



An Investigation of the Effects of Independent Study and Direct Instruction on the Achievement of SS II Students in Visual Arts as A Vocational Subject in Ekiti State, Nigeria

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ABSTRACT

The research compared and analyzed SS II students' achievement in Visual Arts as a vocational subject in public secondary schools in Ekiti State. The study adopted the pretest, posttest "quasi-experimental" control group design. The population comprised all the SSII Visual Arts students in Ekiti State public secondary schools. The researcher randomly selected three local government areas out of the sixteen local government areas of Ekiti State. Three local government areas were picked using a simple random sampling technique to determine three schools in the selected local government areas. In contrast, simple random sampling was used to determine a sample of sixty (60) SSII Visual Arts students for the study. One self-designed research instrument titled the Visual Art Achievement Test (VAAT) was validated by experts in the field of Educational Technology. The reliability coefficient of the instrument was realized as 0.79, using Cronbach's alpha. The instrument VAAT was administered as a pretest and posttest to both direct instruction and independent study groups to determine the differences between the treatments. The data collected was analyzed using the research question, mean, percentage, standard deviation, and analysis of covariance ANCOVA and MCA to answer two research questions and test three hypotheses raised at 0.05 α level of significance. From the results obtained, hypotheses one and three were rejected, while finding retained hypothesis two. The findings revealed a significantly different in the achievement mean scores of the experimental and control groups for Visual Art students taught with direct instruction and independent study. The researcher concluded that using independent study will enhance students' achievement in Visual Arts. Based on the findings of this study, Visual Art teachers should adopt independent research and direct instruction to impart knowledge to the students towards enhancing a better understanding of Visual Art as a vocational subject.

Keywords: Direct Instruction, Independent Study, Students' Achievement, Visual Arts.

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1. INTRODUCTION

It still needs to be improved to improve learning, especially in a school environment. This vital objective elicits the need to investigate the effect of direct instruction and independent study on achievement in the visual arts. Even though the natural explanation is the best method of teaching and learning the visual arts, it places it in a broader context. Sadly, there is still a lack of visual art instruction in Nigeria. However, according to Ruppert (2006), research must explain why the visual arts are essential. However, research supports what the majority of people already feel to be true: that all students benefit significantly from the skills to succeed in their studies, careers, and personal lives. The intriguing area of research that focuses on quantifying the whole spectrum of advantages associated with learning the visual arts is being pursued by Rose and Alec (2004) as they continue to investigate the complicated processes involved in learning and acquiring information and abilities. However, according to Adeleke (2019), many secondary schools in the state of Ekiti provide pupils with good orientation, which leads to successful teaching-learning outcomes. In contrast, teachers need help to acquire new techniques or skills and have little effect on students' enthusiasm to study in real-world settings.

As a result, most teachers require assistance in helping their pupils achieve academic success. The teacher, acting as a change agent, uses various techniques that significantly alter teachers' and students' academic performance. The teacher must pay proper and adequate attention to all aspects of the student's academic achievement in the visual arts, notably the technique selection that will best instil information and skills and help students develop the necessary skills. There are numerous instructional techniques used when teaching academic courses. According to Olaitan (1984), one of them is direct instruction. The demonstration method is one of the relevant variables chosen for this study because it is classified as a direct instructional approach.

The researcher evaluates the value of direct instruction in learning alongside other researchers. Any teacher must be well-prepared for the lesson, and late arrivals from the pupils should be encouraged. Before the study begins, the teacher should gather and prepare all relevant materials. The researcher also mentioned that teachers could teach a large or small class via direct instruction, depending on the available room. According to Adewuya (2003), direct instruction is an explanation-based teaching strategy in which the teacher imparts knowledge while involving his students in handling objects and associating the concept he is presenting. According to Seweje and Jegede (2002), direct instruction is a tool for helping pupils understand concepts, ideas, and principles. According to Paul and Dani (2012), direct instruction is an effective strategy for encouraging students to learn, saving time and resources, and demonstrating how to prevent mishaps and breakages.

They do point out specific flaws, though. It has limited scope to cover and does not allow students to manipulate and make demands for performing tasks independently. According to Uhumiavbi and Mamudu's (2009) research, the direct instruction method is gender-sensitive. They claimed that male students performed better when pupils were exposed to demonstration strategies than their female counterparts. However, in defiance of this viewpoint, nevertheless, in opposition to this view,



Carrier (2005), Price, and Hadgeaft (2009) challenged the claim made above that all student groups benefit when given a chance to interact with materials, take part in activities, and operate objects and equipment based on the findings of their research. Secondary students in classes would have many opportunities to participate actively in learning through demonstrations, educational games, simulations, field trips, and other exciting activities. (Blair, Schwartz, Biswas, and Leelawong, 2007). Carrier and Prpric supported this opinion. In a similar spirit, independent study's ultimate purpose is to teach students how to learn, so they are not reliant on their academic environment or instructors. Students are encouraged to develop life skills through independent study.

These abilities include finding information and allowing students to find, evaluate, and apply knowledge. The more prepared students are, the more effectively they will develop independent learning. Parents, students, and educators have always been concerned about student progress in school. The use of independent study, often known as the project method, has been one of the fundamental theories for students' achievement in visual art classes. There have been numerous hypotheses on what makes students succeed in this subject. Independent study is utilized to help students practice skills taught in the classroom worldwide.

A lot of independent study research has been motivated by the practical need to comprehend how it might enhance learning results. Most visual art instructors assign projects as independent study so students can practice their new abilities outside class. (Wardon, 2001). Therefore, the researcher believes that independent research improves student accomplishment when used as a teaching approach and adequately implemented promptly and thoroughly. Additionally, it will substantially raise pupils' success and skill development, even above the desired level. Therefore, Gartland (1980) proposed that teachers should give students more independent practice instead of a lot of class practice during a teaching presentation. Charles (1996) argued that teachers must respect students' ideas by enforcing their norms, supporting Gartland (1980).

These guidelines can be used as a springboard for individual research or as answers to visual arts challenges. Student academic achievement has long been a concern for parents, students, and educators. Student academic achievement has long been a concern for parents, students, and educators, according to Warton in Gallier (2007). The use of independent study has been one of the prominent theories for student achievement in visual arts classes, among other hypotheses on what influences students' achievement. Utilizing independent investigation has been one of the key concepts for improving students' academic performance. Direct instruction is, however, employed to assist pupils in applying knowledge gained in the classroom. The practical requirement to comprehend the independent study's function in raising achievement has served as the primary impetus for much of the field's research.

Through problem-solving that emphasizes comprehending depth, students gain knowledge. (2007) Binnen Adekoya and Olatoye (2011) examined the impact of three teaching methods on students' performance in pasture and fodder crops: demonstration, peer tutoring, and lecture. With a control group, a pre-post experimental design was used with 150 randomly chosen senior secondary school II (SS2) agricultural science students. The study's research and findings revealed that direct instruction (a demonstration technique) significantly impacted student academic performance, and pupils' increased interaction and friendliness due to the method may be a contributory factor.



In contrast, Paul and Dantani's (2012) study examined how pupils in the Nassarawa Local Government Area of Kano State performed academically in chemistry. The study involved 58 chemistry students from the senior secondary school (SSS1), both boys and girls. The findings showed that direct instruction (demonstration) improved student performance in chemistry more effectively than lecture-based training. This approach demonstrated that when given explicit instruction, boys and girls do better in school. Additionally, when utilizing the lecture method, the study's non-equivalent pretest, posttest, and control group designs revealed that both boys and girls performed equally well in Agricultural Science in the East Education Zone of Kogi State. According to Eric, Ross, and Lynn (1997), the instructional strategy that most teachers need to use to assist students in becoming independent learners is to choose the proper learning strategies autonomously.

1.1 Statement of the problems

Although research doesn't fully explain why visual art is significant, current educational policy considers it a part of the core curriculum essential for all learners' total development. Consequently, it supports what most people already believed to be true in their minds about visual arts, whether visual art contributes significantly to all students' achievement in academics and other spheres of their lives. (Ruppert, 2006). this assertion calls for re-evaluating experimenting with independent study and direct instruction as teaching strategies and approaches as visual arts are currently being emphasized.

It has been noted that visual art is taught using traditional methods in traditional classroom settings, leading to the student's poor performance in internal and external exams. While the issue persists, it's frequently observed that parents force their kids to choose science as a subject, believing that visual arts are only limited to painting and drawing and that anyone who cannot draw a perfect circle with a regular bottle will likely struggle if studying visual arts as a subject. This mistaken belief stems from the misconception that visual arts cannot be taught and must instead be a natural talent for students taking them as a subject. One of the biggest problems is that most students struggle with emotional issues that make them restless, easily distracted, and sometimes incapable of paying attention in class. They also tend to believe that visual arts are only for the most talented and gifted students and that it may be more difficult for them to succeed in the subject than their peers in science classes. As direct instruction and independent study are rarely used in teaching and learning visual art, low performance could be attributed to the teachers' poor use of instructional methods.

1.2 Purpose of the Study

The purpose of this study was to:

1. Compare the effect of direct instruction and independent study on SSII students' achievement in Visual Art as a Vocational subject.
2. Determine whether direct instruction and independent study strategies could be used as practical tools for teaching Visual Art in Ekiti state secondary schools
3. Assess if these instruments could lead to more profound insight into how visual arts teachers can explore such variables to improve students' academic achievement.



1.3 Research Questions:

1. What is the level of students' achievement in Visual Arts?
2. Will the use of independent study improve Senior Secondary School students' achievement in Visual Arts?

1.4 Research Hypotheses

1. There is no significant difference between the pretest achievement mean scores of the experimental (direct instruction and independent study) and the Visual Art control groups.
2. There is no significant difference in the achievement mean scores of the experimental and control groups of the Visual Art student taught with direct instruction and those exposed to independent study.
3. There is no significant difference between the achievement mean scores of male and female students in the experimental and control groups.

2. Methodology

The study adopted a quasi-experimental design type of pretest, posttest, and control group. The population comprised all senior secondary school class Two (SS II) Visual Art students in all 146 public secondary schools in Ekiti State. In addition, The researcher randomly selected three Local Government Areas from the sixteen local Government areas in Ekiti state. While 60 male and female students, twenty from each of the three randomly chosen schools constituted the sample.

Three teachers, one from each school, were trained as research assistants in the study. The schools were randomly assigned to two experimental and one control group. Students in experimental group 1 were exposed to the direct instruction strategy, and those in experimental group II were exposed to the independent study strategy. In contrast, those in the control group received instruction using the traditional methods. Only one instrument, Visual Art Achievement Test (VAAT) with 25 multiple choice items, was used to collect pretest and posttest data. The experiment lasted for eight weeks. The instrument was validated with the help of experts in educational technology and fine and applied arts. At the same time, the test-retest reliability was used on 20 students outside the study groups.

The data collected were analyzed using Pearson's Product Moment Correlation Analysis, and the reliability coefficient of 0.79 was obtained at $p < 0.05$ level of significance, which was considered suitable for the study. The pre-data and post-data collected were analyzed using mean, percentage and standard deviation to answer the two research questions raised. The covariance (ANCOVA) and analysis of variance (ANOVA) were used to test all three hypotheses at $p > 0.05$ level of significance.



Research Question 1: What is the level of student's achievement in visual arts?

Table 1: Level of Students' Achievement in Visual Arts.

	Pretest			% of Total Score
	N	Mean	SD	
Independent Study (Project Method)	20	12.65	2.48	50.6
Direct Instruction (Demonstration method)	20	12.75	2.53	51.0
Control	20	13.20	2.31	52.8

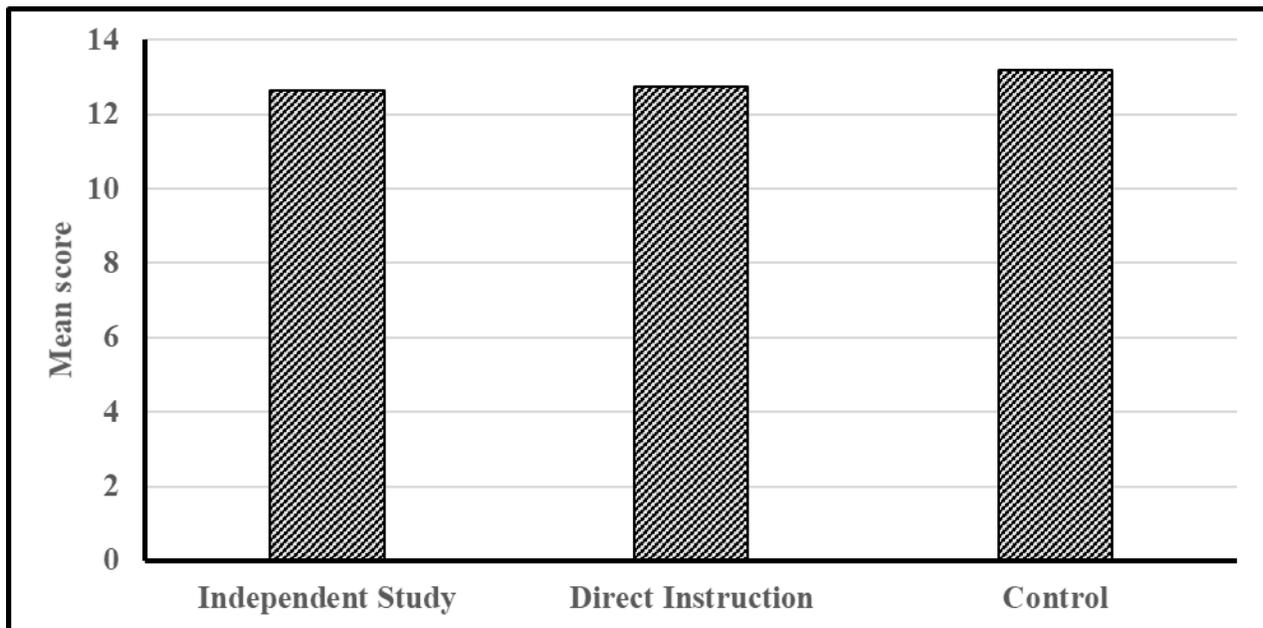


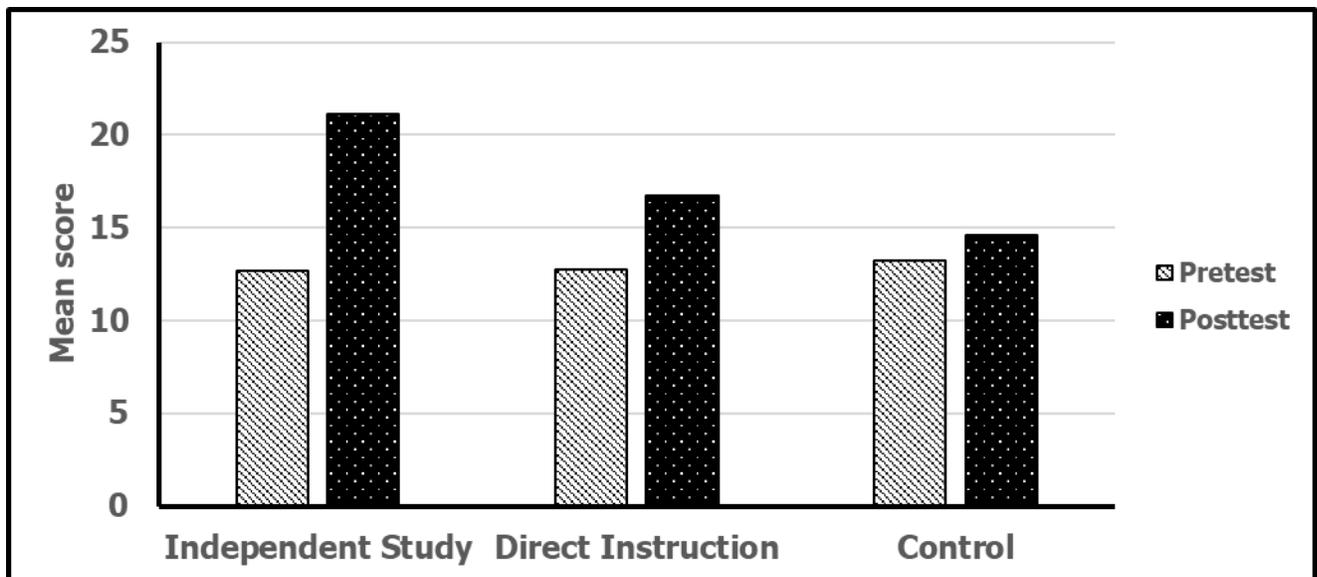
Table 1 and Figure 1 showed that students in the Independent Study group had pre-achievement mean scores of 12.65, while those in the direct instruction and control groups were 12.75 and 13.20, respectively. This result revealed that students' achievement in Visual Arts before treatment was generally low.



Research Question 2: Will the use of independent study improve Senior Secondary School students' achievement in Visual Arts?

Table 2: Effect of direct instruction and independent study on students' achievement in Visual Arts

	N	Pretest		Posttest		Mean Difference	Rank
		Mean	SD	Mean	SD		
Independent Study (Project Method)	20	12.65	2.48	21.15	1.84	8.50	1 st
Direct Instruction (Demonstration method)	20	12.75	2.53	16.75	1.71	4.00	2 nd
Control	20	13.20	2.31	14.60	1.60	1.40	3 rd



The result in Table 2 and Figure 2 indicated an improvement in students' achievement in Visual Art when taught with direct instruction and independent study. Students taught with the project method had the highest post-achievement mean score of 21.15. The result was closely followed by those exposed to the demonstration method, 16.75, while the subjects in the control group had the least mean score of 14.60 in Visual Art. The result implied that using direct instruction and independent study will enhance students' achievement in Visual Arts.



Testing of Hypotheses

Hypothesis 1: There is no significant difference between the pretest achievement mean scores of the experimental (direct instruction and independent study) and the Visual Art control groups.

Table 3: ANOVA summary of students' achievement mean scores in Visual Art before treatment

Source	SS	df	MS	F	p
Between Groups	3.433	2	1.717		
Within Groups	339.500	57	5.956	0.288	0.751
Total	342.933	59			

p>0.05

Table 3 showed that the computed F-value (0.288) with 2 and 57 degrees of freedom was not significant at p>0.05 level of significance. The researcher here retained the null hypothesis. The result, therefore, showed no considerable difference in the achievement pretest mean scores of the experimental and control groups of the visual art students taught with direct instruction and independent study.

Hypothesis 2: There is no significant difference in the achievement mean scores of the experimental and control groups of the Visual Art student taught with direct instruction and those exposed to independent study.

Table 4: ANCOVA of Students' Achievement in Visual Arts by Treatment

Source	SS	df	MS	F	p
Corrected Model	446.108	3	148.703	49.306	.000
Covariate (Pretest)	.208	1	.208	.069	.794
Group	444.285	2	222.143	73.656	.000
Error	168.892	56	3.016		
Total	18990.000	60			
Corrected Total	615.000	59			

***p<0.05**



Table 4 showed that the computed F-value (73.656) with 2 and 56 degrees of freedom was significant at $p < 0.05$ level of significance. The researcher, as a result of this, rejected the null hypothesis. The result revealed a substantial difference between the scores attained by experimental and control groups of the visual art student taught with direct instruction and independent study. The impact of multiple classifications Analysis (MCA) showing the effect of treatment (project method and demonstration method) on the student's achievement in Visual Arts is presented in Table 5.

Table 5: Multiple Classification Analysis (MCA) of students' achievement in Visual Art by treatment

Grand Mean = 17.50					
Variable + Category	N	Unadjusted Devn	Eta	Adjusted for Independent + Covariate	Beta
Independent study (Project Method)	20	3.65		3.43	
Direct Instruction (Demonstration method)	20	-0.75	.73	-0.87	-.05
Control	20	-2.90		-2.57	
Multiple R					.054
Multiple R ²					.003

Table 5 showed that Visual Art students taught using independent study had the highest adjusted mean scores of 20.93 ($17.50 + 3.43$). This result was closely followed by those exposed to the direct instruction method 16.63 ($17.50 + (-0.87)$), while those in the control group had minor adjusted mean scores of 14.93 ($17.50 + (-2.57)$). This finding implied that the use of the project method and demonstration method would enhance students' achievement in Visual Arts. The treatment accounted for 73% ($\text{Eta}^2 = 0.73$) of the observed variance in students' achievement in Visual Arts.

Hypothesis 3: There is no significant difference between the achievement mean scores of male and female students in the experimental and control groups.

Table 6: 2 X 3 ANCOVA summary of Students' Achievement in Visual Arts by Gender and Treatment

Source	SS	df	MS	F	p
Corrected Model	468.013	6	78.002	28.126	.000
Covariate (Pretest)	1.213	1	1.213	.437	.511
Gender	7.413	1	7.413	2.673	.108
Group	446.532	2	223.266	80.504	.000
Gender * Group	14.699	2	7.350	2.650	.080
Error	146.987	53	2.773		
Total	18990.000	60			
Corrected Total	615.000	59			

$p > 0.05$



Table 6 showed that the computed F-value (2.650) with 2 and 53 degrees of freedom was not significant at $p > 0.05$ level of significance. Therefore, the researcher did not reject the null hypothesis. In addition, there was no discernible difference in achievement mean scores between male and female students in the experimental and control groups of visual art students taught through direct teaching and independent study. Similarly, the effect of gender on students' achievement in Visual Arts was not statistically significant 95% confidence level ($F_{1, 53} = 2.673$, $p > 0.05$). However, treatment significantly affected students' achievement in Visual Arts ($F_{2, 53} = 80.504$, $p < 0.05$).

3. DISCUSSION

The research delved into the investigation of the effects of direct instruction and independent study on SSII students' achievement in Visual Arts. The findings revealed that students in the independent study group had pre-achievement mean scores of $\bar{X} = 12.65$. In contrast, those in the direct instruction and control groups had $\bar{X} = 12.75$ and $\bar{X} = 13.20$, respectively, as shown in fig 1, which implied that the level of students' achievement before treatment in Visual Art was average. Furthermore, their mean scores are very close to one another, which shows that these groups are homogenous.

The result in Table 2 and Figure 2 indicated an improvement in students' achievement in Visual Art when taught with direct instruction and independent study. Students taught with the project method had the highest post-achievement mean score of 21.15. This result was closely followed by those exposed to the demonstration method of 16.75, while the subjects in the control group had the least mean score of 14.60 in Visual Art. The observed difference might be linked to the effects of the treatment on the subjects, which showed that the treatment was effective. This outcome implied that using direct instruction and independent study will enhance students' achievement in Visual Arts.

The better performance of the students in the independent study group over direct instruction and control was supported by the view of Binnie (2002) that the use of project was very helpful in assisting the learning of the students for their active involvement in the tasks force than to think and enhance better understanding. Binnie declared further that an independent study is a systematic approach that actively involves students' progress in learning new information and abilities through a prolonged inquiry process centred on a challenging task. Table 3 showed that the computed F-value (0.288) with 2 and 57 degrees of freedom was not significant at $p > .05$ level of significance. Therefore, the researcher did not retain the null hypothesis. This finding implies no considerable difference between the achievement pretest mean score comparisons between the experimental and control groups of the visual art students taught with direct instruction and independent study. The reason for no significance was attributed to the constant use of the traditional teaching method, which they are all familiar with.

The study further revealed a significant difference between the achievement mean scores of the experimental and control groups. This finding showed that Visual Art students taught using independent study had the highest adjusted mean scores of 20.93 ($17.50 + 3.43$). This result was closely followed by those exposed to the direct instruction method 16.63 ($17.50 + (-0.87)$), while those in the control group had minor adjusted mean scores of 14.93 ($17.50 + (-2.57)$).



This outcome implied that independent study and direct instruction would enhance students' achievement in Visual Arts. The treatment accounted for 73% ($\eta^2=0.73$) of the observed variance in students' achievement in Visual Arts. But this result still revealed that an independent study is better than direct instruction and a control group. This result is in agreement with the view of Agboola and Ayodele (2007), who declared that students taught with the independent study performed better in the chemistry achievement test than the students acquainted with direct instruction and also established in the same survey that direct instruction is also better than those taught with inquiry and traditional method.

But this view was against that of Mayer (1997), Gulteken (2005), Chen (2006), Cifteir (2006), Ozdemic, Sylvester (2009) Yelem, Turguland, Buyukasap (2000), Bas and Beyhan (2010) that independent study is still in the developmental stage. Nevertheless, it is a proven alternative to other forms of learning. While there is no sufficient research or empirical data to state with certainty, Blank (1997) and Dickinson (1998) affirmed contrary to the above researchers' views that independent study enhances the quality of learning and leads to a higher level of academic achievement. Compared to the mean difference in achievement mean scores of students in Visual Art following treatment, the study revealed no significant difference between the achievement average test scores for both genders in the experimental and control groups.

The finding of this null hypothesis showed that males and females have the same level of achievement in Visual Arts. Furthermore, Ameh and Dantani (2012), whose affirmation was based on the outcome of the research carried out to determine whether the performance of boys and girls differed followed the respective treatment, that the posttest achievement mean scores were subjected to t-test, the result obtained showed that, the posttest mean achievement scores showed no significant difference between male and female students taught using direct instruction. Based on his finding, the researcher retained the null hypothesis, and the implication was that direct instruction tends to promote homogeneity of performance between boys and girls; there was no gender discrimination in the study of the visual arts, according to the study's conclusion.

But on the contrary, a report in the Punch on Friday, November 29 (2013) declared that females outperformed their male counterparts from the analysis of 2013 WASSCE results. Based on this observation, the researcher believes it is challenging to claim superiority in the intelligence of males and females. This result also revealed that gender has no significant impact on the academic achievement of male and female students studying Visual Art. This result is in line with Fair Weather in Bada (2004) that most students indicate sex differences may result from sex-role stereotype influence.



4. CONCLUSION

According to the study's findings, direct instruction and independent study are valuable methods for teaching and studying visual arts. Therefore, one could suggest teaching and learning approaches for visual arts in light of the study's results. In addition, direct instruction and independent study stimulate students' interest in visual arts.

5. RECOMMENDATIONS

Based on the findings, the researcher made the following recommendations.

1. Visual Art teachers should adopt independent study and direct instruction to impart knowledge to the students towards enhancing a better understanding of Visual Art as a vocational subject.
2. Since students' achievement in Visual Art is not gender-biased, direct instruction and independent study should be considered for developing learners' interest in visual art at all levels, irrespective of gender.
3. Education policymakers should give visual art more recognition as a component of the curriculum necessary for the full development of all students.

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