



Impact of Teacher Demonstration Video On Polytechnic Students' Achievement in Shorthand in Zamfara State

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Abstract

The study examined the effect of teacher demonstration video on Polytechnic students' achievement in Shorthand in Zamfara State. A pretest-posttest quasi-experimental and control group design was used in the study. A sample size of 185 students was obtained from the two intact classes of the two polytechnics that were used for this study. The polytechnics were assigned to treatment and control groups through simple random selection. The instrument for data collection was Shorthand Achievement Test (SHAT). It was validated by 3 educational technology experts and 5 Shorthand lecturers. The instrument was later subjected to reliability test and the data was computed using Pearson product Moment Correlation. A coefficient value of (r) .75 was obtained indicating that the instrument is reliable for the study. Data gathered from the field was computed and used to answer the research questions using mean and standard deviation while hypotheses were tested using t-test. All the analyses were conducted using SPSS version 23. The findings of the study revealed that significant difference exists in the Shorthand achievement scores of polytechnic students exposed to teacher demonstration video and those in the control group. It also revealed that significant difference exists in the Shorthand achievement scores of male and female polytechnic students exposed to teacher demonstration video. Based on these outcomes, the researchers recommended amongst others that Shorthand lecturers should critically examine the need, suitability in use, easy in operation and the possible benefits which is attainable in the use of video instruction in his shorthand class before deciding to apply it in order to avoid futile efforts at the end of the lesson.

Key words: Video, Demonstration video, Shorthand, Achievement

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Introduction

The influx of Information and Communication Technologies (ICTs) has revolutionized the field of education in the 21st century classroom teaching and learning. These technologies are portrayed in the form of pictures, animated graphics, audio players, video players, and other digitized resources that are used to facilitate teaching and learning. The use of digital resources has not only eased the instructional delivery but also makes teaching and learning interactive and appealing to learners' senses in a more effective manner than is obtainable in conventional classroom. Researchers such as Poh-sun and Gary (2018) stated that, the more the number of learners' senses involved in an instruction, the more concrete

the learning becomes. Thus, instructors need to understand the effect of instructional materials, how to prepare, present and utilize them in their instructional delivery. Preparation, presentation and utilization of instructional resources require instructors' clear understanding of the importance of appealing to learners' senses in instructional delivery. This was clarified by David Berlo's (SMCR) model of communication as he identified senses individual as the means of collecting information (Businessstopia, 2018). By this we may say that crave to appeal to multiple senses of learners in instructional delivery presupposes the use of multimedia in teaching and learning. Multimedia integrate various elements such as audio, video, graphics, text and animation



into one synergistic and symbiotic whole that results in more benefit to learners than any one of the media elements can provide individually (Andrew, 2011). This however revealed that one of the important elements of multi-media is video.

A video is an audio-visual resource which provides recorded information for classroom activities as well as explanations and instructors' demonstration of ideas, explanation of concepts and theories to enliven teaching and learning. It combines sounds with pictures, animations and moving images of characters and humans to present classroom activities. Video as an instructional resource is of great significance to classroom instruction as it appeals to learners' senses of seeing and hearing (Brame, 2015). It has the advantage of utilizing sight and audition of the learners which are powerful source of balance in the classroom as it enhances learning outcome. The use of video concretizes the abstract nature of teaching and learning in the 21st century by bringing forth experiences and resources that are far away from the reach of the learners into the classroom (Brame, 2015). Video also offers the advantage of follow-up drills for students' private practice and self-study pattern by closing the barrier of pace, place and time. Video provides opportunity of quizzing students' performance thereby enabling them to self-assess what is learnt and what is not (Abubakar *et al*, 2019).

The availability of video recording, editing and playing facilities has led to the creation of several kinds of videos. Santos (2016) posits that the increasing use of technology to manipulate video recording for classroom instruction over the years made it possible for the creation of videos in a number of ways. For example, instructor made video (using video clips from camcorders, iPhones, iPods, Smartphone, webcam and digital cameras); re-creating video content from existing ones; direct use of already prepared educational videos (mostly found over the net from YouTubeEdu, TEDEd, iTunes and modern libraries); instructor recorded demonstration videos (where direct classroom recording of instructors' demonstration is done) and animated videos (where inanimate objects, screen shot,

images, graphics and other computer generated characters).

The production style of these videos might have different learning effects and that the selection of a video production style should take a holistic view that considers the type of the course and the needs of the learners (Santos, 2016). To align videos with course objectives, Konstantinos (2018) identified six basic types of video production styles that can directly depict learners needs: 1). Classroom lecture with instructor on the blackboard, 2). Talking head of instructor at desk, 3). Digital drawing board (Khan-style), 4). Slide presentation, 5). Studio with out audience, and 6). Computer coding sessions. These videos are produced by the instructors following a peccable presentation format.

The presentation format of instructor-led videos (which is the focus of this research) ranges from direct recording of classroom teaching with a stationary camera, to the illustration on whiteboard and screencasts with voice-over. But the most popular instructional video format is the direct video recording of classroom activities facilitated by the course instructor on camera (Konstantinos, 2018). Konstantinos stressed that these videos are preferred because students consider the facial presence of the instructor or a huma-like animated character (with voice, eye-contact, and gestures) in the video to offer more learning engagements. Comfirming these claim, requires the researcher to find out whether teacher demonstration video appeale to polytechnic students' achievement in Shorthand.

A teacher demonstration video in this context is a pre-recorded Shorthand video package with instructor delivering instructions with illustrations, dictations and demonstrations as would have been done by the instructor in conventional classroom situation. Demonstration videos provide learners with practical description of Shorthand concepts, theories and principles that would have otherwise be made verbally. Shorthand as a discipline is the art of representing spoken sounds by written signs using phonetic symbolic writing method that increases speed and brevity of the writer as compared to longhand. The process of writing in shorthand is called stenography, from the Greek *stenos* (narrow) and *graphein* (to write). A Shorthand writer is a



sound writer who writes the speeches made by the speakers at a great speed. To achieve this, the writer had to listen to the sounds made by the speakers, analyse these sounds and represent them with the corresponding signs. In learning Shorthand, learners are trained on both the cognitive art of identifying various English sounds made by the speakers and psychomotor skills of representing these sounds by their corresponding signs. Affirming this, Ibeigu (2013) defined Shorthand as a skilled subject which involves the use of head, heart and the hand in quick response to spoken words. Shorthand is both cognitive and psychomotor skilled subject taught over the years in a conventional setting.

A conventional Shorthand classroom setting, involves the use of instructor-chalk-and-talk approach characterized by a series of passages dictated by the instructor to students at variant speeds. Students in turn use various signs to represent what is being dictated; this way, students are prepared for speedy writing. Audio tapes are often integrated into the dictation sessions to relieve the instructor off the stress of repetitive nature of dictations. The audio tapes contain pre-recorded dictation of Shorthand passages and instructions which the instructor/teacher only guide the 'plays' and 'stops' as the dictation unfolds in the classroom.

For students' private studies, these audio tapes are available to them containing different dictated passages at different speeds with the instructor giving verbal instructions on how, what, and when to perform a certain instructional task; but audio tapes only appeal to the learners' senses of hearing (Baba *et al.* 2018). Teacher demonstration video provide additional feature of demonstrating to the students how given instructions, and concepts are to be achieved. This research work seeks to investigate whether teacher demonstration video enhance polytechnic students' achievement in Shorthand better than the conventional method,

Achievement is the successful attainment of goal exemplified by the act of accomplishing a task. Though, controversies regarding what makes achievement in shorthand is built around writing shorthand outlines according to the rules of the system, building shorthand

skills, speed of writing and accurate transcription, Shorthand achievement also represents the number of words a learner can write correctly in a minute at a certain speed (Okoro, 2018). Most often than not, students' achievement had been studied and reported with respect to gender.

Gender is a socio-cultural phenomenon that divides students into categories of "male" and "female", with each having associated dress, roles, stereotypes and preferences. Some roles or behaviours that differentiate girls from boys are as a result of how their brains work. The differences that exist in how boys' and girls' brains work are as a result of differences in the way their brains develop; the brain development processes in girls begins with their language areas of brain developing early, while in boys the visual-spatial areas of the brain develop first (Ibeigu, 2013).

Studies in the field of video instructional materials profuse literature today. One of such studies was carried out by Irene (2015) on the Effect of Video Programmes Utilization on Standard Two Pupils' Science Achievement in Dagoretti District, Nairobi County with the objective of examining the effect of level of integration of video programmes into lessons by the instructors on class two pupils' achievement in science. The study was conducted with two groups (experimental and control groups); while experimental group was exposed to video programmes, control group was taught using traditional method only. Upon the completion of the study the analysed result revealed that class two pupils who were taught using an integration of video programmes had higher scores in science as compared to those who were taught using traditional methods. Irene (2015) therefore concluded that utilization of video programmes in science lessons could enhance the academic achievement of lower primary school pupils.

On the basis of what form of video format best enhance student's achievement, scholars like Gambari *et al.* (2016) conducted a study on the Effects of video instructional packages on achievement of senior secondary school students in Mathematics with the objectives of finding out the difference in the mean achievement scores of students taught mathematics using Text



Only (TO), Text and Narration (TN), Text and Animation (TA), and Text + Animation + Narration) video instructional packages. The study adopted quasi-experimental design with a pretest, posttest experimental and control group design. The results revealed that students taught mathematics using TAN Video achieved significantly better than those in the other groups.

In another related study conducted in Turkey, Okoronkwo (2016) investigated the effect of video instruction on students' achievement and attitude towards an introductory physics course. A quasi-experimental pretest-post-test design was used with a total of 25 fresh students. The study was conducted in the General physics II course (which focused on electricity and magnetism concepts). There was one control and one experimental group (namely the video instruction group). The result indicated that the video instructional approach impacted student achievement in physics better than conventional method.

In the area of academic achievements' in relation to gender, researchers revealed that any attempt to enhance conventional class instruction has a lot of effect on students' learning outcomes gender wise. These studies include a study by Ibe, *et al.* (2016) conducted on Gender and levels of attainment of scientific literacy among science students under constructivist instructional model. The study aimed at investigating the levels of attainment of scientific literacy by junior secondary (JSS2) male and female students exposed to constructivist instructional practices and those exposed to conventional (lecture) method. A Quasi-experiment of non-equivalent control group design was used with a total of 162 students of four coeducational schools in Ohafia Local Government Area, Abia state, Nigeria. The findings showed that constructivist instruction enhanced students' attainment of scientific literacy irrespective of their sexes. In the same vein, study by Aniah and Sani (2020) which investigated the effects of two modes of computer assisted instruction (CAI) on pupils' achievement and retention in English spelling in Niger State, Nigeria, further revealed that no significant difference existed in the mean achievement scores of male and female pupils taught

English language spelling using CAI tutorial package. The finding revealed that CAI tutorial package is gender friendly and not gender biased in teaching English language spelling.

Gambari *et al.* (2016) study examined the effects of video-based cooperative, competitive and individualized instructional strategies on the performance of senior secondary schools' students in geometry in Nigeria differs from the above finds. The study revealed that male performed better than females in competitive instructional strategy. Itohan's (2021) study which examined the effectiveness of adaptive instructional delivery approach on students' performance in General Woodwork in technical colleges, Edo State also reported same result. Itohan (2021) study revealed that male students taught General woodwork through adaptive teaching strategy had higher mean gain score than the females. These inconsistencies regarding students' achievement and gender influences in learning outcomes led the researcher to investigate the impact teacher demonstration video on polytechnic students' achievement on Shorthand in Zamfara State.

Statement of the Problem

The task of jotting down executives' speeches, minutes of meetings, conference proceedings and office correspondence' dictations are but the functions of secretaries. Secretaries achieve these, through the use of high speed writing skills known as Shorthand. It is a skill highly priced by fast writers. Standard organizations, companies, government parastatals and higher institutions of learning cannot operate functionally without the services of confidential secretaries. Consequently, for executive has ever lived up to his maximum responsibilities they need the help and cooperation of a competent secretary. Their services usually lighten the bureaucratic burden of most organizations in terms of documentation and preservation of policies, resolutions and extracts of meetings. While these functions are found wherever administrative works exist, the secretaries are expected to transcribe all the captured Shorthand notes from the spoken words into text and document them for further action. Presently,



there is acute shortage of confidential secretaries in most organizations. This may not be unconnected to the fact that high proficiency in Shorthand which includes the ability to take notes/minutes in Shorthand (which most of today's secretaries and aspiring secretaries lack) is still an important criterion for employment, selection, placement and promotion of secretaries (Sarki, 2015). Oden (2018) stressed that even where they are found – in business offices, courtrooms, government offices and committee meetings, they are mostly incompetent to handle their jobs as few of them make use of Shorthand skills which easily allows them to take accurate notes at a great speed over a long period of time. The attitude of secretaries towards the application of their Shorthand skills is attributed to their poor Shorthand achievement in schools Okoro (2018). The reason for the aforementioned was not distanced from the use of conventional method of teaching Shorthand over the years which Adamu (2012) characterized as uninteresting and boring to the students. The need therefore to seek for a better technological approach into the contemporary Shorthand classroom to tackle the issues faced by the conventional method became imperative and has led to a number of researchers employed the use of audio-visual media such as video to ascertain its impact on students' achievement. A number of studies were also done on the causes of students' failure, loss of interest and retention in Shorthand. Few researches were done on the application of video instructional materials in Secondary Schools in North-west zone Nigeria but none was to the knowledge of the researcher was done on teacher Demonstration video on Polytechnic students on Shorthand in Zamfara State. This is the gap left to be filled by this research work. Tertiary institutions are the drilling points of confidential secretaries; hence, the researcher tends to investigate the impact of teacher Demonstration video on Polytechnic students' achievement in Shorthand in two selected Polytechnics in Zamfara State.

Purpose of the Study

The purpose of this study is to investigate the impact of teacher demonstration video

on polytechnic students' achievement on Shorthand in Zamfara State.

Specifically, the objectives of the study are to:

1. Ascertain the impact of teacher demonstration video and conventional class demonstration method on polytechnic students' achievement in Shorthand.
2. Find out the influence of gender on the achievement of polytechnic students taught Shorthand using teacher demonstration video.

Research Questions

The following research questions guided this study:

1. What is the mean achievement score of polytechnic students taught Shorthand using teacher demonstration video and those taught with conventional class demonstration method?
2. What is the mean achievement scores of male and female polytechnic students taught Shorthand using teacher demonstration video?

Research Hypotheses

The following null hypotheses were formulated and tested at 0.05 level of significance:

- HO₁:** There is no significant difference in the mean achievement scores of polytechnic students taught Shorthand using teacher demonstration video and conventional class demonstration method.
- HO₄:** There is no significant difference in the mean achievement scores of male and female polytechnic students taught Shorthand using teacher demonstration video.

Research Methodology

The research adopted quasi-experimental pre-test, post-test non-randomized control group design with two levels of independent variables (Demonstration video and Conventional classroom demonstration method) was used for this study. One level of dependent (achievement) and two level of moderating variables - gender (males and females) were used in the study.



The population of this study consist of all the (422) National Diploma one students of the Department of Office Technology and Management (ND1 OTM) from the two (2) polytechnics (Abdu Gusau Polytechnic, Talata Mafara and Federal Polytechnic, Kaura Namoda) in Zamfara state. The schools were assigned to experimental and control groups using simple random selection technique. A sample size of 187 students obtained through the two intact classes selected from the schools above, were used for this study.

Shorthand Achievement Test (SHAT) with multiple choice items drafted out of the curriculum content taught through the video was used for data collection. The instrument was face and content validated by 3 educational technology experts (2 from Federal University of Technology, Minna and one from Federal college of Education

Technical, Gusau); Five (5) Shorthand lecturers (2 each from College of Education Minna and Abdu Gusau polytechnic, one from Federal Polytechnic Kaura Namoda) validated the instrument. SHAT was pilot tested and the result which was computed using Pearson product Moment Correlation, yielded a coefficient value of (r) .75. This makes the instrument reliable. Data collected from field was used to answer the research question using mean and standard deviation while hypotheses were tested using t-test. All the analyses were conducted using SPSS version 23.

Results

Research Question One: What is the mean achievement score of polytechnic students taught Shorthand using teacher demonstration video and conventional class taught using demonstration method?

Table 1: Mean and Standard Deviation of Experimental and Control Group at Pretest and Posttest

Group	N	Pretest		Posttest		Mean gain
		Mean	SD	Mean	SD	
Experimental	98	40.99	11.865	60.82	11.272	19.83
Control	89	41.44	11.971	56.69	9.421	15.27

Table 1 shows mean and standard deviation of experimental and control group at pretest and posttest. The table revealed that students in experimental group who were exposed to teacher demonstration video had mean score of 40.99 and standard deviation of 11.185 at pretest and mean score of 60.82 and standard deviation of 11.272 at posttest. The table further revealed that students in control group had mean score of 41.44 and standard

deviation of 11.971 at pretest and mean score of 56.69 and standard deviation of 9.421 at posttest. The mean gain scores of 19.83 and 15.27 was recorded for experimental and control groups respectively. This means that students in the experimental group had the highest mean gain score which means that they achieved better than those in the control group.

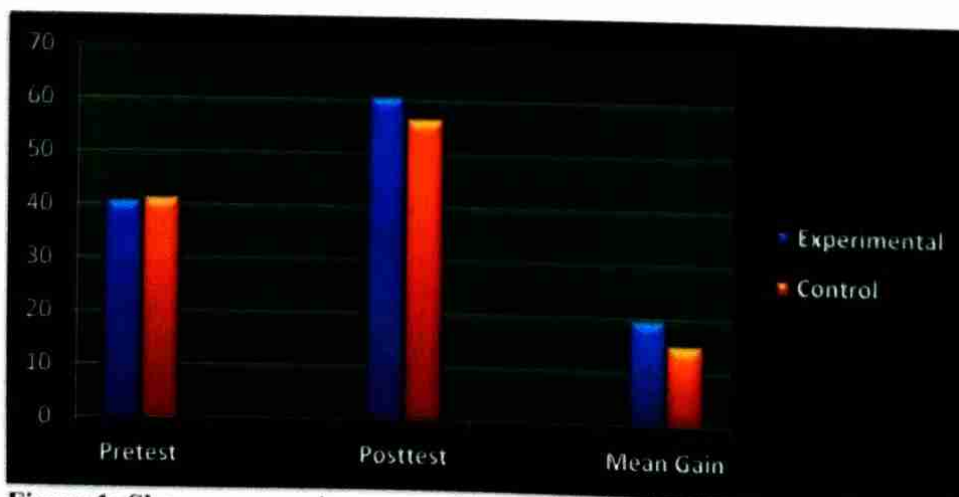


Figure 1: Shows mean gain scores of experimental and control groups



Figure 1 above shows the mean gain scores between pretest and posttest scores of experimental and control groups. The table revealed that experimental group achieved better than the control group. To find out the significance of the variance in the achievement score of experimental

and control groups, hypothesis one was tested.

HO₁: There is no significant difference in the mean achievement scores of polytechnic students taught Shorthand using teacher demonstration video and conventional class demonstration method.

Table 2: t-test Comparison of Posttest Mean Achievement Scores of Students in Experimental and Control Group

Group	N	Mean	SD	Df	t-value	p-value
Experimental	98	60.82	11.272	185	2.709	.007
Control	89	56.69	9.421			

*Significant at p=0.05

Table 2 above shows t-test comparison of the posttest achievement scores of students in experimental and control groups. The table revealed that calculated t-value (t=2.709, df=185, p<0.05) is significant at alpha level. Hence hypothesis one was rejected implying that significant difference exists in the Shorthand achievement score of polytechnic students exposed to teacher demonstration video and those in the control group in favour of those in the experimental

group. To ascertain the magnitude of the difference existed, Hedges' g effect size was calculated and a small effect size Hedges' g = 0.39 was obtained. This means, 39% of the variance occurred as a result of the influence of the experimental treatment.

Research Question Two: What is the mean achievement scores of male and female polytechnic students taught Shorthand using teacher demonstration video?

Table 3: Mean and Standard Deviation of Male and Female students of Experimental Group at Pretest and Posttest

Group	N	Pretest		Posttest		Mean gain
		Mean	SD	Mean	SD	
Males	70	40.17	10.583	63.20	10.637	23.03
Females	28	43.04	14.610	54.86	10.759	11.82

Table 1 shows mean and standard deviation of male and female students in experimental group at pretest and posttest. The table revealed that male students in experimental group exposed to teacher demonstration video had mean score of 40.17 and standard deviation of 10.568 at pretest and mean score of 63.20 and standard deviation of 10.637 at posttest. The table further revealed that female students exposed to teacher demonstration video had mean score of 43.04 and standard deviation of 14.610 at pretest and mean score of 54.86 and standard deviation of 10.759 at posttest. The mean gain scores of 23.03 and 11.82 was recorded for experimental and control groups respectively. The result revealed that male

students exposed to teacher demonstration video recorded high mean gain score between pretest and posttest scores than female students. This means that male students exposed to teacher demonstration video achieved higher than female students taught via the same method. To find out the significance of the difference that existed in the mean gain score of experimental and control groups, hypothesis two was tested.

HO₂: There is no significant difference in the mean achievement scores of male and female polytechnic students taught Shorthand using teacher demonstration video.



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Table 4: t-test Comparison of Posttest Mean Achievement Scores of Male and Female Students in Experimental group

Group	N	Mean	SD	Df	t-value	p-value
Males	70	63.20	10.637	96	3.496	.001
Females	28	54.86	10.759			

Significant at $p=0.05$

Table 4 above shows t-test comparison of the posttest achievement scores of male and female students in experimental group (exposed to teacher demonstration video). The table revealed that calculated t-value ($t=3.496$, $df=96$, $p<0.05$) is significant at alpha level. Hence hypothesis two was rejected implying that significant difference exists in the Shorthand achievement scores of male and female polytechnic students exposed to teacher demonstration video.

Discussion of Findings

This study investigated the impact of teacher demonstration video on polytechnic students' achievement in Shorthand in Zamfara State. The study aimed to find out the difference in the mean achievement scores of polytechnic students taught Shorthand using teacher demonstration video and conventional class demonstration method as obtained in research question one. The result of the analysis reported that students in the experimental group achieved better than those in the control group (exposed to teacher demonstration video). The outcome of the test of hypothesis one further revealed the existence of significant difference in the Shorthand achievements scores of polytechnic students exposed to teacher demonstration video and those in the control group in favour of those in the experimental group. A small effect size Hedges' g of 0.01 was obtained when effect size of the difference was calculated. This could be as a result of the interactive features of the video and the opportunity given to students to have access to the recorded lecture for their private studies. This result supports the findings of Irene (2015) who reported that class two pupils who were taught using an integration of video programmes had higher scores in science as compared to those who were taught using traditional methods. Irene (2015) concluded that utilization of video programmes enhances the academic achievement of lower primary school pupils.

Does Irene's propositions based on his findings retained that video instructions enhance the achievement of students from lower classes. But Okoronkwo (2016) reported that video instructional approach impacted students' achievement in physics better than conventional method. Consequently, Gambari *et al.* (2016) reported that secondary school students taught mathematics using TAN (Text-Animation and Narration) video achieved significantly better than those in the control group.

Although small effect size was obtained between the achievement scores of experimental and control groups, careful considerations should be made by Shorthand lecturers on the decision to whether or not use video instructions. This is the assertion of Santos (2016) who stressed that the selection of video production style should take a holistic view that consider the type of the course and the needs of the learners.

The finding on the research question two revealed that mean achievement scores of male and female students exposed to teacher demonstration video varied. The outcome reported that mean achievement score of male students taught through teacher demonstration video is higher than that of female students. The outcome by the analysed result of hypothesis two reported that significant difference existed between mean achievement scores of male and female polytechnic students taught Shorthand using teacher demonstration video in favour of male students. This could be as a result of the euphoric attitude of males towards any technical skills such as ICT and video operations and the phobia held by females in such technical skills. These finding supports the result of Gambari *et al.* (2016) who reported that male students performed better than females in competitive video-based instructional strategy. Consequently, Itohan (2021) reported that male students taught General woodwork through adaptive teaching strategy achieved



better than females. Contrary to this study, a lot studies reported gender having no influence in students' achievement one of such studies was carried out by Ibe, *et al.* (2016) who reported that constructivist instruction enhanced students' attainment of scientific literacy irrespective of their sexes. In the same vein, Aniah and Sani (2020) revealed that CAI (Computer Assisted Instruction) tutorial package is gender friendly and not gender biased in teaching English language spelling.

Conclusion

Students exposed to teacher demonstration video achieved higher than those taught Shorthand using the lecturer method. Mean achievement scores of male and female students exposed to teacher demonstration video varied. Significant difference exists in the Shorthand achievement scores of polytechnic students exposed to teacher demonstration video and those in the control group in favour of those in the control group. Significant difference exists in the Shorthand achievement scores of male and female polytechnic students exposed to teacher demonstration video.

Recommendations

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

1. Shorthand lecturers should critically examine the need, suitability and the possible benefits attainable through the use of video instruction in any shorthand class before deciding to embark on in order to avoid futile efforts at the end of the lesson.
2. Shorthand lecturers should use videos for instructional delivery that are not too technical so as to control female students' phobia in much technical operations.
3. Government, school administrators, and head of departments of relevant schools should encourage and sufficiently aid shorthand lecturers to use demonstration where necessary.

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