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MAI (Multi-dimensional Activity Based Integrated Approach): A Strategy for Cognitive Development of the Learners at the Elementary Stage

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Cognitive development of the learners is the prime task of each and every stage of our school education and its importance especially in elementary state is quite worth mentioning. Present study investigated the effectiveness of a new and innovative strategy (i.e., MAI (multi-dimensional activity based integrated approach)) for the development of the cognitive abilities in social studies of sixth grade students. “Non randomized/un-equated two group pre-test and post-test experimental design” was followed for this study. Fifty two students from Class-VI of D.M. (demonstration multi-purpose) school, Bhubaneswar City, constituted the members of control group where as 60 students from Class-VI of K.V. (Kendriya Vidyalaya) No-1, Bhubaneswar City, constituted the members of experimental group. The experimental group was taught through MAI and the control group was taught through TMT (traditional method of teaching). The results indicated that MAI is a positive and meaningful strategy for achieving the development of cognitive abilities in social studies of the learners at the elementary stage of our school education, and educational implications were drawn to use and apply MAI in varied teaching learning situations for securing maximum benefits from it.

Keywords: cognitive development, MAI (multi-dimensional activity based integrated approach), social studies curriculum, elementary stage, competency

Introduction

Since the cognitive domain is one of the most important domains of human behavior, the development of the cognitive abilities of the learners is the prime task of our education system/teaching learning process. Cognitive domain of human behavior is also sometimes called as mental or intellectual domain of human behavior. The cognitive domain is a very broad domain of human behavior and it includes all the activities which are directly or indirectly related to mind. Human cognition includes a number of traits like attention, perception, thinking, reasoning, memory, language formation and development, problem-solving, analysis and synthesis capacity, creative imagination, intention, etc.. Cognition is a troublesome term in psychology, because it has no clear referent (Murray, 1990). Though it is a troublesome term, most of the psychologists define it as an important domain of human behavior, which includes all the mental processes/activities of an

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individual starting from lower to higher. Murray (1990) described that cognition has been defined so narrowly as to refer only to “awareness” (Guilford, 1967), and so broadly by others as to include “all higher mental processes” (perception, thinking, attention, language, reasoning, problem-solving, creativity, memory and intelligence).

In order to bring the cognitive development of our school children, different subjects are included in our school curriculum. The subjects taught in our schools like language, literature, social sciences, general sciences, mathematics, art and craft, etc., are primarily meant for the cognitive development of the children. Bloom, Engelhart, Furst, Hill, and Krathwohl (1956) brought a revolution in the field of development of cognitive behavior of the learners/students. In order to develop the abilities of the learners more specifically, quantitatively, systematically and meaningfully in cognitive area, Bloom et al. (1956) prepared a taxonomy for the learning objectives in cognitive area. Bloom et al. (1956, p. 9) in the handbook entitled *Taxonomy of Educational Objectives—Handbook I—Cognitive Domain*, stated,

> Cognitive domain, which is the concern of this handbook, includes those objectives which deal with recall and recognition of knowledge and the development of intellectual abilities and skills. This is the domain, which is most central to the work of much current test development. It is the domain in which most of the work in curriculum development has taken place and where the clearest definitions of the objectives are to be found phrased as description of student behavior. For these reasons, we started our work here, and this is the first of our work to be published.

They said that taxonomy includes mainly six categories of objectives in cognitive area, i.e., knowledge, comprehension, application, analysis, synthesis and evaluation.

Elementary stage of education generally covers the formative years of student’s life. Class-I to Class-VIII is called the elementary stage of education and this stage primarily covers the learners for the age group six to 14. In this stage of life, rapid development takes place in an individual. Most of the abilities of individual child become prominent in this stage. Mental development of the child becomes faster in this stage. As the child comes in contact with various environmental stimuli, she/he receives many things rapidly from the environment and develops the capacities, capabilities, abilities, aptitudes, etc., in different area/field of knowledge in accordance with the facilities/conditions provided to him/her at home, school as well as in the society. At this stage, different kinds of thinking come to his/her mind. Always, she/he tries to materialize all his/her thinking in best possible manner and tries his/her best to develop all his/her inherited and acquired qualities, characteristics and abilities in a full fledged manner. Therefore, proper nourishment in this stage can lead the child towards the development of his/her cognitive abilities. Emphasizing on the development of manifold cognitive characteristics of the child, MHRD (Ministry of Human Resource Development) (1986) in its National Policy on Education stressed on providing qualitative education at the elementary stage. In this regard, the MHRD vehemently stated “education not for access but for success”. The efforts made by Piaget (1952), Vygotsky (1978), Bloom et al. (1956), Bruner (1960), James (1890), Guilford (1967), Fisher and Pipp (1984), Case and Griffin (1990), Elkind and Flavell (1969) and many others for cognitive development of the children are quite significant. Gaysu (1988), Chhotray (1989) and Shah (1992) found that training can enhance the cognitive abilities of the students. The efforts made in this area of training can enhance cognitive abilities of the students are not sufficient and those need to be strengthened (Mishra, 1988; Mishra & Agarwal, 1993).

The subject “social studies” provide vast scope for the development of various cognitive abilities of the individuals like knowledge ability, understanding ability, skill ability, application ability, analysis ability, synthesis ability, evaluation ability, etc.. The knowledge ability in the area of social studies deals with gathering

knowledge/remembering about various facts regarding our physical, social, historic, geographical, civic and cultural characteristics of our country/society/community in particular and about the whole world/humanity in general. Comprehension or understanding ability in the area of social studies deals with providing the child the opportunities to extend his/her background of understanding to include basic and elementary concepts of geography, history, government, economics and sociology, as they bear upon the study of people and their struggle to solve the perennial problems of mankind. Like these, many other cognitive skills are related with social studies curriculum. Dhamija (1985), Sharma (1994), Gangopadhyaya (1991), Aviles (1999), AI-Shadifat (1999), Sharma and Renu (2003) and Pahuja (1992) conducted their studies on different teaching learning strategies for enhancing cognitive abilities/achievement in different areas of social studies and the results of such studies are much encouraging.

It is the natural tendency of the children that they are much inclined towards different types of multi-sensory activities like play, fun, jock, song, etc.. So, the teaching-learning process which is based on different multi-sensory activities like song, puzzle, quiz, debate, telling and forming stories, drama, craft work, model preparation, art and drawing, play and games, recitation, dance and music activities can yield better results than the teaching-learning process based on verbal lecturing, because activity-based teaching-learning strategy always requires the children to be involved actively in the teaching-learning process. This approach follows the principles of learning by doing, learning by enjoying, playing, problem-solving, etc.. Much of the researches have been conducted in different teaching-learning strategies relating to multi-sensory activities and the results found in such researches are quite worth mentioning. For example, the story telling method of Patnaik (1988), dramatization method of Kulkarni (1991), computer assisted instruction of Singh (1992), co-operative teaching technique of Malhotra (1988), objective based teaching and testing of Palanivelu (1989), co-operative learning of Holliday (2001), etc., are quite effective in enhancing the achievement of the learners in different curricular and co-curricular areas.

It is a fact that the nature of one subject differs from that of other subjects, the nature of one unit under the same subject differs from that of other units and the nature of one topic under the same unit differs from that of other topics and the nature of one learning paragraph under the same topic differs from the nature of other learning paragraphs. It is also a fact that the nature of learning materials and objectives of teaching-learning change from situation to situation, time to time and place to place in accordance with the demand of the society, philosophy of the country, local needs/demand of the learners and the facilities available to it. In the process of teaching-learning, a student has to achieve a number of competencies in different areas of teaching-earning according to his/her changing needs for his/her all round development. But, no specific or particular strategy/activity/approach is appropriate for helping a student to achieve all these competencies. Rather, it would be better, if an eclectic/flexible approach would be followed in the process of imparting the teaching-learning. This eclectic approach needs to be changed, according to the change in time, place and demand of the situation and the like.

Taking into account above research gaps, present study was designed to investigate the effectiveness of a new, innovative and flexible approach of teaching-learning (i.e., MAI (multi-dimensional activity based integrated approach)) for the development of the cognitive abilities in social studies of sixth grade students. The study was based on following three main directional hypotheses:

(1) MAI is considered as a better strategy than TMT (traditional method of teaching) for developing overall cognitive abilities in social studies;

(2) MAI is considered as a better strategy than TMT for developing competency wise cognitive abilities

(i.e., knowledge competency, understanding competency, skill competency and application competency) in social studies;

(3) MAI is considered as a better strategy than TMT for developing content area wise cognitive abilities (i.e., cognitive abilities in geography content area, history content area and civics content area) in social studies.

Method

Setting

The study was conducted on Class-VI students of two schools, i.e., D. M. (demonstration multipurpose) school and K.V. (Kendriya Vidyalaya), No-1 of the same city of Bhubaneswar. Both the schools are co-educational (where both boys and girls study together) English medium schools and affiliated to Central Board of Secondary Education, New Delhi. Students from Class-I to Class-XII study in both the schools admit the students from varied backgrounds. Both the schools are well equipped with infrastructural facilities and the distance between them is about 1.5 kilometers.

Participants

Purposive sampling method was followed for the selection of participants of present study. Out of the students of three sections (i.e., sec-A, sec-B and sec-C) of Class-VI in D. M. school, the students of two sections (i.e., sec-A and sec-B) were taken for experiment. Similarly, out of the students of three sections (i.e., sec-A, sec-B and sec-C) of class-VI in K.V., No-1, the students of two sections (i.e., sec-A and sec-C) were taken for experiment. The details of the participants of the present study are given in Table 1.

Table 1

Description of Sample

Name of the schools	Name of the sections	Number of students were being experimented in all the stages of experiment
D.M. school, Bhubaneswar	A	25
	B	27
K.V. No-1 , Bhubaneswar	A	29
	C	31
Total		112

At the beginning of the experiment, total 136 students were in the above mentioned four sections. But, 112 students were studied in all the stages of experiment/completed all the formalities of experiment. All the 52 students of D. M. school constituted the members of the control group where in all the 60 students of K.V. No-1 constituted the members of experimental group. These 112 students in total comprised the sample of the final study.

Identification of Competency Areas

Four cognitive competencies, i.e., knowledge competency, understanding competency, skill competency and application competency, were identified, and such cognitive competencies were studied on the basis of three main content areas in social studies (i.e., geography content area, history content area and civics content area). In the present study, the geography content area included two topics (i.e., India—our country, and our climate, natural vegetation and wildlife), history content area included two topics (i.e., India's cultural contact with outside world and major religions) and civics content area included two topics (i.e., How people in cities meet their needs and caring for things belonging to us all).

Table 2

Development of Multi-dimensional Activities

Subject	Content areas	Name of the learning unit	Teaching learning objective strategy and mode	Activities followed
Social studies	Geography	Monsoon	Objective: Cognitive development Strategy: Song Mode: Individualized	A song had been composed to teach about "monsoon" to the students. The song had been prepared in such a way that the song included all the important points/matters about monsoon given in their book. Besides, the book information about the monsoon, some additional information was also given in the song. In the present study, the students were instructed to memorize and sing the song regarding the monsoon. That song is given below: I am monsoon, I am monsoon. For Indian, I am boon. I am monsoon, I am monsoon, Indian suffer, if I came soon, My late causes death drought become very common, For the reason, India is called a land of monsoon. I reach may first, return back octo last, If any difference, India looses the vast. Indian Ocean my home, I am very periodic, I originated from mousim, the word of Arabic. I am monsoon, I am monsoon, For Indian, I am source of rain. I am monsoon, I am monsoon, I provide India food and grain.
	History	Role/duty of different gods and goddesses of Hindu religion	Objective: Cognitive development Strategy: Role playing in a story followed by discussion mode-group	In the present activity, the students were told to play different roles in a story. The role-playing session of the story was followed by discussion and evaluation. The gist of the story is given below: Once upon a time, there was a giant named as Brutasura. Brutasura who was more powerful. Through the passage of time, Brutasura exploited many Gods and Goddesses like Kubera, Ganesh, Laxmi, Durga, Saraswati, etc., in different ways. Brutasura did not allow the Gods and Goddesses to perform their own duties/functions nicely. All these Gods and Goddesses reached at Narada (Debarshi/Narada) and told him everything about the exploitation of Brutasura. Narada told them (Gods and Goddesses) to say all these things to Brahma (creator of the world) Vishnu (preserver of the world) and Maheswar (destroyer of the world). Because, Brahma, Bishnu and Maheswar are the supreme Gods. In order to solve the problems of all the Gods and Goddesses, Brahma, Vishnu and Maheswar called a joint meeting together. At last, they (Brahma, Vishnu and Maheswar) decided that Brutasura would be destroyed by a bajra (a kind of battle instrument), if that bajra would be prepared from the bones of saint Dadhichi. Dadhichi that was a saint and tapasvi, and at that time, he was meditating in the forests. All the Gods and Goddesses prayed/requested Dadhichi to get his bones. Dadhichi contributed his own bones in order to prepare bajra for killing Brutasura. At last, bajra was made from the bones of Dadhichi and Brutasura was killed with the help of bajra.
	Civics	Differentiating between personal property and public property	Objective: Cognitive development Strategy: Placing pictures in appropriate place Mode: Individualized	Some pictures of different things/articles/places belong to personal property and belong to public property, which were given to the students. The students were instructed to categorize such pictures on the basis of personal property and a public properly; and they keep them separately in two columns given below. Personal property public property. …… ……. …… ……..

Development of Multi-dimensional Activities

The intention of the present study was to develop different cognitive competencies of the learners, i.e., knowledge competency, understanding competency, skill competency and applications competency. Such cognitive competencies were needed to be developed through different content areas in social studies, i.e., geography content area, history content area and civics content area. Suitable multi-dimensional activities were developed in the content areas of geography, history and civics to develop such cognitive competencies. And, such multi-dimensional activities were based on the principles, which are followed in MAI. In the process of teaching-learning, thousands and thousands of activities like quiz, song, puzzle, drama, model preparation, chart preparation, role playing, debate and discussion, cross words, etc., can be used for the betterment of learner's achievement. Such activities can be categorized under three broads' dimensions like head related dimension, heart related dimension and hand related dimension. The activities generally found under head related dimension are puzzle, quiz, debate, etc.. The activities generally found under the heart related dimension are song, drama, recitation, music, etc. and the activities generally found under hand related dimension are craft work model preparations, art and drawing, etc.. The basic principle that the MAI follows is that,

> MAI is a teaching learning strategy which allows the learner to practice a single activity or a group of activities simultaneously coming either form any one dimensions of activities or from more than one dimension of activities (the dimensions of activities are head related dimension, heart related dimension, etc..) for the better learning of particular topic/group of topics.

Referring to the present study, some of the example activities used in the content areas of geography, history and civics for cognitive development of the learners are given in Table 2.

Table 3

Percentage of Weightage in Marks Given to Different Content Areas in Social Studies in Relation to Their Competencies

Competency areas / Content areas in social studies	Knowledge (%)	Understanding (%)	Skill (%)	Application (%)	Total (%)
Geography	8	12	8	7	35
History	12	8	8	7	35
Civics	8	10	6	6	30
Total	28	30	22	20	100

Table 4

Detail Nature of Test Questions of Different Content Areas

Subject	Content areas	Types of questions	Numbers of questions
Social studies	Geography	LQ	3
		SQ	3
		OQ	4
	History	LQ	2
		SQ	5
		OQ	4
	Civics	LQ	2
		SQ	6
		OQ	2

Notes. LQ = Long questions; SQ = Short question; OQ = Objective questions.

Development of CTS (Cognitive Ability Test in Social Studies)

A self-developed cognitive ability test in social studies named as CTS was used in the present study. The same test was used as both pre-test as well as post-test in the present study. This cognitive ability test was based on six chapters of social studies text book of Class-VI relating to which the present experiment was conducted. The test included three types of items, i.e., long question type items (having four marks each) short question type items (having two marks each) and objective question type items (having one mark each). The test-retest reliability co-efficient was found to be 0.78, and the concurrent validity co-efficient was fond to be 0.75 of the present test. In total, the test included 31 items having 100 marks. The Tables 3 and 4 describe respectively about percentage of weightage in marks given to different content areas in social studies in relation to competencies and the details nature of test questions of different content areas of the present test.

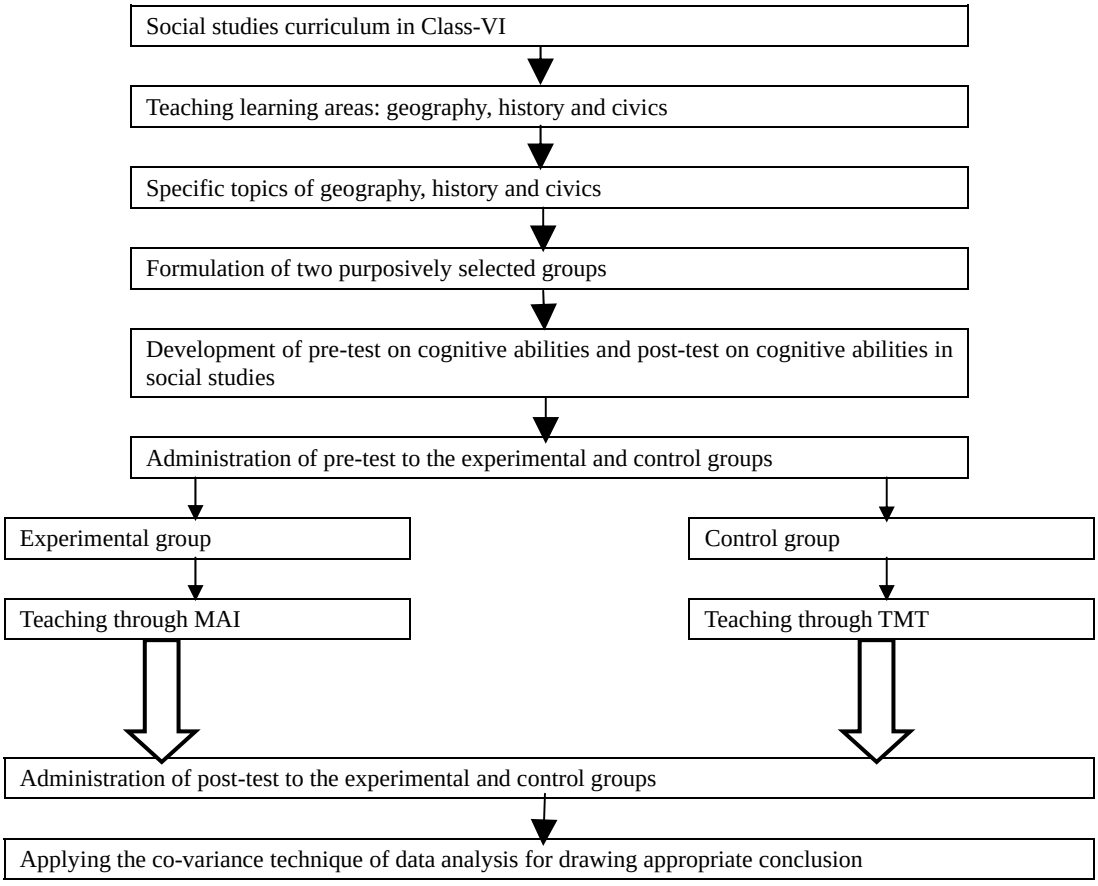


Figure 1. Design of the study.

Procedure of Experiment and Data Analysis

Present experiment was conducted without affecting the normal functioning of the school. “Un-equated two group pre-test post-test design” was followed for this experiment. Prior to the treatment, pre-test was administered on both the control group and experimental group for collection of baseline data for future comparison. After the collection of base line data, the treatments were given to both the groups. The experimental group was taught through MAI and the control was taught through TMT. The experiment

was continued for six months. Just after the treatment, post-test was administered to both the control and experimental groups. The data were scored and analyzed by following the appropriate procedures. The details of the design of the experiment are given in Figure 1.

Results

ANCOVA (analysis of co-variance) method was followed to analyze of the data. The pre-test results were taken as co-variate for the analysis of post-test results. The results were also represented graphically for better understanding. The results of the study were analyzed mainly under three broad heads, i.e.: firstly, studying the effect of MAI over TMT in developing overall cognitive abilities in social studies; secondly, studying the effect of MAI over TMT in developing competency wise cognitive abilities in social studies; and thirdly, studying the effect of MAI over TMT in developing content area wise cognitive abilities in social studies.

ANCOVA results

Pre-test results (x)						Post-test results (y)			
Group	N	M	SD	Fx	$Fy.x$	Fy	SD	M	N	Group
CG	52	34.42	8.94	0.336#	661.33**	150.06**	7.97	58.08	52	CG
EG	60	33.32	10.97				8.22	76.90	60	EG

Notes. CG = Control group; EG = Experimental group; N = Total number of cases; M = Mean; SD = Standard deviation; Fx = Analysis of variance results of the pre test scores; Fy = Analysis of variance results of the post-test scores; $Fy.x$ = Analysis of co-variance results when post test results were co-variated with pre-test results; * = Significant at the level of 0.05; ** = Significant at the level of 0.01; # = Not significant at the level of 0.05.

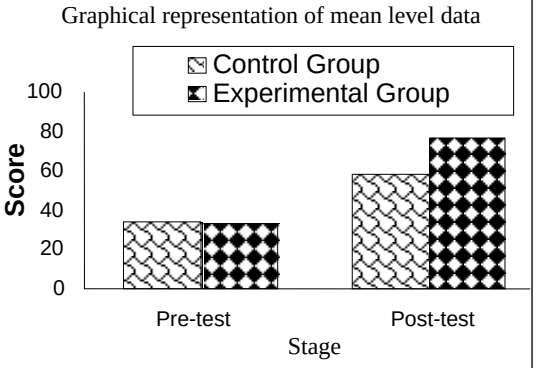


Figure 2. Treatment effects of independent variables on development of overall cognitive abilities in social studies of the control and experimental groups.

Figure 2 notices about the effect of MAI over TMT in developing overall cognitive abilities in social studies. The pre-test level data indicated that there exists no significant difference (Fx = 0.336, P < 0.05) between the mean scores of the control group and the mean scores of the experimental group. But, at the post-test level, the mean level scores of the experimental group were significantly better than the mean level performance of the control group (Fy = 150.06, P < 0.01). When the post-test results of both the experimental group and control group were co-variated with their pre-test results through ANCOVA technique, it was resulted that the performance of the experimental group was better than the control group ($Fy.x$ = 661.33, P < 0.01). Therefore, it is concluded that MAI is a better strategy than TMT for developing overall cognitive abilities in social studies among the elementary school students.

Figure 3 notices about the effect MAI over TMT in developing competency wise cognitive abilities in social studies. At the pre-test level, in respect of each cognitive competency in social studies i.e., knowledge competency (Fx = 2.71, P < 0.05), understanding competency (Fx = 0.003, P < 0.05), skill competency (Fx = 0.296, P < 0.05) and application competency (Fx = 0.02, P < 0.05), the difference between the results of the control group and the experimental group was not significant. But, referring to the post-test level data, the difference between the results of experimental group and control group were significant in respect of each

cognitive competency in social studies, i.e., knowledge competency (Fy = 75.08, $P < 0.01$), understanding competency (Fy = 127.53, $P < 0.01$), skill competency (Fy = 54.66, $P < 0.01$) and application competency (Fy = 66.44, $P < 0.01$). When the post-test results in each cognitive competency area in social studies of both experimental group and control group were co-variated with their respective pre-test results through ANCOVA procedure, the ANCOVA results indicated that in case of each cognitive competency area in social studies, i.e., knowledge competency ($Fy.x$ = 209.07, $P < 0.01$), understanding competency ($Fy.x$ = 333.07, $P < 0.01$), skill competency ($Fy.x$ = 129.485, $P < 0.01$) and application competency ($Fy.x$ = 108.01, $P < 0.01$), the performance of the experimental group was significantly better than the control group. And, taking into account the mean level performance of both the experimental group and control group from pre-test level to post-test level along with ANCOVA results in each cognitive competency area, it was safely concluded that, the methodological difference in teaching leads to the difference in achievement of competency wise cognitive abilities in social studies. MAI is a better teaching method/strategy than TMT in this regard.

Figure 4 demonstrates about the relative effect of MAI and TMT in developing content area wise cognitive abilities in social studies. It is evident from the pre-test level data that, in respect of developing cognitive abilities in each content area in social studies, i.e., cognitive ability of geography content area (Fx = 0.94, $P < 0.05$), cognitive ability of history content area (Fx = 0.59, $P < 0.05$) and cognitive ability of civics content area (Fx = 0.01, $P < 0.05$), the mean level performance of the experimental group did not significantly differ from the mean level performance of the control group. But, the post-test level data indicated that, in respect of developing cognitive abilities in each content area in social studies, i.e., cognitive ability of geography content area (Fy = 65.52, $P < 0.01$), cognitive ability of history content area (Fy = 149.07, $P < 0.01$), and cognitive ability of civics content area (Fy = 69.64, $P < 0.01$), the mean level performance of the experimental group was significantly better than the control group. ANCOVA technique was followed to co-variate the mean post-test cognitive ability scores of each content area in social studies with their respective pre-test scores, and the from the ANCOVA results, it was found that the performance of the experimental group was significantly better than the control group in respect of developing cognitive ability in each content area in social studies, i.e., cognitive ability of geography content area ($Fy.x$ = 178.00, $P < 0.01$), cognitive ability of history content area ($Fy.x$ = 318.33, $P < 0.01$) and cognitive ability of civics content area ($Fy.x$ = 224.90, $P < 0.01$). Hence, it is concluded that MAI is relatively better than TMT for developing content area wise cognitive abilities in social studies.

One significant point can be remarked from the present study is that, at the pre-test level in all cases, there existed no significant difference between experimental group mean scores and control group mean scores, but, at the post-test level in all cases, there existed significant difference between the mean scores of the experimental group and the mean score of the control group. In all cases, the performance of the experimental group was better than the performance of the control group. Analysis of covariance technique was followed to draw the appropriate conclusion regarding treatment effect, because the groups were not equated prior to the treatment. For applying the analysis of covariance technique, the pre-test results of both control group and experimental group were used as the co-variate to the post-test results. ANCOVA results relating to all these cases suggested that in all the cases, the experimental group performed significantly better results than the control group. Therefore, taking into consideration all these aforesaid discussions, it is safely concluded that MAI is a significantly better method than TMT for developing overall cognitive abilities in social studies in

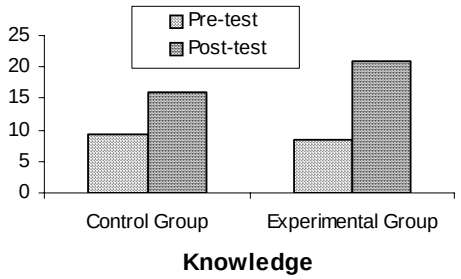
general and competency wise and content area wise cognitive abilities in social studies in specific of elementary school students.

ANCOVA results

Graphical representation of mean level data

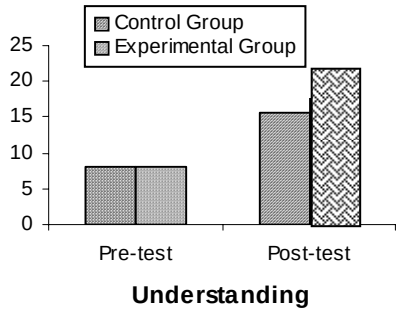
Treatment effects on knowledge competency in social studies

Pre-test results (*x*)						Post-test results (*y*)				
Group	*N*	*M*	*SD*	*Fx*	*Fy.x*	*Fy*	*SD*	*M*	*N*	Group
CG	52	9.19	2.63	2.71#	209.07**	75.08**	2.81	15.85	52	CG
EG	60	8.32	2.94				3.22	20.83	60	EG



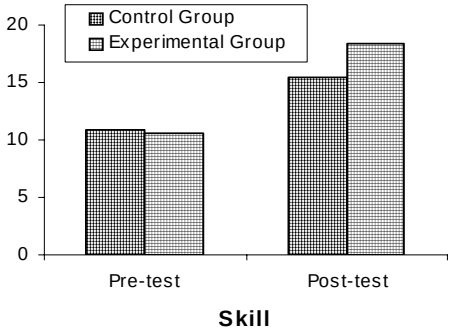
Treatment effects on understanding competency in social studies

Pre-test results (*x*)						Post-test results (*y*)				
Group	*N*	*M*	*SD*	*Fx*	*Fy.x*	*Fy*	*SD*	*M*	*N*	Group
CG	52	8.15	2.90	0.003#	333.07**	127.53**	2.84	15.69	52	CG
EG	60	8.12	3.97				3.43	22.48	60	EG



Treatment effects on skill competency in social studies

Pre-test results (*x*)						Post-test results (*y*)				
Group	*N*	*M*	*SD*	*Fx*	*Fy.x*	*Fy*	*SD*	*M*	*N*	Group
CG	52	10.92	2.84	0.296#	129.485**	54.663**	2.31	15.38	52	CG
EG	60	10.63	2.78				2.05	18.43	60	EG



Treatment effects on application competency in social studies

Pre-test results (*x*)						Post-test results (*y*)				
Group	*N*	*M*	*SD*	*Fx*	*Fy.x*	*Fy*	*SD*	*M*	*N*	Group
CG	52	6.15	2.68	0.02#	108.01**	66.44**	2.83	11.15	52	CG
EG	60	6.25	3.33				2.35	15.15	60	EG

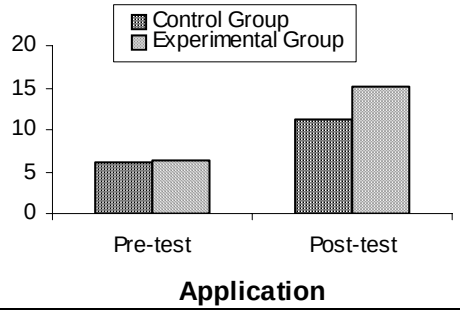


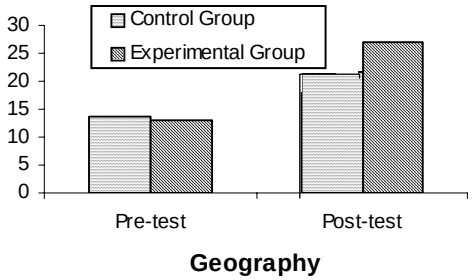
Figure 3. Treatment effects of independent variables on development of competency wise cognitive abilities in social studies of the control and experimental groups.

ANCOVA results

Graphical representation of mean level data

Treatment effects on cognitive ability of geography content area in social studies

Pre-test-results (*x*)						Post-test-results (*y*)				
Group	*N*	*M*	*SD*	*Fx*	*Fy.x*	*Fy*	*SD*	*M*	*N*	Group
CG	52	13.77	3.19	0.94#	178.00**	65.52**	3.04	21.75	52	CG
EG	60	13.08	4.14				3.70	26.98	60	EG



Treatment effects on cognitive ability of history content area in social studies

Pre-test results (*x*)						Post-test results (*y*)				
Group	*N*	*M*	*SD*	*Fx*	*Fy.x*	*Fy*	*SD*	*M*	*N*	Group
CG	52	8.87	3.20	0.59#	318.33**	149.07**	2.93	18.15	52	CG
EG	60	8.33	3.96				3.71	25.97	60	EG

Treatment effects on cognitive ability of civics content area in social studies

Pre-test results (*x*)						Post-test results (*y*)				
Group	*N*	*M*	*SD*	*Fx*	*Fy.x*	*Fy*	*SD*	*M*	*N*	Group
CG	52	11.79	4.12	0.01#	224.90**	69.64**	3.87	18.17	52	CG
EG	60	11.90	4.71				3.45	23.95	60	EG

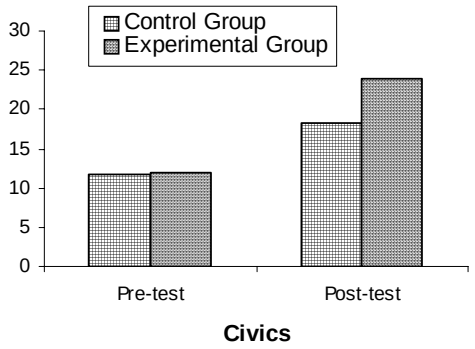


Figure 4. Treatment effects of independent variables on development of content areas wise cognitive abilities in social studies of the control and experimental groups.

Discussion and Conclusions

The studies conducted by Yu (2001), Messman and Jones-Corley (2001), Tzuriel, Kaniel, Kanner, and Haywood (1999), Householter and Schrock (1997), Joshi and Mohapatra (1995), Panda and Chaudhury (2000), Bansal and Suvida (1997), Mohanty (1992) and Panda (1990) clearly gave the indication that cognitive abilities of the individual learners can be developed through using different methodologies in the teaching-learning process. Present study corroborates with these studies in the sense that in the present study, a teaching learning method (i.e. MAI) had been used for cognitive development of the learners and this method provided the fruitful results.

The teaching-learning strategy used in the present study, i.e., MAI, is mainly a joyful and activity centric approach of teaching learning and in present study, it had been used for the cognitive development of the learners. The impact of different joyful and activity centric teaching learning on development of cognitive

abilities/achievement in cognitive area has been discussed by many researchers (Panda & Basantia, 2004; Mishra & Basantia, 2003; Satapathy & Dash, 2003; Din & Calao, 2001; Biegler, 1998; Majumdar, 1990). Panda and Basantia (2004), for example, found from their study that activity based joyful learning approach is a suitable approach for developing interdisciplinary MLL (minimum level of learning) competencies in the selected four areas of language, awareness to physical and social environment, health and hygiene and art and craft through the teaching of environmental studies. Mishra and Basantia's (2003) study suggests that the organized creative activities can develop students' abilities, i.e., knowledge, skill, application, creativity, etc., at the elementary stage. Satapathy and Dash (2003) studied the effectiveness of activity based classroom transaction in terms of quality of achievement of pupils and retention of the competencies learned and the results of the study were quite encouraging. Din and Caleo's (2001) study concerns to the effects of playing educational video games on kindergartener's achievement and the results of the study indicated that treatment has significant effect on spelling and decoding areas but no such impact in the math area. Biegler's (1998) study examines the effectiveness of dramatization as an effective story telling method to increase comprehension of kindergarten children and it was concluded from the study that dramatization has significant impact for increasing the comprehension of kindergarten children. Majumdar (1990) reported that the formation of science concepts and the academic performance of the students at the primary stage could better be facilitated through story telling.

The result of the present study states that MAI is an effective strategy through which cognitive abilities in the area of social studies can be developed. The studies conducted by Holliday (2000), Beam (2000), Natrajan and Natesan (2004), Patnaik and Mohanan (1993), Shahi (1989) and Das Gupta (1988) in the area of social studies resulted that different cognitive related abilities in the area of social studies can be developed through the use of different teaching-learning techniques. The results of the present study Juxtaposes with these studies conducted in the area of social studies.

Educational Implications of MAI

MAI should secure a rightful place in our teaching-learning process due to the following reasons:

(1) Since MAI approach is eclectic in nature, it can cater the needs of our teaching learning process as per the demand of the situation;

(2) This approach makes the teaching learning process more interesting, enjoyable, easier, practical and goal-oriented by following the principles of learning by doing, learning by playing and problem-solving;

(3) Besides the cognitive development of the learners, this approach has wide implications for the affective and psychomotor development of the learners, because this approach uses our different sense organs in the teaching learning process as per the requirements;

(4) This approach reduces the gap among teacher, pupil and teaching learning materials in the process of teaching learning;

(5) This approach makes the teaching learning process more democratic, caring, congenial, collaborative, co-operative and communicative;

(6) This approach strengthens the relationship between the past experiences of the child and his/her present learning;

(7) This approach is realistic in nature, because activities used in this approach are based on the realities of daily life situation;

(8) This approach seems to be a best approach for achieving the objectives of recent trend of

competency-based comprehensive evaluation;

(9) This approach seems to be a suitable approach for achieving multi-dimensional skills and competencies simultaneously like cognitive skills, social skills, emotional skills, morality and value based skills, motor and performance skills, etc..

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