

STRATEGIES OF EFFECTIVE TEACHING AND LEARNING PRACTICAL SKILLS IN TECHNICAL AND VOCATIONAL TRAINING PROGRAMMES IN NIGERIA

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Abstract

Teaching and Learning practical skills in Technical and Vocational training institutions require essential strategies to instilling the right attitudes and technological know-how that will enable the learners to function in the society. The study sought to examine the teaching methods that are applicable in delivering practical contents in technical and vocational education in Nigeria. The study adopted descriptive survey study in three tertiary institutions in Rivers state that offered technical and vocational education courses. The population of the study consists of 205 academic staff in the three tertiary institutions. A sample size of 104 respondents which represent 51% of the entire population was drawn using proportionate stratified random sampling technique. A research questionnaire was developed and validated by two experts, which were used for the data collection for the study. The reliability of the instrument was established using Cronbach Alpha formula to correlate the responses of 30 academic staff that were part of the population but not part of the study sample. The reliability analysis yielded a reliability index of 0.89 which was considered sufficient for the study. The data were collected by personally administering and retrieving the instrument from the respondents by the researcher with the help of two assistances who are staff in the three institutions. 93 completed instrument were retrieved which represent 95% return rate. Data collected were analyzed using mean /standard deviation. The null hypothesis was tested using ANOVA on a 0.05 level of significance. The study found that: traditional teaching methods are also used in teaching of practical skills; Most of the traditional methods that are being used in teaching practical skills in technical and vocational education in Nigeria are no longer relevant; the most relevant methods of teaching practical skills are the use of demonstration methods, enquiry, project and assignment methods. That regular embarking on excursion, use of apprenticeship system, students' industrial work experience scheme (SIWES) programme, and Skills acquisition programme, use of models and computer simulations and Cooperative training programmes are relevant alternatives to the teaching of practical skills in technical and vocational education institutions in Nigeria.

Key words: Teaching strategies, practical skills, technical and vocational education.

1. INTRODUCTION

Teaching and learning strategies in technical and vocational education programme is to impart the basic scientific knowledge, attitudes and practical skills necessary for self reliance and national development. The practical know-how, scientific skills and knowledge are to make the recipient (individual) to be creative and productive in order to function as a performing member of the society. In essence the main goals of teaching technical and vocational education in Nigerian technical colleges are to prepare students for the world of work through the acquisition of theoretical and practical skills (FRN, 2004 as cited in Ali & Muhammad, 2012). This implies that; the technical institutions are expected to train and produce graduates who are equipped with the practical rudiments of their chosen trades. The trades offered in the technical and vocational institutions include: Mechanical engineering trades, Electrical/electronic trades, Construction

trades, Vocational trades such as Home economics, Fine and Applied Arts and Business trades (International Qualification Assessment Services, IQAS, 2011). It means therefore, that the rationale for training students in these trades is to impart or rather for the acquisition of knowledge, attitudes and practical skills that are marketable and lucrative for a sustainable development. Therefore, to impart these qualities in any individual effective teaching strategy or techniques must be employed during the teaching and learning process.

Teaching in general context has often been referred to as an occupation, enterprise and an act of explaining, reading and writing (Suleiman & Nuhu, 2009). Though, this basic definition of teaching also applies to the regular classroom setting in technical and vocational education programme. But, in the teaching of practical skills, there are various teaching methods and techniques available to be adopted, just as in all other fields and to all teachers; the most appropriate teaching methods to adopt in teaching technical and vocational skills should be that which can motivate the students and sustain their interest in the course of instruction (Yinusa, 2014). Furthermore, in terms of practical skills acquisition, it is very appropriate to adopt a teaching method that can bring out the manufacturing process and exploration of materials into the classroom situation (Yinusa, 2014).

An effective teaching strategy is believed to be a source of critical thinking or inspirational disposition on the part of the students (Johanesse, 2012; Borinski, 2003 as cited in Yinusa, 2014). That is, teaching strategies utilized by teachers in technical and vocational education programme must also improve in line with the changing needs of the contemporary society (Okoye, 2010). Therefore, a good teaching strategy for technical and vocational skill acquisition lessons in Nigeria must possess certain qualities capable of bringing out the innovations and making the lesson student-centered activity. The following characteristics of teaching methods are outlined by (Onuegbu, 1979; Obiwusi, 1981; as cited by Okoye, 2010) are as follows:

- 1) It should progress from simple activities to the more complex tasks.
- 2) It should possess qualities capable of arousing the interest and enthusiasm for active participation of the students.
- 3) It should be flexible to accommodate individual differences of the learners.
- 4) It should be structured in such a way that will satisfy the basic needs of the students.
- 5) It should be motivating for achievement without boredom.
- 6) It should link classroom activities with real life activities.
- 7) It should be able to put into action all five senses (hearing, seeing, feeling, testing and touching) for effective retention of knowledge and transfer of skills acquired.

The technical and vocational skills teacher is expected to possess adequate and sufficient practical experience necessary for imparting the skills to the learners through the use of appropriate teaching methods. In Nigeria, the national policy on education (2004) places considerable emphasis on vocational and technical education, practical skills acquisition and lifelong learning. It emphasizes on the study of technologies and related science, and the acquisition of practical skills, attitudes and knowledge relating to occupation in various sectors of the economic and social life. That is why Ubong & Oguzor (2007) maintained that teachers and schools teaching technical courses should emphasize on the practical aspects of the different specialties for the technical and vocational education. Therefore, the need for effective strategies of teaching and learning technical and vocational practical skills in our tertiary institutions cannot be overemphasized.

Though, there is no one best method of teaching practical skills instructions in technical and vocational education, but a method or combination of different methods may be more desirable to use. There are already known strategies of teaching that can be adopted to facilitate the acquisition of practical skills in technical and vocational education programme in Nigeria. This; according to the recommendation of Olarewaju (1994); STAN 1999); Ajibade (2009) and Olokede & Olusanjo (2009) include: 1) Demonstration method 2) Discussion method 3) Project method 4) Discovery method 5) Lecture method 6) Field-trip method 7) Assignment method 8) Electronic learning method 9) Enquiry method 10) Problem solving method. The technical skills teacher can select among these methods to be used in teaching of practical skills instructions in technical and vocational institutions in Nigeria.

2. PROBLEM OF THE STUDY

The technical and vocational skills teacher is expected to be able to deliver skills which match new technologies and practices in the industry as well deliver skills to the current and future workforce in a flexible manner and at a consistent level of quality. Hence, the need to revisit the existing methods of teaching, to ascertain if they are still effective in teaching of practical skills instructions in our technical and vocational institutions.

The problem of this study therefore is what strategies are effective in teaching and learning of practical skills in our technical and vocational institutions? It is against this background that the researchers carried out this study to investigate the teaching strategies that are effective in teaching practical skills in technical and vocational education programme in Nigeria.

3. PURPOSE OF THE STUDY

The main purpose of this study was to examine the strategies of teaching technical and vocational skills in technical & vocational institutions in Nigeria. To this end the study specifically accomplished the following objectives:

- i) Identify teaching strategies used by technical and vocational educators in teaching practical instructions.
- ii) Examine the effectiveness of various teaching strategies used in teaching practical skills instructions in technical and vocational education.
- iii) Identify the effective strategies to teaching and learning practical skills in technical and vocational education.

4. RESEARCH QUESTIONS

The following research questions were raised to guide the study.

- 1) What are the teaching strategies teachers' uses in teaching practical skills in technical and vocational education institutions in Rivers State?
- 2) How effective are the teaching strategies used by teachers in teaching technical and vocational skills in technical and vocational institutions in Rivers State?
- 3) What are the effective strategies teachers employ in teaching technical and vocational practical skills instructions in technical and vocational institutions in Rivers State?

5. HYPOTHESIS

Ho: There is no significant difference in the response of academic staff amongst the three tertiary institutions in Rivers State on the effectiveness of teaching strategies used in practical skills instruction in technical and vocational education program in Rivers State.

6. METHOD AND MATERIALS

The study adopted a descriptive survey design. The study was carried out in three tertiary institutions in Rivers state that offered technical and vocational education courses. The population of the study consisted of 205 academic staff in the three tertiary institutions under this study. A sample size of 104 respondents which represent 51% of the population was drawn using proportionate sampling technique. A questionnaire titled 'Alternative practical teaching methods in technical and vocational education' was developed, validated by two experts and used for the study. The reliability of the instrument was established using Cronbach Alpha formula to correlate the response of 30 academic staff that was part of the population but not part of the study sample. The reliability analysis yielded a reliability index of 0.89 which was considered sufficient for the study. The data were collected by personally administering and retrieving the instrument from the respondents by the researcher with the help of two assistances who are staff in the institutions. 93 completed instrument were retrieved which represent 95% return rate. Data collected were analyzed using percentage count and mean /standard deviation. The null hypothesis was tested using ANOVA on a 0.05 level of significance.

7. RESULTS

Research question one:

- 1) What are the teaching strategies teachers' uses in teaching practical skills in technical and vocational education institutions in Rivers State?

Table1. Respondents mean on teaching methods teachers use in teaching practical skills in technical and vocational education institutions in Rivers State.

S/N	Teaching methods	Mean	SD	Decision
1	Demonstration method	2.56	1.379	Not Utilized
2	Discussion method	3.09	1.479	Utilized
3	Field-trip method	2.91	1.464	Not utilized
4	Enquiry method	2.46	1.221	Not utilized
5	Project-based method	3.48	1.203	Utilized
6	Discovery method	3.55	1.298	Utilized
7	Assignment method	3.13	1.429	Utilized
8	Lecture method	3.69	1.375	Utilized
9	Problem solving method	2.68	1.295	Not utilized
10	Closed circuit television method	2.09	1.324	Not utilized

Table 1: Shows that, items 2, 5, 6, 7 & 8 with mean ranges of 3.09 to 3.69 were utilized by the respondents in teaching practical skills in technical and vocational education institutions in Rivers State. While, items 1, 3, 4, 9 & 10, with mean ranges of 2.09 to 2.91 indicated that they were not utilized in teaching practical skills in technical and vocational institutions in Rivers State.

Research questions two:

- 2.) How effective are the teaching strategies used by teachers in teaching technical and vocational skills in technical and vocational institutions in Rivers State?

Table2. Respondents mean on relevance of teaching methods used by teachers in teaching technical and vocational skills in technical and vocational institutions Rivers State.

S/N	Description	Mean	SD	Decision
1	Demonstration method	3.09	1.479	Effective
2	Discussion method	2.46	1.221	Not Effective
3	Field-trip method	2.56	1.379	Not Effective
4	Enquiry method	3.48	1.203	Effective
5	Project-based method	3.10	1.561	Effective
6	Discovery method	3.33	1.477	Effective
7	Assignment method	3.13	1.429	Effective
8	Lecture method	2.96	1.488	Not Effective
9	Problem solving method	2.68	1.295	Not Effective
10	Closed circuit television method	2.91	1.464	Not Effective

Table 2: Shows that, items 1, 4, 5, 6, & 7, with mean ranges of 3.09 to 3.48 were still effective to use by the respondents in teaching practical skills in technical and vocational education institutions in Nigeria. While, items 2, 3, 8, 9 & 10, with mean ranges of 2.46 to 2.96 signifies that the teaching methods are no longer effective to be used in teaching practical skills in technical and vocational institutions in Rivers State.

Research questions three:

- 3.) What are the effective strategies teachers employ in teaching technical and vocational practical skills instructions in technical and vocational institutions in Rivers State?

Table3. Respondents mean on alternative practical teaching methods can teachers use in teaching technical and vocational skills instructions in technical and vocational institutions in Rivers State

S/N	Description	Mean	SD	Decision
1	Regularly embarking on excursion with students which enhance their practical skills acquisition in technical and vocational	3.78	1.206	Agreed

	education.			
2	Students should be regularly attached on students' industrial work experience scheme (SIWES) programme.	3.73	1.172	Agreed
3	Apprenticeship system should be encouraged to give students firsthand practical experience.	3.99	1.298	Agreed
4	Skills acquisition programme should be conducted for learners in technical and vocational institution.	3.89	1.220	Agreed
5	The use of models and computer simulations in teaching practical skills should be encouraged.	3.92	1.329	Agreed
6	Engaging students in Cooperative training programme during the cause of their study.	4.00	1.209	Agreed

Table 3: Shows that the respondents unanimously agree that all items in the table are effective strategies to teaching and learning of practical skills in technical and vocational education institutions in Rivers State.

Hypothesis

There is no significant difference in the response of academic staff amongst the three tertiary institutions in Rivers State on the effectiveness of teaching strategies used in practical skills instruction in technical and vocational education programme in Rivers State.

Table 4. ANOVA comparison of response of three groups academic staff amongst the three tertiary institutions in Rivers State on the effectiveness of teaching strategies used in practical skills instruction in technical and vocational education programme in Rivers State.

Source	Sum of squares	df	Mean squares	f-value calculated	f-value critical	Significance level
Between groups	2.287	2	1.144	1.816	3.07	0.05
Within groups	56.688	90	.630			
Total	58.975	92				

Significant at $p < 0.05$ level

Table 4 shows that there is no significant difference in the mean response of academic staff amongst the three tertiary institutions in Rivers State on the effectiveness of teaching strategies used in practical skills instruction in technical and vocational education programme in Rivers State. From the Table, the calculated f-value (1.816) is less than the critical f-value (3.07) thus, the null hypothesis is accepted.

8. FINDINGS AND DISCUSSIONS

The major findings of the study were that:

1. The teaching strategies are also used in teaching of practical skills contents in technical and vocational education programmes in tertiary institutions in Rivers State.
2. Most of the teaching strategies that are being used in teaching practical skills in technical and vocational education in Nigeria are no longer relevant.
3. That the most effective strategies of teaching practical skills are the use of demonstration methods, enquiry, project and assignment methods of teaching in technical and vocational education institutions in Rivers State.
4. That regular embarking on excursion, use of apprenticeship system, students' industrial work experience scheme (SIWES) programme, and Skills acquisition programme, use of models and computer simulations and Cooperative training programmes are effective strategies of teaching practical skills in technical and vocational education institutions in Rivers State.

The finding of the study agrees with Yinusa (2014) when he asserts that, in terms of practical skills acquisition, it is very appropriate to adopt a teaching method that can bring out the manufacturing process and exploration of materials

into the classroom situation. Also supports the view of Ubong & Oguzor (2007) who maintained that teachers and schools teaching technical courses should emphasize on the practical aspects of the different specialties for the technical and vocational education. These findings is also in accordance with the assertion of by okoye, that teaching methods utilized by teachers in technical and vocational education programme must also improve in line with the changing needs of the contemporary society (Okoye, 2010). Therefore, the need for effective alternative practical methods of teaching technical and vocational skills in technical institutions is very timely.

9. CONCLUSION

The rationale for effective strategies of teaching practical skills in technical and vocational education institutions in Nigeria is to impart the basic scientific knowledge, attitudes and practical know-how necessary for self reliance and national development.

The practical skills can only be imparted through the use of appropriate and effective teaching methods and techniques that are capable of spurring the learners to creatively explore their potentials and maximize them for the betterment of the society.

Technical and vocational education institutions in Nigeria should not rely on the traditional methods of teaching, because imparting practical skills is paramount. Therefore, they should exhaust all effective measures to imparting the knowledge, attitudes and skills required for the individual to function effectively in the society.

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