

A STUDY TO EXPLORE THE EFFECTIVENESS OF COMPUTER ASSISTED LANGUAGE LEARNING IN TEACHING ENGLISH TO STUDENTS WITH HEARING IMPAIRMENT AT SECONDARY SCHOOL LEVEL IN PAKISTAN

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ABSTRACT:

This study was designed to explore the effect of computer assisted language learning method vs. traditional teaching method in teaching English to students with hearing impairment at secondary school level. It was experimental research based on pre-test and post-test and conducted in Govt. High School for Boys Hearing Impaired Students Gulberg Lahore by randomly selected 40 hearing impaired students. The aim of the present research was to investigate, to what extent computer assisted language learning method enhance hearing impaired students' ability to produce grammatically correct sentences of the cognitive domain. After conducting experiment for 9 weeks, a post-test was conducted and data was analyze by applying pair-sample t-test, chi-square, and independent sample with the help of SPSS software. It was found that the hearing impaired students who were taught via CALL method of teaching had more ability to produce grammatically correct sentences of all learning level of the cognitive domain than the students who were taught via traditional method of teaching. Furthermore, it was also found that the students who were the experiment group were able to solve all level of questions based on grammar of cognitive domain while students of control group performed up to application level of cognitive domain.

Key Words: Computer Assisted Language Learning Method, Traditional Teaching Method, Hearing Impairment, Learning English

Introduction

In the global economy ICT is becoming most important for the growth and development sectors; the focus on ICT is eminent. The feeling of redundant is evident if we are not accepting the usefulness of Information Communication Technology. The over whelming use of technology has succeeded to replace all other sectors such as education, business and economic issues of the world. Computer has established its importance in the world of technology and communication; at the same time it has also won the top most position in ranks of education and teaching. As the computers are becoming smaller and cheaper the usability is being increased as the time passes. Because of their effectiveness they are being used extensively in all parameters of life.

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Variety of reactions is being felt through the learning of computers especially while teaching and learning processes are being performed by the computer. Prospect of using computers is not without appeal but one has to respond and accept the challenge of its existence. At times we are fearful that the speed of intrusion of technology in our society is so rapid that it may overcome the systems. On the whole computer technology should be used just as a tool and nothing more. (Dwyer, 2010). Computer can help us greatly for the hearing impaired education as it is still underexplored in this sector of education. But presently the teachers in the teaching of impaired and special children take more help than the traditional teachers (Marlatt, 2012), but still they are under explored in this field (Wood, 2013), however these program largely depend upon the use of technology internationally in the classroom behaviorist techniques . (Teller & Harney, 2015)

Studies which were conducted in secondary deaf education settings showed that teachers had different attitudes for teaching the special impaired students then the mainstream education system, some were fixed to focused group teaching approaches those had conceptual change, (Sapere, & Sarchet, 2010). Brown and Patsch (2010) posit that deaf education teachers working by using computer while teaching English reveal a strong relationship between computers assisted language learning and students' academic achievement. It is the acronym for CALL and is related language teaching and learning through technology. Significant use of CALL began in the 1960s. Since then, the development of (CALL) software has followed the changes in learning and teaching pedagogies to teach students. As teaching methods changed to audio - lingual and communicative approaches, CALL software are simulating and more interactive programs. Numerous researches have shown that learning strategies employed in Computer Assisted Language Learning (CALL) can affect the quality of learning language of the hearing impairment students. However, there is still lacking in methods and a clear theoretical foundation.

One pedagogy showed that students with hearing impairment taught foreign languages by computer software's programs gave high achievement scores than those taught using local developed programs (Asoodeh, 2015). Moreover, it provides teachers with individualized instructions which allowing students to work at their own pace. For presentation computer is being used for teaching and learning as an aid, normally for reinforcement and assessment such elements are induced into the system for substantial output. (kobayashi, 2016). The network-based technology and computer-assisted language learning contributes in learning, motivating, and enhancing achievement of students, greater interaction, individualization, and independence from a single source of information, and global knowledge generally to all students especially hearing impaired (deaf) learners. (kobayashi, 2016). The four language skills (listening, speaking, reading, and writing) have been identified to provide students with English learning as a whole. It is observed. This view was supported by (Arnhein, 2014). In that Arnhein (2014) stressed that visual learning uniquely enhances hearing impaired students' cognitive understanding of abstract concepts. So, the effective teaches use both while teaching by using computer-assisted language learning. Moreover his argument was that a student's perception of ideas such as causality can be enriched by a visual example. Thus visuals can lead to development of perceptual thinking. For this stance, this idea provoke the researcher to explore

the effectiveness of computer assisted language learning in teaching English to students with hearing impairment at secondary level (Iheanacho, 2015).

Statement of the Problem

A Study to Explore the Effectiveness of Computer Assisted Language Learning in Teaching English to Students with Hearing Impairment at Secondary School level

Research objectives

Keeping in view the research topic, the following research objectives were formulated:

- To investigate, to what extent does CALL (Computer Assisted Language Learning) enhances HI students' ability to produce grammatically correct sentences

Research Hypothesis

H₀1: The mean achievement score of the experimental and control group not significantly differ on pre-test in learning English grammar

H₀2: The mean achievement score of the control group and experimental group not significantly differ on post-test to compare the ability of learning English grammar

H₀3: The mean achievement score of the experimental and control group's students not significantly differ on learning level wise in pre-test

H₀4: The mean achievement score of the experimental and control group's students not significantly differ on learning level wise in post-test

Research Methodology

Research design

It was experimental research and pre-test and post-test design in nature.

Population

Population comprised all (34) students with hearing impairment who were enrolled in 2018-2020 in Govt. High School for Boys Hearing Impaired Students Gulberg Lahore.

Sample

By applying simple random sampling technique, 20 students were selected from 34 students of 9th class of Govt. High School for Boys Hearing Impaired Students Gulberg.

Research Instruments

For this study, the researcher used self-developed pre-test and post-test from "English Grammar" text book of 9th class. The researcher followed the Bloom Taxonomy while developing pre-test and post-test. The researcher developed 10 items of knowledge level of the cognitive domain, 10 items of comprehension, 5 items of application, 2 items of analysis, 1 item of synthesis, and 1 item of evaluation level of cognitive domain from English Grammar text book of 9th class.

Pilot testing of the instruments

Research instruments (pre-test and post-test) was validated by discussing with the English teachers who were teaching in govt. high schools and research committee of University of the Punjab. According to the direction of the research committee some changes were made in the tools before its final implementation. To find content validity of the research tool, test-retest method was applied in. Cronbach's reliability of the tools was 0.87 which was calculated through Statistical package for Social Sciences (SPSS). The computed Cronbach alpha reliability shows that items in the tool were highly correlated and reliable.

Procedure of the Study

The research was conducted in Govt. High School for Boys Hearing Impaired Students Gulberg Lahore. For seeking permission to conduct experiment in this school, the researcher personally visited principal office. After permission, researcher conducted pre-test to find out prior knowledge and characteristics of the students. After that, 20 students for experimental and 20 students for control group were selected by using simple random sampling technique. The researcher continued experiment for 9 weeks. Control group was taught via traditional method of teaching and experimental group was taught via CALL method of teaching by the researcher himself. After completion of 9 weeks treatment, the researcher conducted post-test to find the effect of CALL method to enhance ability of hearing impaired students.

Data Collection and Analysis

The collected data by conducting pre-test and post-test was coded and entered into computer for analysis. Inferential statistics was applied by using SPSS software to analyse the data.

Results and Findings

Difference in the mean achievement score of the experimental and control group in pre-test

The following table (1a) shows that the computed t-value is .383 which is less than the table value (2.037) and the computed sig value is .703 which is greater than the p-value=0.05. It shows that no significant difference exist in the mean achievement score of the experimental and control group in pre-test in learning English grammar Therefore, accepted the null hypotheses and concluded that all students with hearing impairment had the prior knowledge about English grammar. Table No.1b shows that at which learning level did the all students perform in pre-test. Table 1a: *Independent sample t-test for the analysis to find out the difference in the mean achievement score of the experimental and control group in pre-test*

Groups	No.	Mean	Std.D	t	df	Sig
Control	15	12.29	2.452	.383	31	.703
Experimental	26	12.52	2.344			

Chi-square analysis to find out learning level wise students' perform in pre-test

The table No.1b shows comparison of learning level wise performance of all students (experimental and control groups) in pre-test. The computed Chi-square value is 0.329 which less than the table value=5.991 at 2 df, computed sig value is .8484 which is greater than p-value=0.05. It shows no significant difference exist in the mean achievement score between control and experimental groups' performance in the pre-test, accepted the null hypothesis.

In pre-test, 77.4%(12) students of the control and 78.8% (13) of the experimental group's students manage to solve knowledge level items from test, 16.1%(2) students of the control and 12.1% (2) of the experimental group's students manage to solve comprehension level items while 16.1%(1) students of the control and 9.1% (1) of the experimental group's students manage to solve application level items from test. It is concluded that students had the same level of prior knowledge and background in English grammar learning.

Table 1b: *Chi-square analysis to find out at which level students perform in pre-test*

Groups	Level of Performance
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	Knowledge	Comprehension	Application	Analysis	Synthesis	Evaluation
Control Group	77.4%(12)	16.1%(2)	6.5%(1)	0.0%(0)	0.0%(0)	0.0%(0)
Experimental Group	78.8%(13)	12.1%(2)	9.1%(1)	0.0%(0)	0.0%(0)	0.0%(0)

Chi-square=0.329, df=2, sig=.848

Difference in the mean achievement score of the experimental and control group in post-test

The following table (2a) shows that the computed t-value is -20.343 which is less than the table value (2.201) and the computed sig value is .000 which is less than the p-value=0.05. It shows that significant difference exist in the mean achievement score of the experimental and control group in post-test in English grammar Therefore, rejected the null hypotheses and concluded that students of control group and experimental group performed differently in post-test. Table No.2b shows that at which learning level did the students of control group and experimental group performed differently in post-test.

Table 2a: *Independent sample t-test for the analysis to find out the difference in the mean achievement score of the experimental and control group in post-test*

Groups	No.	Mean	Std.D	t	df	Sig
Control	10	18.80	3.443	-20.343	18	.000
Experimental	10	43.50	2.299			

Chi-square analysis to find out learning level wise students' perform in post-test

The table No.2b shows comparison of level wise performance of the students of experimental and control groups in post-test. The computed Chi-square value is 40.000 which greater than the table value=11.070 at 5 df, computed sig value is .000 which is less than p-value=0.05. It shows significant difference exist in the mean achievement score between control and experimental groups' performance in the post-test, rejected the null hypothesis.

In post-test, 90% (9) students of control group while 100% (10) students of experimental group manage to solve knowledge level items. 80% (8) students of control group while 100% (10) students of experimental group manage to solve comprehension level items. 25% (3) students of control group while 100% (10) students of experimental group manage to solve application level items. 0.0% (0) students of control group while 80% (8) students of experimental group manage to solve analysis level items.

0.0% (0) students of control group while 65% (7) students of experimental group manage to solve synthesis level items and 0.0% (0) students of control group while 50% (5) students of experimental group manage to solve evaluation level items in the paper pencil post-test.

Table 2b: *Chi-square analysis to find out at which level students perform in post-test*

Groups	Level of Performance
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	Knowledge	Comprehen sion	Application	Analysis	Synthesis	Evaluation
Control Group	90.0%(9)	50.0%(05)	15.0%(3)	1.0%(0)	1.0%(0)	1.0%(0)
Experimental Group	100%(10)	100%(10)	100%(10)	80.0%(8)	65.0%(7)	50.0%(05)

Chi-square=40.000, df=5, sig=000

Comparison of performance of control group and experimental group in pre-test and post test

The table No.3 shows comparison of level wise performance of the students of experimental and control groups in pre-test and post-test. In the pre-test 77.0% (12) of the control group and 78.8% (13) of the experimental group manage to solve knowledge level items in test while in the post post-test, 90% (9) students of control group while 100% (10) students of experimental group manage to solve knowledge level items.

In the pre-test 16.1% (2) of the control group and 12.1% (2) of the experimental group manage to solve comprehension level items in test while in the post post-test, 50% (5) students of control group while 100% (10) students of experimental group manage to solve comprehension level items.

In the pre-test only 6.5% (1) of the control group and only 9.1% (1) of the experimental group manage to solve application level items in test while in the post post-test, 25% (3) students of control group while 100% (10) students of experimental group manage to solve application level items.

In the pre-test 0.0% (0) of the control group and 0.0% (0) of the experimental group manage to solve analysis level items in test while in the post post-test, 0.0% (0) students of control group while 80% (8) students of experimental group manage to solve analysis level items.

In the pre-test 0.0% (0) of the control group and 0.0% (0) of the experimental group manage to solve synthesis level items in test while in the post post-test, 0.0% (0) students of control group while 65% (7) students of experimental group manage to solve synthesis level items and;

In the pre-test 0.0% (0) of the control group and 0.0% (0) of the experimental group manage to solve evaluation level items in test while in the post post-test, 0.0% (0) students of control group while 50% (5) students of experimental group manage to solve evaluation level items in the paper pencil post-test.

Table 3: *Comparison of performance of control group and experimental group in pre-test and post test*

Groups	Tests	Level of Performance					
	Pre-test & post-test	Knowledge	Comprehen sion	Application	Analysis	Synthesis	Evaluation

Control Group	Pre-test	77.4%(12)	16.1%(2)	6.5%(1)	0.0%(0)	0.0%(0)	0.0%(0)
	Post-test	90.0%(9)	50.0%(5)	15.0%(3)	1.0%(0)	1.0%(0)	1.0%(0)
Experimental Group	Pre-test	78.8%(13)	12.1%(2)	9.1%(1)	0.0%(0)	0.0%(0)	0.0%(0)
	Post-test	100%(10)	100%(10)	100%(10)	80.0%(8)	65.0%(7)	50.0%(5)

Pearson Chi-Square=.850, sig=.356 which is not significant at 0.05 level of significance

Pearson Chi-Square=.70.000, sig=0.00 which is significant at 0.05 level of significance for post-test

Comparison of gain in mean of achievement score of the experimental and control group

Table No.4 shows that the mean of control group in pre-test score is 12.29 and mean of experimental group in pre-test score is 12.52 which show no difference. In post-test the mean score of control group is 18.80 and in post-test the mean score of experimental group is 43.50 which indicate that experimental group's students performed higher as compare to control group in the post test. Moreover, the gain of the control group in post-test is 6.51 at 0.23 mean difference and gain of the experimental group is 31.44 at 24.70 mean difference which shows experimental learn more than the control group. It is concluded that computer assisted language learning method has its more effectiveness than the traditional method of teaching for teach English grammar to hearing impairment students at secondary school level.

Table 4: Comparison of gain in mean of achievement score of the experimental and control group

Groups	\bar{x} Pre-test	\bar{x} Post-test	\bar{x} Gain
Control group (N=20)	12.29 (df=1.994)	18.80 (df=2.024)	6.51
Experimental group (N=20)	12.52 (df=1.994)	43.50 (df=2.024)	31.44
Mean Difference	0.23	24.70	24.93

Independent Sample t-test is significant at 0.05

Conclusion and Discussion

The aim of the present research study was to explore the effectiveness of Computer Assisted Language Learning in teaching English to students with hearing impairment at secondary school level. So, conclusion drawn from the findings which arise from the analysis, it is concluded that that all students have almost same power of retention in pre-test regarding learning English grammar. It means all students who participated in research had almost same power of retention in the knowledge, comprehension and application level because all students performed good in knowledge level learning, perform average in comprehension, and perform poor in application level of the cognitive domain in pre-test. It is noted that as level of learning domain in being increase, the performance of students on pre-test in being decreased as "very good" to "average" and "poor" because in the domain of knowledge, students perform "very good" while as level increase as comprehension, and application, they perform "Average" to "poor" in these domains. But all students achieved "Zero" score in the domain of analysis, synthesis, and evaluation on pre-test which shows that they had little ability to solve these level of question of the English grammar. But after conducting experiment and treated them 9 weeks via computer assisted

language learning teaching method, it was noted that in the post-test, the students who were taught via CALL method of teaching get higher score as compare to control group. So, it is proved that the students who were taught via CALL method of teaching had high level of retention power in English grammar. Moreover, in the post post-test, majority of the students of control group while all students of experimental group manage to solve all items of knowledge level in the test and performed excellent. Minority of the students of control group and all students of experimental group manage to solve all items of comprehension level of cognitive domain and control group performed “very good” while students of experimental group performed excellent in comprehension domain of learning and few students of control group and all students of experimental group manage to solve all items of application level and control group performed “Average” while students of experimental group performed excellent in application domain of learning. No students of control group and majority students of the experimental group manage to solve analysis, synthesis, and evaluation level of items and performed “very good” and “good” in these domain.

It reveals that the students who were taught via CALL method of teaching had high level of retention and are able to solve question of the all levels of cognitive learning domain from knowledge to evaluation level of the English grammar while the students who taught via traditional method of teaching had the ability to solve question of knowledge, comprehension, and hardly application level of the cognitive domain, and decided that computer assisted language method of teaching play more potential role in the learning of English grammar as compare to other method of teaching for hearing impairment students.

On the other hand, it could be said that CALL method of teaching is more effect than the traditional or any other method of teaching because traditional method of teaching develop the ability in the students who just able to solve the question which are knowledge, comprehension and application levels while CALL method of teaching develop such ability in the student which enable them to solve questions not only knowledge, comprehension and application levels but also solve analysis, synthesis, and evaluation levels. Therefore, it is recommended that CALL method of teaching is more effective as compare to traditional or any other method of teaching so teacher should adopt this technique to teach English grammar to the hearing impairment students at secondary school level. It is also recommended that generally the teachers who teach English at any level especially while teaching English grammar, should adopt CALL rather than the traditional method of teaching in their classroom to boosts the learning of their students. The teacher who is not familiar with the use of CALL method of teaching, it is responsibility of school administrators of education department to organize seminars and workshops to familiar with this teaching technique to boost students learning in English.

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