Research Journal of Family, Community and Consumer Sciences _____E-ISSN 2320 – 902X
Vol. **4(5),** 1-7, July **(2016)** *Res. J. Family, Community and Consumer Sci.*

A Study of the Impact of Selected Visual Aids on Knowledge of Municipal School Children

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Available online at: www.isca.in, www.isca.me
Received 1st June 2016, revised 15th June 2016, accepted 22nd July 2016

Abstract

The present study was undertaken to ascertain that visual aids can increase the knowledge of selected concepts. One hundred students from 7th standard in the age group of 12 to 15 years from Andheri Municipal School were selected. Visual aids were posters, charts, bulletin boards and charts. Tools developed were; Visual aids and questionnaires for pre and post testing. Sample for the study were explained concepts through specially prepared visuals. Then, all visuals were displayed on boards for 6 weeks. Sample was informed to study the material and was informed that a test would be conducted on the same. Prepared test was administered to students of 7th standard to ascertain their knowledge level. After a period of 6weeks, the same test was administered to know if there was an increase in marks obtained by the students. There was a significant increase in marks of pre-test and post-test for concepts: Pollution, Value Education and T.B.; for the concepts of safety and habits there was marginal increase in marks. Overall marks of pre-test and post-test shows that there was an increase in marks obtained in the post-test. It is concluded that the prepared aids were effective in increasing the knowledge level of the students.

Keywords: Visual aids, Pollution, Values, T.B., Safety, Habits, Pre and Post–test.

Introduction

"We cannot always build the future for our youth, but we can build our youth for the future". - Franklin D. Roosevelt

The best way to build youth for the future is to make them strong, informed and educated. There are diverse ways of giving information and education. Besides the formal way, visual aids can be used to impart education. Some students are visual learners. By using visual aids you appeal to a broader range of students. It is common knowledge that benchmark for retention of what is solely heard is only about 20%. However, retention can shoot up to 80% with visual materials. Today, contribution of visual aids has been recognized as indispensable and integral component of instructional material. Visual aids bring concreteness in learning and comprehension; and enhance retention. Use of visual aids makes learning more interesting and permanent. They help an audience use their visual capacity and they improve learning because interactive effects can be used to reinforce the material learned. They also help break information down to manageable pieces for an audience to absorb. Thus they save time. People think faster than you speak...visuals help keep them focused on the message. Information that is presented visually is received and processes faster than a verbal message. Visual aids help control nervousness as they give purposeful physical activity that lets your body process nervous energy without distracting audience. Visual aids are particularly beneficial for explaining complex ideas. They overcome the language barrier.

In a populous country like ours we have to think of ways to educate with fewer burdens on teachers. This can be achieved partly by making extensive use of visual aids. Therefore, the present study was undertaken to ascertain the belief that visual aids can increase the knowledge of selected concepts. The current study was undertaken with the following objectives.

Objectives: i. To develop suitable visual aids to disseminate information about selected concepts such as: Pollution, safety measures, good habits, value education and Tuberculosis. (T.B.), ii. To create awareness about the selected concepts by using developed visual aids. iii. To ascertain the impact of relevant visual aids on the knowledge of students.

Review of Literature: There is no adequate literature available on this matter but an effort is made to congregate and search some literature to find out the pertinent studies done on grades levels of students to provide the empirical support to validity of this study. It is assumed that the learning styles are different at all instructional levels so in the result of that assumption the search is kept broad and extensive. Literature about impact of visual aid presents diversified evidences. In the first section of literature review a few studies which were conducted on business professionals are discussed and the second section consists of studies conducted on students.

Scheiber and Hager (1994) provided relatively strong evidence in support of visual aid, and concluded that the visual aid plays a crucial role for making and delivering an effective

presentation. Further they also found from a survey conducted on managers that more than two thirds of the respondents "very frequently" or "frequently" gave presentations. Visual Images demonstrate life or learning as it happens[1].

Bach (2001) in using visual narrative in the learning environment we can be given an opportunity to evoke memories where as Bach discussed 'a memory around we construct and reconstruct life stories'. Visual narrative research makes visible different parts or stories that can then be later looked upon, just as photographs are used in the historical or family history sense. Most of all it enables us to look at a scene in our lives with different perspective, transformation of fixed memories is available (Bach, 2001). Photographs can allow us to learn, reflect and grow from our experiences[2].

Benson (1997) and Branton (1999) as cited in Kleinman and Dwyer (1999), Existence of visual component now a days in learning and teaching is increasing combination of images, instructional manuals, visual presentation, in text books, class room presentations and computer interfaces broadens. Educational institutions' history is evident of continuous relationship between verbal and visual information, that they were espousal of visual enhancements in instructions[3-5].

Morrison and Vogel (1998) suggested that there are many other factors on which business presentations rely, and they considered these factors beyond the substance and structure of the presentation .The factors they have mentioned are "audience factors, environmental factors, and perceptions of the speaker" and they found that the visual variable affected all the other underlying factors. Further they reported a 79 percent over 58 percent of audience consensus on the base of comparison between visual and non-visual usage. They also found that using several colors and extra animation create bad image against presentation and all the efforts of the presenter prove useless. This part of literature review highlights those studies which were conducted on students of different grades levels. These studies are based on the framework of making comparison and finding either the significant difference in student's perception exists or not[6].

Pruisner (1993) conducted a study to estimate the impact of color on learning and understanding capacity of the student. The whole seventh class from Midwestern junior high school was selected as a sample for making comparisons as one of four treatment groups. The variables used in this study were "i. color-cued presentation, and assessment; ii. color-cued presentation, black and white assessment; iii. black/white presentation, color-cued assessment; iv. black/white presentation, black/white assessment". Finally the Color-cued presentation was found the most preferred presentation type and it was realized as an important element to enhance the apparent performance of systematic color cue in graphic presentation[7].

Wilson (1967) also finds the evidences in support of visual aid and verifying the findings of previous studies conducted on visual aid learning and found that the visual aids have significant perception for the teachers, as a teacher they have to deal with a lot of problems in their respective fields. Moreover they reported that a child might be a good reader if they were taught by using visual aids and they can learn more than they learn through the traditional learning methods[8].

Roth (1992) suggested that visualization is a factor of intelligence that includes the mental manipulation of spatial configurations and has been associated with spatial abilities, creative thinking and conceptual problem solving. He also suggested that the move from print to electronic media would increase the need to educate the next generation for the use of visual images[9].

Bennett (1988) reported that in number relationship and algebraic statement visual aids are very helpful in enhancing understanding and learning capacity. We have discussed earlier that impact of visual aids on student perception consists of diversified findings but the most of the literature of empirical studies comes up with positive impacts of visual aid. Based on literature review, theoretical framework has been designed followed by formulation of hypotheses. The framework includes those variables which play a key role in exploring the students' perception and their understanding about visual aid usage in presentation. The main hypothesis was developed to examine difference between the students' perception about visual usage in presentation and the cumulative effect of aggregated independent variable on dependent variable. Sub-hypotheses were devised to validate the impact of individual elements of independent variables on dependent variable[10].

Methodology

Selection of concepts: The concepts selected were: Pollution, safety measures, good habits, value education and T.B. These concepts were selected considering background and need of the children and also in consultation with community development officer of the municipal corporation. When students are sensitized to predicament of pollution in formative years they will make behavior modifications to reduce pollution. Information about safety measures will reduce dangers that may be faced in later years. Good habits and value education form foundation for character building and good citizenship. In Mumbai prevalence of T.B. is quite high. Once the children are made aware about T.B. they will be able to take necessary precautions leading to better health. Thus, these concepts were considered to be relevant.

Selection of sample: One hundred students from Andheri Municipal School were selected. Students from this school were selected as majority of them come from lower socio-economic strata and in municipal schools the number of students per teacher are more; therefore it was felt that if they are given exposure to relevant concepts, they will be better equipped to build their health. Students from 7th standard in the age group of 12 to 15 years were selected. Students in this age group are

enthusiastic, open and receptive to new ideas. There was a rapport with school and willingness of school authorities to permit the said study to be undertaken. Therefore, 100 students were randomly selected from 7th standards.

Selection of visual aids: A visual aid is an object or representation that may be used to clarify or enhance understanding of a concept or process. The best way to ensure success in learning is to present information in different formats for different learners.

In this purview, visual aids are an excellent means to convey information to the target audience. Visual aids may take the form of graphs, charts, tables or photographs and others. They may also appear in texts and in handouts. Selected visual aids for the present study are briefly described:

Poster: A poster is a visual combination of a bold design, brief text, color and message intended to catch and hold attention of the passer-by to implant a significant idea in his mind. It conveys the message directly and is dynamic; hence it can be adapted to various situations and age-groups. Posters are used for motivation, stimulation, as reminders or to create awareness and advertising. It provides creative experience to the person who prepares posters.

Chart: Chart is a visual symbol summarizing, comparing, contrasting, understanding or performing other activities in explaining the subject matter. It breaks down the monotony of a lecture into a language that can be easily understood by the students. It gives detailed information, helps to get the students to think, compare, relate and use factual information. It shows size, placement of parts and operational procedure. It helps to make teaching more effective by emphasizing selected points.

Bulletin Board: It is a board that is used to exhibit bulletins, for making announcements, notices, examination results, exhibiting light weight two-dimensional and three-dimensional objects and anything that needs to be seen and read. It provides a suitable place for display of creative work of students such as photographs, clippings, illustrations, a light-weight sample of products, announcements. It stimulates the interest of students. It helps the students to communicate their ideas visually and also enables them to work as a group.

Flash-Cards: These are visual messages on thick cards to emphasize important ideas in the form of either story or points. The cards are presented to the group in the form of a story or narration. Therefore, can be used and modified for all age groups and any level of literacy. It is very useful aid for a group of 15-20 people. A set of flash cards is very easy to carry and take to the field.

Development of tools for data collection: Two types of tools were developed; Visual aids and questionnaires for pre and post testing. Development of visual aids: As mentioned earlier the concepts chosen were: Pollution, safety measures, good habits, value education and T.B. Vital and suitable information about each concept was selected. The content was edited to suit the visual aid. Illustrations and pictures were selected and drawn to clarify concepts. Attractive colours and fonts were used to enhance clarity and attractiveness. Preparation of visual aids was supervised to ensure quality.

Development of testing tool: A test was developed which contained all objective items. It was based on the content related to selected concepts. The test was constructed by college teachers who are trained and experienced in construction of objective test items. Thus validity was ensured.

It was administered to a small group of students with similar background. This helped to ensure reliability and ease of administration.

Pretest: Before pre-testing, the students were told about rationale of the research without exposing any information about the 5 selected concepts. The prepared test was administered to students of 7th standard. Purpose of pre-testing was to ascertain knowledge level of the students. Test was corrected and marks of students were tabulated.

Administration of Specially Prepared Audio-Visual aids: The students who were selected as sample for the study were explained the concepts through the specially prepared visuals. After having explained once, all the visuals were displayed on boards in the classroom for 6 weeks. The sample was informed to study the material. They were at liberty to read the material as often as they wanted. The students were also informed that a test would be conducted on the same.

Post-test: After a period of 6weeks, the same test (the one that was used to pretest) was administered to know if there was an increase in the marks obtained by the students thus increases in knowledge level.

Results and Discussion

Background of the sample: The sample consisted of 100 students from 7th standard of Municipal School in Tata Compound at Andheri-west. They were in the age group of 12 to 15 years and came from lower socio economic background. By and large students of the municipal were enthusiastic and ready to learn.

Marks for pre test and post test were tabulated. They are presented in Table 1 to 7 and the Figures.

Table -1 shows that 13% respondents got 8 marks in the pre-test, whereas 36% respondents got 8 marks in the post-test. None of the respondents got 8 or 9 marks in the pre-test whereas 11% respondents 8 marks and 1% respondents got 9 marks in the post-test.

Table-1
Marks for "Pollution"

Sr. No	Maximum Marks=10	Pre-Test %	Post-Test%
1	2	2	0
2	3	4	3
3	4	6	4
4	5	21	3
5	6	29	12
6	7	25	30
7	*8*	13	36
8	9	0	11
9	10	0	1
$\bar{x}$	Mean ➡	5.98	7.19

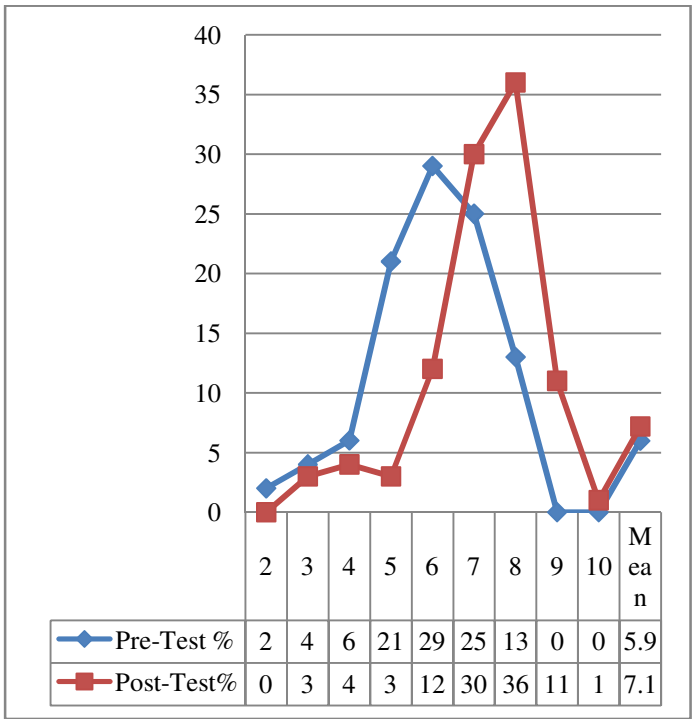

Figure-1
Marks obtained for pollution

Figure-1 represents a graph for comparison between pre-test and post-test marks obtained by respondents for the study on Pollution.

Table-2 shows that for the topic of "safety" 66% respondents got 5 marks in the pre-test, whereas 77% respondents got 5 marks in the post-test. In the pre-test 4% respondents got 2 marks and 5% respondents got 3 marks whereas in the post-test minimum marks obtained were 3 by 3% respondents.

Table-2
Marks for "Safety"

Sr .No	Maximum Marks=5	Pre-Test %	Post-Test%
1	2	4	0
2	3	5	3
3	4	25	20
4	5	66	77
$\bar{x}$	Mean ➡	4.53	4.74

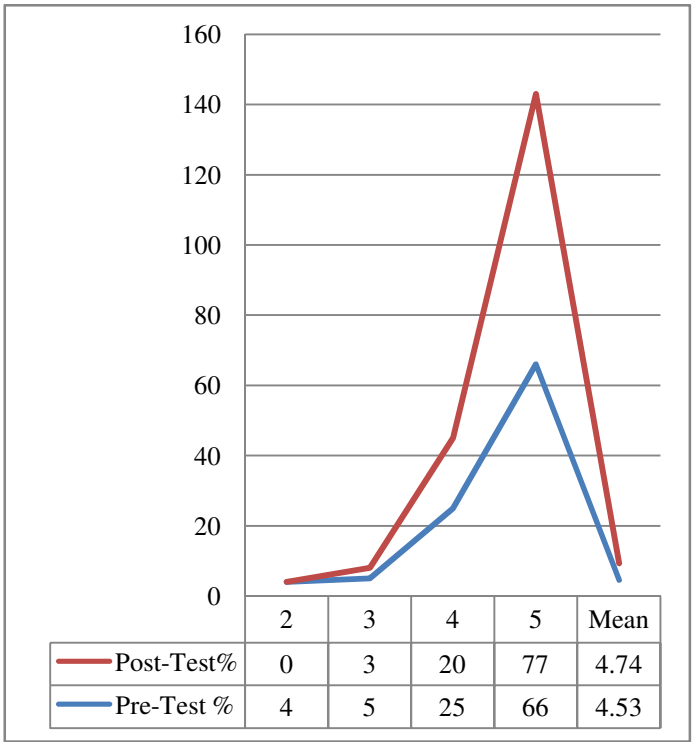

Figure-2
Marks obtained for 'safety'

Figure-2 represents a graph for comparison between Pre-test and post-test marks obtained by respondents for the study on Safety.

Table-3 shows that for the topic of "Habits" in the pre and post tests 86% of the respondents got 5 marks. Minimum marks obtained in the pretest were 2 by1% respondents and minimum marks obtained in the post test were 3 by 1% respondents.

Table-3
Marks for "Habits"

Sr .No	Maximum Marks=5	Pre-Test %	Post-Test%
1	2	1	0
2	3	2	1
3	4	11	13
4	5	86	86
$\bar{x}$	Mean ➡	4.82	4.85

Table-4
Marks for "Value"

Sr. No	Maximum Marks=6	Pre-Test %	Post-Test%
1	2	2	2
2	3	4	3
3	4	12	12
4	5	71	54
5	6	11	29
$\bar{x}$	Means ➡	4.85	5.05

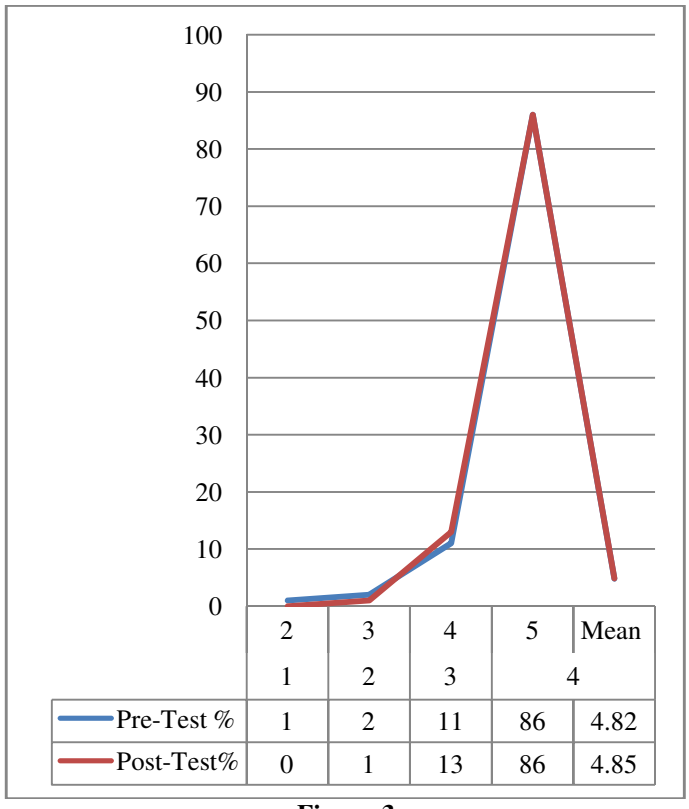

Figure-3
Marks obtained for "Habbits"

Figure-3 represents a graph for comparison between pre-test and post-test marks obtained by respondents for the study on Habits.

Table-4 shows marks obtained by the respondents for topic of "Value". It shows that 11% respondents got 6 marks in pre test and 29 % respondents got 6 in post test. Even though minimum 2 marks were obtained 2 % in the pre test and post test, there is a gradual increase in the number of marks obtained in the post test.

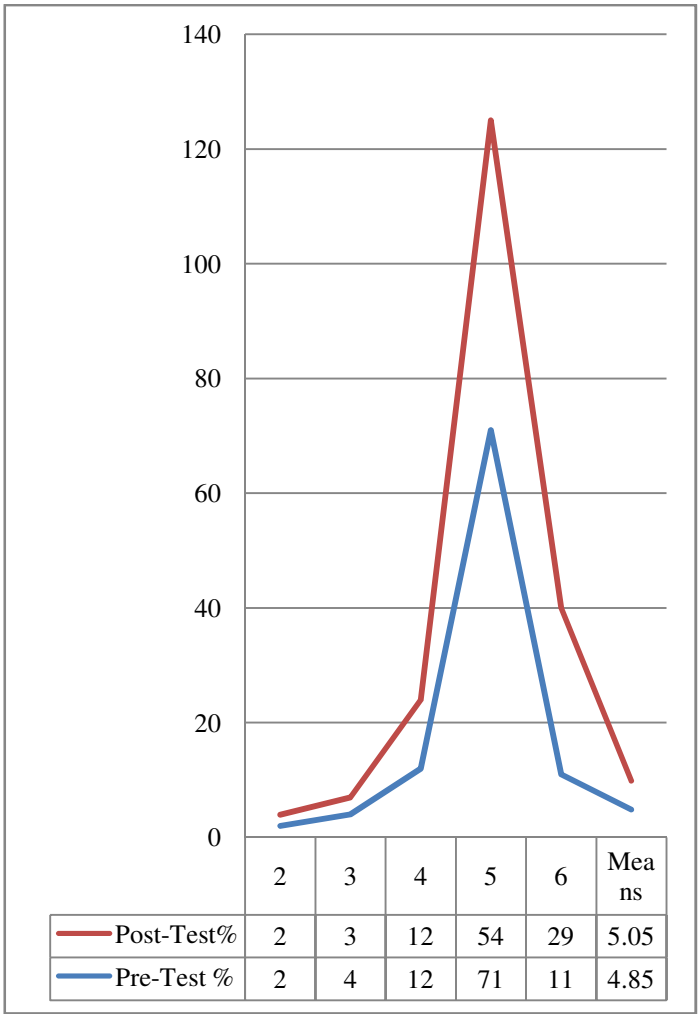

Figure-4
Marks obtained for "Value"

Figure-4 represents a graph for comparison between pre-test and post-test marks obtained by respondents for the study on Values.

Table-5
Marks for "T.B"

Sr. No	Maximum Marks=9	Pre-Test %	Post-Test%
1	1	11	3
2	2	37	13
3	3	42	20
4	4	7	16
5	5	2	10
6	6	1	12
7	7	0	11
8	8	0	7
9	9	0	8
$\bar{x}$	Mean ➡	2.55	4.80

Table-5 shows marks obtained for the topic of T.B. In the pre test 11% respondents got 1 mark and in the post test 3% respondents got 1 mark. In the pre test none of the respondents got 7 or 8 or 9 marks whereas in the post test 11%, 7 %, and 8% got 7, 8, and 9 marks respectively.

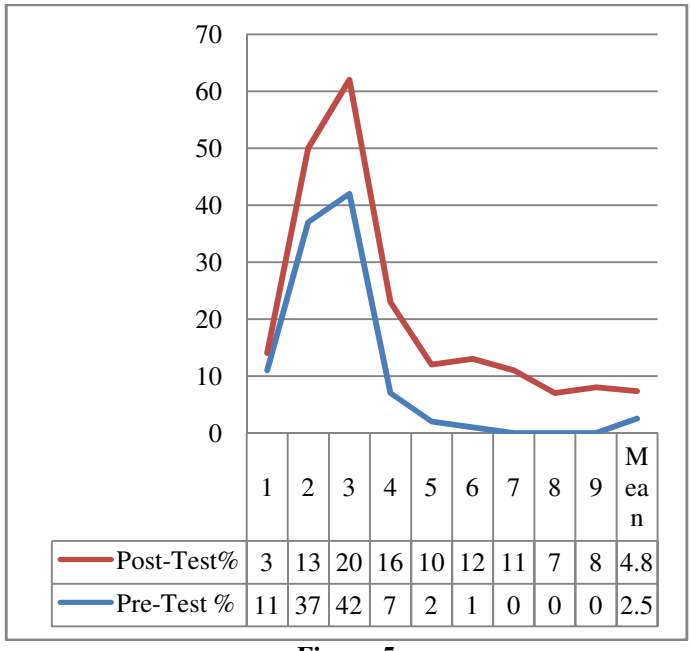

Figure-5
Marks obtained for "T.B."

Figure-5 represents a graph for comparison between pre-test and post-test marks obtained by respondents for the study on TB.

Table-6
Marks for the Whole Test

Sr. No	Maximum Marks=35	Pre-Test %	Post-Test%
1	1	1	0
2	15	0	0
3	16	0	0
4	17	1	0
5	18	2	2
6	19	3	2
7	20	13	1
8	21	5	1
9	22	21	3
10	23	13	6
11	24	19	8
12	25	11	10
13	26	8	15
14	27	3	9
15	28	10	15
16	29	0	10
17	30	0	5
18	31	0	9
19	32	0	4
$\bar{x}$	Mean	22.70	26.61

Table-6 shows marks obtained by respondents for the whole test. The range of marks in pre test is between 14 to 28 marks whereas in post test the range is from 18 to 31. In the pre test 21% respondents obtained 22 marks. In the post test 15% respondents got 26 and 28 marks respectively. The difference in pre-test and post-test mean shows that there is an increase in the marks obtained in the post-test leading to the fact that exposure to visuals increases knowledge of respondents.

Table-7
Difference in the (Means)

Sr. No	Topic with Maximum Marks	Pre-Test	Post-Test
1	Pollution= 10	5.98	7.19
2	Safety=5	4.53	4.74
3	Habits=5	4.82	4.85
4	Value=6	4.85	5.05
5	T.B=9	2.55	4.80
6	Total	22.70	26.61

Table-7 shows significant difference in pre-test and post-test mean shows that there is an increase in the marks obtained in the post-test leading to the fact that exposure to visuals increases knowledge of respondents.

Statistical Test: Observations of the tables 1 to 7clearly reveal that students have learnt, gained knowledge about pollution, habits, value-education, safety and T.B. In order to prove validity of this observation; significance of difference in the means of pre-test and post-test was calculated with 't' test. Output of 't' test results are: Mean of 1st set: 22.57 (pre-test), Mean of 2^{nd} set 26.61 (post-test), Standard deviation-1st set: 3.0822, Standard deviation-2^{nd} set: 3.1811, 't' test value: - 9.121

This is significant at 1% level. This proves that difference in the scores of pre-test and post-test is significant. Therefore, it can be concluded that prepared visual aids were effective in increasing knowledge level of students

Conclusion

A study was undertaken to find out effectiveness of visual aids in teaching students. The visual aids were prepared in a systematic way under the guidance of qualified teachers. Topics of vital importance were selected and appropriate visuals were chosen. Language was clear, brief and simple. Thus common principles of brevity, simplicity, attractiveness and suitable language were used to make the visual aids that were attractive and easy to understand. All the aids were explained to students to ensure that the content was understood. Then the visual aids were displayed in the classroom. Students were instructed to study on their own.

It is clear from the results that there was an increase in the knowledge level of the municipal school children after being exposed to the specially prepared visual aids on selected topics. These findings are very significant and employing this method can be useful in the following ways: i. To give additional inputs to students in the age group of 12 to 15 years. ii. In remote places and in schools where there is shortage of teachers; visual aids can be prepared and presented to students. iii. To impart knowledge effectively at low cost. iv. To reduce the burden of teachers who are overloaded.

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