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# CHALLENGES OF IMPLEMENTING PSYCHOMOTOR SKILLS IN BUILDING TRADES MODULAR CURRICULUM IN TECHNICAL COLLEGES OF ADAMAWA AND TARABA STATES

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## ABSTRACT
This paper focused on identifying the challenges that affect the implementation of the psychomotor skills inBuilding Trades modular curriculum. Two research questions guided the study and two null hypotheses were tested at 0.05 level of significance. Literatures were reviewed to provide relevant information. The design adopted for the study was school-based descriptive survey. The area of the study was Adamawa and Taraba States located in the North East Geo-political zone of Nigeria. The population of the study was 35 Building Trades teachers and 24 technical college administrators from six selected colleges, three from each state. No sampling technique was employed because the entire 59 respondents was manageable. The data was collected using a questionnaire developed by the researchers. The instrument was validated by three experts. The reliability test of the instrument was carried out with Cronbach alpha method and a reliability coefficient of 0.82 was obtained indicating that the instrument is reliable for the study. Mean was used to answer the research questions, while z-test was used to test the hypotheses at 0.05 level of significance. The findings revealed that the psychomotor skills aspects of the Building Trades modular curriculum is bedeviled by numerous challenges such as inadequate instructional

materials, inadequate teachers and poor supervision among others. Among others, the study recommended supply of necessary instructional materials.

**Key Words:** Psychomotor Skills, Building Trades, Modular Curriculum, Science and Technical Colleges. Adamawa and Taraba States

## Introduction

Curriculum is the backbone of any school system. Most of the activities in the school centre on the curriculum. Ajala (2002) sees curriculum as a series of planned learning activities which students are exposed to in the course of their physical and intellectual development. A curriculum is expected to be made of three domains of learning namely: the cognitive, the affective and the psychomotor domains. In Technical and Vocational Education and Training (TVET), the curriculum is specially designed to train skills labour for industrial occupation such as construction and manufacturing, as well as the educational institutions among others. It is in view of this that the National Board for Technical Education (NBTE) developed a modular curriculum for all trades at technical college level. The Commonwealth States Training Advisory Committee (COSTAC) (2009) noted that a module is a specific learning segment, complete in itself and capable of being assessed to determine the level of skills acquired for future application. This module are capable of providing skills for life. These skills are practically insufficient in Nigeria.

Nigeria is in dare need to develop her human resources in order to offer adequate skilled manpower. In order to achieve this goal, a programme drafting panel made up of expert from the universities, polytechnics, construction industry and government boards, and parastatals was set up and it came up with modular trade curriculum (Federal Republic Nigeria (FRN), 2013). The curriculum for each of the programme in building trades in particular is divided into three components namely; general education, which accounts for 30% of the total hours required for the programme, trade theory and practical which accounts for 65% of the time and supervised industrial training/work experience which accounts for about 5% of the total hours required for the programme. To provide this training, the modular

curriculum was designed with the essential knowledge and skills that will enable students perform competently in all aspects of Building trades in the construction industry. However, the implementation is suffering a serious setback.

The curriculum of the building trades was developed with the view of providing a broad base foundation level for rapid development of the construction industry in Nigeria which is currently not being implemented as designed, why not, is a question left to be answered by this study. The goal of mounting building trades' curriculum is yet to be achieved due to some constraints that stand on the way. The researchers observed that some challenges are responsible for poor implementation of building trades modular curriculum. These could be ineffective teaching by building trade teachers, poor supervision on the part of the administrators among others.

The curriculum of each programme including building construction is divided into three components for easy implementation. The first component is made up of general knowledge which is given 30% of the total hours required for the programme. Secondly, the theory and practical accounts for 65% of the time and lastly the supervised industrial training work experience accounts for about 5% of the total hours required for the programme (FRN, 2013). In the building construction trade modular curriculum, a successful completion of modules BBC-12 (Bricklaying), BBC 13 (Blocklaying) and BBC 14 (concreting) can provide the required knowledge and skills for employment purpose and effective performance on the job in line with the new developments taking place in the construction industry (Anaele (2001); FRN, 2013; Olaitan (1996); Okachi, 2008). To determine the quality of the products of TVET programme, it is necessary to objectively and accurately assess the teaching and learning outcome to identify the challenges that bedevil the programme. The outcry from employers of the product of Science and Technical Colleges, specifically on the psychomotor skills performance in building trades motivated this study.

The psychomotor domain of the building curriculum has to do with the five categories of the psychomotor skill which include imitation, manipulation, execution of skill reliably with precision, articulation of task to standard and mastery of task through



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naturalization (Chapman, 2006). The researchers are of the view that, the effective application of the psycho-productive model in skill training and assessment would lead to the production of competent manpower for the construction industry. To get acquainted with details of psychomotor skills performance, the teacher is to focus attention on the various skill components that will equip a skilled trainee who can effectively fit and function well in the labour market. The cumulative mastery of these competencies produces a competent workforce for the construction industry thereby providing safe, durable and functional shelters and other facilities for the citizen.

The objectives of psychomotor skills of the curriculum in technical and vocational education is achieved through constant active participation of the students in practical activities. This is observed by the researchers during teaching practice supervision to be farfetched. According to scholars like Okoro (1999)and Okwori (2012) the psychomotor domain was first developed by Bloom in 1938 which has five stages. According to Chapman (2006) they are: imitation (copying), manipulation (following instruction), develop precious, articulation (integrate related skills) and naturalization (becoming expert). The main focus of the psychomotor domain of learning is for high productivity at all levels of life. As knowledge continue to increase other models have been developed and published. Yalams (2001) noted that the choice of the model for use depends on the need at hand.

Thus, the psychomotor aspect of building trade is to equip the learner with skills such as design, selection of appropriate building tools, setting out a task from the design and implementing the whole design based on the specifications which at present is not obtainable within the study area. Others are observation of safety rules, finishing the task to standard and the care of the tools and equipment. In order to achieve the desired skills the curriculum of building trade is designed in modular form (FRN, 2013). However, it is observed that the implementation of this curriculum has not been effectively achieved. According to Bulama (2008) the achievement of psychomotor skills aspect of technical education is faced by challenges. Building trades teachers are the major stakeholders in the implementation this curriculum hence knowledgeable enough to response to

the challenges faced in the implementation. Administrators on the other hand, facilitate the implementation process at the school managerial level. It is based on this premises that the study compared mean opinions of building trades teachers and administrators on the challenges affecting the effective implementation and the strategies for overcoming the challenges. This study is specifically concerned with assessment of the challenges that affect the implementation of the desired psychomotor skills in Adamawa and Taraba States.

**Purpose of the Study**

The purpose of the study was to determine the challenges affecting the implementation of the psychomotor aspect of building trades modular curriculum in Technical Colleges of Adamawa and Taraba states. Specifically, the study to:

1) Assess the challenges affecting the effective implementation of psychomotor skills aspect of the Building Trades modular curriculum.
2) Suggest the strategies for overcoming the challenges towards effective implementation of the psychomotor skills aspect of the Building Trades modular curriculum.

**Research Questions**

Two research questions guided the study.

1. What are the challenges affecting the effective implementation of psychomotor skills aspect of the Building Trades modular curriculum?
2. What are the strategies for overcoming the challenges towards effective implementation of the psychomotor skills aspect of the Building Trades modular curriculum?

**Hypotheses**

The following hypotheses were tested at 0.05 level of significance:

$H0_1$: There is no significance difference in the opinions of building trades teachers and administrators on the challenges affecting the effective implementation of psychomotor skills aspect of the Building Trades modular curriculum.

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$H0_2$: There is no significance difference in the opinion of building trades teachers and administrators on the strategies for overcoming the challenges towards effective implementation of the psychomotor skills aspect of the Building Trades modular curriculum.

## Methodology

The study was carried out using school-base survey design. This design according to Koul (2003) is vital in studying students' achievement, curriculum methods and school administrations among others. The areas of the study are Adamawa and TarabaStates. The states are located in the North East of Nigeria.The data was collected from the three State Science and Technical Colleges in Adamawa state located at Mubi, Yola and Numan. Three State Science and Technical Colleges were purposively selected from TarabaState, the colleges are located at Jalingo, Bali and Gembu.The population of the study was fifty-nine (59) consisting of all the 35 building trades teachers and all 24 administrators (the principal and the vice principals). Purposive sampling techniques was employed for the study and the population from the six sampled colleges made the sample size. The instrument for data collection was a questionnaire developed by the researcher on a five-point Likert scale titled: Challenges and ways of improving the implementation of psychomotor aspects of building trade curriculum trades (CWIIPBTC). The instrument was validated by three experts of building trades from Modibbo Adama University of Technology, Yola. The reliability of the instrument was carried out in Science and Technical College Gombe, Gombe State. Cronbach Alpha was used to determine the internal consistency of the items. The analysis reveals a coefficient of 0.82 indicating that the instrument is reliable. The data collected was analyzed using mean to answer research questions where bya mean cut-off point of 3. 50 was used for decision making. Any mean score of 3.50 and above was agreed upon while any mean score below 3.50was disagreed upon. Their search hypothesis was tested using z-Testat0.05levelofsignificance. The decision rule was that if z-calculated is greater than or equal to the z-critical value, the hypothesis is rejected. However, if the critical value is less than the z-value the hypothesis is accepted.

## Results

### Research Question One

What are the challenges affecting the effective implementation of psychomotor skills aspect of the Building Trades modular curriculum?

**Table 1. Mean Response of Administrators and Teachers on the Challenges Affecting the Effective Implementation ofPsychomotor Skills Aspects of the Building Trades Modular Curriculum**

| S/N | Responses items | $\bar{x}$ of $n_1$ | $\bar{x}$ of $n_2$ | G$\bar{x}$ | Remark |
|---|---|---|---|---|---|
| 1 | Insufficient qualified building trade teachers affect the teaching of Building trades practical lessons. | 4.07 | 3.65 | 3.90 | Agreed |
| 2 | Insufficient Building trades tools affect the effective teaching of practical lessons. | 4.09 | 4.27 | 4.16 | Agreed |
| 3 | Insufficient building materials affect the teaching of Building trades practical lessons. | 4.15 | 4.30 | 4.21 | Agreed |
| 4 | Building trade teachers find it difficult to develop practical models before the actual practical | 4.30 | 4.60 | 4.28 | Agreed |
| 5 | Building trade teachers find it difficult to organize Building trades practical lessons due to administrative challenges | 4.49 | 3.58 | 4.12 | Agreed |

| | | | | | |
|---|---|---|---|---|---|
| 6 | Involving students in planning practical Building trades lessons is a difficult task due to their negative attitude towards practical lessons | 4.50 | 3.75 | 4.19 | Agreed |
| 7 | Insufficient time is allocated for Building trades practical lessons | 3.91 | 3.77 | 3.85 | Agreed |
| 8 | The schools administration shows little or no interest in regular organization of practical lessons. | 3.38 | 4.35 | 3.96 | Agreed |
| 9 | Teachers find it difficult to encourage the students to participate in practical lesson due to lack of interest. | 3.50 | 3.78 | 3.67 | Agreed |
| 10 | The workshop attendants lack adequate qualification to support Building trades practical lessons | 3.49 | 3.98 | 3.69 | Agreed |
| | **Grand Mean** | **3.98** | **4.00** | **3.99** | **Agreed** |

Key:$\bar{X}_1$= meanofadministrators, $\bar{X}_2$= meanofteachers, $\bar{X}_G$= Item mean, n1= Administrators, n2= Teachers, gx = Grand Mean

Table 1 clearly shows that all the 10 challenges presented for response were confirmed by the respondents. The grand mean of 3.99 indicates that teacher related challenges such as difficulty in organizing Building trades practical lessons, insufficient qualified building trade teachers, insufficient Building trades tools, insufficient building materials. Other challenges areInsufficient time is allocated for Building trades practical lessons, schools administration shows little or no interest in regular organization of practical lessons and workshop attendants lack adequate qualification to support Building trades practical lessons. It can therefore be

concluded that respondents unanimously agreed upon the suggested items as challenges affecting the effective implementation of psychomotor skills aspect of the Building Trades modular curriculum.

**Research Question Two:** What are the strategies for overcoming the challenges towards effective implementation of the psychomotor skills aspect of the Building Trades modular curriculum**?**

**Table 2: Mean Response of Administrators and Teachers on the Strategies of overcoming Challenges towards Effective Implementation of the Building Trades Modular Curriculum in the Psychomotor Skills**

| S/N | Responses items | $\bar{x}$ of $n_1$ | $\bar{x}$ of $n_2$ | $G\bar{x}$ | Remark |
|---|---|---|---|---|---|
| 11 | Provision of adequate machines will improve the teaching of BBC practical lessons. | 3.65 | 3.70 | 3.67 | Agreed |
| 12 | Utilization of machines will improve the teaching of BBC practical lessons. | 4.55 | 3.98 | 4.32 | Agreed |
| 13 | Provision of adequate hand tools will improve the teaching of BBC practical lessons | 3.99 | 3.90 | 3.95 | Agreed |
| 14 | Utilization of sufficient consumable practical materials will improve the teaching of BBC practical lesson. | 3.83 | 4.16 | 3.96 | Agreed |
| 15 | Proper storage of instructional materials will improve the teaching of BBC practical lessons. | 4.55 | 3.78 | 4.16 | Agreed |
| 16 | Involving students in developing models for practicals will improve the teaching of BBC lesson. | 4.62 | 3.59 | 4.20 | Agreed |

| | | | | | |
|---|---|---|---|---|---|
| 17 | Allocating adequate periods on the time table for practicals will improve the teaching of BBC. | 4.28 | 3.89 | 4.20 | Agreed |
| 18 | Recruitment of qualified and experienced workshop assistants will improve the teaching of BBC practical lessons. | 4.33 | 4.20 | 4.45 | Agreed |
| 19 | Recruitment of qualified and experienced building trade teachers will improve the teaching of BBC practical lessons. | 4.52 | 4.15 | 4.37 | Agreed |
| 20 | Involving students in planning practical lessons will improve the teaching of BBC lessons. | 4.19 | 3.17 | 3.78 | Agreed |
| 21 | User of field trips for teaching practical lessons will improve the process. | 3.80 | 3.91 | 3.84 | Agreed |
| 22 | Retraining the workshop assistants will improve the teaching of BBC practical lessons. | 4.55 | 4.08 | 4.36 | Agreed |
| 23 | Combining relevant teaching methods will improve the teaching of BBC lessons. | 4.82 | 3.55 | 4.30 | Agreed |
| | **Grand Mean** | **3.28** | **3.85** | **4.12** | **Agreed** |

Key: $\bar{X}_1$=mean of administrators, $\bar{X}_2$= mean of teachers,$\bar{X}_G$= Item mean,n1= Administrators, n2= Teachers, gx= Grand Mean

Result on table 2 reveals that all the 13 suggested strategies of overcoming the challenges were agreed upon. The grand mean of 4.12 indicates that the respondents consistently agreed upon strategies such as recruitment of qualified and experienced workshop assistants, combining relevant teaching methods by teachers, retraining the workshop assistants, provision of adequate hand tools among others. These strategies



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will help in overcoming the challenges towards effective implementation of the psychomotor skills aspect of the Building Trades modular curriculum.

$H0_1$: There is no significant difference in the opinion of building trade teachers and administrators on existing challenges affecting the implementation of the psychomotor skill aspect of building trades modular curriculum.

**Table 3: z-Test result comparing the opinion of Building Trades Teachers and Administrators on the Challenges affecting the Implementation of the Psychomotor Skills aspect of the Building trades modular curriculum.**

| Respondents | $\bar{x}$ | SD | n | Df | t-cal | t-criti | Remark |
|---|---|---|---|---|---|---|---|
| Trades teachers | 3.88 | 0.32 | 35 | 57 | 1.54 | 2.30 | Accepted |
| Administrators | 3.11 | 0.25 | 24 | | | | |

$P > 0.05$

Table 3 shows a z-calculated value of 1.54, while the t-critical is 2.30. This is higher than the calculated value of t. this indicated that the test did not yield any significant difference in the mean response of the teachers and the administrators on the challenges that affects the implementation of the psychomotor aspect of the building trades curriculum.

$H0_2$: There is no significant difference in the opinion of building trade teachers and administrators on the most appropriate ways of overcoming the existing challenges that affect the implementation of the psychomotor skills aspect of the building trade modular curriculum.

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**Table 4: z-test Result comparing the Opinion of Building Trade Teachers and Administrators on the Most Appropriate Ways of overcoming the Challenges Affecting the Implementation of Building Trades Modular Curriculum.**

| Respondents | x̄ | SD | N | df | t-cal | t-criti | Remark |
|---|---|---|---|---|---|---|---|
| Trades teachers | 3.49 | 0.51 | 35 | | | | |
| | | | | 57 | 2.75 | 3.00 | Accepted |
| Administrators | 3.47 | 0.56 | 24 | | | | |

P > 0.05

Table 4 shows a z-cal of 2.75 at 0.05 level of significance and a t-critical at of 2.00. The test did not revealed any significant difference in the opinion of the teachers and the administrators on the most appropriate ways of overcoming the challenges in implementing the psychomotor aspect of the Building trade curriculum.

## Discussion of Findings

Research question one sought to find out the challenges affecting the implementation of the psychomotor skills aspects of the building trades modular curriculum. The findings show that the manpower is insufficient, materials are not adequate and some necessary tools and equipment are not available. Other challenges found out was lack of interest on the part of the administrators which manifest in lack of effective supervision and lack of motivation on the part of the building trades teachers. The finding is in consonance with the opinion of Bulama (2008) and Okwori (2012) who stressed that lack of instructional materials, tools and facilities are major challenges affecting the implementation of the psychomotor aspect of the building trades curriculum. The finding is also in line with the views of Anaele (2001) and Nyapson (2015), who noted that the quality of manpower in trade courses are lacking in most technical colleges in Nigeria. This poses a great challenge in the implementation of Technical and Vocational Education and Training (TVET) curriculum in our colleges.

Research question two sought to identify the strategies of overcoming the identified challenges that stand on the ways of effective implementation of building trades curriculum. The finding revealed that the provision and utilization of materials, equipment and

tools proper storage of materials and tools can go a long way in the implementation of building trades curriculum. Others are employing and retraining quality manpower, improved commitment on the part of the administrators and involving students in planning practical lessons. The finding is in total agreement with some notable scholars in industrial, Technical and Vocational Education and Training (TVET), the scholars include Olaitan (1996), Anaele (2001)who stressed that functional skills (psychomotor) in any technical and vocational trade can only be attained when the manpower, tools, materials, facilities and methodology are effectively coordinated and mobilized into relevant actions such coordination and actions that can led to effective implementation of the modular building trades curriculum.

Hypothesis one revealed the mean opinion of building trade teachers and that of the administrators of technical colleges on the challenges affecting the effective implementation of the modular building trade curriculum, the psychomotor aspect. The result revealed that there was no significant difference in the mean of the two respondents. That is to say, they agreed on the 10 challenges presented. This finding is in line with the opinion of Enameli (2010), Okwori (2012) and Nyapson (2015) who pointed out that TVET require quality and committed manpower to achieve the set goals of the programme in all technical and vocational institutions across Nigeria.

Hypothesis two compared the mean opinion of building trade teachers and the technical college administrators on the strategies of overcoming the challenges affecting the implementation of psychomotor aspect of building trade modular curriculum. The result revealed that there is no significant difference in mean opinion of the two groups of respondents. This mean that they all agreed that the items presented to them if effectively implemented would go a long way in overcoming the challenges of affecting the effective implementation of the psychomotor aspect of the building trade in technical colleges. This findings is in agreement with Anaele (2001), Bulama (2008), Tsado (2014) and Nyapson (2015) who in various studies found out that provision of practical materials and tools can improve students' skills. They at different times also found out that quality manpower and motivation play a great role in the teaching and learning

process more especially in acquiring skills.

## Conclusion

Based on the findings of the study, it is therefore concluded that difficulty in organizing Building trades practical lessons, insufficient qualified building trade teachers, insufficient Building trades tools, insufficient building materials were found to be challenges bedeviling the implementation of the psychomotor skills aspect of building trades modular curriculum in Government Science and Technical Colleges of Adamawa and Taraba states. Other challenges are insufficient time is allocated for Building trades practical lessons, schools administration shows little or no interest in regular organization of practical lessons and workshop attendants lack adequate qualification to support Building trades practical lessons. If these problems continue to prevail in the implementation of the psychomotor skills aspect of building trades modular curriculum, then the objectives of the curriculum will remain unachieved. To avert the present situation, the study revealed strategies such as recruitment of qualified and experienced workshop assistants, combining relevant teaching methods by teachers, retraining the workshop assistants, provision of adequate hand tools among others. These strategies will help in overcoming the challenges towards effective implementation of the psychomotor skills aspect of the Building Trades modular curriculum.

## Recommendations

Based on the findings of this study the following recommendations have been proffered:

1. States government should provide standard building construction workshops in the colleges.
2. There is need to supply adequate instructional materials in the colleges so that each students can get the opportunity to learn the required skills.
3. States government should recruit and re-train qualified building trade teachers for effective implementation of the curriculum.
4. College administrators should intensify internal supervision by drawing up supervision schedule. This will go a long way in implementing the building trade curriculum.

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5. The National Board for Technical Education (NBTE) should intensify accreditation of trades in Technical colleges to ensure standard across the country.

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