EFFECT OF HANDS-ON/MIND-ON LEARNING ACTIVITIES ON PRIMARY SCHOOL PUPILS` ACHIEVEMENT IN CULTURAL AND CREATIVE ARTS

Abstract

The purpose of the study was to experimentally determine the effect of Hands-on/Mind-on learning activities on primary school pupils` achievement in Cultural and Creative Arts in Nsukka Local Government Education Authority. The study adopted quasi experimental research design. In particular, non-equivalent pre-test post-test alternative treatments control group design. *Three research questions and three null hypotheses guided the study.* The population of this study was 4,200 (2700 males and 1,500 females) Basic Four pupils in all the 117 primary schools in Nsukka Local Government Education Authority *(2021/2022 session). The sample size for the study was 101 Basic 4 pupils. The sampling technique adopted was purposive sampling techniques and simple random sampling technique. The instrument for the study was a 20 items multiple choice objective questions of Cultural and Creative Arts Achievement Test. Using Kudar Richardson 20 (K – R 20), the reliability coefficient of 0.86 was obtained on the Test instrument. The research questions were answered using mean and standard deviation while the hypotheses were tested at 0.05 level of significance using Analysis of Covariance (ANCOVA). The study found out that pupils taught Cultural and Creative Arts using Hands-on/Mind-on learning activities performed better that those pupils taught using conventional method. Also, Hands-on/Mind-on learning activities was effective in improving both male and female pupils` achievement in Cultural and Creative Arts. Base on the findings, the study recommended that* both in-service and pre-service teachers should be educated on the significance and relevance of hands-on/minds-on learning activities, as well as how to effectively use them in cultural and creative arts classrooms.

Key words: *Hands-on/Mind, Learning Activities, Cultural and Creative Arts, Achievement, and Gender.*

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Introduction

While the goal of education is to help pupils increase their cognitive capacity and thinking abilities, the efficacy of a teaching-learning activity is determined by how well students achieve and interact with the information or experience they are given. Pupils can participate in a learning activity with a teacher to gain the knowledge or skills needed to accomplish the intended educational objective. Therefore, the pupil's level of achievement in a particular subject could be determined by the learning activities in which the pupils are involved. Learning activities, according to Siemens and Tittenberger (2009), are a collection of actions aimed at promoting learning, such as diffusion, discussion, discovery, and demonstration. Siemens and Tittenberger believed that for learning activities to be lively, a series of actions must be involved. Bransford, Brown, and Cocking (2000) are of the opinion that when creating learning activities, it's important to consider how learners process new knowledge, gain new abilities, or establish a new way of being. Learning activities may also be defined as the activities that students and teachers engage in during learning events in order to achieve the desired learning results. Teachers providing space in the classroom for students to work with their hands while reasoning with their minds on an item can be considered a sort of learning activity.

So far, several interpretations of what "hands-on/mind-on learning" means have been presented, with the most prevalent and accepted meaning being "learning by doing." Sadi (2011) stated that hands-on/mind-on entails fostering a child's capacity to think critically as part of a comprehensive learning experience. Sadi stated further that, contrary to popular assumption, learning via hands-on/mind-on activities includes not only controlling or manipulating things, but also a depth of study utilizing ideas, objects, and materials, as well as drawing on the depth of investigations using items, materials, and phenomena. It comprises pupils' applying concepts

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and inferring meaning and understanding from their experiences (Haury & Rillero, 1994). Hands-on/minds-on in cultural and creative arts may be seen as any arts activities that allow pupils to handle, witness, and modify the artistic process. It differs from traditional education in that pupils engage with art objects to make observations, and it includes a variety of activities. Hands-on/mind-on cultural and creative arts are essential for student success because they engage students in the learning process by allowing them to manipulate objects or materials in order to absorb information and develop their own understanding of cultural and creative arts themes. Sadi believes that interacting with materials or things motivates and excites students to participate in class. Hands-on/mind-on learning activities, according to the current study, assist students to become critical thinkers, active learners, and researchers in the future. Music, painting, theatre, and dance are all enhanced by hands-on/mind-on activities.

The Cultural and Creative Arts (CCA) curriculum combines the fine and applied arts, music, and theater. The Cultural and Creative Arts curriculum was initially recommended in Nigeria as one of the six basic elementary school curricula during the Lagos Curriculum Conference of 1969 (Olaosebikan, 1982). Cultural and Creative Arts (CCA) is regarded by Nnamani (2014) as an integration of music, arts, drama, and dance in which a student is supposed to grow into and with his people's cultural legacy. He/she is meant to function organically as a cultural aid product, appreciating and acquiring components of his cultural background. According to Ogboji (2013), the incorporation of information, skills, attitude, and values into the many components of CCA enhances the learning of entrepreneurial skills, which in turn generates excellent theatrical performances and artistic masterpieces. The current research is of the opinion that this sort of topic in elementary school may help students attain self-actualization and self-fulfillment since each component of CCA, including studio activities,

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builds creative process abilities that boost students' grasp of the subject. Ogumor (2002) argued that the abilities that learners gain via CCA activities allow them to generate works that are also the final results of an artist's creative process. A truly creative and well-educated person understands how to work with his or her hands and mind and recognizes that any labor can be noble if done with the utmost integrity (Buoro, 2002). This implies that CCA programs might help students improve their manipulative abilities. Using good methods to teach such a subject, such as hands-on/mind-on learning activities, will increase student achievement and, in the long run, produce creative, patriotic, and productive students who will do their best to help the country grow (Orlean, 2009).

Achieving a certain standard in a course of study is referred to as "achievement." Ugwuanyi (2014) sees achievement as a pupil's cognitive attainment in school work, as measured by a passing grade on a school teacher-made exam or standardized test in a subject such as mathematics. This meaning of achievement is in contrast to Ajua's (2006) meaning, which argues that a pupil's academic achievement is seen as effective academic development obtained from the pupil's work and skills in a certain subject area. Academic achievement is regarded as the extent to which a pupil/learner, teacher/instructor, or institution has met educational objectives (Idialu, 2013). In this study, academic achievement is seen as how well male and female students do in activities, assignments, courses, research projects, or programs that they have been given the chance to do.

Gender is a characteristic that distinguishes a man from a woman. Gender has a number of constraints on students' academic success, many of which are related to sex-role differentiation, in which some tasks are assigned to males and others to females. Gender is defined as the social meaning of being a boy or a girl, which includes the formation of identities,

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expectations, behaviors, and power relationships via social interactions (Ambe-Uva, Iwuchukwu, & Jibrin, 2008). Gender, according to Keightley (2011), is concerned with males and females as classifications for each sex in society. Gender, according to Bronfenbrenner (2005), is a set of social distinctions and relationships between men and women. The academic achievement of male and female students in the cultural and creative arts is prioritized in this study. In light of this study, therefore, it is necessary to verify the effect of Hands-on/Mind-on learning activities on pupils' achievement in Cultural and Creative Arts.

The study aim was to ascertain the effect of hands-on/mind-on learning activities on primary school pupils` achievement in cultural and creative arts. In particular, the study sought to:

- Find the differences in the mean achievement scores of pupils taught Cultural and Creative Arts using Hands-on/Mind-on learning activities and those taught with conventional method.
- Find the differences in the mean achievement scores of male and female pupils taught Cultural and Creative Arts using Hands-on/Mind-on learning activities
- Find the interaction effects of method and gender on the differences in the mean achievement scores of pupils taught t Cultural and Creative Arts.

The following research questions guided the study.

- What is the difference in the mean achievement scores of pupils taught Cultural and Creative Arts using Hands-on/Mind-on learning activities and those taught with conventional method?

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- What is the difference in the mean achievement scores of male and female pupils taught Cultural and Creative Arts using Hands-on/Mind-on learning activities?
- What is the interaction effect of method and gender on the differences in the mean achievement scores of pupils taught t Cultural and Creative Arts?

The following null hypotheses tested at 0.05 level of significant guided the study.

Ho_1: There is no significant difference in the mean achievement scores of pupils taught Cultural and Creative Arts using Hands-on/Mind-on learning activities and those taught with conventional method.

Ho_2: There is no significant difference in the mean achievement scores of male and female pupils taught Cultural and Creative Arts using Hands-on/Mind-on learning activities

Ho_3: There is no significant difference in the interaction effects of method and gender on the differences in the mean achievement scores of pupils taught t Cultural and Creative Arts.

Methods

The study was a quasi-experimental design. In particular, non-equivalent pre-test and post-test alternative treatments control the group design. This may be used to more rigorously test whether or not treatment X_1 produces outcomes different from those emerging from X_2 (Thyer, 2012). The intact classes of four primary schools in Nsukka Local Government Education were used. The use of intact classes was to avoid the threat of selection bias among the pupils and to avoid re-arranging and re-grouping, which could affect the normal lesson. Rogers and Revesz (2019) say that the goal of a quasi-experimental research design is to find out if there is a cause-and-effect relationship between independent variables and dependent variables.

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The research design involves two groups which are the experimental group and the control group. The research design is illustrated below:

Group	Pretest	Treatment	Posttest
Experimental	R_b	X_1	R_a
Control	R_b	-	R_a

The study was carried out in primary schools in Nsukka Local Government Education Authority. Nsukka Local Government Education Authority has 117 primary schools (Enugu State Annual School Census, 2021) and it is made up of several communities such as Ede-Oballa, Nsukka, Eha-Alumona, Okpuje, Opi-Agu, Edem, Umuabor, Opi, Okutu, Obukpa, Ibagwni, Obiomo, Awka, Lejja, Alor-Uno, Okpaligbo, Adhe-Ndiagu and Ibagwa-Agu. Nsukka Loacal Government Education Authority has a surface area of 1,810km^2. Nsukka Local Government Education Authority is located in Enugu State, South-East, Nigeria. The population of this study was 4,200 (2700 males and 1,500 females) Basic Four pupils in all the 117 primary schools in Nsukka Local Government Education Authority (Enugu State Annual School Census, 2021). The sample size of the study was 101 (53 for the experimental group and 48 for the control group) basic 4 pupils. The intact classes of the four schools were used as the sample size. A purposive sampling technique was used to select the 2 experimental schools with cultural and creative arts instructional materials, while a simple random sampling technique was used to pick the 2 control group schools.

The instrument used in the study was the Cultural and Creative Arts Achievement Test (CCAAT). The CCAAT was a 20-item of 4 multiple-choice objective questions which was adopted from the Basic 4 Enugu State Government unified examination. Three experts face

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validated the instrument while a table of blueprint handled the content validity of the instrument. Two of the experts were in Childhood Education and one in Measurements and Evaluation all in the Faculty of Education, University of Nigeria, Nsukka. The experts gave the instrument their stamp of approval based on how well it worked, how clear it was, and how well it worked for this level of students.

To ascertain the reliability level of the research instruments, a pilot study was carried out in Obollo-Afor Local Government Education Authority. The reason for the choice of Obollo-Afor LGEA was that the schools in Obollo-Afor were believed to be more or less equivalent in standard to the schools in Nsukka Local Government Education Authority which is the main study area. One type of reliability testing was conducted to determine the internal consistency of the test instrument using Kuder Richardson 20 (K – R 20). The K-R 20 result gave a reliability value of 0.86 which shows that the Cultural and Creative Arts Achievement Test (CCAAT) instrument was highly reliable. Pretest and posttest were used for data collection. The pretest and posttest instrument were administered to both the experimental (Hands-On/Mind-On and control (Conventional) groups. Pre-test at the initial stage was administered simultaneously to both groups. The Pupils in the experimental group were exposed to Hands-On/Mind-on learning activities while those in the control group were taught in the traditional way of teaching. After three weeks posttest was now administered to both groups. Mean and standard deviation were used to answered the three research questions while the three null hypotheses were tested using Analysis of Covariance (ANCOVA). Hence, the hypotheses that were greater than 0.05 were accepted and those hypotheses that were less than 0.05 were rejected.

Results

Research Question 1

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What are the differences in the mean achievement scores of pupils taught cultural and creative arts using Hands-on/Mind-on learning activities and those taught with conventional method?

Table 1

Pre-test and Post–test Mean Scores of Hands-on/Mind-on learning activities and conventional method Groups in the Achievement Test

		Pretest		Posttest		
Group	**N**	**$\bar{x}$**	**SD**	**$\bar{x}$**	**SD**	**Mean Gain**
Experimental	53	25.32	3.44	70.72	6.13	45.40
Control	48	25.25	3.26	49.67	4.87	24.42

***N** = Number of students, $\bar{x}$ = Mean and SD = Standard Deviation

The data presented in Table 1 showed that the experimental group 1 which was taught using Hands-on/Mind-on Learning Activities (HMLC) had a pre-test mean achievement score of 25.32 with a standard deviation score of 3.44 and a post-test mean achievement sore of 70.72 with standard deviation score of 6.13. The difference between the pre-test and post-test mean for the group taught using Hands-on/Mind-on learning activities was 45.40. The control group which was taught using Conventional Method (CM) had a pre-test mean score of 25.25 with a standard deviation score of 3.26 and a posttest mean achievement score of 49.67 with a standard deviation score of 4.47. The difference between (mean gain) the pretest and posttest mean for the group taught using was 24.42. This result reveals that, the pupils in the experimental group taught using HMLC performed better in the achievement test than the pupils in the control group taught with CM. Hence Hands-on/Mind-on Learning Activities is more effective in enhancing pupils` achievement in Cultural and Creative Arts.

Hypothesis 1

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Ho_1: There is no significant difference in the mean achievement scores of pupils taught Cultural and Creative Arts using Hands-on/Mind-on Learning Activities and those taught with Conventional Method.

Table 2: Analysis of Covariance (ANCOVA) of the Significant Difference in the Mean Achievement Scores of Pupils Taught Cultural and Creative Arts using Hands-on/Mind-on Learning Activities and those Taught with Conventional Method

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	11273.607[a]	2	14228.673	186.935	.000
Intercept	7987.422	1	7987.422	264.890	.000
Pretest	112.355	1	112.355	3.726	.056
Group	11183.803	1	11183.803	370.893	.000
Error	2955.066	98	30.154		
Total	386520.000	101			
Corrected Total	14228.673	100			

The result in Table 2 shows that an F-cal of 370.893 with associated probability of 0.000 were obtained with respect to the difference in the mean achievement scores of pupils taught Cultural and Creative Arts using Hands-on/Mind-on Learning Activities and those taught with Conventional Method. Since the associated probability (0.000) was less than 0.05 level of significant set as the bench mark for taking decision, the null hypothesis (Ho_1) was rejected. The inference drawn was that there was a significant difference in the mean achievement scores of pupils taught Cultural and Creative Arts using Hands-on/Mind-on Learning Activities and those taught with Conventional Method.

Research Question 2

What are the differences in the mean achievement scores of male and female pupils taught Cultural and Creative Arts using Hands-on/Mind-on Learning Activities?

Table 3

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Pre-test and Post–test Mean Achievement Scores of Male and Female Pupils in Cultural and Creative Arts using Hands-on/Mind-on Learning Activities

		Pretest		Posttest		
Gender	**N**	**$\bar{x}$**	**SD**	**$\bar{x}$**	**SD**	**Mean Gain**
Male	27	25.19	3.48	70.67	6.13	45.48
Female	26	25.46	3.47	70.77	6.25	45.31

***N** = Number of students, $\bar{x}$ = Mean and SD = Standard Deviation

The result presented on Table 3 shows that the male group had a pretest mean achievement score of 25.19 with a standard deviation score of 3.48 and a posttest mean achievement score of 70.67 with a standard deviation score of 6.13. The difference between (mean gain) the pretest and posttest for male group was 45.48. The female group had a pretest mean achievement score of 25.46 with a standard deviation score of 3.47 and a posttest mean achievement score of 70.77 with a standard deviation of 6.25. The difference between (mean gain) the pretest and posttest mean score for the female group is 45.31. For each of both male and female pupils, the posttest achievement mean was greater than the pretest achievement means with male group having higher mean gain. This shows that Hands-on/Mind-on learning activities appear to have improved the achievement score of both the male and the female pupils.

Hypothesis 2

Ho_2: There is no significance difference in the mean achievement score of male and female pupils taught Cultural and Creative Arts using Hands-on/Mind-on Learning Activities.

Table 4: Analysis of Covariance (ANCOVA) of the Significant Difference in the Mean Achievement Scores of Male and Female Pupils Taught Cultural and Creative Arts using Hands-on/Mind-on Learning Activities

Source	**Type III Sum of Squares**	**Df**	**Mean Square**	**F**	**Sig.**
Corrected Model	119.262[a]	2	59.631	1.626	.207
Intercept	6308.683	1	6308.683	172.040	.000
Pretest	119.122	1	119.122	3.249	.078

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Gender	.665	1	.665	.018	.893
Error	1833.493	50	36.670		
Total	267000.000	53			
Corrected Total	1952.755	52			

The result in Table 4 shows that an F-ratio of .018 with associated probability value of 0.893 obtained with respect to the difference in the mean achievement scores of male and female pupils taught Cultural and Creative Arts using Hands-on/Mind-on Learning Activities. Since the associated probability (0.893) was greater than 0.05 set as the level of significance and criterion for taking a decision, the null hypothesis (Ho_2) was not rejected. Based on this, it was therefore concluded that there was no significance difference in the mean achievement scores of male and female pupils taught Cultural and Creative Arts using Hands-on/Mind-on Learning Activities**.**

Research Question 3

What is the interaction effect of method and gender on the differences in the mean achievement scores of pupils taught Cultural and Creative Arts?

Table 5

Mean and Standard Deviation of the Interaction Effect of Method and Gender on the Mean Achievement Scores of Pupils taught Cultural and Creative Arts

Variables			Pretest		Posttest		
Method	**Gender**	**N**	**$\bar{x}$**	**SD**	**$\bar{x}$**	**SD**	**Mean Gain**
Experimental	Male	27	25.19	3.48	70.67	6.13	45.48
	Female	26	25.46	3.47	70.77	6.25	45.31
Control	Male	20	24.60	3.32	50.00	4.81	25.40
	Female	28	25.71	3.21	49.43	4.98	23.72

***N** = Number of students, $\bar{x}$ = Mean and SD = Standard Deviation

The result presented in Table 5 shows the interaction between method and gender on the mean achievement scores of pupils taught Cultural and Creative Arts. Result shows that the male group had a pretest mean of 25.19 with a standard deviation of 3.48 and a posttest mean of 70.67 with a standard deviation of 6.13. The difference between (mean gain) the pretest and posttest for

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male group was 45.48. The female group had a pretest mean of 25.46 with a standard deviation of 3.47 and a posttest mean of 70.77 with a standard deviation of 6.25. The difference between (mean gain) the pretest and posttest mean for the female group was 45.31. For each of the two groups, the posttest achievement mean were greater than the pretest achievement means with the male group having higher mean gain. This is indicative that Cultural and Creative Arts appears to have improved the achievement score of both male and female pupils. Result in Table 5 also shows that the male group taught with conventional method had a pretest mean of 24.60 with a standard deviation of 3.32 and a posttest mean of 50.00 with a standard deviation of 4.81. The difference between the pretest and posttest mean for the male group was 25.40. The female group had a pretest mean score of 25.71 with a standard deviation score of 3.21 and a posttest mean of 49.43 with a standard deviation of 4.98. The difference between the pretest and the posttest mean for the female group was 23.72. For each of the two groups, the posttest mean score were greater than the pretest means scores. The male group in the conventional method group gained more scores than their female counterpart; this means there was an interaction between method and gender on pupils` achievement in Cultural and Creative Arts

Hypothesis 3

Ho_3: There is no significant difference in the interaction effect of method and gender on the differences in the mean achievement scores of pupils taught Cultural and Creative Arts.

Table 6: Analysis of Covariance (ANCOVA) of the Significant Interaction Effect of Method and Gender on the Difference in the Mean Achievement Scores of Pupils taught Cultural and Creative Arts

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	11274.645[a]	4	2818.661	96.601	.000
Intercept	7895.083	1	7895.083	256.574	.000

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Pretest	109.444	1	109.444	3.557	.062
Method	10993.717	1	10993.717	357.274	.000
Gender	.006	1	.006	.000	.989
Method *Gender	1.038	1	1.038	.034	.855
Error	2954.029	96	30.771		
Total	386520.000	101			
Corrected Total	14228.673	100			

The result in Table 6 shows that an F-ratio of .034 with associated probability value of .855 was obtained with respect to the interaction effect of method and gender on pupils` achievement scores in Cultural and Creative Arts. Since the associated probability (0.855) was greater than 0.05 level of significance set as the criterion for taking a decision, the null hypothesis (Ho_3) was accepted. Thus, the conclusion drawn was that there is no significant interaction effect of method and gender on the mean achievement scores of pupils in Cultural and Creative Arts.

Discussion of Findings

As shown in Table 1, there is different between the mean achievement scores of the two groups of pupils taught Cultural and Creative Arts (Experimental 1: Hands-on/Mind-on learning activities and Control: Conventional method). The analysis revealed that pupils taught using Hands-on/Mind-on performed significantly better in Cultural and Creative Arts Achievement Test than their counterparts who were taught with Conventional method. Result in table 2 further confirmed this finding by indicating a significant difference in the mean achievement scores of both group taught Cultural and Creative Arts. This implies that the efficacy of methods with regards to academic achievement in Cultural and Creative Arts is not the same. The findings of this study contradict the findings of Ogboji (2013) who find out that method of teaching as no effect on students` achievement in Cultural and Creative Arts.

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From the finding of this study, male pupils slightly performed better than their female counter part in Cultural and Creative Arts (CCA). This implies that there is no remarkable difference in the mean achievement scores of male and female pupils taught CCA using Hands-on/Mind-on learning activities. This study also found that there is no significant difference between the mean achievement scores of male and female students taught CCA using Hands-on/Mind-on learning activities. This may be attributed to how interesting it was learning with their hands-on/mind-on. The above finding is in agreement with that of Anaduaka (2008) which established that gender does not matter in Multiple Intelligence Teaching Approach (MITA) which improves students' achievement and interest in geometry.

The comparison between the male and female students taught CCA shows that there is a difference in achievement when Hands-on/Mind-on learning activities and conventional method were used. It was observed that males achieved higher than the females when both Hands-on/Mind-on learning activities and conventional method but no significant difference in both achievement. This means that there seem not to be interaction effect of methods and genders on pupils' achievement in CCA. The finding is in agreement with Omeje (2006) that there is no significant interaction effect of instructional method and gender on students' interest in Igbo Language.

Conclusion/Implications

Various educational approaches, such as constructivism, have stressed the active engagement of students and instructor direction in cultural and creative arts programs. In comparison to traditional training, the findings of this study imply that hands-on/mind-on learning activities may improve learning outcomes. The students in the hands-on/mind-on group learned artistic concepts through both hands-on and mind-on activities. They were actively

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involved in their learning and had firsthand experience with it. During their lessons, their teachers assist them. They completed all hands-on activities and explored all vital questions in order to grasp the subject's key points at the conclusion of the activities. As a result, they may recall significant concepts years later. Furthermore, these activities make cultural and creative education for pupils more entertaining, interesting, and effective. However, pupils who were taught in a conventional way only learned artistic concepts by listening to their teacher and taking notes. They did not use their hands to observe and practice the artistic ideas they were taught. According to the findings, pupils who were taught cultural and creative arts using conventional method achieved an average level of achievement.

This study has several significant implications, one of which is that instructors must recognize the importance of hands-on/mind-on learning activities in cultural and creative arts education. Because a learning environment should incorporate creativity and self-motivation (Harvey, Sirna, & Houlihan, 1998), it is hoped that exposing teachers to contemporary art concerns would drive them to use fresh, motivating methods to comprehend art themes in their classrooms. They should realize that they don't necessarily require high-priced cultural and creative arts tools to properly teach the subject. Teachers may be able to construct hands-on/mind-on learning activities to pique pupils' interest in cultural and creative arts classes (Holstermann, Grube & Bogeholz, 2010). Teachers should also know how to prepare hands-on/mind-on learning activities, as they should not be done in a cookbook approach. Hands-on and mind-on activities should be included in teachers training programme.

Recommendations

The following recommendations were made:

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1. Both in-service and pre-service teachers should be educated on the significance and relevance of hands-on/minds-on learning activities, as well as how to effectively use them in cultural and creative arts classrooms.
2. In cultural and creative arts curricula, curriculum developers should design and incorporate hands-on/mind-on learning activities.
3. Teachers should encourage both male and female pupils on how to carried out some artistic drawings.

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