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## A STUDY OF STUDENTS' PERFORMANCE ABOUT THE SUBJECT CONTENT IN VIEW OF THINKING SKILLS APPROACH

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**Abstract:**-Present study entitled 'A Study of Students' Performance about the Subject Content in view of Thinking Skills Approach' has been carried out on experimental and control groups of students of Classes I-V to examine their performances in respect to content of Hindi, English, EVS and Mathematics subjects. Teachers of experimental group (EG) were oriented regarding the use of instructional materials, innovative instructional strategies and assessment techniques to monitor thinking skills of the students of Classes I-V. Audio-video recording of the teachers transacting innovative approaches in the classrooms of experimental group and students working outside the classroom was done. Research tools were administered on the students of both the groups in respect to Hindi, English, EVS and Mathematics subjects for Classes I-V. Analysis of the data collected shows performance of students of experimental group is better as compared to their counter part i.e. students of control group.

**Keywords:** Thinking skills approach, instructional materials, school-based assignments, experimental and control groups.

### INTRODUCTION

In recent years a number of articles, books, reports, seminars have highlighted the importance of 'Higher Order Thinking (HOT) Skills' and hence appear in the support of teaching thinking skills (1-65). National Curriculum Framework (40) has strongly advocated the development of life skills such as critical thinking skills, interpersonal communication skills, negotiation/ refusal skills, decision-making / problem solving skills, and coping and self-engagement skills is very critical for dealing with demands and challenges of everyday life. Many teachers now admit this fact that 'Teaching for Thinking' and 'Quality Learning' is desirable. If we accept that we need to prepare our students to a vastly different future than we have known, then our understanding of the focus of education also needs to shift. This includes shift in the role of learner, in the role of teachers and changes in their teaching practices and corresponding shifts in assessment. In our country NCERT has taken several steps toward orientation of teachers about the new approach of 'process oriented teaching-learning' (40) which seek to provide a tool to engage children in learning, care has been taken to make teachers understand the distinction between transmission of knowledge by adults and construction of knowledge by learners, and to modify their approach. National Curriculum Framework 2005 (40) recommends a reduced emphasis on external examination, encourages internal assessment through School-Based Continuous and Comprehensive Evaluation and on the holistic assessment of the learner. Right to Education Act, 2009 (Section 29) places the improvement in assessment system at a legal footing by making Continuous and Comprehensive Evaluation mandatory. But the changes suggested above in assessment should commensurate to changes in instructional materials and methodologies. One of the biggest problems for teachers when approaching thinking skills is that this is an invisible area of learning. We can not tell just by looking whether or not our students are actually thinking. Is that distant look in their eyes an indication that they are deep in thought? If they are in deep thought, exactly what are they thinking about? Are they thinking about the work that we have set for them? Here teachers who are in the school system need some strategies or ideas/ types of assessment to make their students' thinking processes more explicit. There is a need of well organized teaching-learning strategies for classrooms that invites and supports thinking and learning. However, to find out the solutions for the diverse needs in

our schools, an intensive collaborative effort by all of us is required. To become a Thinking School, a whole school approach will be necessary whereby all stakeholders are fully committed to the school's aims and how they can best be achieved (1-65). Staff will need to be specially trained and methods will need to be introduced into the curriculum for teaching the skills of thinking, and associated cognitive and metacognitive strategies. In the 'knowledge society' of 21st century, the idea of thinking children, thinking classrooms, and thinking schools is essential to achieve the mission of education (1-65). Keeping above in view, present research study entitled 'A Study of Students' Performance about the Subject Content in view of Thinking Skills Approach' has been administered on students of two groups of schools viz experimental and control groups to examine their performances in respect to Hindi, English, EVS and Mathematics subjects with following objectives:

- To develop Instructional Strategies (i.e. thinking lessons, thinking tools i.e. which tool to use & how to integrate it into the classroom, resource material i.e. print, video and audio) for Primary teachers to teach different thinking skills such as critical thinking, analytical thinking, reflective thinking, integrative thinking and creative thinking.
- To orient and equip Primary school teachers with innovative instructional strategies and assessment techniques to promote and monitor thinking skills of students at primary level.
- To see the effect of thinking skills approach on performance of students in different subjects (Hindi, English, EVS and Mathematics).

#### **DESIGN OF THE STUDY**

The quasi-experimental pre-test, post-test control group design was selected keeping in mind the internal validity of the experimental design (50-52). In order to stimulate students' thinking and develop their social skills during both inside and outside the classroom, different activities like poster making on different themes for Classes I-V (outside the classroom) and worksheets on different themes (inside the classroom) were placed for the students so that they can work individually or in group in the school whenever they get time. It is, worthwhile; to mention over here that in school of experimental group teachers have used innovative instructional materials (50-52) developed on subjects Hindi, English, EVS and Mathematics for Classes I-V and inside & outside classroom activities during the teaching-learning process. Also primary school teachers of experimental group were oriented regarding the use of instructional materials & strategies and assessment techniques using graphical tools (50-52) with a view to promote and monitor thinking skills of the students. As a result of the orientation, all the Primary teachers of experimental group designed thinking based test items in their respective subjects they teach for the summative assessment i.e. first term, second term and final term of students of classes (I-V). Research Tools (Pre-tests and Post-tests) (50-52) were administered on the students of Classes I-V in respect of Hindi, English, EVS and Mathematics subjects in two Primary CBSE affiliated schools of Ajmer district of (Rajasthan) India. One of them was Demonstration Multipurpose School, Ajmer and other one was Kendriya Vidyalaya-I, Ajmer. For the purpose students of Classes I -V were selected. DM School, Ajmer was taken as experimental group and Kendriya Vidyalaya-I, Ajmer was taken as control group. Size of the sample of experimental and control groups was as detailed below:

<b>Class</b>	<b>Average size of the sample of control group (CG)</b>	<b>Average size of the sample of experimental group (EG)</b>
I	40	32
II	40	32
III	40	34
IV	42	34
V	35	34

Photographs of some of the students' activities are given below:

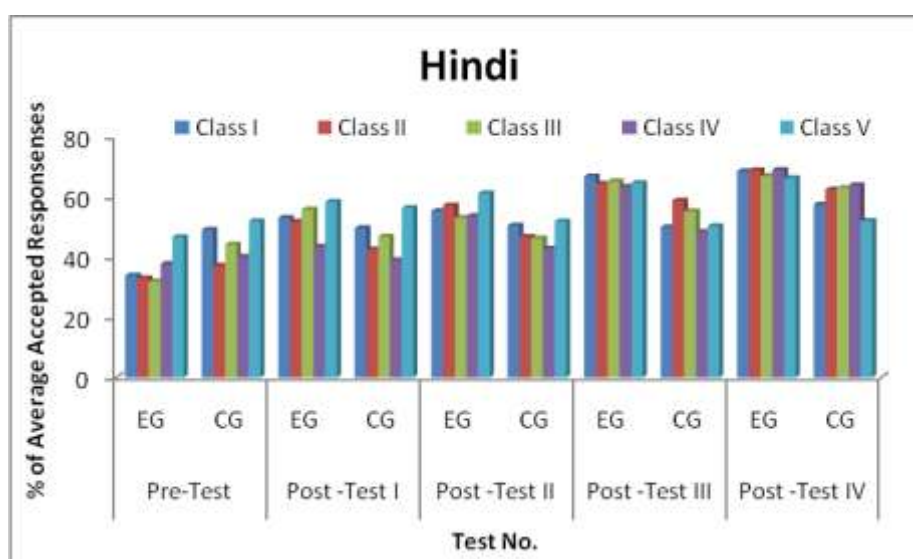


**DATAANALYSIS**

Responses of the students of both the groups i.e. experimental and control were categorized in to three categories viz acceptable responses (AR), unacceptable responses (UAR) and not responded responses (NR). Class and subject wise, analysis of the data in terms of percentage of average accepted responses of students was carried out. Percentage of average accepted responses of students of both groups are listed in Tables 1-5 (50-52) and their graphical representations are shown in Figures 1-8 (50-52). Percentage of average unaccepted and not responded responses of students has not been taken into account simply with the fact that it can be estimated by subtracting these responses from 100. Analysis of the data shows performance of experimental group is better as compared to control group in all the subjects and classes at Primary level. Performance of students of experimental group is better in all the Post Tests administered on the students of classes I-V (Tables (1-5) & (Figures 1-8)). Subject wise average percentages of accepted responses are shown in Figures 5-8 and mentioned in Table 5. It may be noted from the responses of the students that there is a gradual increment in the percentage of accepted responses of the students. The difference in performance of students of two groups (EG & CG) may be attributed to the orientation of Primary teachers in use of innovative instructional materials & strategies and inside & outside classroom activities conducted during the teaching learning process. It is, worthwhile, to mention over here that Primary school teachers of experimental group used exemplar innovative instructional materials (for inside & outside classroom activities) developed on subjects Hindi, English, EVS and Mathematics for Classes I-V during teaching-learning process in their classes. Also primary school teachers of experimental group were oriented regarding use of innovative instructional materials & strategies and assessment techniques with a view to promote and monitor thinking skills of the students whereas the teachers of control group were not oriented (50-52).

**Table 1 Class wise percentage of students' average accepted responses for Hindi**

Class	PERCENTAGE OF AVERAGE ACCEPTED RESPONSES (HINDI)									
	Pre-Test		Post-Test I		Post-Test II		Post-Test III		Post-Test IV	
	EG	CG	EG	CG	EG	CG	EG	CG	EG	CG
Class I	33.97	49.12	53.10	49.72	55.36	50.55	66.92	50.0	68.64	57.5
Class II	33.05	37.19	51.82	42.63	57.27	46.84	64.53	58.85	68.93	62.5
Class III	32	44.26	55.89	46.89	53.13	46.26	65.29	55.29	67	63.10
Class IV	37.81	40.18	43.48	39	53.70	42.94	63.44	48.44	69.07	64
Class V	46.66	52.00	58.4	56.4	61.30	51.95	64.73	50.4	66.30	52.07

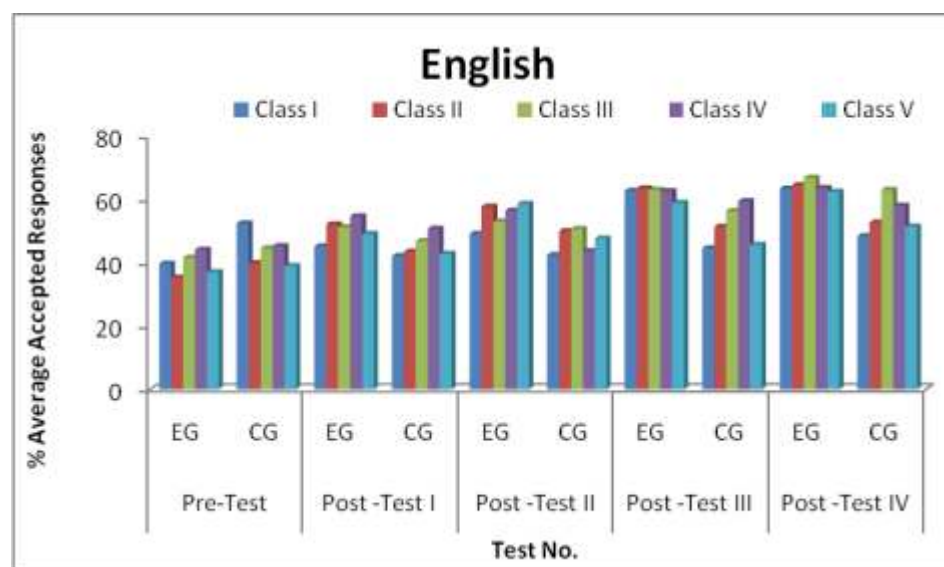


**Figure 1 percentage of students' average accepted responses of Classes I-V for Hindi (50-52)**



**Table 2 Class wise percentage of students' average accepted responses for English**

Class	PERCENTAGE OF AVERAGE ACCEPTED RESPONSES (ENGLISH)									
	Pre-Test		Post-Test I		Post-Test II		Post-Test III		Post-Test IV	
	EG	CG	EG	CG	EG	CG	EG	CG	EG	CG
Class I	39.73	52.52	45.21	42.19	49.19	42.49	62.84	44.65	63.57	48.5
Class II	35.35	39.95	52.27	43.59	57.84	50.07	63.66	51.41	64.61	52.84
Class III	41.66	44.66	51.37	46.89	53.13	50.73	63.17	56.47	67	63.10
Class IV	44.22	45.40	54.78	50.81	56.54	43.81	62.71	59.37	63.75	58.12
Class V	37.08	39.04	49.20	42.91	58.7	47.7	39.05	45.77	62.5	51.5



**Figure 2 percentage of students' average accepted responses of Classes I-V for English (50-52)**

**Table 3 Class wise percentage of students' average accepted responses for EVS**

Class	PERCENTAGE OF AVERAGE ACCEPTED RESPONSES (EVS)									
	Pre-Test		Post-Test I		Post-Test II		Post-Test III		Post-Test IV	
	EG	CG	EG	CG	EG	CG	EG	CG	EG	CG
Class III	42.53	43.13	49.31	45.68	59.59	53.59	59.72	54.55	62.75	54.90
Class IV	37.90	41.59	40.40	37.5	55.06	39.56	62.75	55.62	65.66	57.41
Class V	44.78	49.31	55.72	44.54	56.09	51	57.92	53.38	66.30	54.30

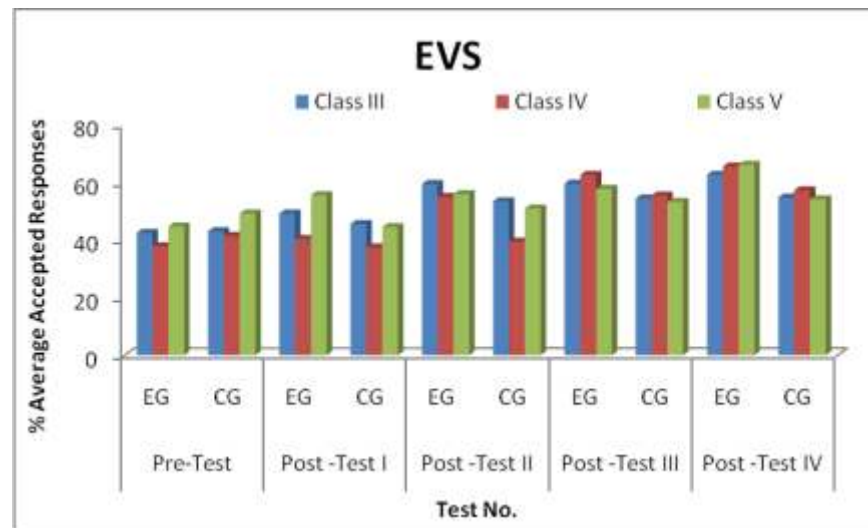


Figure 3 percentage of students' average accepted responses of Classes III-Vfor EVS (50-52)

Table 4 Class wise percentage of students' average accepted responses for Maths

Class	PERCENTAGE OF AVERAGE ACCEPTED RESPONSES (MATHS)									
	Pre -Test		Post -Test I		Post -Test II		Post -Test III		Post -Test III	
	EG	CG	EG	CG	EG	EG	CG	EG	CG	EG
Class I	40.07	42.01	48.2	45.24	52.76	47.07	58.23	50.76	62.58	51.25
Class II	35.71	41.06	48.67	43.13	51.88	47.58	55.09	51.72	60.8	52.3
Class III	41.66	44.66	49.27	43.66	54.58	52.58	60.61	55.58	61.07	58
Class IV	39.55	45.11	42.66	40.20	51.72	47.27	54.94	48.29	59	52.53
Class V	42.95	42.4	48.27	44.34	55.15	48.69	56.22	52.55	60.61	54.53

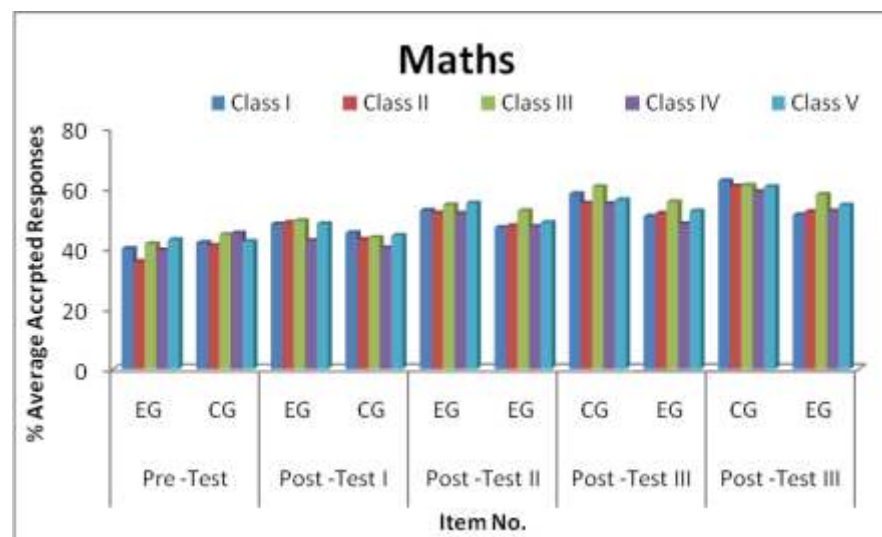


Figure 4 percentage of students' average accepted responses of Classes I-Vfor Maths (50-52)



Table 5 subject wise percentage of students' average accepted responses for Classes I-V

Subject	PERCENTAGE OF AVERAGE ACCEPTED RESPONSES (CLASSES I-V)									
	Pre-Test		Post -Test I		Post -Test II		Post -Test III		Post -Test IV	
	EG	CG	EG	CG	EG	CG	EG	CG	EG	CG
Hindi	36.69	44.55	52.53	46.92	56.15	47.70	64.98	52.59	67.98	59.83
English	39.60	44.31	50.56	45.27	55.08	46.96	62.28	51.57	64.28	54.81
EVS	41.73	44.67	48.47	42.57	56.91	48.05	60.13	54.51	64.90	55.53
Maths	39.98	43.04	47.41	43.31	53.21	48.63	57.01	51.78	60.81	53.72

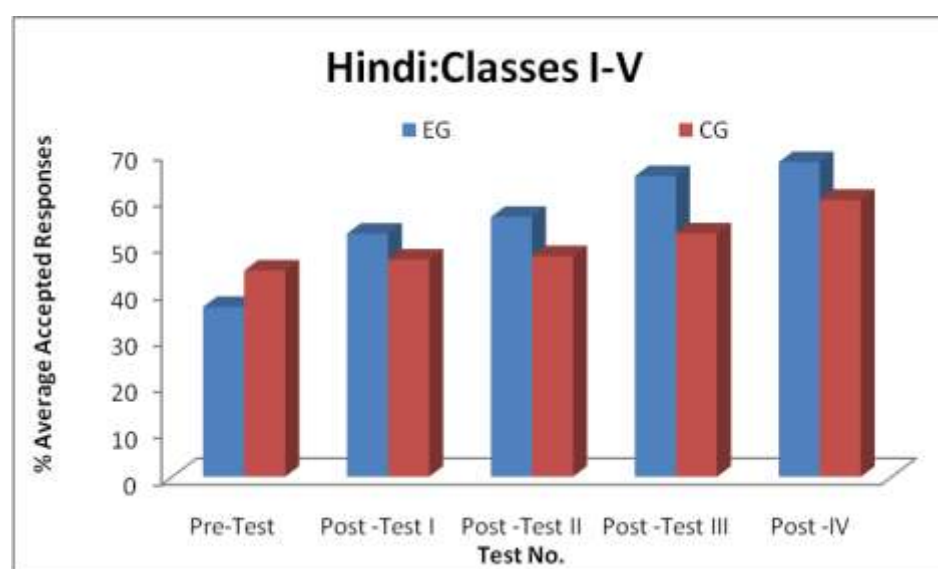


Figure 5 percentage of students' average accepted responses: Hindi for Classes I-V (50-52)

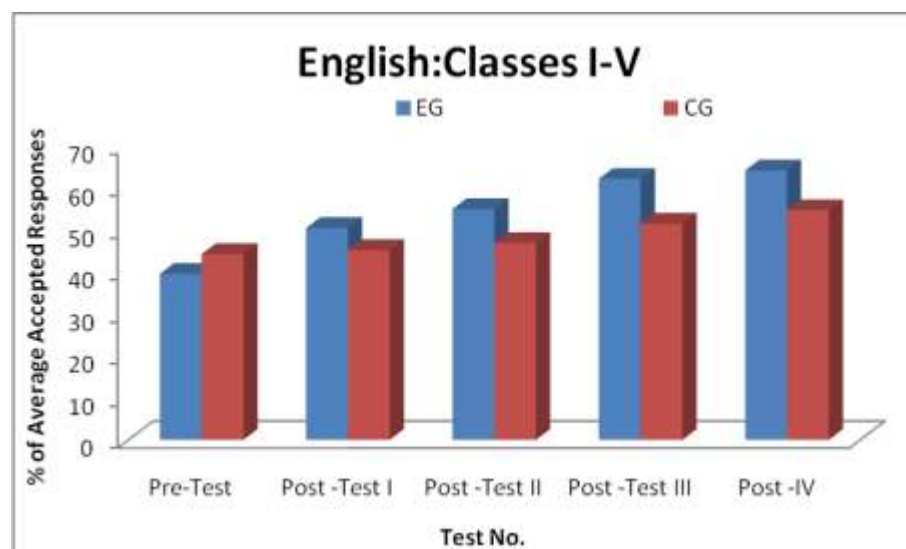


Figure 6 percentage of students' average accepted responses: English for Classes I-V (50-52)

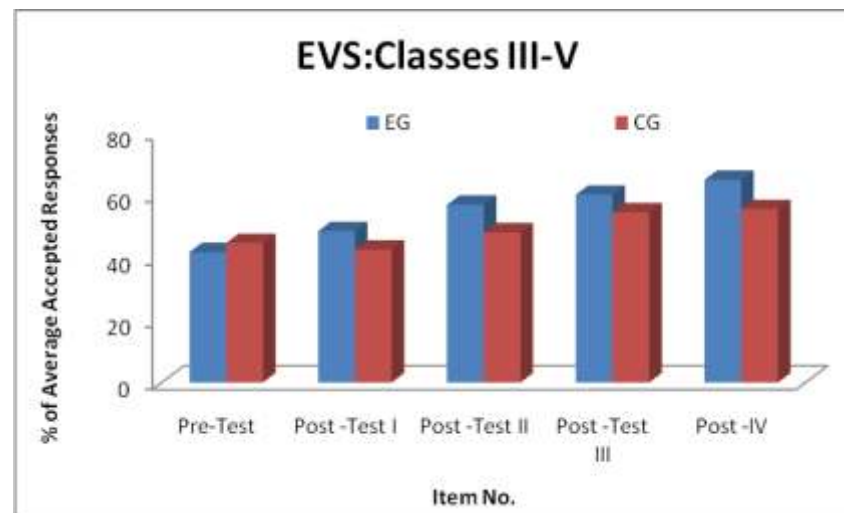


Figure 7 percentage of students' average accepted responses: EVS for Classes III-V (50-52)

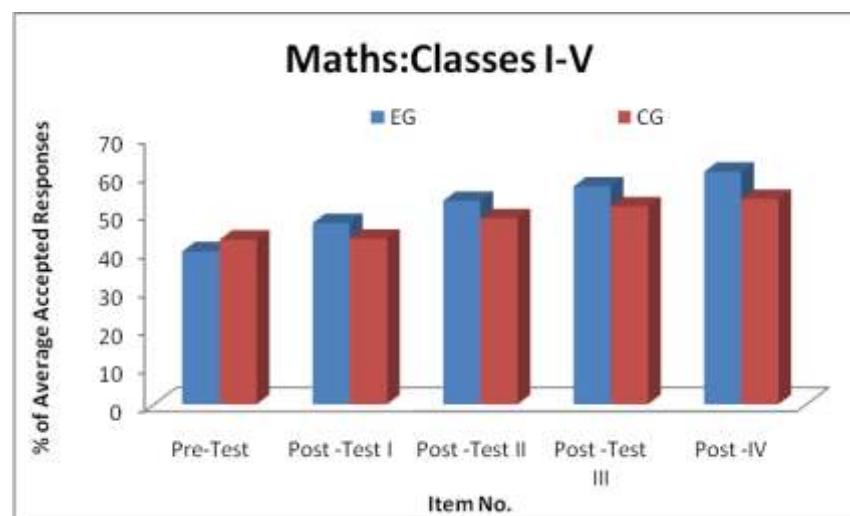


Figure 8 percentage of students' average accepted responses: Maths for Classes I-V (50-52)

#### IMPLICATIONS

Quantitative and qualitative analysis of the data of both the groups shows that there exists a difference in performance of students of two groups i.e. experimental and control in all the subjects (Hindi, English, EVS and Mathematics) and Classes (I-V) at primary level (50-52). Students of control group performed better in all the pretests administered on them. Performance of students of experimental group is found to be better in all the post tests administered on them. It was noticed that most of the questions based on higher order thinking were remain unresponded in case of control group whereas experimental group attempted these questions and responded most of them. This forms a strong backdrop to make use of the innovative instructional materials & strategies and inside and outside classroom activities during the teaching learning process. It is, worthwhile, to mention over here that in school of experimental group teachers have used innovative instructional materials developed on subjects Hindi, English, EVS and Mathematics for Classes I-V and inside & outside classroom activities during the teaching-learning process. Also Primary school teachers of experimental group were oriented regarding the use of instructional materials & strategies and assessment techniques using graphical tools with a view to promote and monitor thinking skills of the students. As a result of the orientation, all the teachers of primary section of school of experimental group designed thinking based test items in the respective subjects (Hindi, English, EVS and Mathematics) they teach for the summative assessment i.e. first term, second term and final term of students of Classes (I-V). In order to stimulate students' thinking and develop their social skills during both inside & outside the classroom, different activities like poster making on different themes for classes I-V (outside the classroom) and

worksheets on different themes (inside the classroom) were placed for the students so that they can work individually or in group in the school whenever they get time. In addition to this, audio-video recording of the teachers transacting subject content using innovative approaches in the classroom (EG) and video recording of students while working outside the classroom was done. Also feedback from the students and teachers has been collected. Accordingly additional inputs were given whereas in the school of control group (CG) neither teacher used exemplar instructional materials nor they were oriented. In view of above, following recommendations (50-52) are made:

- ❖ Learners must be equipped with learning skills (creativity and innovation, critical thinking and problem solving, communication and collaboration) which can help them to become innovative problem-solver, constructors of knowledge, thoughtful decision maker, independent thinker and life-long learner. Accordingly schools have to be tuned in such a way that children get maximum opportunities to learn, think and get various platforms which enable them to make full use of their potential and teachers should amend their roles and act as strategic learners (active researchers and developers of innovations and new directions) by deliberately expanding perspectives and updating their approaches to match the needs of the learners in reference to today's scenario.
- ❖ There is a need of well organized teaching-learning strategies for classrooms that invites and supports 'Teaching for Thinking' and 'Quality Learning'. To become a Thinking School, a whole school approach is exercised necessarily wherein all stakeholders are fully committed to the school's aims and how they can be achieved. Accordingly, staffs need to be specially trained and methods need to be introduced into the curriculum for teaching the skills of thinking and associated cognitive and metacognitive strategies. Also innovative instructional materials and strategies (i.e. thinking lessons, thinking tools, resource materials i.e. print, video and audio) for primary teachers to teach different thinking skills such as critical thinking, analytical thinking, reflective thinking, integrative thinking and creative thinking are suggested in present time-frame of primary school to achieve the mission of education in the 'knowledge society' of 21st century to exercise the idea of thinking children, thinking classrooms and thinking schools.
- ❖ Many teacher educators now admit the fact that 'Teaching for Thinking' and 'Quality Learning' is desirable to a great extent. Therefore the focus of education also needs to shift in the role of students, teachers & changes in their teaching practices and corresponding shifts in assessment. Holistic assessment of the students is very much desirable.
- ❖ Workshops/orientation programmes may be organised for in-service teachers to develop insight about innovative instructional materials/strategies/practices/assessment techniques and how to make them work in their classrooms with an existing curriculum and time-frame. The innovative instructional strategies/practices are considered to be helpful to make existing teaching learning process more effective and supportive in facilitating students' conceptual change, improve their thinking skills and develop quality learning. Teachers must practice to infuse continuous comprehensive evaluation/assessment techniques in the current curriculum transaction process to assess learners' learning growth. They can make use of graphical tools for designing assessment items of different subjects such as Hindi, English, EVS and Mathematics and assessing students' learning. Assessment of students' learning may be accomplished in terms of learning indicators. It has been recognized that learning indicators help to know the extent to which objectives of learning have been achieved. Also learning indicators provide the teacher the basis of what to look in for a child when a child performs a particular task and provide a framework for monitoring the progress of the child, which will help in providing necessary feedback for the improvement of teaching-learning process. Following learning indicators (50-52) may be taken for assessment of learning of students at Primary stage:
  - ♦ Engagement of the students in activities related with inside the classroom and out side the classroom.
  - ♦ Students seek/explore information from different sources and ask higher order questions during the teaching learning process.
  - ♦ Students reflect active listening and involvement in curricular activities.
  - ♦ Demonstration the ability to initiate, locate and evaluate information from multiple sources by the students and motivation within and beyond classroom/school.
  - ♦ Involvement of students in planning, self monitoring and evaluating their learning and creativity.

## CONCLUSION

It may be concluded on the basis of results of the study that existing practices of designing of lesson plan needs to be modified so as to integrate various components of thinking skills such as critical thinking, analytical thinking, reflective thinking, integrative thinking and creative thinking leading to suitable interaction with the students. Continuous comprehensive evaluation as an assessment technique needs to be implemented and infused with thinking based assessment items in each subject. Teaching thinking skills by infusing it across curricular areas should be made integral part of teaching learning process to help students in becoming constructors of knowledge, thoughtful decision maker and independent thinker.

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