey has tried to collect information on facility of computer education in secondary sections of schools and adequate number of computers in the schools. The information thereof is presented in Table 13.

Out of total 1,30,675 schools having secondary sections, only 42,988 schools (32.90 per cent) with secondary sections are providing computer education in the country. Further, out of these schools having facility for computer education only 29,887 schools (69.52 per cent) are having adequate number of computers. It is obvious and pertinent to mention that nearly 55.39 per cent schools in rural area and 79.52 per cent schools in urban area are having adequate number of computers with respect to total



number of schools having computer education in the country. The statistics in regard to computer education at secondary stage by management is available in 8,794 government, 1,788 local body, 14,152 private aided and 18,254 private unaided schools at the time of seventh survey in the country. Further, out of these schools having facility for computer education, it is observed that nearly 56.83 per cent government, 61.80 per cent local body, 56.29 per cent private aided and 86.65 per cent private unaided schools are having adequate number of computers to provide computer education to the students enrolled in secondary section of the schools.

### Guidance Services

The school counselors actively identify academic, career, and personal/social challenges for students, and assist them in planning future education or career choices. They create connections between a student's academic, personal and vocational goals. Also, they consult with parents and school staff to help students in becoming successful. They also offer assistance through classroom guidance, including prevention education, emphasizing safety, conflict resolution and bullying prevention. Besides, the school counselors coordinate services for students by working cooperatively

Table 13  
**Schools having Laboratory for Science and Computers for Teaching at the Secondary Stage, 2002**

<i>Area/ Management</i>	<i>Total No. of Schools Having Secondary Stage</i>	<i>Schools Having Facility at Secondary Stage of</i>			
		<i>Science Laboratories</i>	<i>No. of Schools Having Adequate Science Laboratories</i>	<i>Computer Education</i>	<i>No. of Schools Having Adequate Computers</i>
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>
Rural	84,370	49,654	30,104 (60.62)	17,810	9,866 (55.39)
Urban	46,305	35,445	29,332 (82.75)	25,178	20,021 (79.52)
Total	1,30,675	85,099	59,436 (69.84)	42,988	29,887 (69.52)
Government	45,271	25,199	12,641 (50.16)	8,794	4,998 (56.83)
Local Body	11,301	4,557	2,244 (49.24)	1,788	1,105 (61.80)
Private Aided	38,760	29,405	22,492 (76.49)	14,152	7,966 (56.29)
Private Unaided	35,343	25,938	22,059 (85.04)	18,254	15,818 (86.65)

Note: Figures in parentheses indicate per centages.

with community agencies, which offer additional resources to help our students, and help students to deal with issues ranging from normal developmental concerns to career exploration to crises or trauma.

In view of significance of guidance services provided by the school counselors in secondary schools, the statistics pertaining to secondary schools providing guidance services are collected under seventh survey in year 2002, and are presented in Table 14. As per Table, there are 90,741

cent in rural area and 35.65 per cent in urban area with respect to total number of schools providing guidance services in the country. It is also revealed by the seventh survey data that trained guidance counselors or career masters or combinations of these have been appointed in order to provide guidance to students in secondary schools. Out of 20,689 secondary schools having provision for guidance services, 6,265 schools have trained guidance counselors, 15,532 schools have teacher counselors, and

Table 14  
**Secondary Schools Providing Guidance Services, 2002**

Area / Management	Total No. of Secondary Schools	Schools Having Facility of			
		Guidance Services	Trained Guidance Counselor	Teacher Counselor	Career Master
1	2	3	4	5	6
Rural	63,576	13,314	3,560	10,045	3,056
Urban	27,165	7,375	2,705	5,487	1,858
Total	90,741	20,689	6,265	15,532	4,914
Government	30,591	6,322	1,141	5,069	1,106
Local Body	9,967	951	298	656	228
Private Aided	23,902	6,034	2,196	4,027	1,857
Private Unaided	26,281	7,384	2,630	5,780	1,723

secondary schools in the country of which 20,689 secondary schools (22.80 per cent) have guidance services. As per sixth survey in year 1993, nearly 12,381 secondary schools (18.88 per cent) have guidance services; therefore seventh survey presents a growth of 67.10 per cent.

Area-wise, 13,314 secondary schools in rural area and 7,375 secondary schools in urban area are providing guidance services to the students. It consists of 64.35 per

cent in rural area and 35.65 per cent in urban area with respect to total number of schools providing guidance services in the country. It is also revealed by the seventh survey data that trained guidance counselors or career masters or combinations of these have been appointed in order to provide guidance to students in secondary schools. Out of 20,689 secondary schools having provision for guidance services, 6,265 schools have trained guidance counselors, 15,532 schools have teacher counselors, and

#### **Pre-vocational Courses**

Pre-vocational (which means before work) courses help in developing skills to get a job for an individual, or prepare an individual to become

an apprentice or trainee. Completing a relevant pre-vocational course not only allows an individual to see what working in a particular job is like, it may also reduce the term of an apprenticeship or traineeship if it is decided to continue the training. The study of pre-vocational courses at secondary stage before commencing an apprenticeship or traineeship is a way to get a job. Table 15 provides the number of schools having pre-vocational courses, teachers and enrolment in pre-vocational courses based on the findings of seventh survey.

At the time seventh survey, out of 1,30,675 schools having secondary stage only 3,163 schools (2.42 per cent) are having pre-vocational courses at secondary stage, which is further distributed among 1,765 and 1,398 schools located in rural and urban areas, respectively. Management-wise 816 government, 303 local body, 1,409 private aided and 635 private un-aided

schools are having pre-vocational courses in the country. The total strength of teachers for pre-vocational courses at secondary stage has been 10,121 of which 3,242 teachers are female teachers, indicating that 32.03 per cent teachers are the female teachers for pre-vocational courses. Area-wise, 4,802 teachers are employed in rural area having 1,120 female teachers whereas 5,319 teachers are working in urban area having 2,122 female teachers.

The total enrolment of students for pre-vocational courses in 3,163 schools having secondary stage are 6,60,168 students including 2,73,139 girls at the secondary stage. This indicates that 41.37 per cent girls are enrolled for pre-vocational courses at secondary stage. Area-wise, 3,14,528 students are enrolled in rural area and 3,45,640 students are enrolled in urban area for pre-vocational courses. Management-wise, the schools managed by private agencies are better placed than the

Table 15  
**Teachers and Enrolment in Pre-vocational Courses at the Secondary Stage, 2002**

Area / Management	Number of Schools Having Secondary Stage	Number of Schools having Pre- vocational Courses	Number of Teachers and Enrolment in Schools Offering Pre-vocational Courses at Secondary Stage			
			Teachers for Pre- vocational Courses		Enrolment in Pre-voca- tional Courses	
			Total	Female	Total	Girls
1	2	3	4	5	6	7
Rural	84,370	1,765	4,802	1,120	3,14,528	1,22,345
Urban	46,305	1,398	5,319	2,122	3,45,640	1,50,794
Total	1,30,675	3,163	10,121	3,242	6,60,168	2,73,139
Government	45,271	816	2,405	779	1,52,456	62,170
Local Body	11,301	303	922	294	85,985	38,971
Private Aided	38,760	1,409	4,570	1,138	3,21,268	1,30,106
Private Un-aided	35,343	635	2,224	1,031	1,00,459	41,892

schools being run by local bodies or government on all counts of parameters considered in Table 15 in regard to pre-vocational courses at secondary stage, as far as number of schools, teachers and enrolment is concerned.

### **Oriental Schools Following General System of Education at Secondary Stage**

The seventh survey has enumerated information regarding oriental schools including Sanskrit Pathashalas, Maktabas and Madrasas. Table 16 presents information pertaining to secondary stage in oriental schools following general system of education covering number of schools having secondary stage and enrolment at secondary stage in these schools.

There are total 4,796 Sanskrit Pathashalas of which 1,000 Sanskrit

Pathashalas (20.85 per cent) is having secondary stage. Out of these 1,000 Pathashalas, 70.10 per cent are located in rural area and remaining 29.90 per cent are in urban area of the country. The total enrolment in these Pathashalas is nearly 60,547 at secondary stage. The per cent share of girls enrolment is nearly 30.48 per cent with respect to total enrolment.

As far as Maktabas are concerned, nearly 54 Maktabas consisting of 44 Maktabas (81.48 per cent) in rural area and 10 Maktabas (18.52 per cent) in urban area are having secondary stage of education out of total number of 2,085 Maktabas in the country. These Maktabas have enrolled 2,960 students at secondary stage of which per cent share of girls enrolment is nearly 45.74 per cent.

Table 16

### **Secondary Stage in Oriental Schools Following General System of Education, 2002**

<b>Sanskrit Pathashalas</b>				
<i>Area / Management</i>	<i>Total Number of Schools</i>	<i>Number of Schools Having Secondary Stage</i>	<i>Enrolment at Secondary Stage in Schools</i>	
			<i>Total</i>	<i>Girls</i>
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
Rural	3,575	701	44,172	14,621
Urban	1,221	299	16,375	3,834
Total	4,796	1,000	60,547	18,455
<b>Maktabas</b>				
Rural	1,727	44	2,821	1,331
Urban	358	10	139	23
Total	2,085	54	2,960	1,354
<b>Madrasas</b>				
Rural	5,524	505	51,575	23,975
Urban	2,022	146	9,719	3,943
Total	7,546	651	61,294	27,918

Regarding Madrasas, the seventh survey furnishes that there are total 7,546 Madrasas and out of these only 651 Madrasas (8.63 per cent) are having enrolment at secondary stage of which 505 Madrasas are located in rural area and remaining 146 Madrasas are reported in urban area, respectively in the country. The total number of students enrolled in these Madrasas is 61,294 getting the secondary stage education consisting of 45.55 per cent girls.

#### **Disabled Children Admitted at the Secondary Stage**

A large number of children suffer from various kinds of disabilities due to lack of proper health care in our country. In some cases, the disability

is very severe whereas in other cases the disability is quite mild. The school-going age children suffer from various types of disabilities, like total or partial blindness, total or partial deafness, dumbness, mental-retard-ness, handicap due to orthopedic problems, and various other handicaps due to which either they do not get themselves enrolled or dropout quite early as they cannot cope up with the pressures of school activities. Such children need the special facility of special schools which can cater to their special needs. Further, a large number of disabled children, especially with mild and moderate handicaps, can be educated with other normal children in common schools with some additional facilities

Table 17

#### **Enrolment at Secondary Stage in Schools Admitting Children with Disabilities, 2002**

<i>Disability/ Impairment</i>	<i>Area</i>	<i>Enrolment at Secondary Stage in Schools</i>	
		<i>Boys</i>	<i>Girls</i>
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>
Visual	Rural	12,039	8,067
	Urban	5,973	5,329
	Total	18,012	13,396
Hearing	Rural	5,077	2,974
	Urban	2,323	1,519
	Total	7,400	4,493
Orthopedic	Rural	43,665	22,241
	Urban	17,791	11,674
	Total	61,456	33,915
Intellectual	Rural	5,618	2,744
	Urban	2,107	1,226
	Total	7,725	3,970

Others	Rural	3,272	2,445
	Urban	2,020	1,581
	Total	5,292	4,026
Multiple	Rural	1,185	670
	Urban	391	268
	Total	1,576	938

in these schools. It is envisaged that the orthopedic ally handicapped children and children with other mild handicaps may be imparted education along with normal children by catering to their educational needs by providing special facilities so as to prevent their dropout due to continued frustration arising out of the learning difficulties due to their disabilities. For such children, special provisions are made in the schools under various public funded schemes including the Integrated Education Programme in the country.

During seventh survey, the information about schools enrolling children with disabilities at secondary stage has been collected and presented in Table 17. It envisages the distribution of enrolment in schools admitting children with disabilities, namely, visual, hearing, orthopedic, intellectual, others and multiple impairments at secondary stage by area and management of the school. At the secondary stage, 18,012 boys and 13,396 girls having visual, 7,400 boys and 4,493 girls having hearing, 61,456 boys and 33,915 girls having orthopedic, 7,725 boys and 3,970 girls having intellectual, 5,292 boys and 4,026 girls having others, and 1,576 boys and 938 girls having

multiple impairments are enrolled in the country. The enrolment of boys in rural area is found higher than in urban area for all kinds of impairment stated herein.

### Conclusion

Based on above analytical overview, following conclusions emerged on the secondary stage education:

- It provides information that secondary schools/ sections are available in 69,991 habitations (5.79 per cent), thereby covering 20.55 per cent population, whereas same is available up to 5.0 km to 8,85,148 habitations (73.18 per cent) befitting to 80.43 per cent population in the country. In addition, 10,60,228 habitations (87.66 per cent) are served by secondary schools/sections with coverage of 91.87 per cent population within a distance up to 8.0 km. The secondary sections serve population-wise 37.29 per cent population within habitations and 95.08 per cent population up to eight km.
- Moreover, 1,57,459 habitations (90.13 per cent) are served by secondary schools/sections with coverage of 92.04 per cent population within a distance up to

- 8.0 km. Population-wise 1.48 per cent population within habitations and 89.71 per cent population up to eight km are served by secondary sections.
- Out of total habitations, 6,660 habitations (2.74 per cent) predominantly populated by STs covering 9.15 per cent population have access to secondary stage schooling facilities within the habitations, whereas such schooling facilities are available to 1,40,610 habitations (57.87 per cent) providing access to 65.23 per cent population within a distance of 5 km.
  - Further, 29,049 villages (43.25 per cent) with STs proportion between 1-25 per cent are having secondary stage schooling facilities within them.
  - As far as secondary section is concerned, a growth of 34.95 per cent in secondary schools including a growth of 84.25 per cent in higher secondary schools having secondary sections indicates an average growth of 49.79 per cent in secondary sections. Besides, among 90,741 secondary schools, the distribution by type of schools reveals that 86.73 per cent schools are co-educational, 8.96 per cent are girls', and 4.31 per cent are boys' secondary schools at the time of seventh survey in year 2002.
  - The management-wise total enrolment in Classes IX and X has been 32.65 per cent in government, 7.03 per cent in local body, 39.97 per cent in private aided and 20.35 per cent in private unaided schools are having 41.74 per cent, 45.02 per cent, 42.32 per cent and 38.37 per cent of girls enrolled in these schools in Classes IX and X under secondary sections.
  - The total STs enrolled children in secondary section under seventh survey consist of 61.39 per cent boys and 38.61 per cent girls. In secondary section, the management-wise total enrolled STs children are obtained nearly 48.08 per cent in government, 6.53 per cent in local body, 32.65 per cent in private aided and 12.74 per cent in private unaided schools having 36.54 per cent, 39.66 per cent, 41.71 per cent and 37.96 per cent of girls enrolled in these schools in Classes IX and X under secondary sections.
  - Out of total schools having secondary sections in seventh survey, only 32.90 per cent schools are providing computer education in the country. Also, nearly 22.80 per cent secondary schools are having guidance services, thereby, revealing a growth of 67.10 per cent in respect to sixth survey.

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## **BOOK REVIEW**

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**J. C. Aggarwal and S. Gupta (2010)**  
**“Right to Education and Revitalising Education”**

Shipra Publication

**New Delhi, Price: Rs. 550**

In the present scenario when there is a paradigm shift in education this book written by J. C. Aggarwal and S. Gupta is handy for the students and teachers of education.

First chapter of this book “A brief history of Education Reforms in India” has been written with the aim of highlighting the educational reforms in India. The authors have adopted Historical and Analytical approach in discussing the educational history of India. In the chapter, the authors deals with some of the land marks in the field of educational reforms. The chapter begins with the Wardha Scheme of education which was approved by Gandhiji, to the educational reform measures undertaken by the NDA Government.

Second chapter explains the details of one of the flagship programme of education that is *Sarva Shiksha Abhiyan* (SSA). In this chapter, major features, significance and importance of the SSA has been explored.

The third chapter, “Rights of Children to Free and Compulsory

Education Act, 2009” has been written with emphasis on the above Act. The Act was formulated after making some amendments in the Constitution. Then it provides general information about the Act. The chapter also contains the format and all details of the Act.

The fourth chapter “School Education: ‘Report to Nation’ – National Knowledge Commission 2006-09, is a report on the status of education level in India. It gives a detailed account on the current scenario of education, facilities, problems of curriculum, pedagogy in India. It further supplemented by some major recommendations and observation on the reforms of education in India.

The fifth chapter, “Secondary Education; Universalising Opportunity: World Bank Report, 2009” of this book includes the major observations and recommendations made in a report published by Human Development Unit – South Asian Region, World Bank. It gives details as to why we should invest in the secondary education in India and what are the key challenges

and chances of investing in secondary education in India. Experts have also given the idea that how the expansion in secondary education should take place which is followed by some recommendations on improving the level of secondary education of India.

The sixth chapter “National Knowledge Commission (2006): Major Observations and Recommendations” includes the observation and recommendations of NKC which was constituted by Prime Minister of India on June 13, 2005, to assist PMO on the matters of education, research institutes and reforms needed in education. The Commission gave its recommendations and observations on Right to Education, Higher Education and Vocational Education. The observation is followed by some valuable recommendations further in this chapter report of NKC is discussed and some important suggestions on various aspects of the report are also given. This chapter is the repetition of the fourth chapter “School Education: ‘Report to Nation’ – National Knowledge Commission 2006-09” because that chapter advocates the report of National Knowledge Commission and this is about the formation, foundation and goals of the National Knowledge Commission. Therefore, in my opinion these two chapters can be merged into one because there is no point to study one thing in two chapters.

Chapter seven “Renovation and Rejuvenation of Higher Education: Professor Yash Pal Committee Report (2009) is a report of the advice on Renovation and Rejuvenation of Higher Education. The Committee was formed

to review the role of statutory bodies like the University Grants Commission (UGC) and All India Council of Technical Education (AICTE) in the context of changes in higher, professional and technical education in the country and demands of new knowledge economy. The chapter includes the list of all recommendations made by the Committee on the status and reforms needed in Higher Education in India.

The eighth chapter, “Grading System” of the book is about the adoption of the grading system in the education system in India. The Secondary Education Commission was constituted in 1952-53 by Government of India to make recommendations on the adoption of grading system in Indian education system. Later in this chapter the demerits of the grading system are discussed and some observations are made. The chapter consist of some major announcement made by the then CBSE Chairman Dr. Ashok Ganguly in 2005 and the proposal of introducing some reforms in the education system of India.

The ninth chapter “Follow up Action on Continuous and Comprehensive Evaluation by CBSE 2009” of this book is about to implement some reforms as suggested by HRD Minister. This chapter gives the information about the new scheme of Continuous and Comprehensive evaluation in Class IX and X introduced by CBSE. The chapter contains relevant extracts from the document. It thoroughly gives the details about the objectives of the scheme and also explains about the evaluation process that what should be assessed and how it should be

done, types of assessment, functions of Comprehensive and Continuous Evaluation.

Chapter ten, “Overview of Development and Recent Initiative in Education” is an assessment of some of the major educational reforms and initiatives introduced in education system by Government of India. It gives the details of outcomes and drawbacks about the initiatives launched by Government of India that what is the current status of the schemes and up to which level it is completed. This chapter further contains some exclusive extracts from the RTE Act, 2009. The chapter concludes with a table of International comparison of Indian education on certain other key Educational Parameters.

The last chapter, “Essential Points Relating to Education Reforms and Implementation of the Act in the Present Scenario” contains a brief but meaningful effort by authors. They have pointed out some essential points which need to be taken into consideration while planning and implementing new schemes and educational reforms.

The entire book gives an idea about the status of education in India, new initiatives launched and what is the status of these schemes and the need for any kind of reform. The book also contains some important reports by MHRD, Human Right Development Commission etc. on the state of education in India.

ABHISHEK SINGH  
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विद्यया ऽ मृतमश्नुते



एन सी ई आर टी  
NCERT

**राष्ट्रीय शैक्षिक अनुसंधान और प्रशिक्षण परिषद्**

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**(Division of Educational Research)**

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विद्यया ऽ मृतमश्नुते



एन सी ई आर टी  
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**राष्ट्रीय शैक्षिक अनुसंधान और प्रशिक्षण परिषद्**

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**( शैक्षिक अनुसंधान प्रभाग )**

### **एन.सी.ई.आर.टी. सीनियर रिसर्च एसोसिएटशिप (पूल ऑफिसर) स्कीम**

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