

## IMPACT OF CAPTIONED VIDEO INSTRUCTION ON NIGERIAN HEARING-IMPAIRED PUPILS' PERFORMANCE IN ENGLISH LANGUAGE

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### Abstract

*This study investigated impact of captioned video instruction on Nigerian hearing impaired pupils' performance in English language. The study adopted quasi-experimental pretest, post test, control group design. The experimental group was exposed to captioned video instruction while the control group was taught using the conventional teaching method for the hearing impaired. Two hypotheses were raised and field validated Primary English Performance Test (PEPT) used as data collection instrument. The study concluded that both instructional strategies were effective in giving English language instruction to hearing impaired pupils, as performance of the two groups did not indicate any significant difference and gender did not influence their performance either. Consequently, it was recommended that teachers should be trained to design and develop captioned video, and infrastructural base for their use in the schools provided by Government.*

**Keywords:** Captioned Video, Hearing Impaired, Performance, Gender Influence, English Language

### Introduction

Education is generally acknowledged as an instrument for fostering the worth and development of individual, for individual sake and for general development of the society. One of the main goals of Education in Nigeria is that every child shall have a right to equal educational opportunities, irrespective of any real or imagined disabilities, each according to his/her ability (FRN, 2004). To give concrete meaning to the idea of equalizing educational opportunities for all children, their physical, sensory, mental, psychological or emotional disabilities notwithstanding, provisions must be made for educational needs of the impaired, in terms of instructional media, methodology, learning environment, classroom management etc. Impairment is therefore not seen as sufficient impediment to attainment of academic aspiration and optional fulfillment of individuals.

Impairment is a medical term for anatomical loss of body function. As noted by Ipaye (1996), impairment is malfunction of a part of the body, resulting from an injury, disease, hazard in the environment or genetic factor. Hearing sensitivity is indicated by the quietest sound that an animal can detect called the hearing threshold. Hearing loss exists when an animal has diminished sensitivity to the sounds normally heard by its species. In humans, the term hearing impairment is usually reserved for people who have relative insensitivity to sound in the speech frequencies.

There are two types of hearing impairments, conductive hearing impairment and sensorineural hearing impairment. A third type is a combination of the two called mixed

hearing loss. Hearing impairment are categorized by their type-conductive, sensorineural or both by their severity, and by the age of onset. Furthermore, a hearing impairment may exist in one ear (unilateral) or in both ears (bilateral). A conductive hearing impairment is present when the sound is not reaching the inner ear, the cochlea. This can be due to external ear canal malformation, dysfunction of the eardrum or malfunction of the bones of the middle ear.

A sensorineural hearing loss is one resulting from dysfunction of the inner ear, the cochlea, commonly caused by damage to the hair cells in the cochlea. As noted by Lang and Meath-Lang (1995), in the language class, children with auditory perception problems may not perceive the difference between various consonant blend in English Language or be able to differentiate between the iron doorbell and the first ring of the telephone. Effective teaching of pupils who are deaf or hearing-impaired requires special skills and technologies. Keller (2005) opines that impaired learner often shows an ever increasing gap in vocabulary growth, complex sentence comprehension and construction, and in concept formation as compared to pupils with normal hearing ability.

The main problem of hearing impaired pupil is communication, as such pupil cannot effectively hear the teacher's voice. It is therefore important to understand the peculiarity of the impaired learners, to have the right instructional media selected for their teaching/learning process. Instructional media enhance learning and increase the interest of learners in teaching and learning. They also help in assimilation and retention because what is seen can be easily retained and remembered by learners.

Obat (2002) identifies supporting strategies and instructional media that hearing impaired pupils may use to manage their academic, they are lip reading, sign language, hearing equipment such as hearing aids, radio microphone and induction loops, television and computer. Pupils who are deaf or hard of hearing usually rely on lip reading, while those who are profoundly or prelinqually deaf are more likely to use sign language. Lip reading requires intense concentration and is tiring over long periods. Sign language is an independent language and it is capable as a spoken language in conveying meanings and ideas. It has its own punctuation and grammar. It can also communicate complex theories and concepts.

Many different assistive technologies are available to those who are hearing impaired. People with cochlear implants and hearing aids or neither of these can also use additional communication devices to reduce the interference of background sounds, or to mediate the problems of distance from sound and poor sound quality caused by reverberation and poor acoustic materials of walls, floor and hard furniture. Hearing aids are used by pupils who have some residual hearing. The hearing aid amplifies all sounds and does not distinguish between wanted and unwanted sounds. Background noise is equally amplified and therefore, hearing aid may be of little use in noisy situations. Radio microphone is another instructional medium for the hearing-impaired. The microphone worn by the Speaker transmits and amplifies the speech only to people wearing its receiver. More than one person can wear a receiver and the device is useful for excluding background voice. An audio induction loop is a wire attached to the walls of a room and sets up electromagnetic field within the enclosed loop. When a sound is made within that loop, the signal is received by the pupil's hearing aid and converted back to sound.

Indeed, hearing impaired pupils can learn better if appropriate assistive technologies are employed in the learning process. For instance, captioned video allows hard of hearing or deaf pupils to see what is taught in form of video, caption, gesture, lip read. The caption feature allows the designer to give viewers a deeper understanding of the video. Adding captions and sub titles makes videos more accessible to people who can't follow along with the audio – either because they speak a different language or because they are deaf or hard of hearing.

Excellence and Education Network (2011) reported that in Nigeria there are 93 schools available for disabled children nationwide. According to the report, 22 schools are for the deaf, 13 schools for autistic children, 29 schools for the physically and mentally challenged, 1 school for the delinquent and 28 schools for the blind while Ogun State has 6 primary schools for special pupils, including 3 that are specifically for the deaf and hearing impaired. Most of these schools reportedly lack human and material resources for effective implementation of their curricula, yet hearing impaired pupils need highly structured learning situations and resources because they lack the necessary field of experience and the ability to incorporate messages within their constructs. The quest for appropriate and affordable instructional resources for such learners make investigation of captioned video effectiveness imperative, particularly for the teaching of English language at the primary school level.

The official language in Nigeria is English and emphasis is placed on ability of learners at levels beyond the pre-primary to effectively communicate in the language. Furthermore, a credit pass at the Senior Secondary School Examination (SSSE) an equivalent of General Certificate in Education (GCE) is a major prerequisite for admission into tertiary institutions and no waiver is granted to any category of learners.

Effectiveness of captioned video has been variously investigated. Fakomogbon (1998) examined the coordinated team approach in developing captioned video tape instructional package for special learners. The study had deaf students in an introductory technology class as the subjects. Experts involved in the production included Educational Technologists, introductory technology and English Language teachers. The pilot study to validated the developed captioned video reported no significant difference in the pre-test and post-test scores of the subjects. Hutchinson (2005), investigated the effects of using Americans with Disabilities Act (ACA) compliant captioned instructional digital video on learning outcomes of participants drawn from Mississippi State University TCK 1273 class. The result indicated no significant effect of ADA-compliant captioned video on the students learning outcome. Anderson-Imnan, Terrazas & Uladimir (2008) investigated the effects of expanded captions versus standard captions on the comprehension of educational video materials on DVC by students who are deaf or hard of hearing and results indicated no statistically significant differences in their performances. A closely related study was reported by Atinmo & Egunjobi (2010). Comparative effect of captioned video and face-to-face instruction in library instruction was examined sampling hearing impaired students drawn from 4 conventional secondary schools in Oyo State offering integration education to hearing impaired students. The result reported no significant difference in the performance of the two groups.

## Hypotheses

- HO<sub>1</sub>: There is no significant difference in the performance of hearing impaired pupils exposed to captioned video instruction and those taught using the conventional teaching method
- HO<sub>2</sub>: There is no significant interactive influence of gender on performance of the hearing impaired pupils

## Methodology

This study adopted the quasi-experimental, post-test control group design. The study employed two treatment groups comprising captioned video instruction group (experimental) and conventional teaching method group (control). Two (2) public primary schools for the deaf, located in Ijebu-Ode and Sagamu towns in Ogun State, Nigeria (a distance of 43 kilometers from each other) were purposively chosen because of the adequacy of their pupils in primary class five and the distance from each other. Simple random technique was then used to draw 20 (10 male & 10 female) pupils from each of the schools to constitute experimental and control groups. In all, the sample size was made up of 40 subjects.

The captioned video had 6 topics in English Comprehension and grammar, drawn from the past questions of 2003-2008 Common Entrance Examinations and divided into six lessons for this study. Video discs were developed using sign language, body language and lip reading, with the captions in bold typeface and written in English language. Lesson plans were also prepared on content of the captioned video for the control group. The main instrument used as data collecting tool was Primary English Performance Test (PEPT), consisting of 20 objective items drawn from field validated Common Entrance Examination Questions produced by the State Ministry of Education. The captioned video instruction and lesson plans were face validated by experts in Educational Technology, Special Education and Educational Evaluation from Olabisi Onabanjo University, Ago-Iwoye, Ogun State and the University of Ibadan, Oyo State, Nigeria.

## Results

The pre-test and post-test performance scores of the pupils in PEPT were analyzed using descriptive Statistics and Analysis of Variance. The findings of this study indicate that participants in the captioned video group had a mean score of 18.100 while participants in the control group had a mean score of 17.125. For male participants, the mean score was 18.150 while the female participants mean score was 17.075. This shows that there was a slight difference in male and female pupils' performance in English language.

The results in Table 2 above indicate that there was no significant effect of captioned video instruction on hearing impaired students' performance in English Language ( $F_{(1,35)} = 2.063$ ;  $p > .05$ ). Also gender did not significantly influence hearing impaired students' performance in English language ( $F_{(1,35)} = 2.245$ ;  $p > .05$ ). The result also indicates that there was no significant two-way interaction effects of treatment and gender ( $F_{(1,35)} = .600$ ;  $p > .05$ ) on hearing impaired students' performance in English Language.

**Table 1:** Descriptive Statistics of the Post Treatment Scores of hearing impaired students' performance in English Language

Treatment Group	Gender	N	Mean	Std. Deviation
Captioned Video	Male	10	18.400	.9661
	Female	10	17.800	1.135
	Total	20	18.100	1.071
Control	Male	10	17.900	1.101
	Female	10	16.350	3.127
	Total	20	17.125	2.416

**Table 2:** Test of Between-Subjects Effects of Captioned Video Instruction on Hearing Impaired Students' Performance in English language

Source	Type III Sum of Squares	df	Means square	F	Sig.
Corrected Model	93.244(a)	4	23.311	16.651	.000
Intercept	153.083	1	153.083	109.344	.000
Pretest	69.925	1	69.925	49.946	.000
Group	2.888	1	2.888	2.063	.160
Gender	3.143	1	3.143	2.245	.143
Group * gender	.840	1	.840	.600	.444
Error	49.000	35	1.400		
Total	12550.950	40			
Corrected Total	142.244	39			

a R squared = .656 (Adjusted R Squared = .616)

### Summary of Findings

1. There was no significant effect of captioned video instruction on hearing impaired students' performance in English Language. The null hypothesis was therefore accepted.
2. Gender difference has no significant effect on interactive influence on hearing impaired pupils' performance in English Language. The null hypothesis was therefore accepted.

## Discussion

The result of this study on impact of captioned video instruction on hearing impaired pupils' performance in English Language revealed that although the captioned video group performed better than the control group, the difference was not statistically significant. It also reported that male and female pupils exposed to captioned video instruction did not record significant difference in their performance. Although some studies in Nigeria have confirmed efficacy and significant superiority of video mediated instruction over conventional teaching method (Ajayi-Dopemu & Talabi, 1986; Fakomogbon, 1997; Yusuf, 1998 & Abolade, 1999), the studies were in regular schools and the subjects were students with no disabilities.

The issue of equivalent performance of captioned video and conventional teaching method are corroborated with reports of several studies that have examined the use of captioned video instruction for students in conventional and special schools (Hutchinson, 2005; Anderson-Inman, Terrazas & Uladzimir, 2008; Atinmo & Egunjobi, 2010). Hutchinson (2005) found no significant effect of Americans with Disabilities Act (ADA) compliant captioned Instructional digital video on learning outcome of students. Anderson-Inman, Terrazas & Uladzimir (2008) investigated the effects of expanded captions versus standard captions on the comprehension of educational video materials on DVC by students who are deaf or hard of hearing. Although survey indicated that the students preferred to use videos with expanded captions, the results between subjects did not reveal any statically significant difference in their performance. Atinmo & Egunjobi (2010) was a comparative study of captioned video and face-to-face instruction in library instruction for secondary school students with hearing impairment. The result also reported no significant difference in the performance of the two groups.

The finding of no gender influence in the performance hearing impaired pupils exposed to captioned video as reported by this study is not surprising. Although male and female are biologically difference and this has been reported to affect the way and manner in which they respond to teaching and learning, the controversy such studies have attracted may probably explain why researchers have constantly wondered whether there are really sex differences in academic achievement. Birkman (1994) investigated the relationship of individual learning style with achievement and attitudes of students receiving instruction via two-way interactive television and the influence of gender on their achievement. 54 students enrolled in two high school psychology classes were the study population, pretest and posttest achievement gain scores were analyzed using one-way analysis of variance and t-test. Results showed that there was no significant difference the performance of the male and female students, sex variable was also found not to have any significant influence on the achievement of secondary school students in a video mediated instruction (Abolade, 1999). Indeed, male and female subjects often appear to perform equally well when exposed to video mediated instruction.

## Conclusion and Recommendations

Educational attainment of hearing impaired pupils depends a lot on the quality of teaching and technologies adopted in the process. The findings of this study which reported comparable effectiveness of captioned video instruction with the conventional teaching method for the hearing impaired, and the fact that captioned video is gender unbiased should



make its adoption a judicious decision. Consequently, the following recommendations are made based on the above findings:

- (1) There is the need for all stakeholders, including Federal, State and Local Governments, and private sector to provide infrastructure for the use of assistive technologies in the Nigerian special schools, particularly for the deaf and hearing impaired pupils. Most of the schools have no alternative means of generating electricity, whereas the National electricity supply is epileptic.
- (2) In-service training programs should be periodically organized for teachers of hearing impaired pupils on design, development and use of captioned video
- (3) Instructional materials developers should be encouraged by government, through necessary incentives and patronage to produce captioned video on different school subjects
- (4) Parents of hearing impaired pupils should be encouraged to procure educative captioned video to complement efforts of schools.

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