

## **EFFECT OF VIDEO-AIDED INSTRUCTION ON PRIMARY SCHOOL PUPILS' INTEREST AND MEMORY DEVELOPMENT IN ARITHMETIC IN OGOJA LOCAL GOVERNMENT AREA, CROSS RIVER STATE**

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### **Abstract**

*Technology aided instructional techniques have permeated all aspects of the classroom teaching. Thus, this study investigated the effect of video-aided instruction on primary school pupils' interest and memory development in arithmetic in Ogoja Local Government Area, Cross River State. Four research questions and six null hypotheses guided the study. The pretest posttest quasi-experimental research design was adopted for the study. The population of the study comprised all the primary two pupils in public primary schools in the LGA in 2019/2020 academic year, out of which 48 pupils (21 males and 29 females) in two intact primary two classes in different schools were sampled for the study. The Arithmetic Interest Rating Scale (AIRS) and Arithmetic Memory Development Rating Scale (AMDRS) developed by the researchers were used for data collection. These instruments, alongside with the lesson plans and the video-aided instructional package (A+ Maths Video for Primary II developed by EDTECH Nigeria, 2019) were face-validated by three experts; one each from Primary Education, Education Psychology and Measurement & Evaluation. The instruments were then trial-tested on 20 primary two pupils who were not part of the actual study. The reliability index for AIRS estimated using Cronbach Alpha was 0.83 while that of AMDRS determined using Pearson's Product Moment Correlation Coefficient was 0.87 which showed that the instruments were reliable for the study. Data obtained using the instruments were analyzed using mean and standard deviation to answer the research questions while ANCOVA was used in testing the null hypotheses at .05 level of significance. Results showed that video-aided instruction was significantly effective in improving primary school pupils' interest and*

*memory development in arithmetic, there was no significant gender difference in primary school pupils' interest and memory development in arithmetic. In addition, there was no significant interaction effect of instructional approaches and gender on primary school pupils' interest and memory development in arithmetic. It was recommended among others, that teachers should adopt video-aided instruction in teaching primary school pupils so as to enhance their interest and memory development in arithmetic.*

**Keywords:** Video-aided instruction, Interest, Memory development, Arithmetic

### **Introduction**

Technology aided instructional techniques have permeated all aspects of the classroom teaching. Some information and communication technologies have provided powerful instructional media for effective learning of various school subjects (Aboyeji, 2014). Thus, policymakers in education sector and educators really need to utilize various technologies in teaching and learning because technology enabled instructions seemingly captivate, motivate and enhances learning among different categories of learners, especially at the primary education level.

Primary education is the basic level of education in Nigeria. It is defined as the type of education given to children between the age of 6 to 12 years old (Federal Republic of Nigeria-FRN, 2013). Some of the objectives of primary education as stated in the Nigerian National Policy on Education are; to inculcate permanent literacy, numeracy, and the ability to communicate effectively, and to lay a sound basis for scientific, critical and reflective thinking among others. In pursuance of these objectives, various subject curricula have been designed, one of which is mathematics that sets to expose pupils to basic skills in arithmetic.

Arithmetic deals with the study of basic mathematical operations such as addition, subtraction, division and multiplication (Purpura, Baroody, & Lonigan, 2013). Ansari (2008) also described arithmetic as the act of processing, computation, reasoning, and decision making about the relationship between numbers. Thus, arithmetic in this study involves the acquisition of basic mathematics skills. Previous studies have shown that later success in mathematics is related to early performance in arithmetic (Claessens, Duncan, & Engel, 2009; Fuchs et al., 2010). Perhaps, this is because the study of mathematics progresses through interrelated concepts whereby advanced mathematical knowledge is dependent on the acquisition and retention of more basic prerequisite arithmetic abilities (Purpura, Baroody,

& Lonigan, 2013). In other words, inadequate development of the required abilities in early years limits an individual's acquisition of more advanced skills in the subject in later years. However, advances in technology as earlier noted have generated potential technology-based instructional approaches adjudged to facilitate learning among children.

One of such technology aided instructional approaches that is likely to increase learning among children according to some researchers (Adegoke, 2010; Gambari, Ezenwa & Anyanwu, 2014; Gambari, Yaki, Gana & Ughovwa, 2014) is the video aided instruction. Video aided instruction is an audiovisual platform that transmits verbal and non-verbal contents or materials to learners (Gambari, Shittu, Daramola, & Jimoh, 2016). These authors explained that it involves teachers playing an instructional video package using a video player and television or computer monitor, which displays the content. Similarly, Furo (2015), opined that video-aided instruction involves the use of an electronic approach that integrates texts, sounds, graphics, and images in the presentation of learning experiences. It is also described as a combination of several digital media such as images, sounds, and texts, in an integrated multiple sensory manner of presentation of learning activities to an audience (Ogochukwu, 2010). From these views, video aided instruction could be construed in this study as the use of video gadgets in visually displaying and transmitting learning content or activities to learners.

Video-aided instruction has become one of the basic and effective approaches to teaching children (Lucido, 2007). In their observation, Abragan and Hambre (2017) revealed that the approach adds action to learning experiences presented, which help pupils in comprehending even abstract ideas. Some researchers (Zhang, Zhou, Briggs, & Nunamaker, 2006; Donkor, 2010) have also acknowledged that video aided instruction facilitates instruction due to its rich and powerful way of presenting learning experiences in attractive and interesting manner, thereby making learners to be highly engrossed in learning activities. This implies that pupils are likely to feel excited and enjoy doing tasks in arithmetic when the learning activities are presented using video-aided instructions.

Implicitly, video aided instruction could be an effective way of dispensing learning experiences to learners. Moreover, Olatayo, Omiola, and Adedapo (2017) noted that video aided instructional packages presents learning experiences in ways that appeals to learners' senses of hearing and sight, which makes teaching and learning more pleasant and interesting, thus significantly contributing to maximum learning outcomes. Thus, in their study, the authors found that the use of video-aided instruction increased students' achievement in indices and logarithms aspects of mathematics, with females

performing better than their male counterparts. Other previous studies have also shown that video-aided instructions led to great improvements in students' attendance to lesson, interest, motivation and achievement in mathematics (Ogochukwu, 2010; Chaudari, 2013). Abragan and Hambre (2017) also reported that video-aided instruction was significantly effective than the lecture method in increasing pupils' interest in learning.

Interest typically explains the predisposition to engage in certain activities more than others (Gardner & Tamir, 2009). Usman and Okeke (2017) also defined interest as a subjective feeling of curiosity or concentration in certain activities or objects. This implies that interest influences pupils' choices of engaging in different activities. In this study, interest is viewed as the preference and degree to which pupils engage in arithmetic activities. Apart from pupils' interest in arithmetic which seem to be positively influenced by the use of video-aided instruction, the pupils' memory development could also be enhanced through the same approach.

Memory development is the process of expanding and enlarging the length of time over which information can be retained or stored by an individual (Formoso, Jacobovich, Injoque-Ricle, & Barreyro, 2018). According to Ogochukwu (2010), well-designed video-aided instructional packages potentially help ineffective development of children's memory capacity than the normal classroom setting. This is because the early years of children, specifically between 3-8 years are crucial to their proper memory development in later years (Marder, Gazzaniga, DeLong, & Wichmann, 2008). From the observation of the researchers, children commonly develop their memory through their effects towards correctly recalling certain occurrences within their environments when chatting with one another either in class, outside the class or at home. This is how they also develop their memory on what is learnt in the class which depends on the learning activities being presented to them. From these assertions, memory development is defined in this study as the process through which pupils expand their capacity to retain and recall what they have learnt in arithmetic over an appreciable duration of time.

Literature has shown that video aided instruction has effect on children' memory development. Specifically, in relation to the learning of arithmetic, Formoso, Jacobovich, Injoque-Ricle, Barreyro (2018) reported that audio-visual aids promoted children ability to retain what has been taught in their memory than mere finger counting and teachers' use of chalkboard. Likewise, Purpura and Ganley (2014) revealed that children's mathematics skills at kindergarten were significantly associated with their memory capacity in mathematics at preschool year. This implies that video aided instruction could have effect on pupils' memory development. However, children

memory development among other factors may also be dependent on the pupils' gender.

Gender differences in school achievement generally has remain a contentious issue in education literature. According to Akani (2009), gender refers to a social and cultural construct that specifies the qualities, behaviour and roles in which different societies ascribe to females and males. Thus, gender refers to differences that exists between male and female pupils as defined by the society, which has potential influence on their learning of arithmetic. Some studies have shown that girls differ from boys in their interest in arithmetic (Watt, 2006; Kurumeh, Achor, Akume & Mohammed, 2012), others (Udofia, 2008; Ogwuche & Kurumeh, 2011) have conversely revealed that girls showed greater interest and achievement in Mathematics than boys, while others (Okigbo & Okeke, 2011; Agashi, 2014) reported similar level of interest in the subject for both male and female pupils. This means that further research is still needed.

It suffices to note at this point that in spite of the potential effect of video aided instruction on pupils' interest and memory development in arithmetic, the technology seem yet to be adopted by teachers in public primary schools in Nigeria, particularly in Ogoja Local Government Area. Moreover, there is nearly no literature on the effect of the video-aided instructional approach, specifically on pupils' interest and memory development in arithmetic in the area. Observably, one striking issue is that any deficit suffered by pupils in terms of interest and memory development in arithmetic at this early stage likely affects their learning progress in advance contents in mathematics. Hence, with the constant need for laying in pupils, a solid foundation in the learning of arithmetic, the researchers were poised to explore the effect of video-aided instruction on primary school pupils' interest and memory development in arithmetic in Ogoja local government area, Cross River State. Specifically, the study sought to determine the:

1. mean arithmetic interest ratings of pupils exposed to video-aided instruction and those not exposed to it;
2. influence of gender on the mean arithmetic interest ratings of pupils;
3. interaction effect of teaching approaches and gender on the mean arithmetic interest ratings of pupils;
4. mean arithmetic memory development ratings of pupils exposed to video-aided instruction and those not exposed to it;
5. influence of gender on the mean arithmetic memory development ratings of pupils;
6. interaction effect of teaching approaches and gender on the mean arithmetic memory development ratings of pupils.

### **Research Questions**

The following four research questions were posed to guide the study.

1. What are the mean arithmetic interest ratings of pupils exposed to video-aided instruction and those not exposed to it?
2. What is the influence of gender on the mean arithmetic interest ratings of pupils?
3. What are the mean arithmetic memory development ratings of pupils exposed to video-aided instruction and those not exposed to it?
4. influence of gender on the mean arithmetic memory development ratings of pupils?

### **Hypotheses**

The following hypotheses were formulated in the study and were tested at .05 level of significance.

- H<sub>01</sub>:** There is no significant effect of video-aided instruction on the mean arithmetic interest ratings of pupils exposed to it and those not exposed to it.
- H<sub>02</sub>:** There is no significant influence of gender on the mean arithmetic interest ratings of pupils.
- H<sub>03</sub>:** There is no significant interaction effect of teaching approaches and gender on the mean arithmetic interest ratings of pupils.
- H<sub>04</sub>:** There is no significant effect of video-aided instruction on the mean arithmetic memory development ratings of pupils exposed to it and those not exposed to it.
- H<sub>05</sub>:** There is no significant influence of gender on the mean arithmetic memory development ratings of pupils.
- H<sub>06</sub>:** There is no significant interaction effect of teaching approaches and gender on the mean arithmetic memory development ratings of pupils.

### **Method**

Non-equivalent control group pretest-posttest quasi-experimental research design was adopted for the study, conducted in Ogoja Local Government Area (LGA) of Cross River State, Nigeria. The study population comprised all the primary II pupils in public primary schools in the LGA for the 2019/2020 academic year. Primary II pupils were chosen because they were at the age where the foundation of arithmetic knowledge and skills is being laid. The sample of the study was made up of 48 (21 male and 29 female) pupils, in two intact primary II classes in two different primary schools whose pupils were not homogeneous in terms of interest and memory

development in arithmetic. The use of intact classes was to avoid disruption of normal school activities in the schools involved in the study. The conditions for selecting a school were that the school had at least: 1) one functional television set and video player, 2) a source of power or electricity, 3) one teacher with a minimum qualification of Nigerian Certificate in Education (NCE) in Primary Education and three years of teaching experience teaching, and, 4) that the school authority was willing to permit the involvement of the pupils, and the use of the school facilities for the study. Only one stream of the intact classes was selected in each of the schools, and the entire class was consequently used for the study. One of the two intact classes selected in one primary school was randomly assigned to the experimental group while the other intact class in another primary school was assigned to the control group.

Two instruments; Arithmetic Interest Rating Scale (AIRS), and Arithmetic Memory Development Rating Scale (AMDRS) developed by the researchers were used for data collection in the study. The AIRS consisted of section A and B. Section A elicited personal information of the pupils (pupil's gender, class identification number, school code), while section B contained five items that elicited data on pupils' interest in arithmetic (in terms of: attentiveness, zeal or passion for doing addition, subtraction, division, and multiplication). The ratings for each of the items ranged from 1-4 depicting very low, moderate, high, and very high arithmetic interest respectively. Likewise, the AMDRS had section A and B. Section A also elicited personal information of the pupils (pupil's gender, class identification number, school code), while section B contained five items that elicited data on pupils' memory development (in terms of: increased knowledge, calculating speed, manipulative abilities, problem solving ability, and recalling ability) in arithmetic. The ratings for each of the items also ranged from 1-4 portraying very low, moderate, high, and very high arithmetic memory development respectively.

Three experts, one each from Primary Education, Educational Psychology, and Measurement and Evaluation carried out the face validation of the instruments, lesson plans and the video-aided instructional package (A+ Maths Video for Primary II developed by EDTECH Nigeria, 2019). The research instruments were later trial-tested twice on 20 primary II pupils in one of the public primary schools in Ogoja LGA which was not among those used for the actual study but met the criteria for the study. Cronbach Alpha method was used in estimating the reliability of the AIRS based on the scores generated from the first trial test, and a reliability index of .83 was obtained for the instrument. On the other hand, estimate of temporal stability, specifically the test-retest technique with Pearson product moment correlation

coefficient was used to determine the reliability of the AMDRS, which was 0.87. The reliability indices obtained for the AIRS and AMDRS showed that the instruments were reliable for the study.

### **Procedure**

Before commencement of the experiment, the researchers sought informed consent and permission of the authorities of the sampled schools, which was granted to the researchers after due consultation with the parents of the pupils. The regular classroom teachers for the selected intact classes of the two sampled schools were used as research assistants, who were adequately informed and well-orientated about the objectives of the study, method of lesson presentation, exposure of the research assistant for the experimental to arithmetic video-aided instruction, and how the two research assistants were to administer the instruments for data collection.

The experiment lasted for a duration of six weeks. In the first week, Pre-test of AIRS and AMDRS were done in order to determine the level of pupils' interest and memory development in arithmetic before the commencement of the experiments. The rating of the pupils' interest and memory development in arithmetic was done by the teachers. Afterwards, the actual experiment, including revision lasted for four (4) weeks for both experimental and control groups. The experiment was conducted during the normal school periods following the schools' timetable for the four weeks of 35 minutes per lesson period daily. Two sets of lesson plans, with the same content, specific objectives, duration and evaluation were developed for the two groups, except that the experimental group was taught by watching the A+ Maths Video for Primary II as developed by EDTECH Nigeria, while the control group was taught using the normal chalkboard teaching approach. At the sixth week, the same AIRS and AMDRS were readministered at post-test in order to determine the effect of the different treatments on the pupils' interest and memory development in arithmetic respectively, though the items were shuffled. The rating of the pupils was also done by the same teacher. Data generated from the pretests and posttests were used for analysis. Data were analyzed using mean and standard deviations to answer the research questions while the hypotheses were tested using analysis of covariance (ANCOVA) at 0.05 level of significance.

### **Results**

The results from the analysis of data generated in the study are presented in Tables in this section line with the research questions that were posed to guide the study, and the null hypotheses formulated for the study.

**Research Question One:**

What are the mean arithmetic interest ratings of pupils exposed to video-aided instruction and those not exposed to it?

**Table 1: Pretest and Post-test Mean arithmetic interest ratings of pupils exposed to video-aided instruction and those not exposed to it**

Instructional Approaches	N	Pretest		Posttest		Mean Difference
		$\bar{x}$	SD	$\bar{x}$	SD	
Taught with Video Aided	24	8.63	1.05	14.25	2.40	5.62
Taught without Video Aided	25	8.84	1.52	9.48	1.39	0.64

Result in Table 1 shows that pupils who were taught arithmetic with video aided instruction had a mean interest rating of ( $\bar{x} = 8.63$ ,  $SD = 1.05$ ) at pretest, and a mean of ( $\bar{x} = 14.25$ ,  $SD = 2.40$ ) at posttest, while their counterparts who were taught without video aided instruction a mean interest rating of ( $\bar{x} = 8.84$ ,  $SD = 1.52$ ) at pretest and a mean of ( $\bar{x} = 9.48$ ,  $SD = 1.39$ ) at posttest. Mean difference of 5.62 and 0.64 obtained for pupils taught with video aided instruction (experimental group), and those taught without video aided instruction (control group) respectively imply that video aided instruction effectively increased pupils' interest in arithmetic.

**Hypothesis One**

**H<sub>01</sub>:** There is no significant effect of video-aided instruction on the mean arithmetic interest ratings of pupils exposed to it and those not exposed to it.

**Table 2: Analysis of Covariance (ANCOVA) of the effect of video-aided instruction on the mean arithmetic interest ratings of pupils exposed to it and those not exposed to it**

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Decision
Corrected Model	289.016	4	72.254	18.886	.000	.632	
Intercept	173.631	1	173.631	45.385	.000	.508	
Pre-AIR	2.014	1	2.014	.526	.472	.012	
Gender	7.984	1	7.984	2.087	.156	.045	NS
Teaching Approaches	267.317	1	267.317	69.874	.000	.614	S

Teaching Approaches* Gender	1.791	1	1.791	.468	.497	.011	NS
Error	168.331	44	3.826				
Total	7299.000	49					
Corrected Total	457.347	48					

**Note:** Significant, NS = Not Significant

Result in Table 2 shows that the effect of video-aided instruction on pupils’ interest in arithmetic was significant ( $F(1, 48) = 69.874, p < .05, \eta^2_p = .614$ ). This is because the associated probability value of 0.00 is less than 0.05 set for testing the null hypothesis. Hence, the null hypothesis is rejected, and the inference drawn is that there is a significant effect of video-aided instruction on the mean arithmetic interest ratings of pupils exposed to it unlike those not exposed to it. The effect size of ( $\eta^2_p = .614$ ) indicates that 61.4 percent variance in pupils’ interest in arithmetic is accounted for by the use of video-aided instruction.

**Research Question Two:**

What is the influence of gender on the mean arithmetic interest ratings of pupils?

**Table 3: Pretest and Post-test Mean Arithmetic Interest Ratings of Male and Female Pupils**

Gender	N	Pretest		Posttest		Mean Difference
		$\bar{x}$	SD	$\bar{x}$	SD	
Male	22	8.50	1.23	11.23	3.29	2.73
Female	27	8.93	1.36	12.30	2.88	2.37

Result in Table 3 shows that male pupils had a mean interest rating of ( $\bar{x} = 8.50, SD = 1.23$ ) at pretest and a mean of ( $\bar{x} = 11.23, SD = 3.29$ ) at posttest, while female pupils had a mean interest rating of ( $\bar{x} = 8.93, SD = 1.36$ ) at pretest and a mean of ( $\bar{x} = 12.30, SD = 2.88$ ) at posttest. Mean difference of 2.73 and 2.37 for male and female pupils respectively shows that male pupils had slightly higher arithmetic interest than their female counterparts.

### Hypothesis Two

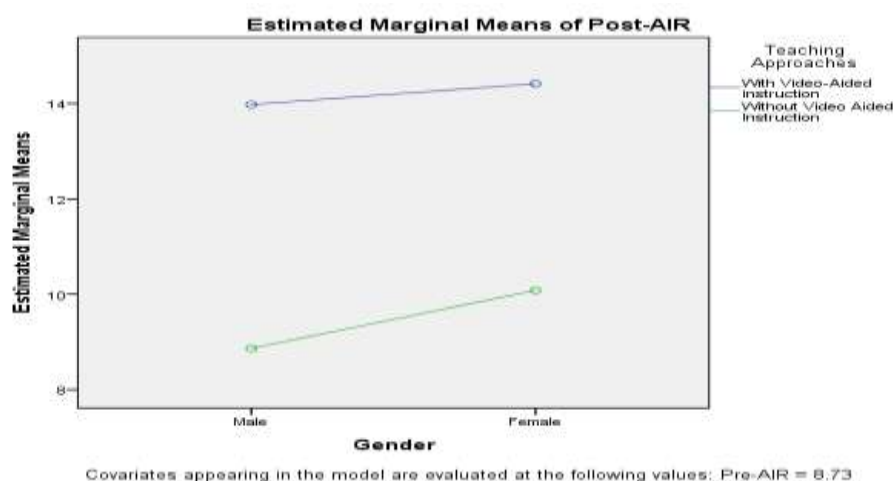
**H<sub>02</sub>:** There is no significant influence of gender on the mean arithmetic interest ratings of pupils.

Result in Table 2 also shows that the influence of gender on the mean arithmetic interest ratings of pupils was not statistically significant ( $F(1, 48) = 2.087, p > .05, \eta^2_p = .045$ ). This is due to the fact that the associated probability value of .156 is greater than 0.05 set as level of significance for testing the null hypothesis. For this reason, the null hypothesis was not rejected. Therefore, the conclusion drawn is that gender does not significantly influence pupils' interest in arithmetic.

### Hypothesis Three

**H<sub>03</sub>:** There is no significant interaction effect of teaching approaches and gender on the mean arithmetic interest ratings of pupils.

Result in Table 2 also indicate that the interaction effect of teaching approaches and gender on the mean arithmetic interest ratings of pupils was not statistically significant ( $F(1, 48) = .468, p > .05, \eta^2_p = 0.011$ ). This is because the associated probability value of 0.497 was greater than 0.05 set as level of significance for testing the null hypothesis. Thus, the null hypothesis was not rejected. Consequently, it is concluded that there is no significant interaction effect of teaching approaches and gender on the mean arithmetic interest ratings of pupils. This is evident as the lines drawn against teaching approaches and gender (male and female) do not intercept at any point as depicted by the graph below.



**Fig. 1:** Graph showing the interaction effect of teaching approaches and gender on gender on the mean interest rating of pupils in arithmetic

Figure1 shows parallel lines on the graph, also the marginal means for pupils taught with video aided instruction was about 14 while that of pupils taught without video aided instruction was about 9 irrespective of pupils' gender. These are indications that there was no interaction effect of teaching approaches and gender on the mean arithmetic interest ratings of pupils.

**Research Question Three:**

What are the mean arithmetic memory development ratings of pupils exposed to video-aided instruction and those not exposed to it?

**Table 4: Pretest and Post-test Mean arithmetic memory development ratings of pupils exposed to video-aided instruction and those not exposed to it**

Instructional Approaches	N	Pretest		Posttest		Mean Difference
		$\bar{x}$	SD	$\bar{x}$	SD	
Taught with Video Aided	24	8.67	1.27	15.29	2.65	6.62
Taught without Video Aided	25	8.38	1.68	8.92	1.73	0.54

Result in Table 4 shows that pupils who were taught arithmetic with video aided instruction had a mean arithmetic memory development rating of ( $\bar{x} = 8.67, SD = 1.27$ ) at pretest, and a mean of ( $\bar{x} = 15.29, SD = 2.65$ ) at posttest, while their counterparts who were taught without video aided instruction had a mean arithmetic memory development rating of ( $\bar{x} = 8.38, SD = 1.68$ ) at pretest and a mean of ( $\bar{x} = 8.92, SD = 1.73$ ) at posttest. Mean difference of 6.62 and 0.54 obtained for pupils taught with video aided instruction (experimental group) and those taught without video aided instruction (control group) respectively imply that video aided instruction effectively improved pupils' memory development in arithmetic.

**Hypothesis Four**

**H<sub>04</sub>:** There is no significant effect of video-aided instruction on the mean arithmetic memory development ratings of pupils exposed to it and those not exposed to it.

**Table 5: Analysis of Covariance (ANCOVA) of the effect of video-aided instruction on the mean arithmetic memory development ratings of pupils exposed to it and those not exposed to it**

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Decision
Corrected Model	538.873	4	134.718	31.027	.000	.738	
Intercept	86.882	1	86.882	20.010	.000	.313	
Pre-AIR	22.609	1	22.609	5.207	.027	.106	
Gender	2.647	1	2.647	.610	.439	.014	NS
Teaching Approaches	486.415	1	486.415	112.027	.000	.718	S
Teaching Approaches* Gender	17.433	1	17.433	4.015	.051	.084	NS
Error	191.045	44	4.342				
Total	7834.000	49					
Corrected Total	729.918	48					

**Note:** Significant, NS = Not Significant

Result in Table 5 depicts that the effect of video-aided instruction on pupils' memory development in arithmetic was significant ( $F(1, 48) = 112.027, p < .05, \eta^2_p = .718$ ). This is because the associated probability value of 0.00 is less than 0.05 set for testing the null hypothesis. Thus, the null hypothesis is rejected, and the conclusion drawn is that there is a significant effect of video-aided instruction on the mean arithmetic memory development ratings of pupils exposed to it unlike those not exposed to it. The effect size of ( $\eta^2_p = .614$ ) explains that 71.8 percent changes in pupils' memory development in arithmetic is accounted for by the use of video-aided instruction.

#### Research Question Four:

What is the influence of gender on the mean arithmetic memory development ratings of pupils?

**Table 6: Pretest and Post-test Mean memory development Ratings of Male and Female Pupils**

Gender	Pretest		Posttest		Mean Difference	
	N	$\bar{x}$	SD	$\bar{x}$		SD
Male	22	8.09	1.63	11.86	4.44	3.77
Female	27	8.85	1.29	12.19	3.48	3.34

Result in Table 6 shows that male pupils had a mean interest rating of ( $\bar{x} = 8.09$ ,  $SD = 1.63$ ) at pretest and a mean of ( $\bar{x} = 11.86$ ,  $SD = 4.44$ ) at posttest, while female pupils had a mean memory development rating of ( $\bar{x} = 8.85$ ,  $SD = 1.29$ ) at pretest and a mean of ( $\bar{x} = 12.19$ ,  $SD = 3.48$ ) at posttest. Mean difference of 3.77 and 3.34 for male and female pupils respectively indicate that male pupils had slightly higher arithmetic memory development than their female counterparts.

### **Hypothesis Five**

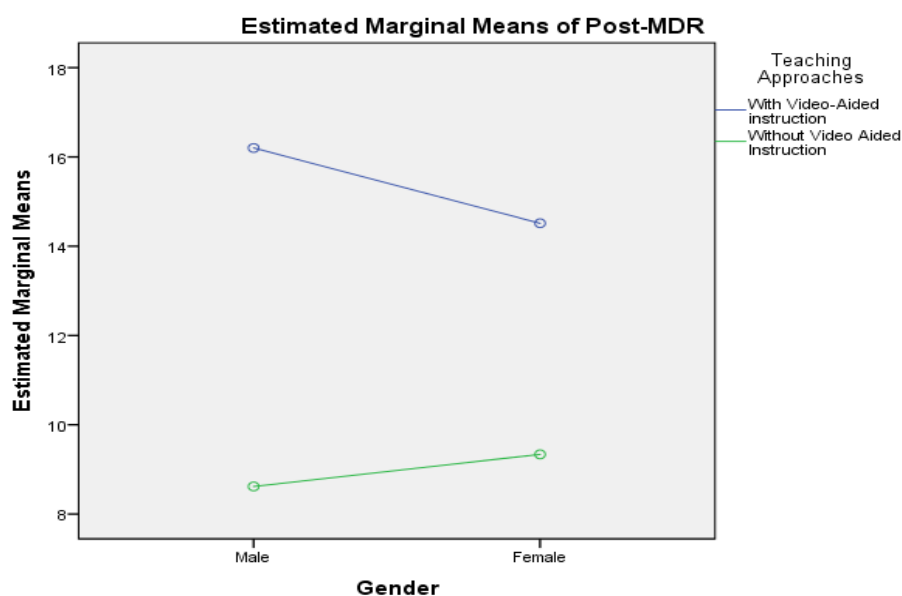
**H<sub>05</sub>:** There is no significant influence of gender on the mean arithmetic memory development ratings of pupils.

Result in Table 5 also portrays that the influence of gender on the mean memory development ratings of pupils in arithmetic was not statistically significant ( $F(1, 48) = .610$ ,  $p > .05$ ,  $\eta^2_p = .014$ ). This is due to the fact that the associated probability value of .439 is greater than 0.05 set as level of significance for testing the null hypothesis. On this note, the null hypothesis was not rejected. Consequently, it was concluded that gender does not significantly influence pupils' arithmetic memory development.

### **Hypothesis Six**

**H<sub>06</sub>:** There is no significant interaction effect of teaching approaches and gender on the mean arithmetic memory development ratings of pupils.

Result in Table 5 also shows that the interaction effect of teaching approaches and gender on the mean arithmetic memory development ratings of pupils was not statistically significant ( $F(1, 48) = 4.015$ ,  $p > .05$ ,  $\eta^2_p = 0.084$ ). This is because the associated probability value of 0.051 was greater than 0.05 set as level of significance for testing the null hypothesis. Thus, the null hypothesis was not rejected, therefore, it was concluded that there is no significant interaction effect of teaching approaches and gender on the mean arithmetic memory development ratings of pupils. This is evident as the lines drawn against teaching approaches and gender (male and female) do not intercept at any point as illustrated in the graph below.



Covariates appearing in the model are evaluated at the following values: Pre-MDR = 8.51

**Fig. 2:** Graph showing the interaction effect of teaching approaches and gender on the mean memory development rating of pupils in arithmetic

Figure 2 shows parallel lines on the graph, also the marginal means for pupils taught with video aided instruction was about 16 while that of pupils taught without video aided instruction was about 9 irrespective of pupils' gender. These portray that there was no interaction effect of teaching approaches and gender on the mean memory development rating of pupils in arithmetic.

## Discussion

The main focus of this study was to determine the effect of video-aided instruction on primary school pupils' interest and memory development in arithmetic in Ogoja local government area, Cross River State. Thus, the study revealed that the use of video aided instruction effectively increased pupils' interest in arithmetic. Furthermore, it was confirmed that there is a significant effect of video-aided instruction on pupils' interest in arithmetic. This implies that pupils' interest in arithmetic improved appreciably when video-aided instruction was adopted. The finding adds credence to that of the study by Abragan and Hambre (2017), which showed that video-aided instruction significantly increased pupils' interest in learning than the normal teaching

approach. Likewise, the finding lends support to the finding of other previous researchers (Ogochukwu, 2010; Chaudari, 2013) who revealed that video-added instructions led to great improvements in students' attendance to lesson, interest in mathematics. This could be true because video aided instruction presented arithmetic learning activities to pupils in an exciting and pleasurable manner, which can possibly promote their interest in learning such activities.

The finding of this study also showed that video aided instruction effectively improved pupils' arithmetic memory development. In essence, pupils' arithmetic memory develops substantially when they are taught with video-aided instruction. In addition, it was confirmed that there is a significant effect of video-aided instruction on pupils' arithmetic memory development. This finding is consistent with the finding of Formoso, Jacobovich, Injoque-Ricle and Barreyro (2018) that audio-visual aids promote children ability to retain what has been taught than mere finger counting and teachers' use of chalkboard. This finding was expected because video aided instruction presents learning activities and content in the manner that is appealing to the children's senses of hearing and sight, and also enjoyable, thus increasing the pupils' likelihood of retaining such pleasant experiences.

Furthermore, the study also found that there was no significant influence of gender on the mean arithmetic interest and mean arithmetic memory development of pupils. Similarly, there was no interaction effect of teaching approaches and gender on interest and mean memory development rating of pupils in arithmetic. The findings are in contrast with the outcome of some previous studies (Watt, 2006; Kurumeh, Achor, Akume & Mohammed, 2012) that girls differ from boys in their interest in arithmetic. However, the findings are in line with those of other researchers (Okigbo & Okeke, 2011; Agashi, 2014) who have reported that both male and female demonstrated similar degree of interest and achievement in arithmetic. In other words, both male and females had the same level of interest and achievement in arithmetic. This may be possible because both male and female pupils are usually taught by the same teacher under the same learning conditions.

## **Conclusion**

Based on the findings of this study, the researchers conclude that video aided instruction have significant positive effect on primary school pupils' interest and memory development in arithmetic. Additionally, it was concluded that gender is not a significant factor in primary school pupils' interest and memory development in arithmetic. Hence, there is no significant interaction effect of instructional approaches and gender on pupils' interest and memory development in arithmetic.

### Recommendations

Based on the findings, the researchers recommended that:

1. Teachers should adopt video-aided instructions in teaching arithmetic in primary schools in Ogoja LGA of Cross River State, Nigeria so as to enhance pupils' interest and memory development in it.
2. School administrators should provide necessary facility that will enable the use of video-aided instruction in teaching arithmetic in primary schools in Ogoja LGA of Cross River State, Nigeria.

### Declaration of Conflict of Interests

The authors declare that there is no potential conflict of interest with respect to authorship of this research, as well as the publication of this article.

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