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Effectiveness of Computer Aided Teaching Programme (Animated Film) in Gujarati at Primary Level

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Abstract:
The main purpose of the study was to assess the effectiveness of multimedia based computer aided teaching programme (animated movies) and the traditional method of teaching for teaching to the students studying in urban and rural schools. From the six primary schools 320 students of standard - IV were selected for implementation of the main experiment and the re-test. The students were categorized in two groups through Stratified + Random sampling method. Both in urban schools and rural schools one group was taught through multimedia based computer aided teaching programme (animated movies) and one group was taught by a teacher through traditional method. Thus after teaching through the respective methods four unit tests were administered on the students. Then the post test was administered on the students. The opinions from the teachers and the students of the experimental group were also gathered. The same type of procedure was carried out for re experimentation. For the main experiment of the study Post test equal group only design and for the Re test experiment Single group Post test design was used. The analysis of the data was done using statistical analysis formulas like two way Analysis of Variances (ANOVA), t-test, F-test and percentage etc. So far as findings are concerned the mean scores of unit tests and post test administered on the students of standard -6 were found to be equal. But the same was found higher than the traditional group. The computer aided teaching programme was proved to be more effective. Both the variables –area and sex were found having equal effect on the achievement.

Keywords: *Computer teaching Programme (Animated movies), Effectiveness, Gujarati subject*

1. Introduction

The main purpose according to Competency oriented course in Gujarati subject is the skills like listening, speaking and reading from standard I to standard III, while in standard IV the competency of writing skills by learning listening, speaking, reading and understanding. Although competency based course has been implemented in Gujarati subject many problems have to be confronted in developing language teaching and dealing with individual student. How is it if the students of primary schools are taught with joy, as they are very small. As a response to this question the approach of using Computer aided teaching programme (animated film) was implemented.

Computer aided teaching programme is a kind of software developed with the help of computer which can be used in education. It is a teaching programme in which computer technology is used to teach the students individually at the same time it takes the place of a teacher. In educational programmes just like animated movies and carton films teaching based cartoon pictures are drawn and are given

animation effect making them looking live and moving. With the use of multimedia animated photos, animated videos, sound, written data and music etc. are arranged together on computer and computer aided teaching programme is constructed. According to Mayer Moreno (2002), Computer programs are used to create and store graphics, images that are delivered on the screen in sequences that simulate. The images can be recorded on motion, picture, film or on video tape." In this way, "One picture is equal to one thousand words" It is also true that "One animation is equal to one thousand words" On the basis of this statement a computer aided teaching programme (an animated film) was developed and its effectiveness was measured.

2. Rationale of the Study

To collect the data related with educational technology and computer aided programme different books and research literature were reviewed.

Micheal(2001) carried out the research to know the difference between Computer aided teaching and traditional method of teaching. Jefar(2003) and Sauthong(2003) studied the effectiveness of CAI programme of animation, sound, writing and the traditional teaching method. Barnet(2006) studied the effectiveness of computer aided teaching to the students of K. G. Chung(2008) studied the effectiveness of computer assisted animation teaching with text, sound and explanation for presentation of information. Edan and others(2011) studied the effectiveness of web based Brainpop Animated Movies on the result and teaching to the students of standard 4 and 5. Soyiko and others(2011) studied the effectiveness of Animation Programme and Paper based Instruction in teaching Science subject. Lingzong(2012) used animation film production software design for enabling the students to control character animation and to express their feelings thereby increasing their interest and developing communication skills. Sushmujoli(2013) compared the effectiveness of animation programme and traditional teaching method. No research of using animation film programme for teaching Gujarati subject had been carried out.

In the research carried in the past Micheal(2001) selected the sample of total seventy students in two groups formed by random sampling method. Jefar(2003) selected one hundred eight one students of standard -4, while Sauthong(2003) formed two groups of 50-50 students of secondary schools. Barnet(2006) took the sample of two schools of A School of District of Palm Beach country. Chung(2008) took 175 students studying in grade 8 of Junior high school as sample. In the present study 320 students studying in standard- 4 were selected by Stratified Random sampling method and Random Sampling method.

In the past studies Micheal(2001) used pre test and post test design. Alkhalifa(2003) also applied pre test and post test design. Jefar(2003) and Sauthong(2003) used post test design only. Barnet(2006) used Pre test design only, while Edan and others(2010) used pre test and post test experimental design. Soyika and others(2011) used pre test and post test design , whereas in the present research only Post test Experimental design was used.

So far as the statistical methods are concerned Micheal(2001) used ANOVA, 2×3 Factorial Variance analysis and t –test. Alkhalifa(2003) used ANOVA method. Sauthong(2003) and Tabassam(2004) used t-test, ANOVA, Chi square test. Chung(2008), Edan and others(2010), Soyida, Riska and Miksar(2011) used Co Variance and t-test. Lingjhong(2012) used Co Variance and t-test, while in the present test t-test, F-test, percentage, 2×2 factorial Variance analysis ANOVA method.

In the past researches the tools like opinionnaire, achievement test, Conception test, intelligence scale, Likert scale, attitude scale, Questionnaire, knowledge test, divisional test, register, result sheet, reading software, interview schedule, Manvit- U test, film production software, Report card,

intelligence test, concept map test, paper based instruction and computer programmes were used by the researchers. In the present study animation film programme was used by the researcher.

The findings which were found the researched of the past showed that Alkhalifa(2003)'s computer based programme had the positive effect. In the researchers conducted by Jefar(2003) and Sauthong(2003) and Tabassam(2004) the computer programmes proved to be effective in terms of achievement and attitude. Edan and others(2010) and Lingjhong(2012) found that animated movies programmes were found effective for effective learning classroom teaching. According to Soyika and others(2011) and Sushmujoli(2012)'s findings animation programme was found more effective than paper based instruction.

3. Objectives of the Study

1. To compare the means of achievement scores in the unit tests – 1, 2, 3 and 4 achieved by the students of the experimental groups in the six schools of urban and rural area.
2. To compare the means of achievement scores in the unit tests – 1, 2, 3 and 4 achieved by the students of the experimental group and the controlled group of school no. 1 in the urban area.
3. To compare the means of achievement scores in the unit tests – 1, 2, 3 and 4 achieved by the students of the experimental group and the controlled group of school no. 1 in the rural area.
4. To compare the means of achievement scores of the students of the experimental group of the six schools in the urban and rural area in the post test.
5. To compare the post test means of achievement scores of the students of the experimental group and the controlled group of school No.-1 in the urban area.
6. To compare the post test means of achievement scores of the students of the experimental group and the controlled group of school No.-1 in the rural area.
7. To study the effect of teaching method, sex and their interactions on the students' scores in the post test.
8. To study the effect of teaching method, area and their interactions on the students' scores in the post test.
9. To study the effect of area, sex and their interactions on the students' scores in the post test.
10. To collect and interpret the opinions from the students of and the teachers of the experimental group about computer aided educational programme.

4. Hypotheses of the Study

Ho_1: There will be no significant difference between the means of achievement scores in the unit tests- 1, 2, 3 and 4 obtained by the students of the experimental group of the six schools of in urban and rural area.

Ho_2: There will be no significant difference between the means of achievement scores in the unit tests- 1, 2, 3 and 4 obtained by the students of the experimental group and the controlled group of school No. 1 in urban area.

Ho_3: There will be no significant difference between the means of achievement scores in the unit tests- 1, 2, 3 and 4 obtained by the students of the experimental group and the controlled group of school No. 1 in rural area.

Ho_4: There will be no significant difference between the means of achievement scores in the post test obtained by the students of the experimental group of the six schools in urban and rural area.

Ho_5: There will be no significant difference in the means of achievement scores in the post test obtained by the students of the experimental group and the controlled group of school No. 1 in urban area.

Ho_6: There will be no significant difference in the means of achievement scores in the post test obtained by the students of the experimental group and the controlled group of school No. 1 in rural area.

Ho_7: On assessing after controlling the effect of the post test scores-

7.1 The variable of teaching method will not have any significant effect on the post test scores.

7.2 The variable of sex will not have any significant effect on the post test scores.

7.3 The interaction between teaching method and sex will not have any significant effect on the post test scores.

Ho_8: On assessing after controlling the effect of the post test scores-

8.1 The variable of area will not have any significant effect on the post test scores.

8.2 The interaction between teaching method and area will not have any significant effect on the post test scores.

Ho_9: The interaction between area and sex will not have any significant effect on the post test scores.

5. Population and Sample Selection Procedure

In the present research the investigator defined the population as "The students studying Gujarati subject in Standard- 4 of Gujarati medium primary schools of Navsaari district."

6. Sample Selection

In the present research the investigator selected the students studying in standard- 4 from rural and urban area for studying the effectiveness of teaching through Computer multimedia based animated film. From 6 schools of rural and urban area of Navsaari district, 320 students were selected through Purposive sampling method. The details about the respondents included in the sample and the schools have been shown in table 1.

Table: 1 Details of the Respondents included in the Sample for the Main Experiment

No.	Name of the School	Group	Teaching Method	Sex		Total Respondents	Level
				Boys	Girls		
1	Shri D. D. High school, Navsaari (Urban)	Experimental	Computer aided teaching programme	20	20	40	High from 59% to 73%
		Controlled	Teaching through Traditional teaching method	20	20	40	
			Total	40	40	80	Medium 45% to 59%
2	Shri Shantaben Rambhai Haribhai Patel, Kharel High school(Rural)	Experimental	Teaching through Traditional teaching method	20	20	40	Low from 31% to 45%
		Controlled	Teaching through Traditional teaching method	20	20	40	
			Total	**40**	**40**	**80**	

7. Research Design

In the present research 'Only Post test Equal Group Design' was used from different experimental designs. For the re experiment 'Single Group Only Post Test Design' was used. In the present study the converted form of the research design was as shown in table 2.

Table: 2 Form of Research Design

Only Post test Equal Groups Design			
Group	**Pre test**	**Independent Variable**	**Post test**
Experimental group(ER)	-	X_1	T_2E
Controlled group(CR)	-	X_2	T_2C

ER= Experimental group taught through Computer Aided Teaching Programme.
CR= Controlled group taught through Lecture method.
X_1= Teaching through Computer Assisted Teaching Programme.
X_2= Teaching through Lecture method.
T2= Teacher made Post test.
R= Randomization
T_2E = Scores on the Post test of Computer Assisted Teaching programme.
T_2C = Scores on the Post test of Lecture method.

8. Research Tools

For the present research the investigator constructed two types of tools which are as under.

1. Tools for Experimentation
2. Tools for studying the effectiveness of the Experimental work

8.1 Tools for Experimentation

For experimentation work of the study a computer assisted teaching programme – an animation film for presentation of the four units of Gujarati subject textbook of standard- 4 published by Gujarat State School Textbook Board was constructed by the researcher.

8.2 Tools for studying the effectiveness of the Experimental work

(i) Unit tests (for four units)
(ii) Post test
(iii) Opinionaire
(iv) Questionnaire ⟶ Yes – No type for students

9. Scheme of Statistical Analysis

For analysis and interpretation of the categorized data different statistical formulas like mean, 't' test, 'f' test, 2×2 factorial Variance analysis (ANOVA), 'Chi' square, percentage, etc. were worked out. For analyzing the teachers' responses diary qualitative analysis was applied. For these work Microsoft Excel, and SPSS software was used by the investigator.

10. Data Analysis

For comparison of the obtained achievement scores on the unit tests administered on the experimental group and the controlled group of the selected schools from urban and rural areas the scores were used for 't' test, 'F' test 2×2 ANOVA. The details are as shown in table 3, 4, 5 and 6.

11. t- test

Table: 3

Schools	Unit Test	Group	N	Mean	Std. Deviation	t-Value
Urban Area(Main Experimental Group)	**Unit test-1**	**Experimental Group**	40	19.63	4.34	2.83
		Controlled Group	40	16.55	5.32	
	Unit test-2	**Experimental Group**	40	18.88	4.53	3.03
		Controlled Group	40	15.43	5.06	
	Unit test-3	**Experimental Group**	40	18.28	4.36	3.33
		Controlled Group	40	14.28	4.77	
	Unit test-4	**Experimental Group**	40	19.05	4.42	3.33
		Controlled Group	40	15.78	5.34	
Rural Area(Main Experimental Group)	**Unit test-1**	**Experimental Group**	40	18.8	4.83	2.91
		Controlled Group	40	15.25	6.02	
	Unit test-2	**Experimental Group**	40	17.78	4.41	2.68
		Controlled Group	40	15.03	4.78	
	Unit test-3	**Experimental Group**	40	16.98	5.08	3.38
		Controlled Group	40	13.25	4.79	
	Unit test-4	**Experimental Group**	40	18.55	4.51	3.26
		Controlled Group	40	14.75	5.84	

Significant at 0.01 level.

Sr.	School Area	Group	No. of students	Mean	Standard Deviation	Standard Error SD	t-Value	Significance of t-value
1	School No. 1 of Urban area Post test(written form)	Experimental Group	40	34.53	7.99			Significant at 0.01 Level
		Controlled Group	40	26.25	12.38	2.33	3.55	
2	School No. 1 of Rural area Post test(written form)	Experimental Group	40	33.25	10.30			Significant at 0.01 Level
		Controlled Group	40	24.88	7.86	2.05	4.09	

Significant at 0.01 level.

Significant difference is seen between the achievement scores the Controlled group and the experimental group in Urban area and rural area.

12. F-Test

Table: 4 Variance Analysis on the Post test of the Experimental Group of the Six Schools

Post Test	Emergence of Variance	Sum of Squares(SS)	Degree of Freedom(df)	Mean of Squares(ms)	F-Value
Post Test(Written form)	**Between Groups**	150.8	5	30.16	0.35
	Within Groups	20086.8	234	85.84	

13. ANOVA (2 × 2 Analysis of Variance)

Table: 5 Variance Analysis of Interaction between Teaching Method, and Area

Emergence of Variance	Degree of Freedom(df)	Sum of Squares(SS)	Mean of Squares(ms)	F-Value obtained through calculation	Significance Level of F-Value
Between Groups	1	1411372	1411372	-	A
	1	277.23	277.23	28.79	Significant at 0.01 Level
Teaching Method	1	70.23	70.23	0.73	
Area	1	0.10	0.10	0.01	Not Significant at 0.05 Level
Teaching Method× Area	1				
	1				Not Significant at 0.05 Level
Within Groups	156	15021.35	96.29	-	
Total	159				

Table: 6 Variance Analysis of Interaction between Teaching Method, and Sex

Between Groups	1	141372.10	141372.10	-		
Teaching Method	1	2772.23	2772.23	28.67	$F_{0.05} = 3.90$ $F_{0.01} = 6.81$	Significant at 0.01 Level
Sex	1	1.600	1.600	0.017		
Teaching Method × Sex	1	5.630	5.63	0..06		Not Significant at 0.05 Level
Within Groups	156	15084.45	96.7	-		
Total	160					

The findings based on the above tables are as under.

14. Finding of the Study

1. There was no significant difference between the means of achievement scores in the unit tests- 1, 2, 3 and 4 obtained by the students of the experimental group of the six schools of in urban and rural area. Therefore it can be said that teaching through computer assisted programme was more effective.
2. There was a significant difference between the means of achievement scores in the unit tests- 1, 2, 3 and 4 obtained by the students of the experimental group and the controlled group of school No. 1 in urban area. Therefore it can be said that teaching through computer assisted programme was more effective than teaching through traditional method.
3. There was a significant difference between the means of achievement scores in the unit tests- 1, 2, 3 and 4 obtained by the students of the experimental group and the controlled group of school No. 1 in rural area. Therefore it can be said that teaching through computer assisted programme was more effective than teaching through traditional method.
4. There was no significant difference between the means of achievement scores in the post test obtained by the students of the experimental group of the six schools in urban and rural area. Therefore it can be said that teaching through computer assisted programme was more effective.
5. There was a significant difference in the means of achievement scores in the post test obtained by the students of the experimental group and the controlled group of school No. 1 in urban area. Thus, teaching through computer assisted programme was more effective than teaching through traditional method.
6. There was a significant difference in the means of achievement scores in the post test obtained by the students of the experimental group and the controlled group of school No. 1 in rural area. Thus, teaching through computer assisted programme was more effective than teaching through traditional method.
7. The variable of teaching method had significant effect on the post test scores. It means that the students could learn better through computer assisted teacher than that of traditional teaching method.
8. The variable of sex had no any significant effect on the post test scores. So it can be said that the teaching method had the same effect on both the boys and the girls.
9. The interaction between teaching method and sex had no any significant effect on the post test scores. It means that both boys and girls could learn better through computer assisted teaching.
10. The variable of area did not have any significant effect on the post test scores. It means that both the rural students and the urban students could learn equally.

11. The interaction between teaching method and area did not have any significant effect on the post test scores. So it can be said that the effect of teaching through computer assisted teaching was equal for both urban and rural students.
12. The interaction between the variable of area and sex did not have any significant effect on the post test scores. So it can be said that the effect of teaching through computer assisted teaching was equal in terms of both the variables area and sex.

15. Educational Implications

- Teaching of Gujarati subject can be made more effective if the students are taught Gujarati through with the help of animation film.
- For improvement of the students' academic achievement in Gujarati subject in rural area necessary changes should be made and thereby teaching should be made effective.
- For competency based education animated film type computer assisted teaching programme can be more effective because this type of teaching also provides entertainment to the students.
- At primary level teaching and learning can be made interesting and entertaining if Gujarati and other possible subjects are taught through audio-visual and computer assisted programmes.
- If certain abstract concepts and ideas are taught with the help of computer in the classrooms the students can learn and understand them very easily.
- The experts of different subjects should work together to prepare effective and useful literature which can be used for preparing computer assisted animated films or teaching programme. Thus the students can be benefited for learning.

16. Conclusion

Nowadays computer technology is used in every field. If this computer technology is used in education in different ways teaching learning can be made interesting, fruitful entertaining and effective. In the present study a computer assisted teaching programme for Gujarati subject was constructed and its effectiveness was established. It opens new horizons in the field of education.

In short, it is hoped that the present research will be useful for development of Gujarati language and also for developing students' competency.

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