

## Effect of Developed Captioned-Video in English on the Performance of Hearing-Impaired Students in Upper Basic School, Kaduna.

M.A. FAKOMOGBON, O.O. OBILODAN, G.O. AMOKA, A.A. AMOSA  
University of Ilorin, Nigeria.

**Abstract.** This study examined the effect of a developed Captioned-video in English on the performance of hearing-impaired students in upper basic school, Kaduna, Nigeria. The study combined qualitative and quantitative research methods, involving one group pretest-posttest experimental research design. Three research questions and three hypotheses were raised and formulated respectively. The population for this study comprised all hearing-impaired students in Kaduna State, Nigeria. The target population were all JSS 1 upper basic students in Kaduna State Special Education School (KASSES). Twenty-nine (29) of these students were selected as the sample for this study. Three research instruments were used in this study. They include: Captioned-video to Teach English Language (CVTEL), Student's Performance Test in English Language (SPTTEL), and Student's Attitudinal Questionnaire (SAQ). A total of fourteen (14) experts were engaged in validating the three research instruments to ensure suitability and content appropriateness. The experimental group was initially pre-tested using Student's Performance Test in English Language (SPTTEL), then exposed to the Captioned-video and a post-test after. An attitudinal questionnaire was given to the students to elicit responses on their reaction to the Captioned-video. All instruments were field validated. The findings revealed amongst others that; significant difference existed between the performances of hearing-impaired students taught English language before and after

exposure to the Captioned-video. The students performed better in the post-test than in the pre-test and no significant difference existed in the performance of male and female hearing-impaired students that were exposed to the Captioned-video. The study concluded that the Captioned-video improved hearing-impaired students' performance in English language, irrespective of gender and the students also expressed positive attitude to the use of the Captioned-video. It was therefore recommended that teachers develop Captioned-videos to meet educational standards and maximize their use for educating hearing-impaired students.

**Keywords:** Captioned-video, Hearing-Impaired, Performance, Attitude, Gender.

### 1. Introduction

Doorn (2010) expressly stated that our ability to hear is what keeps us in touch with the world we are in. The inability to hear by the hearing-impaired student can cause huge communication, social and educational problems (Hall, Oyer, & Haas, 2001) It is therefore imperative that intervention strategies be implemented to enhance the productivity of the hearing-impaired student. Quite a number of multimedia products have been made available for learning. The design of these tools for teaching and learning has however been drafted from teachers to businesses, making them more technology-centered than learner-centered. The

commercially designed instructional materials are not tailored in line with the contents of the curriculum. As a result of this, the quality of instructional materials produced and used is grossly undermined. This is consequently not suitable for the hearing-impaired students, as it has the potential to disrupt the educational process (Bull, 2013).

This study is therefore geared towards developing a Captioned-video to supplement conventional classes for the hearing-impaired students and went ahead to examine the effect of the Captioned-video on the students' performance. It also examined the influence of gender on their performance, as well as their attitude towards the use of Captioned-video.

## 2. Literature Reviewed

The quest for finding more effective and efficient ways of passing knowledge, and creating solutions to problems has governed various spheres of human existence. This also applies in the field of education; as various methods have been employed overtime to create solutions to educational problems. Technology can be credited to have greatly advanced these methods. These methods have been tremendously useful in the field of education as a whole and also special education in facilitating learning. Learning refers to a relatively permanent change in behaviour brought about by practice or experience (Lachman, 2010). Learning is seen as a product of interaction, and in the learning design, this interaction of learners may be with teachers, instructors, other people or content of what is to be learnt (Elias, 2011). Learning could be said to be one of the major goals of education.

Amaele (2003) defined education as the total development of the individual child, through acceptable methods and techniques, according to his abilities and interests, as well as the needs of the society to take his rightful place and contribute adequately to the advancement of his society. The quality of life of individuals in a society depends on their collective capacity and ability to continuously learn and change. For sustainable development of a nation, it is imperative for its citizens to embrace lifelong learning and its government to provide what is

needful for development in the area of education. Education can greatly enhance the effectiveness of every member of society and build lasting change (Sterling, 2014).

The goals of education according to the National Policy on Education (FRN, 2013) includes amongst others: development of the individual into a morally sound, patriotic and effective citizen, provision of equal access to qualitative educational opportunities for all citizens at all levels of education, within and outside the formal school system. These goals are non-restrictive to the types of students; special needs students or regular students. In order to fully realize the goals of education in Nigeria, educational activities shall be learner centered for maximum self-development and self-fulfillment- both for the regular schools and the schools for special education.

The field of special education has come a long way in Nigeria, from when handicaps were totally neglected, and stigmatized, to the periods where missionaries and other non-governmental bodies created an avenue to cater for people with special needs (Ajavon, 2006). These individuals with special needs are very much a part of our society, and according to the National Policy on Education (FRN, 2013), have equal rights to education as every other Nigerian. As a result of their unique needs however, they require differentiated teaching and learning methods, as the traditional formal setting is usually unsuitable for them (Adebisi, Jerry, & Rasaki, 2014). These methods vary widely because the different requirements of different special needs individuals vary. A wide range of disabilities faced by them include: autism, blindness, deafness, emotional disturbance, visual impairment, intellectual disability, multiple disabilities, other health impairments, specific learning disability, speech or language impairment, traumatic brain injury, and hearing impairment (Hallahan & Sayeski, 2010).

Hearing impairment is a broad term referring to hearing losses of varying degrees, ranging from hard-of-hearing to total deafness (Shemesh, 2010). Hearing impairment is a less-than-normal hearing condition, which can range from minor impairment easily compensated for with electronic amplification, to profound deafness for which there is no remedy. It can be present at

birth, caused by an illness or injury, or developed with advanced age (Adekunle, Bakare, & James, 2013). The type of hearing loss experienced by an individual determines the kind of intervention that will be recommended.

The interventions that exist for the various categories of hearing loss include: hearing aids, loops, assistive listening devices, captioning, cochlea implants and tactile aids (Aboud, 2008). Most of these interventions are technological devices that enhance communication abilities for the hearing-impaired individual. A lot of these technologies have been introduced into the classrooms, making teaching and learning more effective and efficient. The integration of media tools in special education has significantly affected its teaching and learning (Balmeo, et al., 2014). Media tools are used for instructional purposes to facilitate communication and learning (Smaldino, Russell, Heinich, & Molenda, 2009).

Brown (2011) and Parton (2006) clearly highlighted the positive role incorporating technology in the various multimedia forms can play in helping hearing-impaired students absorb more information, and generally promote learning. Some of these positive roles of incorporating technology include; creating channels for communication, stimulating improvement of various skills, making distance education possible, and creating enabling environment for discovery of new learning experiences. Exposure to video instructional package such as captioned video and printed materials by the hearing-impaired learners has been found to result in positive outcomes including not only reading skills but also other cognitive abilities (Stanovich, 1993; Marschark, et al., 2012).

Video instructional package illustrates all forms of video technology, which provides opportunity to students to have numerous levels of interaction between the package and students. Thus, the benefits of video instructional package are the ability for the students to play, replay, pause and rewind to any precise segment of the tape (Amosa, 2016). Audio-visual such as captioned-video in teaching and learning would assist the hearing impaired students to have the

necessary and quality learning experiences that will bring about meaningful and productive learning.

Thus, it will guarantee greatest value and effectiveness in teaching-learning. Captioned-video is a video that contains text that transcribes the narration and provides the description of sounds and music present (Cornell University, 2014). Captioned-video was brought to deliver enriched educational and cultural experiences for the hearing-impaired child to bring them into better touch with their environment and people around them (Itighise, 2012). For this to be possible, the hearing-impaired student needs to be communicated with in the primary language of communication in their environment.

The lingua franca in Nigeria is English language, and emphasis is placed from the lowest level of education on a child's ability to adequately comprehend the language at home and school level (Danladi, 2013). It is one of the core subjects offered in all Nigerian schools. The English studies curriculum is designed to help both the learners and teachers. It not only integrates contemporary national issues, but also emerging global issues, to ensure the emergence of well-rounded citizens who can be relevant globally. The activities provided are practical for both the teacher and student, which ensures the actualization of the set performance objectives and reinforcement of lessons. One way to teach effectively is to develop locally made captioned video.

Gender has been identified as one of the factors that affect academic achievement of students. Studies by Omoniyi and Oluniyi (2014) and Bain and Rice (2010) on gender effect on hearing-impaired students' performance show no significant difference in the achievement level of male and female students. Itighise (2014) and Abdullahi and Bichi (2015) from their study also reveal no significant difference in the performance of male from female students. The female child possesses the potential to achieve as much as her male counterpart if granted similar privileges, and vice-versa. Abdullahi and Bichi (2015) opined that there are other factors alongside gender that could affect students' academic performance. One of such is attitude. Attitude is a huge

determinant as to how well a technology is embraced by the users. No matter how highly efficient, effective or fantastic an instructional tool is, if negatively perceived by the potential user, it may hinder the user from deriving the benefits the instructional package has to offer. Students have however been found to express high interest levels in using media technology tools in learning (Jurich, 1999).

### 3. Purpose of the Study

The study sought to examine the effect of a developed Captioned-video in English on the performance of hearing-impaired students in upper basic school, Kaduna, Nigeria. Specifically, the study investigated:

- (i) The performance of hearing-impaired students' pre-test and post-test.
- (ii) The performance of male and female hearing-impaired students that used the captioned-video.
- (iii) The attitude of male and female hearing-impaired students to the use of captioned-video.

### 4. Research Questions

Answers were sought for the following research questions:

- (i) What is the performance of hearing-impaired students' pre-test and post-test?
- (ii) What is the performance of male and female hearing-impaired students that used the captioned-video?
- (iii) What is the attitude of male and female hearing-impaired students to the use of captioned-video?

### 5. Research Hypotheses

The following hypotheses were tested for the purpose of this study:

Ho<sub>1</sub>: There is no significant difference in the performance of hearing-impaired students' pre-test and post-test.

Ho<sub>2</sub>: There is no significant difference in the performance of male and female hearing-impaired students that used the captioned-video.

Ho<sub>3</sub>: There is no significant difference in the attitude of male and female hearing-impaired students to the use of captioned-video.

## 6. Methodology

### 6.1 Research Design

This study adopted a mixed method research combining both quantitative and qualitative research methods. The qualitative part involved the design and development process of the Captioned-video, while the quantitative entailed the assessment of the effectiveness of the Captioned-video. Using a pre-experimental design of one group pretest-posttest, an experimental group was given a pre-test and then administered with the Captioned-video, and thereafter post tested. Descriptive research of the survey type using questionnaire (students' attitudinal questionnaire) was used to elicit responses about students' attitude towards the use of the Captioned-video. The results from the pre-test and post-test were then analyzed using t-test to determine how effective the Captioned-video was.

### 6.2 Participants

The population for this study comprised all hearing-impaired students in Kaduna State, Nigeria. The target population were all JSS 1 upper basic students in Kaduna State Special Education School (KASSES). Twenty-nine (29) of these students were selected as the sample for this study.

### 6.3 Instruments

Three research instruments were used in this study. They include: Captioned-video to Teach English Language (CVTEL), Student's Performance Test in English Language (SPTL), and Student's Attitudinal Questionnaire (SAQ).

### 6.4 Reliability and Validity

A total of fourteen (14) experts were engaged in validating the three research instruments to ensure suitability and content appropriateness. To determine the reliability of the instrument,

the test-retest reliability method was obtained by administering the instrument twice over a period of two weeks interval on the sampled respondents. The instruments yielded reliability values of 0.81 for Captioned-video in English Language, 0.76 for students' performance test in English Language (SPTL), and 0.84 for student's attitudinal questionnaire using the Pearson product moment correlation statistics.

**6.5 Data Analysis**

The three research questions were answered through their corresponding hypotheses. Moreover, the three hypotheses were tested using paired sample t-test and independent sample t-test statistical tools

**Results**

**Hypotheses Testing**

**Hypothesis One:** There is no significant difference in the performance of hearing-impaired students' pre-test and post-test.

To determine whether there is a significant difference in the performance of students before and after using the Captioned-video, they were subjected to a pre-test and a post-test. A mean gain of 7.66 was recorded from the pre-test and post-test, which indicates an improvement in the students' performance on exposure to the Captioned-video. These scores were further subjected to paired sample t-test statistical tool and the results are presented in Table 1.

**Table 1: t-test Result of Pre-test, Post-test**

	N	X	SD	T	Df	Sig (2-tailed)
Pretest-Posttest	29	7.655	4.04	10.209	28	0.000

From Table 1,  $t(28) = 10.209$ ,  $p = 0.000$ . The  $p$ -value  $< 0.05$  alpha value, hence the null hypothesis is rejected. Hence, there is a significant difference in hearing-impaired students' pre-test and post-test.

**Hypothesis Two:** There is no significant difference in the performance of male and female hearing-impaired students that used the Captioned-video.

To determine if there was significant difference in the post-test scores of male and female students exposed to the Captioned-video, the null hypothesis was tested using independent sample t-test at 0.05 level of significance as shown in Table 2.

**Table 2: t-test Result on Male and Female Post-test Performance**

Gender	N	X	SD	Df	T	Sig (2-tailed)
Male	17	10.35	6.10	27	0.454	0.653
Female	12	11.33	5.12			

Furthermore, in Table 2, the t-test result shows  $t(27) = 0.454$  and  $p = 0.653$ .  $p > 0.05$  alpha value, hence the null hypothesis is not rejected and it can be concluded that there is no significant difference in the performance of male and female hearing-impaired students that used the Captioned-video.

**Hypothesis Three:** There is no significant difference in the attitude of male and female hearing-impaired students to the use of Captioned-video.

To determine if there was significant difference in the attitude of male and female students toward the use of the Captioned-video, the null hypothesis was tested using t-test as shown in Table 3.

**Table 3: t-test Result on Attitude of Male and Female Students Towards the Use of Captioned-video**

Gender	N	X	SD	Df	T	Sig (2-tailed)
Male	17	3.55	0.309	27	0.676	0.505
Female	12	3.63	0.328			

Table 3 shows no significant difference between male and female students' attitude towards the use of Captioned-video. The result further reveals  $t(27) = 0.676$ ,  $p = 0.505$ . The null hypothesis is hence not rejected because the  $p$ -value  $> 0.05$  alpha value. Hence, a conclusion can be drawn that there is no significant difference in the attitude of male and female hearing-impaired students to the use of Captioned-video. Both male and female students had a positive attitude to the use of Captioned-video.

### 7. Discussions

The study revealed significant difference between the performances of hearing-impaired students taught English language before and after exposure to the Captioned-video. The students performed better in the post-test than in the pre-test. The finding is in accordance with the findings of Madhubala, Alavi, & Letchumanan (2014) which revealed that Captioned instructional videos had positive effect on students' performance. The study also agrees with the findings of Omoniyi and Oluniyi (2014) which revealed that hearing-impaired students taught with captioned-video performed better than those taught without it. Furthermore, the study by Itighise (2014) puts the use of captioned-video ahead of the conventional sign method based on the study to find the difference in the academic performance of the groups taught with captioned-video and those taught with conventional sign method.

The study further revealed no significant difference in the performance of male and female hearing-impaired students that were exposed to the Captioned-video. Thus, the treatment improved the performance of hearing-impaired students regardless of gender. This closely aligns with the study by Omoniyi and Oluniyi (2014), which revealed no significant difference in the performance of male from female students. Itighise (2014) and Mihaladiz, Duran and Yildirim (2011) also made similar

observations, that gender does not have an effect on the performance of students. It has been established that captioned-video enhanced the performance of both male and female students to the same degree.

### 8. Conclusion

Hearing-impaired students' attitude towards the use of captioned-video was also examined and found to be positive. This aligns with the studies of Madhubala, Alavi and Letchumanan (2014) and Weasenforth (1994), where students expressed positive attitudes towards the use of any form of technology. The findings indicate that adopting Captioned-video as a supplementary tool to conventional sign method would be a welcome idea by a majority of hearing-impaired students.

Captioned-video brings a fresh and exciting way to learn, which is equally effective as it improves the performance of students. This is indicative of the Captioned-video being an effective intervention to supplement teaching and learning. The use of conventional methods for instruction among the students with hearing-impairment is largely calling for strategies that can better supplement the sign language mode of instruction. More so, because their sense of sight is their major mode of receiving instruction, Captioned-video is highly effective in engaging them maximally.

### 9. Recommendations

Based on the findings of this study, the following recommendations were made:

- (i) Captioned-videos are highly effective to supplement conventional sign language methods for the hearing-impaired students. They should therefore be developed for subjects in schools to help hearing-impaired students boost their academic performance and make them more enthusiastic about

- learning, with easy-to-grasp concepts.
- (ii) Captioned-video is also not gender biased, hence very appropriate for the co-educational classroom environment.
  - (iii) All stakeholders in the special schools should encourage and assist in funding the development of indigenous learning media that greatly meets the teaching and learning.
  - (iv) Educational technologists and teachers should be encouraged to develop Captioned-videos to meet prime educational standards.

## References

- Abdullahi, S., & Bichi, A. A. (2015). Gender issue in Students' academic achievement in English language. *Journal of the Department of Education*, 4(1), 31-38.
- Aboud, A. (2008). *Assistive technology for students with hearing impairments*. Retrieved from The special ed wiki: <http://sped.Wiki dot. com/ assistiv etech nolog yfor stud entsw ithh earingimpairments>
- Adebisi, R. O., Jerry, J. E., & Rasaki, S. A. (2014). Barriers to special needs education in Nigeria. *International Journal of Education and Research*, 2(11), 451-462. Retrieved from <http://www.ijern.com/journal/2014/November-2014/36.pdf>
- Adekunle, B. A., Bakare, C. A., & James, T. (2013). *EDU 426: Special Education*. Lagos: National Open University of Nigeria.
- Ajavon, P. A. (2006). An overview of deaf education in Nigeria. Nigeria.
- Amale, S. (2003). *A study guide on History and Policy of Education in Nigeria*. Ilorin: NDEMAC (Nig. Publishers) Ltd.
- Amosa, A. A. (2016). Evaluation of a developed interactive video instructional package for basic technology concept in Nigerian schools using Kirkpatrick model Unpublished (Doctoral dissertation) Department of Educational Technology, University of Ilorin, Ilorin, Nigeria.
- Bain, C. D., & Rice, M. L. (2010). The influence of gender on attitudes, perceptions and uses of Technology. *Journal of Research on Technology in Education*, 39(2), 119-132.
- Balmeo, M. L., Nimo, E. A., Pagal, A. M., Puga, S. C., ArisDafQuino, & Sanwen, J. L. (2014). Integrating Technology in teaching students with special learning needs in the SPED schools in Baguio City. *The IAFOR Journal of Education*, 2(2).
- Brown, J. M. (2011). *Does the use of technology in the classroom increase students' overall academic performance*. Gonzaga University, Communication and Leadership Studies. Retrieved from [http://web02.gonzaga.edu/communication/theses/practice/stftp/Brown\\_gonzaga\\_0736M\\_10115.pdf](http://web02.gonzaga.edu/communication/theses/practice/stftp/Brown_gonzaga_0736M_10115.pdf)
- Bull, P. H. (2013, September). Cognitive constructivist theory of multimedia: Designing Teacher-made interactive digital. *Scientific Research*, 4(9), 614-619. doi:<http://dx.doi.org/10.4236/ce.2013.49088>
- Cornell University. (2014). *Captioning Videos*. Retrieved from Academic Technologies.
- Danladi, S. S. (2013). Language policy: Nigeria and the role of english language in the 21st century. *European Scientific Journal*, 9(17).
- Doorn, R. (2010, September 1). *Teaching hearing impaired children*. Retrieved from Teachmag.com: <http://www.teachmag.com/archives/130>
- Elias, T. (2011, January). Learning Analytics: Definitions, Processes and Potential. Retrieved from <http://learninganalytics.net/LearningAnalyticsDefinitionsProcessesPotential.pdf>
- Federal Republic of Nigeria. (2013). *National policy on education*. Lagos: NERDC Press.
- Hall, B. J., Oyer, H. J., & Haas, W. H. (2001). *Speech Language & Hearing Disorders: A guide for the teacher* (3rd ed.). Needham Heights: Allyn & Bacon.

- Hallahan, D., & Sayeski, K. (2010, September 2). *Special education*. Retrieved from Education.com: <http://www.education.com/reference/article/specialeducation1/>
- Itighise, A. E. (2012). Information and Communication Technology (ICT) and changing role of special education teacher. *African Journal of Educational Research and Administration*, 5(1), 96-99.
- Itighise, A. E. (2014). Instructional Captioned Film, Conventional sign method and academic performance of hearing impaired students in economics in special schools in Akwa Ibom State, Nigeria. *Journal of Education and Practice*, 5(35), 140-151.
- Jurich, S. (1999). Impact of video technology in education. *TechKnowLogia*, 41-44. Retrieved from [www.techknowlogia.org](http://www.techknowlogia.org)
- Lachman, S. J. (2010). Learning is a Process: Towards and improved definition of learning. *The Journal of Psychology: Interdisciplinary and Applied*, 477-480. doi:10.1080/00223989709603535
- Madhubala, B., Alavi, Z. K., & Letchumanan, K. (2014). Captioned instructional video: effects on content comprehension, vocabulary acquisition and language proficiency. *English language teaching*, 7(5), 1-16. doi:10.5539/elt.v7n5p1
- Marschark, M., Sarchet, T., Convertino, C., Borgna, G., Morrison, C., & Remelt, S. (2012). Print Exposure, Reading Habits, and Reading achievement among deaf and hearing college students. *Journal of Deaf Studies and Deaf Education*, 61-74.
- Mihladi, G., Duran, M., & Yildirim, M. Z. (2011). Investigation of Primary School Students' attitudes towards Technology. Turkey. Retrieved from <http://www.esera.org/media/eb ook/strand7/ebook-esera2011 MIHLADIZ-07.pdf>
- Omoniyi, T., & Oluniyi, E. A. (2014). Impact of captioned video instruction on Nigerian hearing-impaired pupils' performance in english language. *Academic journal of interdisciplinary studies*, 3(6), 411-416. doi:10.5901/ajis.2014.v3n6p411
- Parton, B. S. (2006). Snapshots of interactive multimedia at work across the curriculum in deaf education: Implications for public address training. *Journal of Educational Multimedia and Hypermedia*, 15(2), 159-173.
- Shemesh, R. (2010). Hearing impairment: Definitions, Assessment and Management. *International Encyclopedia of Rehabilitation*. Retrieved from <http://cirrie.buffalo.edu/encyclopedia/en/article/272/>
- Smaldino, S. E., Russell, J. D., Heinich, R., & Molenda, M. (2009). *Instructional Technology and Media for Learning*. Ohio: Merrill Prentice Hall.
- Stanovich, K. E. (1993). Does reading make you smarter? Literacy and the development of verbal intelligence. In H. Reese, *Advances in Child Development and Behavior* (Vol. 24, pp. 133-180). New York: NY: Academic Press.
- Sterling, S. (2014, November 28). The importance of education for sustainable development. *World News*. Retrieved from <http://www.universityworldnews.com/article.php?id=20141126162856455>
- Weasenforth, D. L. (1994). Closed Captioning: Students' Responses. *Annual Meeting of the Teachers of English to Speakers of Other Languages*. Baltimore.