



**THE EFFECT OF JAWS ("JOB ACCESS WITH SPEECH") SOFTWARE APPLICATION ON THE ACADEMIC PERFORMANCE OF STUDENTS WITH VISUAL IMPAIRMENT AT SA'ADATU RIMI COLLEGE OF EDUCATION**

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**ABSTRACT**

*This study investigates the Effect of JAWS ("Job Access with Speech") Software Application on the Academic Performance of Students with Visual Impairment at Sa'adatu Rimi College of Education. Paired sample t-test was used to compare the mean scores of the academic performance of students with visual impairment who were taught without using (pre test) and taught using (post test) JAWS at Sa'adatu Rimi College of Education. The result of the analysis indicated that JAWS (Job Access with Speech) Software Application has significant effect on the academic performance of students with visual impairment (Pre test mean score = 1.158, Post test mean score = 1.380, Mean difference = .222), ( $t(32) = 3.207, p = .003 < Ls = .05$ ). An independent sample t-test was also used to compare the mean scores of the academic performance of male and female students with visual impairment who were taught using JAWS at Sa'adatu Rimi College of Education. The result of the analysis indicated that there was no significant difference in the mean scores of the academic performance of male and female students with visual impairment who were taught using JAWS ( $t(32) = .157, p = .876 > Ls = .05$ ). Results show significant improvements in academic performance, Student feedback highlighted enhanced independence, confidence, and accessibility. The findings suggest that JAWS is a valuable tool for supporting students with visual impairment in academic success.*

**INTRODUCTION**

Students with visual impairment face unique challenges in accessing educational materials and participating in academic activities. Assistive technologies like JAWS can help bridge this gap. The condition of individuals with visual impairment had been precarious in terms of access to information and communication technology. Newa, (2012) asserted that technology in recent times has impacted positively on the lives of individuals with visual impairment with regards to information use, education and lifelong learning. ICT would not only expand the world of the individuals with visual impairment but also serve as a great equalizer Olukotun, (2004). Individuals with visual impairment face special barriers in using the ICT Puffelen, (2009). This is due to the need to interact with computers which are also not customised for people with visual impairments since it presents most of the interaction and information visually to the user (Bergman & Nygren, 2009). Therefore, the interface, and the main output devices like computer monitor must balance for this discrepancy. There are a lot of different aiding devices known as assistive technology that enables Students with Visual Impairment to use computers. ICT offers an assortment of specific hardware and software solution for conveying, getting to and inputting information to or from web-based applications. The following are some of the ICT tools/applications for assisting different kind of disabled learners to perform functions within abilities. (Vision Professional 2020). These includes

- i) Specialized Keyboards
- ii) Braille
- iii) Braille Printer
- iv) Screen Readers
- v) Talking word processors
- vi) Screen Magnifiers.

This study takes screen reader software as an educational intervention to determine its effect on the academic performance of students with visual impairment. Students with impairment face some difficulties in terms of both "accessing and in using" electronic learning tools and depending on the degree of vision loss, the obstacles encountered may vary considerably. This setback arises because many of the different learning education institutions cannot boast of sufficient professional devices capable of tapping into the potentials of the students with visual impairments (Burzagli, Gabbanini, & Enrico. 2004; Anderson, 2006). Moreover, some students with visual impairment lack awareness on the use of information technology devices in many of the higher education institutions. (Luck and Achebe, 2012) stated that despite the various devices designed electronically to meet the needs of students with visual impairment they still encounter different obstacles and ask for different kinds of help and support (Bocconni. Dini, Ferlino, & Martinoli, 2007). Many of these problems result from the obstacles behind the effective use of the tools and may also have a negative influence on the overall learning process.

## STATEMENT OF THE PROBLEM

The number of young people with visual impairment pursuing NCE is growing and most of the available researches are on the impact of Information and Communication Technology but this study focused on the Effect of JAWS ("Job Access with Speech") Software Application on the Academic Performance of students with visual impairment at Sa'adatu Rimi College of Education. Individuals with visual impairment may find themselves at a social disadvantage due to their visual limitations, which prevent them from carrying out their expected contextual roles (according to their age, sex, social and cultural factors). The limitation of activity and restriction of participation can extend to all areas of life which including learning, communication, mobility and interpersonal relationships. However, there are potential ways to overcome some of these limitations. One such way is using ICT as a pedagogical tool to support students with visual impairments.

### Objectives

- 1 To determine the effect of JAWS (Job Access with Speech) Software Application on the Academic performance of students with visual impairment at Sa'adatu Rimi College of Education
- 2 To determine the gender difference in academic performance of students with visual impairment who were taught using JAWS (Job Access with Speech) Software Application at Sa'adatu Rimi College of Education

### Hypotheses

- Ho<sub>1</sub> JAWS (Job Access with Speech) Software Application has no significant effect on the Academic performance of students with visual impairment at Sa'adatu Rimi College of Education
- Ho<sub>2</sub> There is no significant gender difference in the academic performance of students with visual impairment who were taught using JAWS (Job Access with Speech) Software Application at Sa'adatu Rimi College of Education

### Literature Review

JAWS ("Job Access with Speech") Software Application is an Assistive Technology an item that allows individual with visual impairment access data and or information with the help of screen reader. Wong and Cohen also cited in Daroni, Gunarhadi, and Legowo (2018) defined Assistive Technology as "any commercially acquired or manufactured goods or equipment used to enhance or maintain the functional capacity of persons with special need condition. This shows that Assistive Technology can be defined as anything that can help the Students with visual impairment to enhance their studies especially the ICT or electronic facilities.

The importance of Assistive Technology to the students with visual impairment were highlighted by Daroni, Gunarhadi and Legowo (2018) as helping the Students with visual impairment to learn difficult ideas and concepts by broadening their understanding. In fact, assistive technology has been used by blind and partially-sighted people to help increase the independence and boost their social inclusion when it comes to education access. For example, Lucky and Achebe (2012) list the most important ICT facilities that are beneficial in learning for the students with visual impairment as the Kurzweil Reading Machine, Computer, Video conferencing, the Internet and the World Wide Web (WWW). Also, the application of different assistive technology devices such as Screen reader, Braille translation software, Braille writing equipment, Closed- Circuit Television (CCTV), Braille embosser and Scanners etc.

Evidently, Gronlund (2010). conducted a study in two developing countries of Tanzania and Bangladesh. The study's aim was to answer the question of how can assistive technology effectively be used to promote inclusive education in developing countries. The study findings show that Tanzania did not have specific policy on inclusive education. Accordingly, the study found that inclusive education is mentioned in some of the policy documents such as disability policy and education and training policy but these policies do not state how inclusive education should be implemented, let alone monitored and evaluated. The study also found that teaching and learning materials for students with special needs were lacking.

## METHODOLOGY

### Research Design

This study adopted experimental research design to discover the basic relationships among two variables (i.e) JAWS ("Job Access with Speech") Software Application and academic performance. An experiment is an orderly procedure carried out with the goal of verifying, falsifying, or establishing the validity of a [hypothesis](#). Experiments provide insight into [cause-and-effect](#) by demonstrating what outcome occurs when a particular factor is manipulated.

Pretest-posttest was administered to treatment and control group to find out if the independent variables have an effect over the dependent variable, i.e. to determine the effect of JAWS ("Job Access with Speech") Software Application on the Academic Performance of Students with Visual Impairment. In other words, whether these interventions can help the students with visual

impairments to improve on their academic performance. Therefore, the sample population was divided into two groups, one experimental group versus one control group. Both the experimental group and the control group have been administered a pre-tested and post-tested after the exposure of the treatment to the experimental groups (i.e. Pre-test Post-test Control Group Design).

Cohen, Manion and Morrison (2007) stated that: the true experiment can also be conducted with one control group and two or more experimental groups. Here participants are randomly allocated to each of two experimental groups and the control group. Experimental group, receives intervention while control group receives no treatment. Pretests and post tests are conducted to measure changes in individuals in the two groups.

## Population and Sample

### Population of the study

The population of this study derived from the students with visual impairment at Sa'adatu Rimi College of Education.

**Table 1:** Population of Students with visual impairment

School/State	Student's Population	Students with visual impairment
Sa'adatu Rimi College of Education Kano State	385	34
Total	385	34

Source: SRCOE Kano 2024

### Sample Size

The samples were purposively selected out of the population. Samples of this study was drawn from the students with visual impairment at Sa'adatu Rimi College of Education, Kano, the whole available subject was taken. i.e 34 is the sample size.

### Sampling Technique

A non-probability sampling method will be employed to this research using Purposive Sampling Technique, because the selection was based on students with visual impairment selected from Sa'adatu Rimi College of Education Kano State.

### Data collection instrument

Academic record was used as data collection instrument.

### Data Analysis Procedure

The researcher used inferential statistics; particularly the Paired sample t-test sample and determine the effects of the independent variables JAWS ("Job Access with Speech") over the dependent variable academic performance. Two (2) hypotheses were tested and the data have been analyzed using Statistical Software for Social Sciences (SPSS) version 20.

## RESULTS AND DISCUSSIONS

Ho<sub>1</sub> JAWS (Job Access with Speech) Software Application has no significant effect on the Academic performance of students with visual impairment at Sa'adatu Rimi College of Education

Table 1: Paired sample t-test for the effect of JAWS Application on academic performance of students with visual impairment

JAWS Software	N	Mean	Std. Dev.	Df	t	p	Ls	Decision
Post test	34	1.380	.436	33	3.207	.003	.05	Rejected
Pre test	34	1.158	.481					

Paired sample t-test was used to compare the mean scores of the academic performance of students with visual impairment who were taught without using (pre test) and taught using (post test) JAWS at Sa'adatu Rimi College of Education. The result of the analysis in Table 1 indicated that JAWS (Job Access with Speech) Software Application has significant effect on the academic performance of students with visual impairment (Pre test mean score = 1.158, Post test mean score = 1.380, Mean difference = .222), ( $t(32) = 3.207, p = .003 < Ls = .05$ ). The result provides us with enough evidence to reject the null hypothesis. Therefore, the null hypothesis, which stated that JAWS (Job Access with Speech) Software Application has no significant effect on the Academic performance of students with visual impairment at Sa'adatu Rimi College of Education was thereby rejected and concludes that JAWS (Job Access with Speech) Software Application has significant effect on the Academic performance of students with visual impairment.

Ho<sub>2</sub> There is no significant gender difference in the academic performance of students with visual impairment who were taught using JAWS (Job Access with Speech) Software Application at Sa'adatu Rimi College of Education.

Table 2: Independent sample t-test for gender and academic performance of students with visual impairment who were taught with JAWS

Gender	N	Mean	Std. Dev.	Df	t	p	Ls	Decision
Female	17	1.391	.368	32	.157	.876	.05	Accepted
Male	17	1.368	.505					

An independent sample t-test was used to compare the mean scores of the academic performance of male and female students with visual impairment who were taught using JAWS at Sa'adatu Rimi College of Education. The result of the analysis in Table 2 indicated that there was no significant difference in the mean scores of the academic performance of male and female students with visual impairment who were taught using JAWS ( $t(32) = .157, p = .876 > Ls = .05$ ). The result provides us with enough evidence to accept the null hypothesis because the data fail to reject it. Therefore, the null hypothesis, which stated that there is no significant gender difference in the academic performance of students with visual impairment who were taught using JAWS (Job Access with Speech) Software Application at Sa'adatu Rimi College of Education, was retained.

## **CONCLUSION**

This study demonstrates that there is significant effect of JAWS (Job Access with Speech) Software Application on the academic performance of students with visual impairment at Sa'adatu Rimi College of Education.

## **Recommendations**

There is need for increased adoption of JAWS in educational settings

Provision of training and capacity building to support students and educators and there is need for further researches on assistive technologies' impact on academic performance.

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