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Effect of Verbal and Graphic Stimuli on Students' Learning Performance

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[0156] Abstract

In this study, the effect of verbal and graphic stimuli in students' performance in imaginative painting is critically x-rayed. It was motivated by the problem of neglect of these vital tools as teaching aids in Nigerian primary and secondary schools' educational curricula. The objectives of the study therefore included to find out the degree of effect of verbal stimuli on students' performance in imaginative painting, ascertain if graphic stimuli significantly affect students' performance in imaginative painting and ascertain the current level of students performance in imaginative painting in Nigeria. For the methodology, a combination of experimental and survey techniques were used in gathering data, while the data were analyzed both statistically and in percentage frequencies. Results obtained show that verbal and graphic stimuli have significant effect on students' performance in imaginative painting and that students exposed to them perform better in imaginative paintings than those not exposed to them. Leading the researchers to recommend that government should make it mandatory for primary and secondary schools to use verbal and graphic designs in the teaching of students as a vital educational resource in Nigeria.

Keywords: Graphic Stimuli, Learning Performance, Students, Teaching, Verbal Stimuli.

1. Introduction

According to Dincel and Savur (2019) imaginative painting is painting from memory or the painting of something that you have imagined rather than something that exists or is seen. It is one of man's ways of communicating. However, the rules, conditions and laws which can be expected from the application of the procedures of information theory to education often must be adhered to for one to communicate effectively, both verbally and graphically (Baird & Dooey, 2017).

Thus, a knowledge of these laws is very necessary for creative imagination and ingenuity in teaching/communications. This is to say whether a student or a child is an infant in school, in a rural village or attending a big school in a big city, his art work will follow the same universal pattern. This is because all students pass through the same stages of growth and development in their drawing. Each student is subject to likes and dislikes, each is affected by the inner world of his mind and the outer world of his environment, and each manifests these individual influences in the results of his art activities, affirmed Robertson (Baird & Dooey, 2017).

Empirical evidence reveal that students may be harmed by the imposition of adult standards and the use of coloring books and patterns. The student who is free to paint as he

pleases grows in ability and power of self-direction. The student's drawings testifying to his instinctive desire to communicate, his crayon becomes a graphics means which is often more expressive and informative than spoken words (Bahri & Lorenza, 2017). If this kind of spontaneous creative activity is given free range and encouraged in childhood, it may well lead to the development of that personal creativity which in turn leads to enrichment of adult life by spontaneous creativity at all levels of human development (Bahri & Lorenza, 2017). This will ultimately advance the quest for community and societal development in Nigeria (Opara, et al, 2024).

Again, to persuade the student to talk about his work opens a rich field of direct communication between him and his teacher/fellow students. This conversation between teacher and student or parents and child promotes the child's mental capacities and ability for imaginative paintings (Fung & Fung, 2020). Experts argue that when students are not stimulated verbally during teachings, it decrease their performance learning and actions, while when they are not stimulated graphically, their overall academic performance will be adversely affected. These lack of verbal and graphic stimuli they say, will then cumulatively lead to the student's underdeveloped imaginative capacities and a consequent poor performance in imaginative learning (Fung & Fung, 2020).

The outcome of this study will bring to the field of knowledge the degree of influence of verbal and graphic stimuli have students' performance. It will also serve as a guide to teachers and parents in knowing or determining the impact of verbal and graphic stimuli on students' performance in imaginative painting. It will show how to stimulate students with graphics to improve their learning performance (Gardiner, 2017; Golparvar & Khafi, 2021). Again, it will be useful to teachers and scholars in the area of teaching, learning, research and practice, Golparvar and Khafi (2021) added.

Statement of the Problem Imaginative painting is one of the various ways an artist can use to communicate to others or express himself. The images represented are usually from memory which could be influenced by what we hear or see (Bahri & Lorenza, 2023). The problem is that here in Nigeria, the value of graphic and verbal stimuli to children's mental development is not quite appreciated in many schools, and thus not given serious attention in most of our schools through the provisions of verbal and graphic teaching aids. Hence, the present study intends to specifically investigate the effect of verbal and graphic stimuli on students' performance in imaginative painting in selected secondary schools in Imo State, Nigeria. This is with a view to ascertaining how verbal and graphic stimuli affect students' performance in imaginative painting.

Objectives of the Study the main objective of this study is to determine the effect of verbal and graphic stimuli on students' learning performance in imaginative painting. The specific objectives include: (a) to ascertain the effect of verbal stimuli on students' learning performance in imaginative painting. (b) To determine if graphic stimuli significantly affects students' learning performance in imaginative painting. (c) To ascertain the current level of students performance in imaginative painting in Nigeria.

Research Questions (a) To what extent do verbal stimuli affect students' performance in imaginative painting in Nigeria? (b) Does graphic stimuli significantly affect students' performance in imaginative paintings in Nigeria? (c) Is the current level of students' performance in imaginative painting in Nigeria significantly high?

Research Hypotheses: The following null-hypotheses were therefore tested in this study: (a) Verbal stimuli have no significant effect on students' learning performance in imaginative painting in Nigeria. (b) Graphic stimuli do not significantly affect students' performance in imaginative paintings in Nigeria. (c) The current level of students' performance in imaginative painting in Nigeria is not significantly high.

2. Review of Related Literature

2.1 ***Concept of Imaginative Panting:*** According to Golparvar and Khafi (2021), imaginative painting among others types of painting is painting from memory, which is painting something that you have imagined rather than something that you are looking at, that exits. The trigger which sets the creative process in motion is some form of experience. This is true whatever the art is – painting, drama, poetry, and it is true whether the artist is an adult or a child, there must always be a stimulus to activate the trigger, and this stimulus arises out of experience (Golparvar & Khafi). Creative achievements in works of any kind require imaginative, constructive and executive powers which respectively constitute the idea, design and execution or craftsmanship. Anything to be accomplished must be born of an idea or image and be organized or put into shape as a conception and practically carried out (Bahri & Lorenza, 2023). This then calls to question the effect of verbal and graphic stimuli on students' learning performance, which is the main focus of this study.

2.2 ***Verbal Learning and Its Importance Explained:*** Verbal learning is that mode of study by which the teacher uses spoken words to input knowledge in the students (Gardiner, 2017). It is an effective means of expression of ones spoken language including the use of proverbs, riddles, narratives, commands, requests, exclamations, simple and complex statements (Gardiner, 2017). Verbal learning is very important in the educational process because it is faster in the dissemination of information. Through verbal learning, information reaches a wider audience in a class in an organized form and at the same time. The students also communicate back to the lecturer through the verbal process. In effect, in verbal learning, there is immediate response in form of feedback. In other words, in verbal learning the communication system is interpersonal and feedback is faster (Gardiner, 2017).

In verbal learning the lecturer studies or understands immediately the idiosyncrasies, gesticulation of the students through their responses and reactions and vice-versa. In this process, there is interaction and interaction among the lecturer/teacher and students as well as students and students (Gardiner, 2017; Ata-Akturk & Sevimli-Celik, 2023). In verbal learning, the students' audience gesticulates as you speak to him. They nod their heads in agreement or disagreement to the lecturer, who immediately understands the disposition of the students. This he can read through their puzzled frictions/looks whether they are losing interest or appreciating the lecturer is known immediately. All these are the feedback, which is immediate through verbal learning (Gardiner, 2017).

2.3 ***Graphics and Learning Values:*** Various definitions have been posited about the word graphics. Agu and Ugwu (2002) define graphics as a process of expressing and communicating ideas and information through the use of organized visual materials on a two dimensional surface. It involves combination of words, symbols and illustration when it deals with posters, packages and labels, lettering, advertising, photography, printing and lithographic work are all forms of graphic work (Wu et al., 2025). Graphic is also defined as the dramatic and artistic presentation of visual elements of communication. Graphics is further defined as concerning mainly with written sign usually letters, or drawings. It is also defined as an inscriptions which gives a clear description of life like picture especially in words (Agu & Ugwu, 2002).

From the above definitions, it can be deduced that in whatever we doing in life, there are often some application of graphics (Agu & Ugwu, 2002). In our day to day activities, some trace of graphics come in deliberately. The mason, carpenter, draftsman etc – all apply graphics in their daily duties. Graphics is an important field of study which will be useful to virtually everybody especially students irrespective of his field of specialization (Barbot et al., 2013). Graphics are important in the daily activities of children's lives, including imparting knowledge in them at both

primary, secondary and tertiary institutions (Azizi & Khafaga, 2023). Graphics in text books makes it clearer for students to understand and improve their knowledge in learning. Both visual and audio elements enjoy some use of graphics (Bayat, 2016).

2.4 ***Graphic/Verbal Learning and the Students.*** It is impossible to separate completely one facet of a child's development from another (Bahri & Lorenza, 2023). But this is one aspect of his personality development that is chiefly neglected in our education Agu and Ugwu (2002). Those involved in the arts education should consider this, especially the senses, the emotion, the imagination (Agu & Ugwu, 2002; Ata-Akturk & Sevimli-Celik, 2023). The knowledge of our outer world comes to the students through his senses: seeing, hearing, tasting, smelling and touching. Students must therefore be encouraged in the simple sessions to enjoy what they do and given positive approvals in their boundless curiosity about the things around them and in their growing discrimination of colours, smell and sound. Teachers should thus be more alive to individual forms of expressions in the children, while the intention is to develop every one of their senses more fully and to widen the scope of its uses and enjoyment. Those who tends to experience the world in visual terms, will propably be the happiest with two-dimensional work, painting (Imaginative painting) and flat pattern making while those whose esthetic sense is dominant will find their fullest experience and expression in working with solid materials modeling pottery or carving (Barrett, Creech & Zhukov, 2021).

Calavia, Blanco and Casas (2021) equally state that stored by his experience, the student passes on what is stored in his inner mind in his paintings. So the productions of many students looking at the same object or undergoing the same experience may be different through this peculiar chemistry of art. This unfolding capacity can be gradually improved in the child through the use of verbal and graphic processes, thus, stimulate the performance of the students in imaginative painting (Chang, Du, Kuo & Chang, 2023; Chen et al., 2023).

2.5 ***Educating the Students via Verbal/Graphic Stimuli***What we believe education is and does must depend on what we believe a students to be and what we know of the potentialities in the world in which he grows up (Kuo et al., 2023). It seems obvious that the sooner you teach every student to read and the sooner you teach him to work carefully and accurately with his hands the better it will be for him and society (Danesh & Nourdad, 2017). These are just two of the beliefs accepted for many years which have been largely disproved by actual experiments, while the main questions have hardly been formulated, far less systematically answered. The psychologists have yet drawn our attention to many things which have some bearing on the teaching of imaginative painting (Barrett, Creech & Zhukov, 2021).

Hence, the teacher has the responsibility of making some choices for the student (Calavia, Blanco & Casas, 2021). She takes on this responsibility by providing certain materials and certain learning conditions to the students. When she suggests and encourages certain forms of activity and when she praises and approves certain kinds of work. Even the freest sort of "free activity" is not completely free, since it could be influenced directly or indirectly. Since teachers cannot escape the very great responsibility, it is incumbent on them to think very carefully about how the influences of verbal and graphic communications stimulate students' performance in imaginative painting (. Now so long as the teachers are passing on or encouraging the students to find out practical information about the world in which we live or about the world in which we live or about the history of our civilization, we know that we are fairly sure in teaching something which will be necessary and useful if he is to take his place in the culture to which he was born (Kunderevych et al., 2021). Every piece of factual information comes to us through the senses, every feat of intellectual activity operates on matter presented in the first place through the senses, every

aesthetic pleasure depends on the activity of the senses (Dincel & Savur, 2019; Baird & Dooey, 2017). This means that we must be aware of and sensitive to the needs of the students, that we must search deeply for ways of meeting his needs and directing his activities as well as be prepared to wait for years for results and honestly try to assess the value of our teaching.

3. Methods

This study is limited to independent and dependent key variables that determine the influence of verbal and graphic stimuli on the painting ability of selected secondary school students in Owerri metropolis, Nigeria. The experimental and survey research methods were used in the study. The experimental method involved classroom tests of students on verbal and graphic abilities. Questionnaire was also administered to both students and teachers on the subject matter.

The population of the study included secondary school students in Owerri metropolis from ages 12 to 21, all gender. There were a total number of 32 registered secondary schools in Owerri metropolis, with an estimated students' population of 18,048. To determine the sample size from the 32 secondary schools, 7 representative secondary schools were selected for this study. They include: Emmanuel College Owerri, Government College Owerri, Girls Secondary School Owerri, Federal Girls College Owerri, Akwakuma Girls Secondary School Owerri, Government Technical College (GTC) Owerri, and Saint Paul's International Secondary School Owerri. From the total population of 18,048 students, the Taro Yamane (1964) method was used to determine the sample size as follows:

$$n = \frac{N}{1 + N(e)^2}$$

where n = Sample Size

N = The Population

I = Constant

e = Margin of Error.

Then, substituting, $n = \frac{18,048}{1 + 18,048\ (0.05)^2}$

$$n = \frac{18,048}{1 + 18,048\ (0.0025)}$$

$$n = \frac{18,048}{1 + 45.12}$$

$$n = \frac{18,048}{46.12}$$

$$n = 391.623$$

$$n \approx 392 =$$

TABLE 1: DATA DISTRIBUTION ON THE SCHOOLS

S/N	School	Selected class	Selected teachers students population
1	Emmanuel College, Owerri	JSS -3	56
2	Government College, Owerri	JSS 1	56
3	Girls Secondary School, Owerri	SSS -2	56
4	Federal Girls College, Owerri	JSS -2	56
5	Akwakwma Girls Sec., Owerri	Jss -1	56
6	Government Technical College, Owerri	SSS -3	56
7	St Paul’ s Intril schl, Owerri	SSS -1	56
	Total: 7 Secondary school	7 class	392

The researcher adopted purposive sampling criteria in equitably allocating the 392 sample size to the seven selected secondary schools on a quota basis of 56 students respectively. Table 1 gives a clear picture of this. Simple percentage frequencies were be used to first analyze the data. Thereafter higher statistical tool of Chi-Square (X^2) was used to further test the statistical significance of the results obtained.

4. Data Presentation & Analysis

TABLE 2: STUDENTS’/TEACHERS’ RESPONDENTS DISTRIBUTION/ PARTICIPATION RATE

S/N	School	Students	Teachers
1	Emmanuel College, Owerri	52	4
2	Government College, Owerri	52	4
3	Girls Secondary School, Owerri	52	4
4	Federal Girls College, Owerri	52	4
5	Akwakwma Girls Sec., Owerri	52	4
6	Government Technical College, Owerri	52	4
7	St Paul’ s Intril schl, Owerri	52	4
	Total: 7 Secondary school	364	28

Out of the 392 respondents sample size, each of the 7 secondary schools provided us with 52 (13.27%) students and 4 (1.02%) teachers respectively. This shows fair and equitable distribution and participation of all the schools. See table 2 on this.

Fig 1: STUDENTS'/TEACHERS' RESPONDENTS DISTRIBUTION/ PARTICIPATION RATE

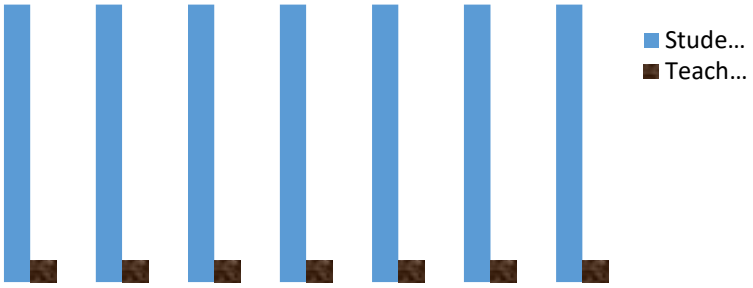


TABLE 3: STUDENTS' RESPONDENTS DATA

Options	**Frequency**	**Percentage**
Male	164	45.05%
Female	200	54.95%
Total	364	100%

Data on table 3 shows that 164 or 45.05% of the students were male, while 200 or 54.95% were female. This shows that the female students were slightly more in number than the male.

TABLE 4: **THE STUDENTS' AGE BRACKETS**

Options	**Frequency**	**Percentage**
12 – 16 years	200	54.95%
17 – 20 years	144	39.56%
21 years	20	5.49%
Total	364	100%

Data displayed on table 4 show that 200 of the students or 54.95% were in the age range of 12 to 16 years. 144 of them or 39.56% were in the age bracket of 17 to 20 years, while 20 (5.49%) were 21 years. See figure 2 on this result.

Fig. 2: THE STUDENTS' AGE BRACKETS

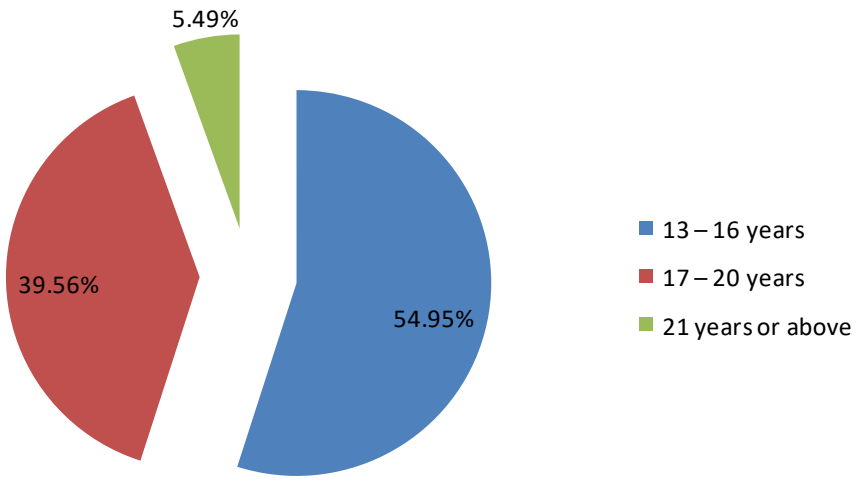


TABLE 5: THE STUDENTS RESPONDENTS' CLASSES

Options	Frequency	Percentage
JSS 1	52	14.29%
JSS 2	52	14.29%
JSS 3	52	14.29%
SS 1	104	28.56%
SS 2	52	14.29%
SS 3	52	14.29%
Total	364	100%

From table 5, we could see clearly that all the classes with the exception of SS1 had 52 (14.29%) of the students' respondents/participants respectively, while SS1 had 104 or 28.56% because two secondary schools volunteered their SS1 classes.

TABLE 6: ON WHETHER THE STUDENT HAS PARTICIPATED IN IMAGINATIVE PAINTING

Options	Frequency	Percentage
Yes	364	100%
No	0	0%
Total	364	100%

From table 4.7 above, it is clear that all the 364 students representing 100% have participated in imaginative paintings before. This show they are quite knowledgeable about our subject matter.

TABLE 7: HOW LONG THE STUDENTS HAVE PARTICIPATED IN IMAGINATIVE PAINTINGS

Options	Frequency	Percentage
11 − 15 years	60	16.48%
6 − 10 years	172	47.25%
1-5 years or	132	36.26%
Total	364	100%

Data displayed on table 4.8 above show that 16.48% of the students have participated in imaginative paintings for between 6 to 10 years, while 36.26% have done it for between 1 to 5 years only. See figure 4.4 for a graphic presentation of this result.

Fig. 4.4: How Long the Students Have Participated In Imaginative Paintings

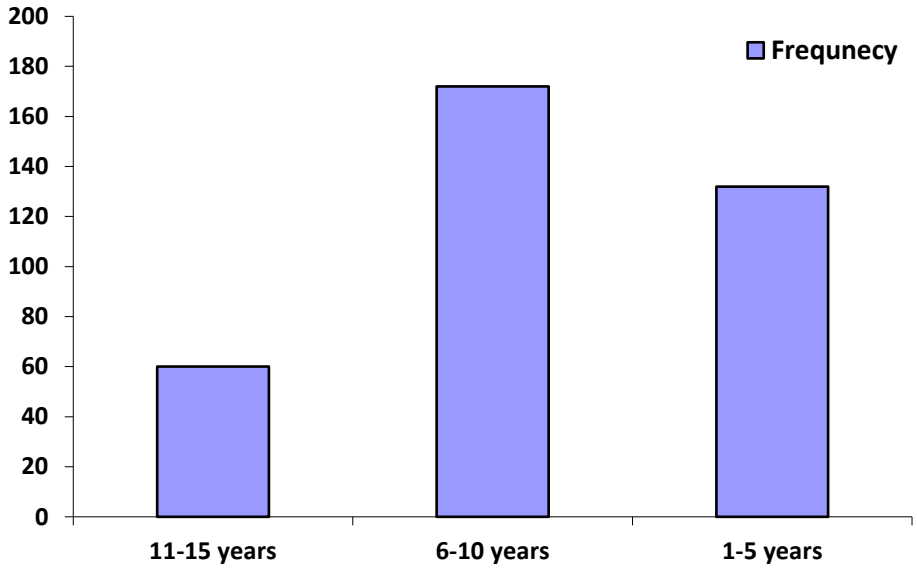


Table 8: ON WHO INTRODUCED THE STUDENTS TO IMAGINATIVE PAINTING

Options	Frequency	Percentage
Your Teacher(s)	288	79.12%
Your Parent/Relations	26	7.14%
Your Friends	50	13.74%
Total	364	100%

From table 8 above, the data show that 288 (79.12%) first learnt imaginative paintings from their teachers, only 26 (7.14%) learnt it from their parents, while 50 (13.74%) were introduced to it by their friends. This result shows that parents are not doing much in introducing their children to imaginative paintings in Nigeria. See figure 4.5 for this result.

Fig. 4.5: ON WHO INTRODUCED THE STUDENTS TO IMAGINATIVE PAINTING

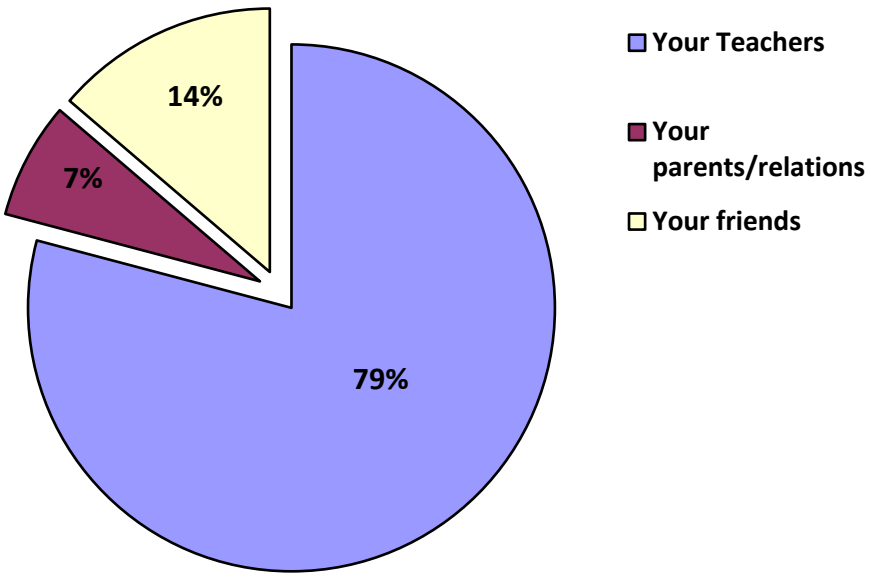


TABLE 9: STUDENTS ANSWERS ON WHETHER VERBAL AND GRAPHIC STIMULI AFFECTED THEIR PERFORMANCE IN IMAGINATIVE PAINTINGS

Options	Frequency	Percentage
Yes	294	80.77%
No	30	8.24%
Can't say	40	10.99%
Total	364	100%

Data displayed on table 4.10 above gives the information that 80.77% of the students believe strongly that verbal and graphic stimuli affected their performance in imaginative paintings. 8.24% disagreed with that, while 10.99% were neither here nor there. See figure 4.6 for a graphic presentation of this result.

TABLE 10: THE EXTENT TO WHICH VERBAL STIMULI AFFECTED THE STUDENTS PERFORMANCE IN IMAGINATIVE PAINTING

Options	Frequency	Percentage
Great extent	262	71.98%
Insignificant Extent	54	14.84%
Can't say	48	13.19%
Total	364	100%

From table 10, 71.98% of the students said verbal stimuli affected their performance in imaginative paintings to a great extent. 14.84% said verbal stimuli affected their performance in imaginative paintings

to a great extent. 14.84% said it affected their own performance insignificantly, while 13.19% were not quite sure whether it did or not.

TABLE 11: THE EXTENT GRAPHIC STIMULI ALSO AFFECTED THE STUDENTS' PERFORMANCE IN IMAGINATIVE PAINTINGS

Options	Frequency	Percentage
Significant Degree	297	81.59%
Insignificant Degree	32	8.79%
Can't Say	35	9.62%
Total	364	100%

81.59% of the students said graphic stimuli affected their performance in imaginative paintings quite significantly. 8.79% said it affected theirs insignificantly. While 9.62% could not quite make up their minds on this. See figure 4.12 for the graphic picture of this result.

TABLE 12: ON VERBAL AND GRAPHIC STIMULI WHICH AFFECTS THE STUDENTS PERFORMANCE MORE IN IMAGINATIVE PAINTING

Options	Frequency	Percentage
Verbal stimuli	108	29.67%
Graphic stimuli	110	30.22%
Can't say	146	40.11%
Total	364	100%

Data displayed on table 12 above show that majority of the students (40.11%) could not decipher between verbal and graphic stimuli which one affects their performance in imaginative painting more. However 29.67% of them said it is verbal stimuli, while 30.22% rooted for graphic stimuli

TABLE 13: ASSESSMENT OF THE STUDENTS' CURRENT PERFORMANCE IN IMAGINATIVE PAINTINGS

Options	Frequency	Percentage
Doing well	322	88.46%
Not doing well	21	5.77%
Can't say	21	5.77%
Total	364	100%

88.46% of the students believed they are currently doing well in imaginative paintings in their schools. However, 5.77% of them said they are not doing well, while the remaining 5.77% could not quite make up their minds on this.

Section B: Data On The Teacher Respondents

Table 14: THE TEACHERS' ASSESSMENT OF THE STUDENTS' PERFORMANCE IN IMAGINATIVE PAINTINGS

Options	Frequency	Percentage
Very Good	6	21.43%
Good	12	42.86%
Fair	6	21.43%
Poor	4	14.29%
Total	28	100%

From the teacher's ratings of the students' performance, 21.43% scored very good in imaginative painting, 42.86% scored 'good,' 21.43% scored 'Fair' while 14.29% scored 'Poor'. This result shows that on the average, majority of the students are doing quite well in imaginative paintings.

TABLE 15: TEACHERS' ASSESSMENT OF THE EFFECT OF VERBAL STIMULI ON THE STUDENT'S PERFORMANCE IN IMAGINATIVE PAINTINGS

Options	**Frequency**	**Percentage**
Significant Effect	23	82.14%
Insignificant Effect	3	10.71%
Can't Say	2	7.14%
Total	28	100%

82.14% of the teachers said verbal stimuli affects their students' performance in imaginative paintings significantly. 10.71% said it affects them insignificantly, while 7.14% said they are not quite sure.

TABLE 16: TEACHERS' POSITIONS ON THE EFFECT OF GRAPHIC STIMULI ON THEIR STUDENTS PERFORMANCE

Options	**Frequency**	**Percentage**
Significant Effect	25	89.29%
Insignificant Effect	3	10.71%
Can't Say	0	0%
Total	28	100%

89.20% of the teachers believed that graphic stimuli affects their students' performance significantly, while the remaining 3 (10-71%) said it affects their own students insignificantly.

Table 17: TEACHERS' ASSESSMENT OF VERBAL AND GRAPHIC STIMULI, WHICH AFFECTS STUDENTS' PERFORMANCE MORE

Options	**Frequency**	**Percentage**
Verbal Stimuli	14	50%
Graphic Stimuli	14	50%
Can't Say	0	0%
Total	364	100%

50% of the teachers went for verbal stimuli, while the remaining 50% went for graphic stimuli. This shows that both verbal and graphic stimuli are equally important in students' learning's.

Section C: Class Room Experiment Analysis

The 364 students from the 7 secondary schools in Owerri were divided into 2 groups of 182 each. Group 'A' were exposed to some graphic paintings displayed in their class rooms. They were also made to engage in a 30-minutes per day classroom discussion on imaginative painting, which was moderated by their teachers for a period of 14 days.

Group 'B' of another 182 students were neither exposed to the graphic paintings nor made to engage in any verbal discussion on imaginative paintings. After 14 days, the two groups were served with the questions in Appendix 2 and asked to draw them within 2 hours. Their answer scripts were distributed to the 28 teachers for markings. The result came up as follows:

TABLE 18: GROUP 'A' STUDENTS SCORES' ANALYSIS

S/N	Score Ranges	Number of Students	Grades
1.	81 - 100%	17	Excellent
2.	71 - 80%	54	Very good
3.	61 - 70%	42	Good
4.	51 - 60%	39	Good
5.	41 - 50%	11	Fair
6.	31 - 40%	8	Poor
7.	21 - 30%	5	Poor
8.	11 - 20%	5	Very poor
9.	0 - 10%	1	Very Poor
	Total	182	83.52% (Acceptable)

Decision Rule

Accept that verbal and graphic stimuli affect students' performance if up to half or more of the entire students score above 50%. Otherwise, reject.

If Outcome $\geq$ 50% = Accept (Acceptable Result)

If Outcome < 50% = Reject (Unacceptable Result).

Interpretation:

Table 18 show that 17 of the group 'A' student score above 80% (excellent), 54 students scored above 71% (very good), 42 students scored above 61% (good), 39 students scored above 51% (fair), 11 students scored above 41% (fair), 8 students scored above 31 (Poor), 5 students scored above 21% (poor), another 5 students scored above 11% (very poor), while I student scored below 10% (very Poor).

From this result, it is clear that 152 students out of 182, representing 83.52% scored above 50%. This shows that verbal and graphic stimuli affects students' performance in imaginative paintings positively (83.52% > 50%).

TABLE 19: GROUP 'B' STUDENTS SCORES' ANALYSIS

S/N	Score Ranges	Number of Students	Grades
1.	81 - 100%	1	Excellent
2.	71 - 80%	4	Very good
3.	61 - 70%	7	Good
4.	51 - 60%	13	Good
5.	41 - 50%	36	Fair

6.	31 - 40%	72	Poor
7.	21 - 30%	20	Poor
8.	11 - 20%	20	Very poor
9.	0 - 10%	9	Very Poor
	Total	182	13.74%

Interpretation

Table 19 on students not exposed to verbal and graphic stimuli shows that only 1 of them scored above 81% (Excellent), 4 scored above 71% (Very Good), 7 scored above 61% (Good), 13 scored above 51% (Good), 36 scored above 41% (fair), 72 students scored above 31% (Poor), 20 students scored above 21 (Poor), another 20 students scored above 11% (Very Poor), while the remaining 9 students scored below 10% (Very Poor).

Since only 25 students out of 182, representing 13.74% scored above 50%, we hereby conclude that non exposure to verbal and graphic stimuli decreases students' performance in imaginative paintings quite significantly.

Hypothesis one

Ho: Verbal stimuli have no significant effect on students' performance in imaginative painting.

Hi: Verbal stimuli have significant effect on students' performance in imaginative painting.

Test Statistics = Chi-Square (X^2)

$$X^2 = \sum \frac{(O-E)^2}{E}$$

$$E = \frac{\text{Row Total X Column Total}}{\text{Overall Total}}$$

Level of Significance = 95 percent.

TABLE 20: A TEST OF VERBAL STIMULI ON THE STUDENTS

Options	**O**	**E**	**O**	**E**	**Total**
Significant Effect	294	278	262	278	556
Insignificant Effect	30	42	54	42	84
Can't Say	40	44	48	44	88
Total	364	364	364	364	728

Adapted from tables.

Degree of Freedom = (C-1) (R-1)

Where R = No of Rows

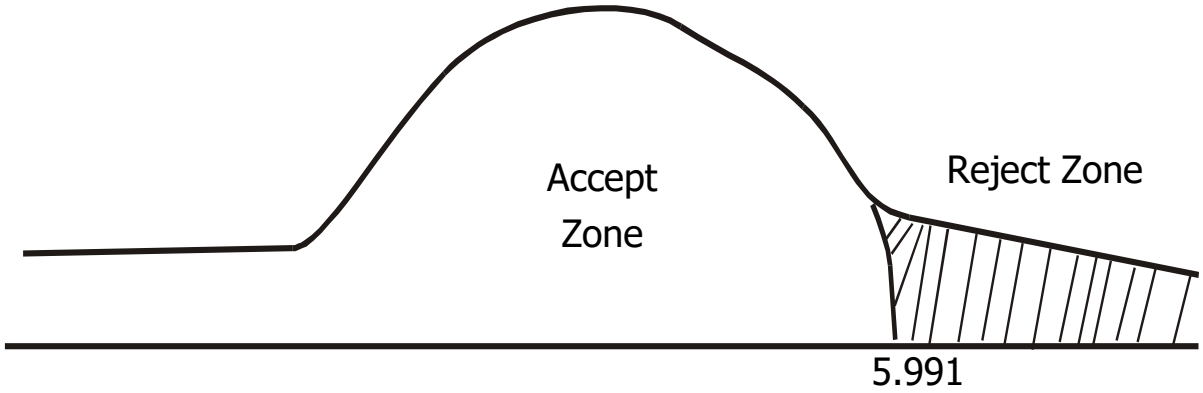
C = No of Columns

= (3-1) (2-1)

= 2 X 1

:. Critical Chi-Square (0.05,2) = 5.991.

Decision Rule: Reject Ho if the computed Chi-Square is greater than the Critical Chi-square. Otherwise, accept.



Since the computed Chi-Square (9.4) is greater than the critical Chi-Square (5.991), we hereby reject the Ho and accept the Hi which says that verbal stimuli has significant effect on students' performance in imaginative painting.

Hypothesis Two

Ho: Graphic stimuli do not significantly affect students' performance in imaginative paintings in Nigeria.

Hi: Graphic stimuli significantly affect students' performance in imaginative paintings in Nigeria.

Test Statistics = Chi-Square (X^2)

$$X^2 = \Sigma \frac{(O-E)^2}{E}$$

$$E = \frac{\Sigma \text{Observed frequency}}{\text{Number of observations}} = \frac{364}{3} \quad 121.33$$

Level of Significance = 95 percent.

Table 21: EFFECT OF GRAPHIC STIMULI ON STUDENTS

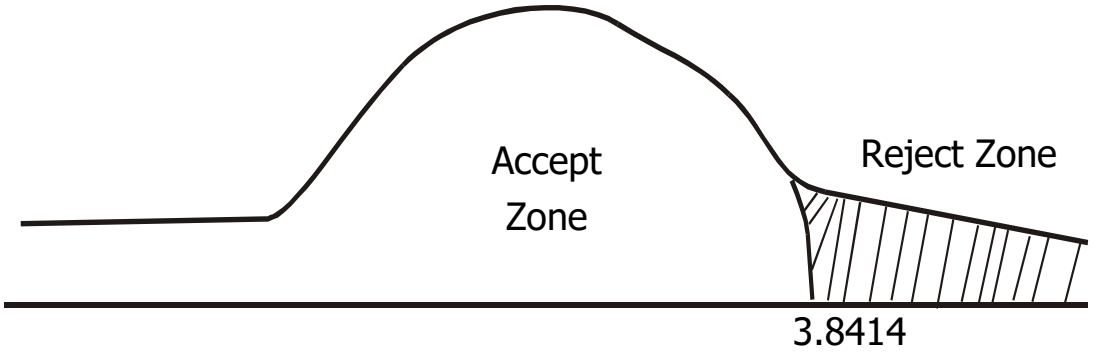
Options	**O**	**E**	**Total**
Significant Effect	297	121	418
Insignificant Effect	32	122	154
Can't Say	35	121	156
Total	364	364	728

Data from table

Degree of Freedom (1-2) (1-2)

:. Critical Chi-Square = 3.8414

Decision Rule: Reject Ho if the computed Chi-Square is greater than the Critical Chi-square. Otherwise, accept.



$$X^2 = \frac{(297-121)^2}{121} + \frac{(32-122)^2}{122} + \frac{(35-121)^2}{121}$$

= 256 + 66.39 + 61.12

= 383.51

Conclusion

Since the computed Chi-Square (383.51) is greater than the Critical Chi-Square (3.8414), we hereby reject the Ho and accept the Hi which says that "graphic stimuli affect students' performance in imaginative painting very significantly".

Hypothesis Three

Ho: The current level of students' performance in imaginative painting in Nigeria is not significantly high.

Hi: The current level of students' performance in imaginative painting in Nigeria is significantly high

Test Statistics = Chi-Square (X^2)

$$X^2 = \Sigma\frac{(O-E)^2}{E}$$

$$E = \frac{\Sigma \text{Observed frequency}}{\text{Number of observations}} = \frac{364}{3} \quad 121.33$$

Level of Significance = 95 percent.

TABLE 22: CURRENT LEVEL OF STUDENTS' PERFORMANCE

Options	O	E	Total
Doing Well	322	121	443
Not Doing Well	21	122	143
Can't Say	21	121	142
Total	364	364	728

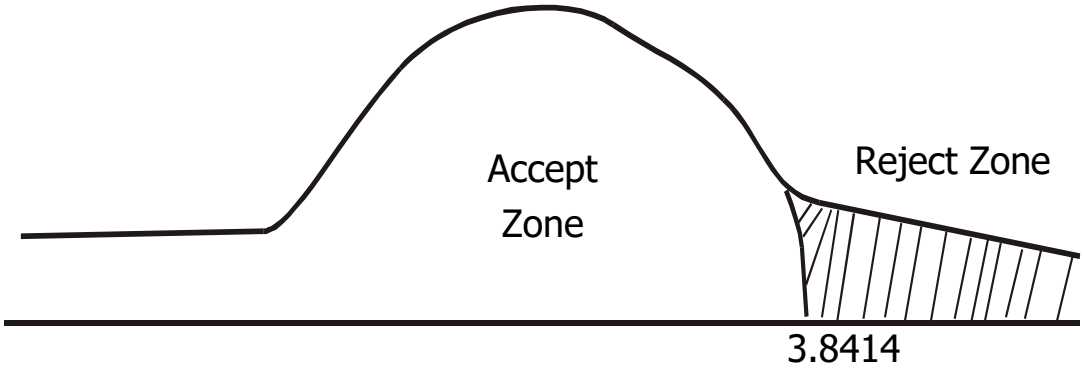
Data adapted from table 4.14
Degree of Freedom (1-2) (1-2)
:. Critical Chi-Square = 3.8414

$$X^2 = \frac{(297-121)^2}{121} + \frac{(32-122)^2}{122} + \frac{(35-121)^2}{121}$$

$$= 256 + 66.39 + 61.12$$

$$= 383.51$$

Decision Rule: Reject Ho if the computed Chi-Square is greater than the Critical Chi-square. Otherwise, accept.



$$X^2 = \frac{(322-121)^2}{121} + \frac{(21-122)^2}{122} + \frac{(2}{121}$$

$$= 333.89 + 83.61 + 82.64$$

$$= 500.14$$

Since the computed chi – square (500.14) is greater than the critical chi-square (3.8414), we hereby reject the Ho and accept the Hi which says that the current level of students' performance in imaginative paintings in Nigeria is significantly high.

1.9 Summary of Finding

(a) Students exposed to verbal and graphic stimuli perform better in imaginative paintings than those not exposed to them with an 83.52% to 13.74% ratio.(b)Verbal stimuli have significant effect on students performance in imaginative painting. (c)Graphic stimuli also affect students performance in imaginative paintings very significantly. (d) The current level of students' performance in imaginative paintings in Nigeria is significantly high.

4.1 Discussion of Findings

As the number one result reveals, students exposed to verbal and graphic stimuli perform better in imaginative paintings, learning and development than those not exposed to it. This same fact plays itself out in other areas of children's lives. That is to say, when graphic and verbal stimuli are introduced early enough into a child's life, as a baby, it stimulates its thinking faculties and easy grasp with the environment. The child begins then to learn objects and their names which help to develop his intelligence quotient. It also help the child in his speech developments. Such mental development stays with the child for life and helps him/her as a solid foundation for future educational performance. Studies that buttress this point include Ata-Akturk and Sevimli-Celik (2023); Baird and Dooey (2017); Barbot et al. (2013), and Chang et al. (2023).

Verbal stimuli, as the number two result reveals also has innate significant effect on students' performance in imaginative paintings. This is because at this early stage, the students still need to be effectively guided in understanding, interpreting and appreciating abstract paintings. Such arcane abilities help the young lads in making connections and meanings with their world, which consequently leads to their effective participation and contribution to society. Previous studies that agree with this include Bahri and Lorenza (2023), Azizi and Khafaga (2023), Bayat (2016), Danesh and Nourdad (2017).

Graphic stimuli on the other hand, strike a lot of interests on children, as the number three result shows. It is through it that their innocent and fragile minds feed more on the world around them, and intuitively connects to it. It incites their mind's eyes and sets it on a thinking journey, which in turn leads to higher mental and artistic developments in the child. This result is supported by Wu, Du and Chang et al. (2024), Chen, Li and Cukurova (2024), and Calavia, Blanco and Casas (2021). In the same vein, *Ndem, Owan, Ayeni, Odigbo et al. (2025) assert that when this type of* programmes are introduced in rural areas, it will definitely improve the sustainable livelihood of rural communities.

Even though the result number four says that the current level of students' performance in imaginative paintings in Nigeria is significantly high, we are not sure the same could be said of students in Nigerian rural schools, most of which neither have qualified teachers nor graphic material facilities for the children's' viewings. Hence, if this same study done in Owerri metropolis is repeated in a typical Nigeria rural community, the result could be appalling, we believe.

5. Conclusion

Conclusion Verbal and graphic stimuli are inevitable for children's' all-round effective performance in life. This fact is much more reflected in their educational performance and also in imaginative paintings. While students in Nigerian big cities like Owerri are exposed to better teachers, with verbal and graphic material facilities, their counterparts in the rural areas are left 'barefooted' on this. Attention of federal, states and local governments is therefore being drawn by this study to that effect, in order to stimulate all round development in all Nigerian children.

6. Recommendations

Mindful of the findings and other revelations of this study, we hereby recommend as follows: (a) Nigerian students both in the urban and rural areas should be exposed to more interactive sessions in order to better stimulate their verbal stimuli. (b Exchange programmes in forms of excursions, debates and social days should be organized between students in city schools and those in rural schools, in order to close the social gaps between them, especially in verbal expressions and graphic imaginative thoughts. (c) More classes should be conducted for students in Nigeria in the area of imaginative paintings, which helps in their over-all mental developments.

(d) Both electronic and non-electronic verbal and graphic facilities should be provided in all schools in Nigerian rural areas, in order to close the gap between the students there and their counterparts in the cities. (e) Federal, states and local governments in Nigeria should deploy more funds in the area of verbal, graphic and imaginative painting in Nigerian schools.

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