

## **AFTERSCHOOL ARTISAN APPRENTICESHIP AND STUDENTS' ACADEMIC PERFORMANCE IN MATHEMATICS.**

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### **Abstract**

Students are expected to rest then practise exercises given from school after school but some students resume at a master's shop to learn an handiwork, this action makes students have their attention divided as they have to resume at their masters' workshops as soon as they leave school and any delay or lateness is met with stiff penalty. The study investigated the influence of afterschool artisan apprenticeship on secondary school students' academic performance in Mathematics. A total of three hundred and sixty-seven students from three public junior secondary schools in Ewekoro Local Government Area of Ogun State were used as the sample for the study. An Apprenticeship Enquiry Questionnaire (AEQ) and students' third term 2014/2015 Unified Promotion Examination result in Mathematics were used. Hypotheses formulated for this study were analysed using Analysis of Variance (ANOVA) at 0.05 level of significance. The results showed that students' academic performance in Mathematics was not affected by the students' engagement in afterschool artisan apprenticeship and that there was no significant influence of afterschool artisan apprenticeship and gender on students' academic performance in Mathematics. The study recommended among others that because of the peculiarity of the subject students should be encouraged to cultivate the habit of practising exercises on their own even when they are in their master;s workshops.

**Keyword:** afterschool artisan, apprenticeship, performance, Mathematics

### **Introduction**

Mathematics is a major subject for maintainable evolution. It is the cornerstone of all aspects of human existence. It is applicable in everyday living and it is a universal language that is essential in almost every field, such as handling money, measurements in fashion and carpentry, livestock farming, baking, among other. Makarfi (2001) noted that Mathematics is universal not only in the way it influences the basic sciences, the applied sciences, engineering, and technology, but also in the way it has been made relevant to the development of the social sciences and the liberal arts.

In Nigeria, the teaching and learning of Mathematics has gone through several developments from the era of formal Arithmetic, Algebra, Geometry and the likes through the period of traditional Mathematics and the modern Mathematics controversy to the present everyday general Mathematics. These changes have always been necessitated by the realization of the role Mathematics should play in the nation's scientific and technological development as well as responses to societal needs and demands (Aguale, 2004). Any career a child may choose to pursue in life requires application of mathematical knowledge and skills and for an individual to become an artisan, the individual will need a strong background in basic mathematical concepts such as quantification, relations, geometrical shapes and measurements. Apprentices need some basic mathematical knowledge to develop the artisan creative skills.

Apprenticeship is a training pattern which involves on-the-job practise and its related dictate. Apprenticeship can accommodate a wide range of abilities and aptitudes because it accurately reflects the equally wide range of skills required in a modern economy (Bosch & Charest, 2008). After-school apprenticeship is an after school on-the-job training programme that students are exposed to after formal educational activities. Apprenticeship is more than the growth of a set of vocational crafts, it comprises a rite of passage, a form of inauguration into working life and adult responsibilities (Lehmann, 2007), accompanied by the formation of occupational identity (Kirpal, 2004). Apprenticeship, therefore, does more than prepare young people for work, it provides them with a

particular identity and positions them in a world where occupations may also be shorthand statements of their individuality (Hall & Chandler, 2005; Steedman, 2011.).

In Africa, apprenticeship is an old cultural practices of informal training of younger generation where parents who earn a living with one craft or the other always pass the skill on by ensuring that their wards become skilful in their area of expertise. The traditional apprenticeship model was designed after a craft system of production, with very distinct characteristics allowing for a much more practical mode of learning. During apprenticeship, learning progresses steadily, it is done mostly through imitation, experimentation and blunder, rehearse and redo, advertence and emulation of master artisans and gradually growing participation. On the spot feedback is required while on training meanwhile errors and oversight are accommodated during the learning process. Apprenticeship allows artisans to build up skills gradually. Apprenticeship programmes have been described positively in terms of their ability to nurture and develop the knowledge and skills of entrants to the labour market, and less favourably as 'wasteful exercises in time-serving' (Ainley & Rainbird, 1999).

The inductive mode of transmission of knowledge is the most common mode of teaching/learning in apprenticeship. Apprenticeship programmes are affordable, flexible in the size of intakes. Meanwhile, the form of apprenticeship programme lacks methodical course content; bare of structured blueprint of training, highly rooted on untested folk ways, stereotypic in gaining new ability and information. Furthermore, the apprenticeship programmes skills which have their roots in our traditional system lack innovations that are backed by scientific principles. The 'graduates' of these programmes are not analytically tried out to find out their degrees of proficiency of their mastery other than be immaturely assessed by the number of months or years spent as an apprentice in addition to the level of display of adroitness in operations.

Eneh (2010) argued that the effects of declining rate of young people who enlist for apprenticeship training do not in any way promote the act of students combining academic work and apprenticeship training as such may spell doom for the larger society in the long run. Eneh (2010), Uwaifo (2010), Odu (2011) and Kire & Husayn (2014) are all of the view that every child should be introduced to one form of handiwork or the other so that every learner can develop on his/her area of aptitude and as well as reduce the scourge of youths unemployment in the country. Aminu (2009) posited that skill acquisition boosts labour market by empowering unskilled, poor and unemployable youth for sound social living, thereby, curtailing restiveness, crime and poverty. Skill acquisition is an antidote for idleness and makes for self-reliance (Ogbodo, 2009).

Unemployment is on the increase every day, parents on the other hand want to safeguard the future of their wards, they enrol their wards to learn a handiwork after school hours but there is a general assumption that the divided attention will affect the academic performance of students in Mathematics given the nature of the subject. It is expected that after each day of every school day activities, students should attend extra lesson classes to enhance what has been taught in the class or rather an home lesson teacher should comes around to teach for better clarity of concepts that are not well understood during the teaching learning process but in some cases these is completely different some resumes at their masters' shop to learn a craft. Meanwhile Abari et al (2018) found out that there is no significant relationship between students' apprenticeship and academic performance and that apprentices will either improve or not improve their academic performance but rather personal effort had to be made of student reading abilities.

Gender prejudices also shapes attitudes towards apprenticeship programmes. General believe was that some crafts involves more strength and technicality to handle than the other. Eneh (2010) observed that 85% of males were technical apprentices and artisan services providers while 15% of females engaged mainly in other less technical services as against the harder professions. In African settings, females are believed to learn more handiwork compared to their male counterparts. Abari et al (2018) established that apprenticeship of both male and female students does not affect their academic performance rather students needs to improve on their academics.

Some people believed that afterschool artisan apprenticeship is a preparatory stage for the would be world, some others sees it a waste of time that a child should not have divided attention. Uwaifo

(2008) pointed out that both parents have roles to play in a child's academic life, that children from functional home are better advantaged in everything compare to those from dysfunctional home. It is in the light of the above, that the study sought to investigate the influence of afterschool artisan apprenticeship on secondary school students' academic performance in Mathematics

### Hypotheses

There is no significant influence of after-school artisan apprenticeship on students' academic performance in Mathematics

There is no significant influence of gender on students' academic performance in Mathematics

### Methodology

The research design adopted for this study was a survey. The population of this study consisted of all students in public secondary schools in Ewekoro Local Government Area of Ogun State. The cluster sampling technique was used to select students in Junior Secondary Two. Using simple random technique three (3) Public Secondary Schools in the Ewekoro Local Government Area were selected. In all a total of three hundred and sixty-seven (367) students were used. Ewekoro Local Government Area of Ogun State was chosen because schools in that area were identified as having these characteristics of schooling and learning handiwork. A self developed semi-structured close ended questionnaire titled "An Apprenticeship Enquiry Questionnaire" (AEQ) was used to elicit responses from students. Students' unified promotional examination record in Mathematics for 2018/2019 academic session was also used for students' performance. Data collected were analysed using simple percentages and Analysis of Variance (ANOVA) at 0.05 level of significance

### RESULTS

Demographic Distribution of the Respondents based on the marital status of their parents

Table 1: Distribution of respondents' parent's marital status

Parent's marital status	Frequency	Percentage (%)
Single	43	11.7
Married	286	77.9
Divorced	3	.8
Separated	24	6.5
widow/widower	11	3.0
Total	367	100.0

The demographic distribution shows that 43 (11.7%) of the respondents' parents were single parents (parents that were never married but had children anyhow), 286 (77.9%) of the respondents' parents were married and living together, only 3 (0.8%) of the respondents' parents were divorcees (parents that were married before but no more), 24 (6.5%) of the respondents indicated that their parents were separated (parents that are not living together) and 11 (3.0%) of the respondents' parents were widows/widowers. With this finding, majority of the respondents were from intact homes. Figure 1 shows the graphical representation of this distribution.

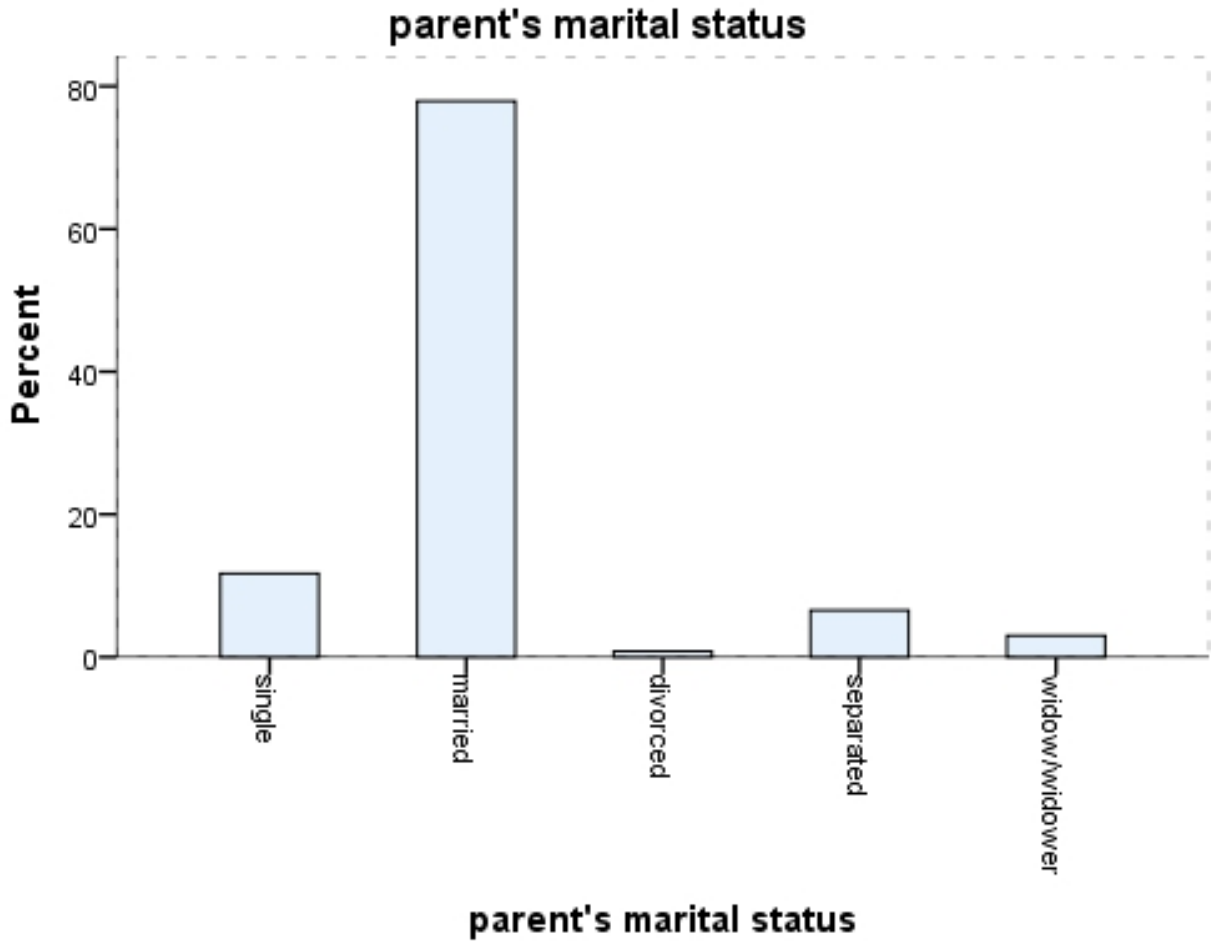


Figure 1: Percentage Bar Chart Showing Respondents' Parents' Marital Status

Hypothesis one

There is no significant influence of after-school artisan apprenticeship on students' academic performance in Mathematics

Table 2: ANOVA summary showing the influence of after-school artisan apprenticeship on students' academic performance in Mathematics

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	137.476	1	137.476	1.016	.316
Residual	11501.581	85	135.313		
Total	11639.057	86			

From table 2, the null hypothesis is accepted while the alternative hypothesis is rejected. This is premised on the fact that the calculated F-value of 1.016 is insignificant at .05 significant levels. Therefore, there is no significant influence of after-school apprenticeship on secondary school students' academic performance in Mathematics,  $F(1,85) = 1.016$ ;  $p = .316$ ). The implication is that students' academic performance in Mathematics is not affected by students' engagement in handiworks/skill practice.

Hypothesis two

There is no significant influence of gender on students' academic performance in Mathematics

Table 3: ANOVA summary showing the influence of gender on students' academic performance in Mathematics

Model	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	147.265	1	147.265	1.296	.256
Within Groups	41481.514	365	113.648		
Total	41628.779	366			

From table 3, the null hypothesis is accepted and the alternative hypothesis is rejected. This is predicated on the fact that the calculated F-value of 1.296 is insignificant at .05 significant levels. Therefore, there is no significant influence of gender on secondary school students' academic performance in Mathematics,  $F(1,365) = 1.296$ ;  $p = .256$ ). The implication is that students' academic performance in Mathematics is not influenced by gender difference.

### Summary of Findings

1. Students' academic performance in Mathematics is not affected by the students' engagement in handiwork/skill practice.
2. Gender difference does not influence students' academic performance in Mathematics.

### Discussion of Findings

The result shows that students' engagement in handiwork/skill practice have no influence on their academic performance in Mathematics. This implies that afterschool artisan apprenticeship does not negatively affect secondary school students' academic performance in Mathematics. This may be because the knowledge gained from Mathematics is required in skills learnt and vice versa. Moreover, during this period of apprenticeship apprentices stay in their masters' shops where they can engage in some forms of academic endeavours including doing assignments and reviewing lessons earlier taught/learnt which result in better performance in Mathematics. This finding is in agreement with Abari et al (2018), they confirmed that there is no significant relationship between students' apprenticeship and academic performance and that apprentices will either improve or not improve their academic performance but rather personal effort had to be made of student reading abilities. Fuller and Unwin (1998), affirmed that students can see a purpose for their learning as a relationship can be established between 'what they learn, its application, and the development of adult identities' while Evans, et al (2004) suggested that the learning outcomes in this type of programme are not necessarily restricted to formal qualifications, but may include 'self assurance, increased capability, improved attainment, greater ability to exercise control over their situations and environments, and the development of new attitudes toward learning/working'

It was also revealed that students' academic performance in Mathematics is not influenced by gender difference. This finding points to the fact that being a male or female does not differ significantly in their academic performance in Mathematics. This assertion is confirmed by Abari et al (2018) who established that apprenticeship of both male and female students does not affect their academic performance rather students needs to improve on their academics. .

The result further revealed that parent's marital status does influences students seeing that majority of the respondents were from functional homes. Rochlkepasrtain (2003) is of the opinion that the family and its structure plays a great role in children's academic performance. When parents stays together better decisions are made on their children behalf and this impact their future turnout. Uwaifo (2008) pointed out that both parents have roles to play in the child's academic achievement. Abdulhamid (2011), Lawani & Ojo (2016) opined that majority of students who had high achievement in Mathematics lived with both parents. .

## Recommendations

Based on the findings, the following recommendations were made:

Because of the peculiarity of the subject students should be encouraged to cultivate the habit of practising exercises on their own even when they are in their master;s workshops.

During P.T.A. meetings, parents should be enlightened on the importance of Mathematics and be advised to encourage their wards to give more attention to the practice of Mathematics after school hours.

Teachers should endeavour to give comprehensive take home assignments so that even within their peer the student can be of help to each other and their time at their master's workshop will be judiciously used

The media should help to educate public on the importance of education and balancing it with learning of handiwork which will impact Nigerian technological culture and national development on the long run.

Governments could help to establish and equip vocational centres in strategic areas within the local government area so as to have an organized academic and vocational curriculum running concurrently. The government could also employ technical teachers cum artisans to teach students practical skills.

The need for further research cannot be over-emphasised, the study was limited to only three junior secondary schools in Ewekoro Local Government Area of Ogun State but further studies can be carried out in all the nine secondary schools in the local government. Also, more research work should be carried out on the influence of after-school artisan apprenticeship in other states and local government areas in Nigeria especially with the spate of unemployment in the country.

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