



Imparting Curriculum with Bodily / Kinesthetic Intelligence to Foster Active Learning Among the Elementary School Children

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ABSTRACT

Intelligence is an innate potential present in every individual, exploring and expressing it can be successful through the learning activities. Some learners prefer to learn through movement as well. They are indeed termed as kinesthetic learners or possess kinesthetic intelligence. The aim of the research article is to find out the influence of kinesthetic intelligence based intervention program on active learning classroom among the school-age children. A self-structured Multiple Intelligences Inventory with 0.729 Cronbach's alpha and 0.638 split-half correlation and Active Learning scale with 0.827 Cronbach's alpha and 0.921 split-half correlation was administered to the respondents. The sample consists of both boys and girls of sixth standard, where, 50 children for experimental group and 50 children for control group were selected for the study. Random sampling technique was utilized for the study. The students were initially assessed and grouped based on their intelligences using Multiple Intelligences Inventory. Kinesthetic intelligence was found to be dominant among the sixth grade classroom. Hence, the educational modules were developed in accordance with kinesthetic intelligence for social science curriculum. The modules were introduced to the 50 respondents of experimental group. The results revealed highly significant differences between the pre-test and post-test scores of the experimental group children indicating the kinesthetic intelligence intervention had an influence on active learning among the children of experimental group. Identifying the dominant intelligence in the

children and helping them to recognize their own potentials and imparting teaching as well encouraging them to learn accordingly is very important.

Keywords: *Kinesthetic Intelligence, Dominant, Active Learning, Multiple Intelligences*

INTRODUCTION

Bodily-kinesthetic intelligence entails the potential of using one's whole body or parts of the body to solve problems. Dr. Howard Gardner (1983) in his book, "Frames of Mind" have discussed that abstract reasoning and physical activities as a related behavior. Students often struggle to learn in a traditional classroom where rote learning is given more importance. Kinesthetic learners benefit from hands-on, manipulative activities, plays, moving around while memorizing, through re-enactments, art, dance, and other active learning channels. The modalities of bodily/kinesthetic intelligence can be categorized into three different forms of expression: dramatic, industrial, and recreational (Jensen, 2001). Dramatics explains that dramatics encompasses domains such as dance, drama, mime, theater, musicals, choreography, media play, and improvisation. Industrial arts refer to the functional aspect of bodily/kinesthetic intelligence. Industrial arts include woodworking, auto repair, metalworking, construction, sculpting, and design. Recreational arts include exercise, rough-and-tumble play, games, scavenger hunts, adventures, obstacle courses, and sports.

The Kinesthetic modality is considered the farthest from language. Equally important is the fact that, when children, by nature active and energetic little creatures, act out their learning, they learn more deeply and enjoy subjects more as they learn (Rocky, 2011).

Therefore, teaching kinesthetic learners requires active and creative lesson planning and when imparted in this method has other benefits as follows:

- Allowing the learners to be recognized and rewarded for their strengths;
- Provides opportunities for learners to adapt their studies to their interests and learning preferences;
- Reduces the chances of boredom by offering a variety of activities; and
- Provides a teaching/learning methodology that works.

Hence, this study has made an attempt to impart social science curriculum with kinesthetic intelligence activities and to find out its effect on active learning among elementary school children.

METHODOLOGY

Aim: To find out the influence of kinesthetic intelligence intervention for imparting curriculum on active learning among the school-age children

Objectives:

- To profile the kinesthetic intelligence and active learning of elementary school age children.
- To develop educational modules on social science curriculum using kinesthetic intelligence activities.
- To administer the developed modules to the experimental group.
- To find out the differential influence of intervention program on pre-test and post-test scores of active learning.
- To find out the differential influence on active learning between control group and experimental group children.

Hypotheses:

1. There was no significant difference between the pre and post-test mean scores of the following aspects of active learning among experimental group respondents
 - a. Do
 - b. Review
 - c. Learn
 - d. Apply

2. There was no significant difference between the mean scores of experimental and control group respondents on the aspects of active learning considered for the study.

Scope

The present research provides a framework to identify the learning outcome of children based on Kinesthetic Intelligence intervention. Children become more intelligent by exposing them to variety of ways of learning; it individualizes according to their interests and needs; and gets exposed to variety of teaching strategies that make learning more efficient, successful, and enjoyable. Teachers are also enabled to use such strategies for effective classroom teaching-learning.

Sampling Technique - Random sampling method was carried out to maintain the homogeneity of the samples.

Research Design

Phase I – Identification/development of appropriate tools

An extensive survey was carried out to identify the most appropriate tools. The investigator has done a thorough review of literature and a market survey of availability of Multiple Intelligences scale and Active Learning scale. As researcher was not able to get the suitable scales for the present study, it was decided to develop the tools. Thus, the tools were developed and standardized with Multiple Intelligences Inventory with 0.729 Cronbach's alpha and 0.638 split-half correlation and Active Learning scale with 0.827 Cronbach's alpha and 0.921 split-half correlation.

Phase II – Identification of schools

A survey of schools of both private and government schools in Bangalore city was carried out to identify schools which are ready to participate in the research program. The schools which showed keen interest were considered for the study. Hence, two schools were selected and approached through the management to seek the permission for the further research study. One of the schools, Ramanashree Udaya Education Society was selected for the experimental study and Seshadripuram School was taken as the control group study.

Phase III: Selection of sample

Elementary school children identified in the previous phase was selected for the research study. The 50 children of sixth grade from Ramanashree Udaya Education Society, situated in the close proximity was selected for intervention program and 50 children of sixth grade from Seshadripuram School, which is located away from the experimental group school was identified as a control group to avoid spillover effect.

PHASE IV: Pre-test Assessment

Initially a pre-test was conducted on the selected group for the study to understand the type of Multiple Intelligence and Active learning of sixth grade children. The representative samples identified in phase III will be assessed to find out the dominant intelligence.

PHASE V: Teaching-Learning Materials (TLMs) Development

The Teaching-Learning Materials (TLMs) were designed and developed for Social Science subject considering the dominant intelligence, i.e., kinesthetic intelligence of the elementary school children. The academic subject was identified based on the discussion with the teachers and experts.

PHASE VI: Implementation of the Intervention Program

The developed modules were introduced to the experimental group in a phased manner for a period of one semester. The sessions were held every day for the time duration given by the school authorities. Each aspect of the social science curriculum was covered using the kinesthetic intelligence educational activities to foster the active learning among the respondents.

PHASE VII: Post Assessment

A Post assessment of the respondents was carried out to find out, if there is any effect of intervention program on the participants active learning scores taught through Kinesthetic Intelligence curriculum using the Active Learning scale.

PHASE VIII: Analysis and interpretation of data

Analysis of the data was done using Mean, Standard Deviation and Student 't' test. Interpretation of data and conclusions are presented in the results and discussion.

RESULTS AND DISCUSSION

1. Socio-Demographic Variables of the Respondents

FIGURE 1

Age of the Respondents

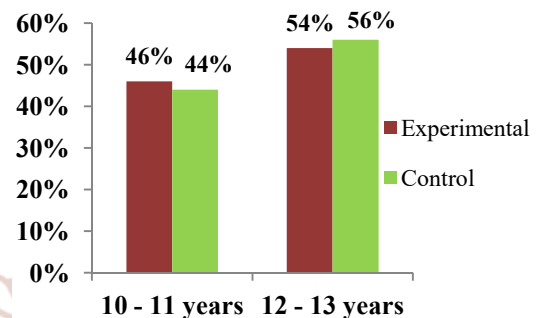
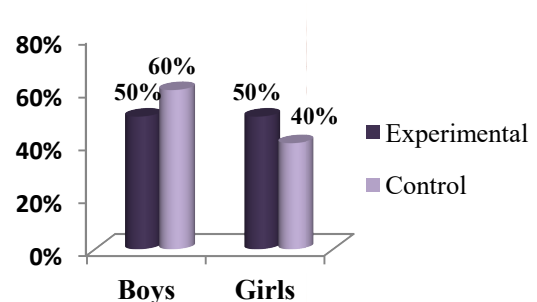


Figure 1 depicts the experimental and control group respondents' age. Majority of both experimental group (54%) and control group respondents (56%) were belong to the age group of 12-13 years. Hence, there was no significant difference found between the experimental and control group respondents with respect to age distribution.

FIGURE 2

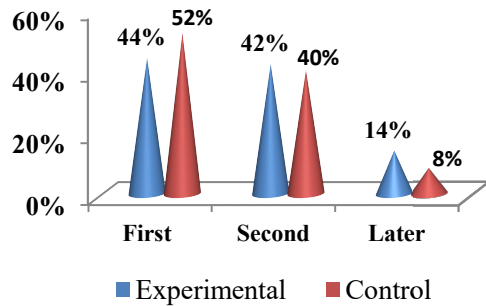
Gender of the Respondents



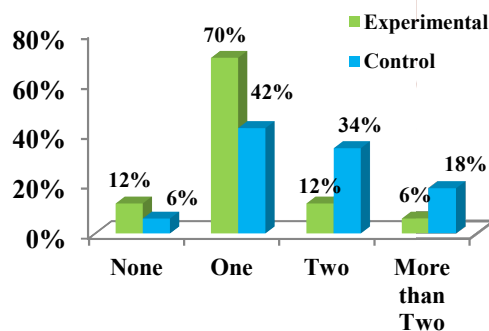
Majority (60%) of control group respondents were boys, whereas, among the experimental group, there was an equal distribution of the respondents between both the genders in figure 2. However, there was no statistical significant difference found between the groups.

FIGURE 3

Ordinal Position of the Respondents



When the ordinal position was considered in figure 3, majority of both experimental (44%) and control group (52%) were first born. The next highest percentage of both experimental (42%) and control group respondents (40%) were second born. A small percentage of the respondents’ of both control and experimental group fall under later born category (8% and 14% respectively). Hence, 1.18 score was the statistical difference found between the groups which is statistically non-significant.



The elucidated information on number of siblings clearly indicates that majority of experimental group (70%) respondents and considerable percentage of the control group respondents (42%) had only one sibling. Considerable percentage 34% of the respondents were in control group while equal percentage (12% each) of experimental group respondents were belong to both second and no siblings’ categories. A small percentage of control group respondents (6%) had no siblings. The analysis indicates differences between experimental and control group respondents with respect to number of siblings’ variable. Hence, the statistical analysis indicates 12.76 significant differences at 5% level.

Table 1: Mean scores of Kinesthetic Intelligence among the respondents N=100

Aspect of Intelligence	Experimental Group		Control Group		‘t’ Test
	Mean	SD	Mean	SD	
Bodily/Kinesthetic Intelligence	6.79	1.30	7.04	1.90	0.88 ^{NS}

NS: Non-significant

The table 2 represents the mean scores of kinesthetic intelligence among control group and experimental group respondents. The mean kinesthetic intelligence score for the experimental group was 6.79 while for the control group respondents 7.04. However, when the above data was subjected to statistical analysis, non-significant difference was observed between the groups.

Table – 3: Pre and post assessment of Active learning among Experimental group N=50

Aspect	Response	Scores		Paired ‘t’ Test
		Mean	SD	
Do	Pre	14.82	2.06	23.31*
	Post	22.94	2.35	
Review	Pre	4.74	1.77	14.37*
	Post	8.98	1.30	
Learn	Pre	7.52	2.19	17.59*
	Post	13.92	1.58	
Apply	Pre	3.88	1.67	17.28*
	Post	8.96	1.38	

* Significant at 5% level

A social science curriculum based kinesthetic intelligence intervention was given to the respondents predominant with kinesthetic intelligence to nurture the active learning. Kinesthetic intelligence based intervention modules designed and developed with activities like drama, origami, role play, dumb charades, one-minute drawing were given to teach social science curriculum to enhance active learning among the experimental group respondents.

The table 3 depicts the pre and post assessment of active learning among the experimental group respondents. When the above data was subjected to statistical analysis, it indicated a significant difference between the pre and post-test active learning mean scores for all the aspects of active learning, as follows: Do (Pre-test 14.82 to Post-test 22.94); Review (Pre-test 4.74 to Post-test 8.98); Learn (Pre-test 7.52 to Post-test 13.92); and Apply (Pre-test 3.88

to Post-test 8.96) with post-test scores showing higher than the pre-test scores. Hence when the above data was subjected to find the statistical significant differences between pre and post-test mean scores for all the aspects of active learning, a strongly significant differences was observed at 5% level indicating intervention was very effective in nurturing active learning skills among the respondents.

Uzho and Salame (2016) research involves the application of Bodily/Kinesthetic Intelligence Theory to improve the creative learning in students. Through this research it has been discovered that many teachers agree with the importance of bodily kinesthetic intelligence that allows the development of creative learning especially in first grade children. They also expressed that they would like to work with a new curriculum that includes more activities related to this intelligence.

Hence, the hypothesis (1) stating that there was no significant difference between the pre and post-test scores of experimental group respondents on all the aspects of active learning considered for the study was rejected.

Table – 4: Pre and post Assessment of Active learning among Control group N=50

Aspect	Response	Scores		Paired 't' Test
		Mean	SD	
Do	Pre	11.16	2.02	4.31*
	Post	10.62	2.12	
Review	Pre	4.18	1.27	1.76 ^{NS}
	Post	4.24	1.25	
Learn	Pre	6.36	1.66	1.42 ^{NS}
	Post	6.4	1.16	
Apply	Pre	4.5	1.37	0.77 ^{NS}
	Post	4.56	1.32	

* Significant at 5% level, NS: Non- Significant

Control group respondents did not receive any intervention to impart social science curriculum. These respondents were taught the social science curriculum with regular teaching methods in the school.

The table 4 represents the pre and post-test scores of active learning among the control group respondents. When the above data was subjected to statistical analysis, there found to be no significant differences between the pre and post-test active learning mean scores for all the aspects of active learning expect for one, which are presented as follows: Do (Pre-test

11.16 to Post-test 10.62); Review (Pre-test 4.18 to Post-test 4.24); Learn (Pre-test 6.36 to Post-test 6.4); and Apply (Pre-test 4.5 to Post-test 4.56). The data indicates that there was not much difference found between the pre and post-test scores among the respondents. Thus when the above data was subjected to find the statistical significant differences between pre and post-test mean scores for all the aspects of active learning shows no significant differences.

Table – 5: Comparison of Active Learning among Experimental and Control group respondents N=100

Aspect	Experimental		Control		Paired 't' Test
	Mean	SD	Mean	SD	
Do	22.94	2.35	10.62	2.12	28.22*
Review	8.98	1.30	4.24	1.25	17.70*
Learn	13.92	1.58	6.4	1.61	22.89*
Apply	8.96	1.38	4.56	1.32	15.32*
Total	54.8	5.02	26.2	6.63	27.81*

* Significant at 5% level

The table 5 exemplifies the scores of active learning among the experimental and control group respondents. The respondents of the experimental group were introduced to the intervention program while the control group respondents were not. When the above data was subjected to statistical analysis, there found to be significant differences between the experimental and control group respondents on all the aspects of active learning mean scores. The mean scores of experimental and control group are presented as follows: Do (exp 22.94 and cont 10.62); Review (exp 8.98 and cont 4.24); Learn (exp 13.92 and cont 6.4); and Apply (exp 8.96 to cont 4.56). The data indicates that there were significant differences found between the experimental and control group respondents' mean scores. Thus, when the above data subjected to find the statistical significant differences between experimental and control group respondents' mean scores for all the aspects of active learning, shows significant differences at 5% level.

Hence, the hypothesis (3) stating that there was no significant difference of the mean scores of active learning between the experimental group and control children on all the aspects of active learning considered for the study was rejected.

CONCLUSION

The present study shows the kinesthetic intelligence intervention on social science curriculum found to have an impact on the learning environment of the

elementary school children. Children tend to be more energetic during this stage of life; hence the bodily/kinesthetic intelligence educational activities have opened new doors to explore their learning atmosphere to be lively.

The results of the study show highly significant differences between pre and post-test scores of the experimental group respondents indicating the kinesthetic intelligence intervention influences the active learning among these respondents.

Identifying the dominant intelligence in the children and helping them to recognize their own potentials and imparting teaching as well encouraging them to learn accordingly is very important.

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