Effectiveness of Multiple Intelligences Teaching Approach in Drug Education of Pupils in Enugu State of Nigeria

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Abstract

This study examined the effectiveness of Multiple Intelligences Teaching Approach in drug education of pupils in Enugu state of Nigeria. A programme of drug education based on the Multiple Intelligences Teaching Approach was developed. An experimental group was taught using this programme while a control group was taught using the same programme but developed based on the traditional teaching approach. The effects on the two groups were examined through testing. Pupils taught with the Multiple Intelligences Teaching Approach gain more knowledge than those taught with the traditional teaching approach. Urban pupils taught with the Multiple Intelligences Teaching Approach gained significantly more knowledge than those taught using the traditional approach. There was no significant difference between the mean achievement of male and female pupils taught drug education with the MITA-DEP. The result showed the multiple intelligences teaching approach to be more effective than the traditional teaching approach in drug education of pupils

Keywords: Multiple Intelligences Teaching Approach, Effectiveness, Drug Education, Primary six Pupils

1. Introduction

There has been an increase in the number of youths who abuse drugs in Nigeria. In spite of the school drug education, the age of first use and pattern of abuse showed the 10 – 29 years age bracket as the most vulnerable group in drug abuse in Nigeria (Adebiyi, Faseru, Sangowawa, & Owoaje, 2010; Bamaiyi, 1998; UNODC, 2007). This age group is still within the school age (primary through secondary and higher education level). The Nigerian government has made several efforts at controlling this ugly situation through school drug education (Nigerian Education Research and Development Council-NERDC, 2007), legislation (Ukpore, 2006; Federal Government of Nigeria, 2011) and law enforcement (Bamaiyi, 1998). These efforts appear not to have been quite effective given the increasing number of youths who get involved in drug in the country. The laws however have failed to transform the consumers' value system and so have not been an effective means of controlling drug abuse (Burtch, 2006). This can be demonstrated by the fact that consumers who are inclined to using drugs go on seeking for an alternative drug when one drug is banned (Ukpore, 2006). Youths in some parts of Nigeria have been observed to seek alternatives to Indian hemp in lizard droppings. Lizard excreta act as intoxicant because the white portion is rich in ammonia which intoxicates (Giade, 2009). Other substances such as glue, thinner, petroleum products among others have been abused by young people (Ngoka, 2003). These products are readily available and youths who are deprived access to the illegal substances can easily lay their hands on these substances. There is therefore need to find an effective teaching approach for school drug education in Nigeria.

School drug education in Nigeria is delivered through school subjects such as Health and Physical Education and Social Studies. These two subjects are been taught in all public primary schools in Nigeria, yet the age of first use of drug has continued to increase. Research studies have revealed deficiencies in the status of drug education in both primary and higher education in Enugu state (Nwagu, 2010; 2012). One of the studies revealed that teachers teach pupils using mostly lecture approach and pupils participated less in classes during such classes (Nwagu, 2010). The lecture method of teaching is a feature of traditional teaching approach (Sawyer, 2006). This approach had been criticized by educational reformers (Epanchin, Townsend, & Stoddard, 1994). They argued that the traditional education focuses on teaching, not learning. The traditional teaching approach according to Weber, (1996) tends to neglect active student involvement. These inadequacies in the school drug education in Enugu state of Nigeria place question marks on the effectiveness of school drug education in the state.

Effectiveness is a term used to describe the intended or desired result of a process, procedure or programme (Hornby, 2005). For effective teaching and learning, the use of relevant and appropriate methods of teaching that recognize the nature of children and how they learn is very important in the learning process of children (Federal Ministry of Education 2006). Drug abuse among youths has remained stubbornly impervious to simplistic adult-centered health education messages that ignore young people's perspectives. Giving children the opportunity to participate actively in the process of drug education helps them to express themselves in an approved way under adult watchful eyes (UNESCO, 2004).

The best option to preventing such antisocial behaviours as drug abuse is by transforming the value system of individuals (Burtch, 2006). Hence the individuals will value their health and reject any behaviour likely to endanger their health. This can only be achieved through an effective teaching approach. The Multiple Intelligences Teaching Approach (MITA) have been proved to be an effective teaching approach capable of making great contributions to education at all levels because it adopts several techniques, strategies and tools in teaching all subjects at all levels of education (Geimer, Getz, Pochert, & Pullam, 2000; George, Mitofsky, & Peter, 2001; Anaduaka, 2007).

2. Multiple Intelligences Teaching Approach

The Multiple Intelligences Teaching Approach is based on the theory of Multiple Intelligences. This theory was propounded by Howard Gardner (Gardner, 1983). Gardner proposed that there are seven and later nine different intelligences as follows: The Verbal-Linguistic; Logical-Mathematical; Musical; Spatial; Bodily-Kinesthetic; Interpersonal; Intrapersonal; Naturalistic and Existential Intelligences (Gardner 1993; 1999). Gardner believed that a major problem in schools as they are organized and operated today is that they tend to restrict much of their curriculum and teaching to the linguistic and logical-mathematical dimensions of intelligence (Owens and Valesky, 2007). Every individual has an element of each of the intelligences (Okebukola, 2002). However individuals are smarter in one or two of these intelligences. Teachers through keen observation of learners' activities should figure out which type of intelligence a learner is more gifted with and go on to determine ways of incorporating teaching strategies suitable for these intelligences into his or her lessons so that every child will benefit from the lesson.

For the purpose of this study, a programme of drug education based on the Multiple Intelligences Teaching Approach (MITA) was developed. The programme incorporated various teaching strategies suitable for the various intelligences in order to help all the learners to benefit maximally from the lessons thus increasing the effectiveness of the instructions (Awotua-Efebo, 1999).

The study was conducted in Enugu State of Nigeria. Enugu state is located in the south-eastern part of Nigeria. The choice of the area was based on the fact that drug use is a culture that depends on types of drug available and the disposition of the community to the use of the drug. Enugu state is homogenous in substance availability and disposition of elders to some drugs. For example, the consumption of alcoholic drinks like palm wine, rafia wine, and local gin (kaikai) is permitted and the drinks are produced and sold locally and openly in every part of the state. This is unlike in some states in the northern parts of Nigeria where the sale and consumption of alcohol are prohibited. Moreover in Enugu state snuff, which is a form of tobacco, is permitted while cigarette which is equally a form of tobacco is not socially accepted. Literature has shown that drug availability and social factors influence drug use. Therefore, children in Enugu state need to be strongly equipped with the right knowledge, values and skills that will help them resist the use and or abuse of drugs, some of which are readily available and socially acceptable.

3. Aim, Research Questions and hypotheses

The aim of the study was to ascertain the effectiveness of MITA in drug education of pupils in Enugu state. The need for an effective teaching approach for drug education was quite evident. Numerous studies showed the MITA to be an effective teaching approach in several field of study Albero, Brown, Eliason & Wind, 1997; Prieto & Ferrandiz, 2003; Anaduaka, 2007). Is this MITA also an effective teaching approach for drug education? How effectiveness is the MITA in drug education compared with the traditional teaching approach? How effective is the MITA in drug education of urban and rural pupils? How effective is the MITA in drug education of male and female pupils?

Four null hypotheses were formulated to guide the study. These were tested at .05 level of significance. The first hypotheses states that "There is no statistically significant difference between the mean achievement scores of pupils taught drug education using the MITA and those taught with the traditional teaching approach." The second hypothesis was to verify the effectiveness of MITA for urban and rural pupils. It states that "There is no statistically significant difference in the mean achievement scores of urban and rural pupils taught drug education using the MITA." To further verify the effectiveness of MITA in drug education of male and female pupils the third hypothesis states that " There is no statistically significant difference between the mean achievement scores of male and female pupils taught drug education using the MITA."

4. Method

4.1 Design

The quasi experimental design using a non-equivalent pretest-posttest control group design was adopted for the study.

4.2 Participants

Participants were 91 primary six pupils in selected public schools in Enugu state. In Nigeria, formal school system consist of; pre-primary education, primary education, secondary education and tertiary education. Children progress to primary schools from age 5 or 6 years and remain in primary school for six years moving from primary one through primary six. Their final year in primary school (primary six) is a transitory period from childhood to adolescent. It is a time when they are about moving from primary to secondary education. Appropriate timing of school drug education is essential for its effectiveness. Delivering drug education to these pupils prior to their initial experimentation with drug will help to modify their behavioural patterns and responses in drug use situations (McBride, 2003).

Participants were selected from both the rural and urban communities. Two rural and two urban primary schools were randomly selected (out of the 112 and 116 schools that constituted the rural and urban schools respectively). From the selected schools, one intact class was selected from primary six classes through balloting from each of the selected schools. The two classes from the rural area were assigned to experimental and control groups through balloting while the two classes from the urban schools were also assigned to experimental and control groups. The pupils from these classes constituted the subjects for the study.

4.3 Study materials

A programme of drug education based on the Multiple Intelligences Teaching Approach was developed by the researchers based on literature and under the guidance of experts. The programme titled 'Multiple Intelligences Teaching Approach Drug Education Programme (MITA-DEP) was designed to last for six weeks. The programme covered only the 'gateway drugs' namely; tobacco, alcohol, and Indian hemp. These act as 'gateway drugs' to the use of other substances like cocaine, heroin, amphetamine, inhalants and hallucinogens (Makanjuola, Daramola & Obembe, 2007; Eze, 2007).

The MITA-DEP was designed for the experimental group while an alternative programme exactly the same in content as the MITA-DEP but develop with the traditional teaching approach was designed for the control group. The MITA-DEP contained eleven lessons. The researchers tried as much as possible to bring in activities that appealed to different intelligences in each lesson. Armstrong (1994) submitted that the teacher may not be able to include all the intelligences at each step in his lesson plan, but once he or she is able to reach into as many intelligences as possible before the end of the lesson, then the MITA has served its purpose.

Darling-Hammon (1993) pointed out that teaching is not routine. To be effective, teachers need to vary techniques in relation to the learners' needs. Teachers also need to make many decisions about the students' learning styles. Poplin and Weeres (1992) observed that with the traditional teaching approach attention is not given to each learner's special needs and abilities. The MITA-DEP however ensures that each learner is given special attention by bringing in as many teaching methods as possible to suit individual learner's learning style (Armstrong, 1994).

Drug use is behaviour and just as children learn to use drugs they can also be help to learn not to use drugs for their life's entire problem. Many educationists (Geimer, Getz, Pochert, & Pullam, 2000; Prieto & Ferrandiz 2003; Anaduaka, 2007) believe the multiple intelligences teaching approach is an instructional strategy that can carry every child along irrespective of the level of study and the course of study. This study therefore was designed as an empirical base to verify whether the MITA an was effective instructional approach for drug education.

The MITA-DEP was validated by a team of five experts from the field of Health Education, Pharmacy, Clinical Psychology, Educational Foundations, and Sociology and Anthropology. After the modification of the programme in line with the experts' recommendation, the programme was trial tested using two intact classes from one of the other schools in the area of study not sampled for the study. One of the classes was taught using the MITA-DEP and the other class was taught using the traditional method. The lessons plans prepared with the two approaches were followed strictly to determine their practicability.

4.4 Instruments for Data Collection

For the successful accomplishment of the objectives of the study, the researcher developed a Drug Education Achievement Test (DEAT). The DEAT consist of two sections. Section A of DEAT contains 24 items designed to elicit information on the pupils' knowledge of drug. Pupils were required to answer true or false to items in this section. Section B consists of 16 items designed to elicit information on the pupils' knowledge of acceptable, healthy-drug-related behaviours. The pupils were required to answer yes or no to items in section B of DEAT. The internal consistency of the instrument (DEAT) was determined using the Chronbach's alpha. The instrument yielded an alpha of .81. This was considered acceptable (Anaekwe 2007).

4.5 Experimental Procedures

Six research assistants who were classroom teachers with minimum qualification of first degree in education were trained on the techniques of executing multiple intelligences based lesson plans. The training programme lasted for 21 hours which spanned over ten days. During this period the researchers trained the assistants on the steps involved in the administration of the lessons especially the ones with the multiple intelligences approach as

this was the one that was strange to the assistants. During the training, the research assistants were properly trained in the rudiments of the philosophy, principles and methodology of the approach.

The assistants were also given time to demonstrate the procedures for the two approaches. Doubts raised during the training were clarified and misconceptions corrected. After the training, only the best two of the research assistants were used for the study. One of the research assistants was assigned to the experimental and the other to control group for both the urban and rural schools.

Prior to implementing the programme, the DEAT was administered to both the experimental and the control group as pretest. The experimental groups were then taught using the MITA-DEP while the control groups were taught using the Traditional Teaching Approach. The treatment lasted for a period of six weeks. The post test was administered at the end of the treatment. The DEAT was again administered as post test.

The trained research assistants were involved in teaching the lessons and in administering the pre and post tests. The researchers supervised the teaching and the administration of the tests to ensure that the lesson plans were strictly followed and that the tests were administered under exam conditions.

4.5.1 Control of Extraneous Variables

To control for initial group difference, only government owned schools were used for the study since these school were similar in many ways. Again analysis of covariance (ANCOVA) was used in analyzing the data. The pretest scores were used as covariate to the post test score in order to partition out initial differences in the subjects relative to the study.

The pupils were not informed that they were part of a study to avoid curiosity that may lead to interaction. In order to control for interaction after school, separate schools were used for the experimental and the control group in both the urban and rural settings.

Hawthorne effects was controlled by teaching both the experimental and the control groups during their usual physical and health education periods and in their normal class setting with the research assistants coming in as specialist teacher. The duration of teaching, topics covered, and test administered were the same for both groups.

All the research assistants underwent rigorous training to ensure equal competence in all of them such that all the observed difference in the study cannot be attributed to differences in teachers' effectiveness. Also all the research assistants had the same qualification and about the same experience in teaching. The same teacher taught the experimental groups while another teacher taught the control groups.

All the pretest instruments were withdrawn from the pupils immediately after the pretest and kept till the day of the posttest. Pupils were not informed that the test will be repeated during the posttest. Again the duration of treatment (six weeks) was enough to minimize any effect of the pretest.

5. Analyses

The data generated were coded and analyzed in the SPSS 16.0. The total number of items in the DEAT was 40. Each correct answer in DEAT was scored 1 mark. Therefore, the maximum possible score for DEAT was 40 marks and the minimum possible score was 0. The mean and standard deviations scores for DEAT were computed and used to answer the research questions. Analysis of covariance (ANCOVA) was used to test the null hypotheses.

6. Results

The result in Table 1 shows that the experimental group had a pretest mean score of 26.51 and a standard deviation of 5.76. The control group had a pretest mean score of 28.28 and a standard deviation of 4.79. The difference in the mean score of the two groups for the pretest was 1.77 with the control group having the higher mean score with less variability. The posttest mean score for the experimental group was 33.36 with a standard deviation of 5.80. The control group had a posttest mean score of 28.59 and a standard deviation of 4.37. The difference in the mean scores of the two groups for the posttest was 4.77 with the experimental group having the higher score. While the experimental group had a gain score of 6.84, in the posttest, the control group had a gain score of 0.30. This higher mean posttest for the experimental group is attributable to the effect of the treatment. MITA-DEP was therefore more effective than the traditional teaching approach in helping pupils to gain knowledge about drugs.

The result in Table 2 shows that the F value of teaching method (43.991) was significant at .000 level of significance. Therefore at .05 level of significance, teaching method is also significant. The null hypothesis of no significant difference was rejected. This shows that there was a significant difference in the mean achievement scores of pupils taught drug education with the MITA-DEP and those taught with the traditional method.

The result in Table 3 shows that the urban pupils in the experimental group had a mean pretest score of 29.43 with a standard deviation of 5.01 respectively while the rural pupils in the same experimental group had a mean achievement score of 21.71 and a standard deviation of 3.08. The difference in the mean achievement score in

the pretest was 7.72. In the posttest, the experimental urban pupils had a mean achievement score of 36.50 and a standard deviation of 3.91. The rural pupils in the same experimental group had a mean achievement score and standard deviation of 28.18 and 4.59 respectively. The difference in the mean scores of the urban and rural pupils in the posttest was 8.32. While the urban pupils had a gain score of 7.07, the rural pupils had a gain score of 6.47. The difference in their gain scores was only 0.60. It could then be seen that there was no substantial difference in the mean achievement scores of urban and rural pupils taught drug education with the MITA-DEP.

Table 4 reveals that location as main effect has an F value of 12.197. This was found significant at .001 level of significance. It is therefore significant at an alpha level of .05. The null hypothesis was rejected. This implies that there was a significant difference between the mean achievement scores of the urban and rural based pupils taught drug education with the MITA-DEP.

The result in Table 5 shows that the male pupils in the experimental group had a pretest mean achievement score of 27.33 with a standard deviation 6.13, while the female pupils in the same experimental group had a mean achievement score of 25.79 and a standard deviation 5.45. The males performed fairly better in the pretest but with greater variance than the females. The difference in their mean achievement scores in the pretest was 1.54. In the posttest, the male pupils in the experimental group had a mean achievement score of 33.33 with a standard deviation 5.49. The female pupils in the same group had a mean achievement score of 33.38 and a standard deviation 6.18. The difference in the mean scores of the two groups in the posttest was .04. While the male pupils had a gain score of 6.00, the female pupils had a gain score of 7.58. The difference in their gain scores was 1.58 in favour of the females. It did appear that the females benefited slightly more from the MITA-DEP than the males.

The result in Table 6 shows that the F value of .670 for the effect of gender was significant only at .418 level of significance. Consequently at a higher level of significance .05, gender effect would not be significant. Therefore the decision was to accept the null hypothesis. This implies that there was no significant difference between the mean achievement scores of the male and female children taught drug education with MITA-DEP.

7. Discussion

The results in Tables 1 and 2 show the effectiveness of MITA-DEP in helping pupils to acquire knowledge about drugs. Pupils taught drug education with the MITA-DEP gained more knowledge than those taught with the traditional teaching approach. Table 1 shows that the experimental group (those taught with MITA-DEP) had 6.54 more gain score than the control group (those taught with the traditional teaching approach. Table 2 shows that there was a significant difference (P = .000) in the mean achievement scores of the two groups.

The result was as expected because the MITA-DEP used diverse teaching techniques and strategies and the learners were actively involved. The use of diverse teaching techniques, according to Okebukola (2002), enables the learners' varying intelligences to be stimulated diversely and the learners learn more. Furthermore, Sherman (2006) observed that effective teaching is fundamental to learning, especially when the learners play significant roles in the teaching and learning process.

The result of this study was in line with the findings of Anaduaka (2007) who found that MITA enhanced student's achievement in geometry; and that of Albero Brown, Eliason and Wind (1997) who found that the use of MITA resulted to an increase in reading test scores in one second grade, one third grade and two fourth grades' spelling classes. That the MITA-DEP was found more effective than the traditional teaching approach could be attributed to the fact that the different teaching methods and strategies used in the MITA-DEP tended to appeal more to the sensibility of learners (Smith, 2002). The inclusion of interactive sessions in MITA-DEP also enhances learning. Tobler and Straton (1997) pointed out that interactive drug education programmes are at the minimum twice as effective as non interactive programmes. The MITA-DEP was developed with several interactive sessions incorporated into the various learning activities to stimulate pupils' interpersonal intelligences.

The traditional teaching approach on the other hand is generally restricted to linguistic and logical mathematical intelligences (Owens & Valesky, 2007). Thus the pupils in the control group were not adequately stimulated by the teaching process such that learners who were gifted in other intelligences outside linguistic and logical mathematic were not adequately challenged. Furthermore, the traditional teaching approach, according to Sawyer (2006), is characterized by 'instructionism'. This type of approach tends to neglect active learners' participation (Weber, 1996). The exclusive use of the traditional teaching approach for the pupils in the control group resulted in the pupils being less active which negatively affected their achievement. Learners taught using the traditional approach memorize facts and procedures without reflecting on the purpose or on their own learning strategies. This, according to Sawyer (2006), does not result to deep learning. The teacher's adoption of the traditional teaching approach may have resulted to the lower mean achievement gain score by pupils in the controls group.

Implicit in this finding is that health educators and others involved in drug education should adopt MITA for drug education rather than using the traditional teaching approach, the use of which depicts the teacher as the all knowing authority who hand down facts to the learners. Drug educators should adopt MITA, especially the MITA-DEP because it encourages active learners' participation which is essential for enhanced knowledge acquisition. As many intelligences as possible should be incorporated into the teaching and learning process for effective drug education.

The result in Table 3 reveals slight difference in the gain achievement scores of urban and rural pupils taught with the MITA-DEP. Though the rural pupils scored much lower than the urban pupils in the pre and post test, they were able to make a gain score of 6.47 while the urban pupils made a gain score of 7.07. Table 4 presented the ANCOVA of the differences in the mean achievement scores of the urban and rural pupils in DEAT. The result shows that the difference in the mean achievement of urban and rural pupils was significant at .001 level of significance. Therefore at .05 level of significance it was also significant.

The finding of this result is surprising. It was rather taught that MITA-DEP would have had the same effect or about the same effect on both the urban and the rural pupils since the content and procedure for MITA-DEP was the same for the two groups. This result is however consistent with the findings of Okenwa (2008) and Akabogu (2006) who found out that significant difference existed in the academic achievements of urban and rural students. The finding of this study could be attributed to the fact that the pupils in the rural setting were deficient in the use of English language. This was observed during the intervention programme. The urban pupils were more at home with the use of the English language than the rural pupils. Since the language of instruction for middle basic education was English (in accordance with the recommendation of the National Policy on Education), the rural and urban pupils were taught using English. The rural pupils however appeared not too conversant with the use of English and were at a disadvantage. The rural pupils would have probably gained more scores if they had been on the same level with the urban pupils in terms of their English language comprehension.

Language of instruction is therefore an important issue in drug education. This is because even when effective teaching approach such as MITA is adopted, if the learners are not conversant with the language of instruction, their educational achievement will be reduced. Teachers using the MITA should therefore adopt language suitable for the learners. When learners are not conversant with the language of instruction, they will probably loss interest in the whole process. No wonder Tobler (1997) stated that failure of drug education programmes can directly be linked to failure of such programmes to engage learners' interest. They argued that such programmes are not developmentally appropriate or they are too abstract to be meaningful to the learners. In the case of the rural pupil, their poor comprehension of the language of instruction probably made the programme more or less abstract for them. This affected their achievement.

The female pupils taught with the MITA-DEP gained 1.58 scores more than the male pupils taught with the same approach (Table 5). Again there was no significant difference in the mean drug education achievement scores of male and female pupils taught with the MITA-DEP (Table 6). Research studies have shown that neither the male nor the female learner is superior to the other in terms of their academic achievement. It is only the socialization process which at times labels one gender superior to the other that tend to bring about differences in the achievement of male and female learners (Dareng, 2001; and Adigwe, 1999).

This finding is consistent with the findings of Anaduaka (2007) who found that there was no significant difference in the achievement of male and female students taught geometry with the MITA. The finding is however inconsistent with that of Ibe (2006) which showed that male students performed better in science and mathematics when taught with different methods. The methods used by Ibe (2006) were guided discovery, demonstration and the conventional method. The MITA was not used. The present study therefore shows that both male and female pupils benefited when MITA is the teaching approach. Gender differences that tend to exist in science and science-related courses have been attributed to gender stereotyping in science and technology (Dareng, 2001).

8. Implications of the Study

The result of this study has provided empirical evidence on the effectiveness of the Multiple Intelligences Teaching Approach in health education in general and particularly for drug education. Health educators and others involved in drug education should adopt the MITA for drug education rather than using the traditional teaching approach which is less effective in achieving the desired goal of health education. Drug educators should adopt MITA, especially the MITA-DEP, because it encourages active learners' participation which is essential for enhanced knowledge acquisition. As many intelligences as possible should be incorporated into the teaching and learning process for effective drug education.

Health educators who want to achieve pronounced positive attitude change to drug use in learners should adopt the MITA as an educational approach in achieving this. Helping the learners to develop healthy attitudes to drug

is very essential because according to Nwachukwu (1999), attitudes provide readiness for behaviour. Since drug use is a behaviour, learners need to develop healthy attitude to drug use to enable them use drugs in a healthy manner. This is even more important for children who have not started using drugs. Their healthy attitude to drug will go a long way in helping them stay drug free or use drug reasonably if they have to.

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Table 1. Means and Standard Deviations of Achievement Scores of Pupils in DEAT

Group	No	Pretest		Post test		Gain Score
		$\overline{x}$	SD	$\overline{x}$	SD	
Experimental	45	26.5111	5.7628	33.3556	5.8042	6.8445
Control	46	28.2826	4.7687	28.5870	4.3746	0.3044
Diff. in Mean		1.7715		4.7686		6.5401

Table 2. Analysis of Covariance (ANCOVA) Table for Testing of Effect of Method on Pupils' Achievement Score in DEAT.

Source	Sum of Square	df	Mean Square	F	Sig.
Corrected Model	1369.555	2	684.778	40.412	.000
Intercept	711.489	1	711.489	41.988	.000
Group (Expt. and control)	745.424	1	745.424	43.991	.000
Pretest	852.293	1	852.293	50.297	.000
Error	1491.170	88	16.945		
Total	90002.000	91			
Corrected total	2860.725	90			

Table 3. Mean Pre- and Posttest Scores of Achievement of Urban and Rural Based Pupils Taught Drug Education using the MITA-DEP

Location	N	Pretest		Post test		Gain Score
		$\overline{x}$	SD	$\overline{x}$	SD	
Urban	28	29.4286	5.0143	36.5000	3.9110	7.0714
Rural	17	21.7059	3.0774	28.1765	4.5858	6.4706
Diff in mean		7.7227	8.3232		0.6008	

Table 4. Summary of Analysis of Covariance (ANCOVA) of Mean Achievement Scores of Urban and Rural Pupils Taught with MITA-DEP and Assessed with DEAT.

Source	Sum of Square	df	Mean Square	F	Sig.
Corrected Model	837.558	2	418.779	27.280	.000
Intercept	667.184	1	667.184	43.461	.000
School Location (Urban and rural)	187.236	1	187.236	12.197	.001
Pretest	104.717	1	104.717	6.821	.012
Error	644.754	42	15.351		
Total	51549.000	45			
Corrected total	1482.311	44			

Table 5. Mean Achievement Scores of Male and Female Pupils Taught Drug Education with the MITA-DEP (Pre- and Post-DEAT Scores).

Sex	N	Pretest		Post test		Gain Score
		$\bar{x}$	SD	$\bar{x}$	SD	
Male	21	27.3333	6.1346	33.3333	5.4894	6.0000
Female	24	25.7917	5.4452	33.3750	6.1842	7.5833
Diff in mean		1.5416			0.0417	1.5833

Table 6. Summary of Analysis of Covariance (ANCOVA) Result of Pupils' Achievement Scores in DEAT by Gender.

Source	Sum of Square	df	Mean Square	F	Sig.
Corrected Model	663.386	2	331.693	17.011	.000
Intercept	454.817	1	454.817	23.326	.000
(Male and female)	13.064	1	13.064	.670	.418
Pretest	663.366	1	663.366	34.022	.000
Error	818.926	42	19.498		
Total	51549.000	45			
Corrected total	1420.698	44			

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