

**EVALUATION OF THE MODE OF INSTRUCTIONS AND INSTRUCTIONAL MATERIALS AVAILABLE TO  
TRAINERS OF ELECTRICAL APPLIANCES REWINDERS IN ENUGU STATE, NIGERIA**

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**ABSTRACT**

Apprenticeship is the learning of a trade through practical experience under the guidance of a master craftsman it is aimed at making unemployed youth's skillful and self-reliant thus reducing unemployment. The apprenticeship system of training rewinders in Enugu Local Government Area is faced with many challenges such as lack of facilities; inadequately planned programme. and instruction, unsteady growth of the number of youths entering the trade and awful conditions of training to which the apprentices are exposed, just to mention a few. It is because of the above conditions that the researcher considered it necessary to carry out a study of this nature. The survey research design was employed in the study. Questionnaire were designed and administered to 300 apprentices,' craftsmen in Enugu Local Government. Frequency counts, percentages and mean scores were used to analyze the data. The study revealed the type of programme, instruction and method of evaluation inherent in the tram conditions to which the apprentices are subject and the type of facilities, tools and equipment available for the training of rewinders. Based on these observations, the researchers recommended that: the government should encourage the master craftsmen to be educated by ways of scholarships or evening classes, public libraries should consider the interest of these caliber of readers in the society; commercial banks should augment the efforts of the people's Bank of Nigeria by giving loans to these craftsmen to enable them purchase tools, and government should establish an inspectorate division for an "out of school" education that will guide these master craftsmen

**KEYWORDS:** Apprenticeship, Master craftsman, Electrical appliances, Rewinders

## **INTRODUCTION**

In the history of man, he had made all efforts to conquer his physical environment. By one way or the others, he had transmitted manual skills, knowledge vital to specific tasks from generation to generation. These transmissions, in the early years were done by developing these skills among recruits to the parts. The easiest method used was by imitation, observation and individual initiative. Cala (2002) mentioned that the first learning was perhaps by accident and that men also learnt to work by trial and error and by initiation. These four methods were crude and unorganized; hence as man advanced in civilization, his method of learning was glaringly becoming inadequate. This method lasted until it became essentially necessary that the adult members of the society must teach the traders and general education of the time to the youths. They were thus forced to seek new, adequate, planned and organized experiences and methods of learning. In consequences thereof, the methods of learning through planned experiences came into use.

It was then that the apprenticeship system developed (Haw, 2008). Layton (1951) revealed that apprenticeship is a formal relationship between employer and apprentices through which the mutual obligations and duties of each one is established by written agreement. Cala (2002) further hinted that apprenticeship which originated during the middle ages was among the first forms of planned and organized learning. A careful study of our towns portrays a very good number of tradesmen. These often include rewinders, welders, builders, carpenters, cabinet makers or electronics servicemen just to mention a few. Virtually, all these tradesmen have learnt their skills through the apprenticeship system.

Today, many youths enter the rewinding occupation with a view of acquiring skills in the maintenance and construction of electrical appliances such as electric motors, generators, public power supply transformers, welding machines and their likes, such youths hope to graduate and gain lucrative employment or set up their own workshops in a few years or even months. Rewinding of electrical appliances is an important occupation which demands competencies from the practitioners. These practitioners require good trainings in order to run these workshops; otherwise they could constitute sources of danger to the society. This therefore implies that the youths who enter the occupations as apprentices need adequate trainings to meet the demands of rewinding/ electrical professionals (Haw, 2008)

Apprentice rewinders had incessantly bitterly complained about the inadequately planned

programmes, mode of instructions and instructional materials available for their trainings. The number of youths entering the occupation does not seem to be on the increase. Also, there had been lots of complaints from those who hire the services of workmen rewinders, due to lack of professionalism in their services. As a result, there is need to evaluate the mode of instructions and instructional materials available to trainers of electrical appliances rewinders.

Different definitions have been accorded to apprenticeship by different authors and authorities. Layton (1951) has the definition of apprenticeship as that formal relationship between employer and apprentices through which the mutual obligations and duties of each one is established by written agreement. He observed that the term apprenticeship is associated with a contract either written or implied for services to be rendered. The services take the form of instruction on the part of the master and learning through working on the part of the learners or apprentices. The chamber's Encyclopedia defines apprenticeship as learning of a trade, art or other callings by practical experiences under the guidance of a master, perhaps also with some classroom study. The term is also used to denote the period of time served by apprentices. It is an important means of training skilled craftsmen. Okorie and Ezeji (2010), also defined apprenticeship as an arrangement under which an infant or an adult male or female bonds himself to serve and learn for a definite time form a master, who on his side covenants to teach his trade or calling to an apprentice. For the purposes of this study, apprenticeship means the learning of trade or art through practical experiences under the guidance of a master craftsman after the agreement between the master and the apprentice has been reached.

In Nigeria, the government has launched the 'Open Apprenticeship scheme" this National open apprenticeship Scheme is one of the national youth employment and vocational skills development programmes which is designed to given vocational training to unemployed youths who have no maketable skills. The aim of this scheme is to tackle the youth employment meanace in the country (Mclaughlin, 1978). It is worthy to note that with the introduction of the open apprenticeship scheme by the federal government, apprenticeship system has moved from

With this background, therefore, the researcher sees the need to evaluate and establish what mode of instructions and evaluation that obtains in enugu local government area in this aspect of global trend development.

Father-son training, to master- servant and now in this country to Government-citizen apprenticeship

in the training of skilled craftsmen in Nigeria.

In most pre-industrial societies, the apprenticeship system was the basic social institution responsible for the training of craftsmen and served as a mechanism for passing of skills from one generation to another. In spite of the growing popularity of formal education, apprenticeship still remains a widely used method for skill and knowledge transmission throughout the world. In Europe, it is used to teach trades such as furniture printing, construction, motor mechanic and electrician (Parks, 1979). In both the then Eastern German, and Zuckert, (1979) and western German Parks, (1979) respectively, portrayed that great importance is attached to the training of apprentices. Besides giving vocational training in a specific trade, apprentices, are taught the following subjects which are more or less required for all occupations, i.e. civics, industrial, economics, fundamentals of data processing etc.

#### **THE PURPOSES OF THIS STUDY WERE**

1. To investigate the type of instructions that exist in the chosen trade, and how the apprentices are evaluated.
2. To find out the type of equipment and tools that are available in this trade and how the prices of the equipment and tools affect their purchases.

#### **RESEARCH QUESTIONS**

1. What types of instructions exist in electrical rewinding industry in Enugu local Government Area?
2. What is the degree of availability of standard instructional resources needed for the training of rewinders?

#### **METHOD**

The design of the study was a survey research design. Sample survey gathers data and information from a percentage of the population to represent the entire population. The source of data is primary data, which was gathered with the use of structured questionnaire. The choice of data was logically dictated by the fact that this study is a descriptive survey type. The study covered three major towns in Enugu local Government Area, namely, Enugu main town, Abakpa Nike and Emene.

#### **POPULATION**

A survey of workshops along roads in Enugu local government Area has revealed that there were eighty five (85) viable rewinding service workshops, one hundred and twenty-one (121) master craftsmen and six hundred and twenty-one (621) apprentices in Enugu local Government Area.

### **SAMPLING TECHNIQUES**

The sample consisted of one hundred (100) master craftsmen and three hundred (300) apprentices equally distributed among the workshops referred to above. The establishments were randomly selected from the population. To qualify as a subject for this study, the workshop must have at least two apprentices and the master must have been in his trade for a minimum of three years.

### **TECHNIQUE OF DATA ANALYSIS**

In analyzing the data collected, frequency counts and percentages as well as mean, scores were used. The means were determined and used to answer research question 4, on the degree of availability of instructional resources.

Frequency counts and percentages were used for the other analyses. Here the response was transformed into scores and grouped into frequencies. The formula for covering the raw scores to percentages is as follows:

$$\% = F/N \times 100$$

Where f= frequency of respondents to a particular item, N = number of respondents, %= percentages of total respondents. Mean score for each item

The mean score for each item was computed by multiplying the frequency of each response mode with the appropriate nominal value. Very adequate (VA) = 4, Adequate (A) = 3, Inadequate (IA) = 2, Very Inadequate (VIA) = 1, And using the formular below:,  $X = \frac{\sum nf}{N}$ , Where x = mean,  $\Sigma$  = Summation sign, N = Nominal value for an item

F= frequency of response under each response mode, Nr= number of respondents to an item.

### **ANALYSIS AND RESULTS**

The length of time apprentices stay with their masters were also sought and this is shown in the table below.

**Table 1: Duration of training of apprentices**

<b>Years</b>	<b>Number</b>	<b>%</b>
2	20	6.6
3	226	75.3
4	48	16
5	6	2
Total	300	100

The lengths of time apprentices spend with their masters varying from two to five years. For 75% of the apprentices studied, the duration of training stood at three years .Only 16% spent two and five

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years . It can then be rightfully concluded that apprentices in the local government Area spend three years in training.

**RESEARCH QUESTION 1****WHAT TYPE OF INSTRUCTION EXISTS IN ELECTRICAL REWINDING INDUSTRY IN ENUGU LOCAL GOVERNMENT AREA?**

In order to ascertain the type of instructions that prevail, seven items were identified in the questionnaire and apprentices were asked to indicate their levels of agreement by checking (✓) against the response item which in their opinions best suits to the statement.

**Table 2: Type of Instruction Used in the Training of Apprentices**

Questionnaire items	Strongly agree/ agree Freq. (%)	Strongly disagree/disagree Freq. (%)	Total (%)
The master craftsman is always in the workshop directing during practical works	256 (85.3)	44 (14.7)	300 (100)
Practical assignments are often given individually.	192 (64)	108 (36)	300 (100)
Enough instructions on the theoretical aspects of the trade are given	117 (39)	183 (61)	300 (100)
Time allotted for theoretical work is too small	255 (85)	45 (15)	300 (100)
Fields trips to factories to see how jobs are carried out are inevitable	141 (47)	159 (53)	300 (100)
There is a library in the work-shop where related information and books are kept for references like trade books, circuit diagrams journals, etc	36 (12)	264 (88)	300 (100)
Modes of teachings employed in teaching the apprentices include:			
Lecture / telling method	39 (13)	261 (87)	300 (100)
Demonstration /practice	264 (88)	36 (12)	300 (100)
Observation	246 (82)	54 (18)	300 (100)
Explanation /questions	179 (59.7)	121 (40.3)	300 (100)
Questioning	15 (5)	285 (95)	300 (100)

Highlight shows that 85.3% of the respondents agreed that the master craftsmen are always in the workshops directing during practical works. This can be seen to be true from the fact that virtually all the works were brought in for repairs and should any major damages occur, the master craftsmen may have to pay. 64% of the respondents also agreed that practical assignments are given individually. This is particularly true for senior apprentices who can reasonably follow given instructions.

Again, 39% of the respondents only agreed that theoretical aspects of the trade are given. This shows

that a lot of improvement is needed in this direction. 85% of the respondents complain that enough time is not given to theoretical works. This confirms the earlier complaints that enough theoretical works are not given. 47% of the respondents would want field trips to factories. This percentage shows that some numbers (53%) can do without it. This can be attributed to the fact that various appliances are continually being brought to these workshops for repairs.

Only 12% of the respondents subscribed having resource centers like library. this was found in only two big companies. It can then be said that since these big firms saw the need for a library, this should be recommended to the younger workshops. Of all the instructional methods sampled, these two methods appear to be used more often- demonstration/ practices and observation, they were closely followed by explanation/ question approaches. All other methods were not found to be often used. Finally, it can be concluded that the rewinding apprenticeship has a fairly organized method of instructions, only that the theoretical aspects of the training should be improved upon. One can blame this on the poor educational backgrounds of most of the master craftsmen. An in- service training or evening programmes should be recommended to them.

## RESEARCH QUESTION 2

### WHAT IS THE DEGREE OF AVAILABILITY OF STANDARD INSTRUCTIONAL RESOURCES NEEDED FOR THE TRAINING OF REWINDERS?

To determine the degree of availability of instructional resources, the mean scores of the items were computed. A score of mean 2.45 and above were accepted and the instructional materials were classified as adequate.

**Table 3: Degree of Availability of Instructional Resources**

Instructional resources	Degree of Availability					X	Remarks
	SA	A	DA	SD	F		
1 Rules	27	15	13	4	59	3.1	Adequate
2 Try squares	3	10	16	22	51	1.2	in adequate
3 Dividers	2	17	37	3	59	2.3	"
4 Marking gauges	10	15	40	30	95	2.0	"
5 Mallets	27	30	20	0	76	3.13	Adequate
6 Hammers	33	30	23	10	96	2.89	"
7 Screw drivers	43	38	18	0	99	3.0	"
8 Pliers	46	45	0	0	91	3.5	"
9 Stripping pliers	26	33	17	17	93	2.7	"

10	Files	23	36	18	17	94	2.6	“
11	Bracers	7	23	43	27	100	2.2	Inadequate
12	Electric drilling machines	13	28	14	15	70	2.5	Adequate
13	Electric grinders	15	27	14	15	71	2.5	“
14	Cutters	46	35	17	2	100	3.2	“
15	Formers	7	13	43	29	92	1.9	Inadequate
16	Scissors	25	37	30	0	92	2.9	Adequate
17	Winding counting machines	7	10	47	30	94	1.9	Inadequate
18	Rheostats	15	16	40	27	98	2.1	“
19	Blow lamps	15	11	40	30	96	2.1	“
22	Ohmmeters	8	14	40	30	92	2.0	Inadequate
23	Ammeters	10	14	36	40	100	1.98	“
24	Voltmeters	7	20	43	29	99	2.05	“
25	Wattmeters	7	12	47	30	96	1.8	Inadequate
26	Frequency meters	10	15	40	32	97	2.0	“
27	Tachometers	10	13	40	30	93	2.0	“
28	Complete spanner kits	34	41	25	0	100	2.7	Adequate
29	Allen keys	7	10	47	30	94	1.9	Inadequate
30	Filler gauges	3	13	53	30	100	1.85	“
31	Wire gauges	3	13	50	30	96	1.8	“
32	Pulleys	27	40	20	8	95	2.9	Adequate
33	Vices	13	28	14	15	73	2.5	“
34	Riveting tools	7	11	46	32	94	1.9	Inadequate
35	Hacksaws	15	29	14	15	95	2.6	Adequate
36	Key pliers	14	10	40	30	41	2.0	Inadequate
37	Shifting spanners	13	11	41	30	99	2.0	“
38	Extractors	13	15	10	3	100	2.9	Adequate
39	Electric ovens	4	14	50	31	99	1.9	Inadequate
40	Step down transformers	5	17	60	18	100	2.0	“
41	Step up transformers	5	18	60	18	101	2.09	“
42	Functional/Non-functional electric motors	44	39	15	1	99	3.2	Adequate
43	Generators, as teaching aids	17	16	40	27	100	2.2	Inadequate

The highlight shows the reactions of the respondents concerning equipment and other training resources .The table shows that a reasonable number of equipment which ought to be available in these training workshops were lacking. It was only in a few outstanding workshops that this

equipment was found complete.

Despite the fact that most other smaller shops do not have this equipment, they still vary out normal services; they have alternative ways of solving the problems that the absence of this equipment posed to them. For instance, 'former' a tool very useful in coiling wires to be placed into motors or generators slots was found inadequate in the table. Practically four or more nails driven into a felt wooden board can perform its work. Useful equipment is the electric oven. Its functions can be performed by placing high wattage bulbs in an enclosed system – this gives approximately same end results.

Generally, most items that were found inadequate in the table have their functions carried out by one or more local ways .this can be attributed to the experiences of the master craftsmen.

A few tools and equipment were found in use in most of the workshops which were not on the suggested list. These include hydraulic lift, compressor machines, amprobes and stator / rotor electronic testers. On why necessary equipment was not found in their workshops, they complained of lack of fund. However, they claim that experience helps them to overcome certain problems.

## **DISCUSSION**

The findings of this study revealed that the learning experiences are received through observation/ participation modes. The apprentices watch their masters and senior apprentices while they are engaged in various tasks and assimilate the techniques and replicate these when jobs are assigned to them. The learning experiences are quite structured as usually simple tasks are assigned initially and as they successfully complete each, they are given progressively more difficult tasks. Formal instruction is done only when the workshop is less busy and the master may demonstrate to them the use of tools or techniques for doing a particular job. Assessment of learning is done by master craftsmen in a continuous manner .Only when they are satisfied , that a particular technique or job has been learnt, the next more difficult assignment is then given .No formal tests or examinations are conducted. Also, the study's findings revealed that the teaching materials available in the workshops consist of tools, equipment (though lacking) and opportunities for practical works. Books, notebooks, chalkboards and writing materials are infrequently available and seldom made use of.

## **CONCLUSION**

In conclusion, this study evaluated the mode of instructions and instructional materials available to trainers of electrical appliances rewinders in Enugu Local Government Area of Enugu state. In references to the findings of this study, it is concluded that the instructions, mode employed by trainers of electrical appliances rewinders are observation and participation modes as well as assessment of learning's which are done in continuous manners. The study also concludes that there are inadequate instructional materials available to the trainers. Lastly, the study concludes that the purpose of this study has been overwhelmingly satisfied. It is therefore, hoped that other researchers, the government of Enugu state as well as vocational improvement planners in their efforts to find out the problems facing the training of rewinders may show enough interest and examines and utilize the findings which have emerged from this study.

## **RECOMMENDATIONS**

The study therefore recommends among others that:

1. The government should encourage the master craftsmen to update their educational backgrounds. This can be done by their being given scholarships or being encouraged to attend the vocational improvement courses as it is being presently run in technical collages in the state, particularly Enugu .
2. Public libraries should be encouraged to stock special books for rewinders. This should serve as reference points for them. As an alternative, a special Centre should be developed in the town where "do it yourself" type of books should be stocked. Apprentices and their masters can learn the theoretical and practical aspects of their trades from there.

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