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**Mabel CPO Okojie  
Editor**

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Even though space does not permit us to include the names of many others who contributed their valuable time and talent in service to the *Journal*, we do thank them as well. Since 1993, they have served as associate editors; co-editors; guest, style, copy, and managing editors; managing reviewers; members of the editorial board; regional editors; and publishers.

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As a refereed journal, the *International Journal of Vocational Education and Training* depends on qualified individuals to serve as manuscript reviewers. We send feature article manuscripts to three reviewers. So as not to overwork our reviewers, we need some of you to join us for a one-year term.

If you have a record of publications, research experience, and an interest in gaining additional practice in the use of the Publication Manual of the American Psychological Association, please email your vita to Dr. Davison M. Mupinga at [dmupinga@kent.edu](mailto:dmupinga@kent.edu).

## Message From the Editor

Technology has continued to impact every facet of the cosmic world to the extent that economic superstructure including social and educational infrastructures are constantly transforming in order to address emerging changes. Technical and vocational education and training (TVET) is no exception in terms of its evolutionary precepts due to the demand to keep pace with technological advancement. Scholars and writers in the field of TVET have continued to search for avenues to improve policies and practices that guide the acquisition of marketable skills in the area of TVET as well as strategies that focus on skill based instruction. One of the features of the modern day information technology age is the sharing of ideas in a global scale and International Journal of Vocational Education and Training (IJVET) with its global outreach has become the platform for collective dissemination of ideas among scholars and practitioners. IJVET has become a forum that galvanizes discourse on TVET and on the related disciplines from the national and international perspectives. Subscribers, researchers and practitioners in the area of vocational education including workforce education are able to share new ideas and practices through the outlet which IJVET provides.

Therefore, IJVET has become a point of contact among researchers and practitioners and a forum where research findings are discussed and new ideas are shared in a manner that informs future practices in the field. Research findings and position papers discussed in the present volume depict the role of IJVET as an international rich information source where vocational and technical education researchers and practitioners engage in an academic dialogue. The dialogue is designed to improve teaching practices in the area of TVET as discussed in the various articles contained in the volume.

The first article examines the importance of understanding appropriate terminologies in the study of the concepts through which technical and vocational education and training (TVET) finds expression. The findings of the study suggest that instruction in the area of TVET can be improved if appropriate English terminologies are learned and could serve as advance organizers upon which new concepts in TVET could be anchored. The second article deals with collaboration among social partners such as labor unions, employers and business organizations to make sure that TVET meets the needs of businesses as well as recognize labor requirements. The third paper stresses the necessity of

establishing partnership between TVET educational institutions and industries and without such partnership the activities of TVET might be hampered. The fourth article in this volume explores how various school districts can customize existing resources for instruction in TVET subject areas and in doing so expand available resources for TVET students. The fifth paper discusses the use of improvised materials as teaching aids especially in countries where instructional materials are in short supply. This article calls for creativity among TVET teachers. The findings of the sixth article show that blended method of teaching skill subjects is found to be more effective when compared with demonstration method. In the seventh article, the author points out that the findings of research productivity is not applied in the classroom by teachers who invariably rely on their personal and professional experience. One of the implications is that those teachers may not remain current as technology advances and knowledge grows.

Various articles which are contained in this journal are written by authors from various parts of the world. Researchers in the present volume of IJVET have provided information showing how instruction and activities in TVET can be improved. The ideas presented are unique as well as varied and can trigger off innovative ideas among the readers. IJVET with its international outreach has become a forum for sharing ideas. I express my sincere thanks and gratitude to the authors, reviewers and to the entire editorial personnel including administrative staff for their effort in helping to produce this issue of IJVET.

MABEL CPO OKOJIE  
*IJVET* Editor

# **A Jordan Case Study: Vocational Education Students' Awareness of English Vocational Terminology**

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## **Abstract**

This study aims at investigating to what extent are Jordanian vocational education students aware of the importance of using English vocational education terms, as well as to what extent they are able to use those terms appropriately. The sample consisted of sixty-eight students, and a test was the main instrument in this study. Findings showed that vocational education students are to some extent ignorant of the vocational terms in English. Moreover, the gender has an effect on students' awareness of the vocational terms in favor of the females. Awareness of vocational education students who come from academic secondary schools in vocational terminology is better than those who come from vocational secondary schools. Finally, the academic year level of the students play a role in favor of the seniors. However, the results revealed severe weakness in students ability to use the vocational terms appropriately, and there were no significant differences between the students' use of those vocational terms that could be attributed to the difference in their gender, secondary school stream or academic year level.

*Key words:* Jordan, Vocational education, English, Vocational terms, EFL.

## **Introduction**

Qualified workforce is crucial in today's competitive world economy and Jordan like the other developing countries cannot afford to stay behind in terms of global development. Jordan has taken positive steps in developing all education sectors including vocational education and training in specific



because it develops human talents and potentialities as well as prepares manpower needed for economic and social service sector (Bhalalusesa, 2011, p.67). However, the present job market welcomes workers with specific occupational skills and more importantly, the ability to interact in specialized forms of English (Ababneh and Al-Momani, 2011, p.53). It was the rapid development of the new technologies at the beginning of 1990s that contributed to the formation of learners who started learning English not only for pleasure but also for specific purposes. They indispensably need to understand manuals, to purchase or distribute products, or to read specialized textbooks and journals (Kraavček, 2008, p. 33). Today there is a great demand for learning English As it has become a tool for international communication in transportation, commerce, banking, tourism, technology, diplomacy and scientific research (Brown, 2001, p. 118).

Thus there is a need to enhance English in higher vocational and technical education because this directly affects the training of professional and technical personnel. Traditional focus on vocational and technical education teaching expertise, which also led to higher vocational and technical college students do not attach importance to English. With the change in the environment of modern human resources, higher vocational and technical schools teaching philosophy must also change to keep up with the times requirement, and to improve the status of English teaching so that students improve their mastery of English and teachers promote students to learn English due to the benefits that would be gained from mastering acceptable degree of English along with their technical expertise because mastering a foreign language especially English has become one of the main advantages for anyone who wants to stand out and be distinguished between his colleagues since this merit could open avenues to his/her future career. For instance, (Kursun, 2011, p. 106) research about the Turkish experience in developing vocational education and training in Turkey, reveals that the inadequacy of effective foreign language education was one of the main setbacks that faces the development of that sector. He also claimed that vocational education students are taught in a foreign language as a result they are automatically trained in a foreign language which is no longer a need, but a must in today's global market (ibid, p. 106).

The present paper focuses on the role of learning English terminology for vocational education students in Jordan. It is well acknowledged that a certain mastery of English is nowadays essential, for many reasons such as "competing with other job seekers by being qualified and equipped with this advantage as there are different uses for English language in social, survival, occupational, academic and technical field" (Brown, 2001, pp. 118-9). In a study conducted to measure Jordanian vocational education students attitudes towards learning English, findings show that they consider learning English very important for

their future jobs or if they want to complete their graduate studies ( Ababneh, 2012, p. 65). In the same vein, a study that aims to examine if Jordanian vocational education students are motivated to learn English or not, since motivation played a significant role in learning especially a foreign language which is not frequently used in the daily life of its learner, It was concluded that Jordanian vocational education students are highly extrinsically motivated to learn English and they also have positive attitudes towards learning and using English as well (Ababneh, 2012, p. 51). This of course is reasonable since many companies around the world require English for job positions (Brown, 2002, p. 21).

In an effort to look into vocabulary learning strategies of Malaysian TEVT -L2 learners, a study was carried out on 31 students in the German- Malaysian Institute. Results of this study reveal that the students appreciate the importance of learning vocabulary of the target language. It has also shed some light on the importance of inducing compatibility between learning vocabulary among students and the approach used by instructors in TVET institutes; which would enhance the effectiveness of English language learning. Moreover, in Kraváček (2008, p.33) research to find out the best way to teach and motivate teenage students to learn wood/ furniture vocabulary in English, he concludes that new words can be fairly easily acquired by providing practical exercises. As educators, we are always invited to keep our students' vision fixed on useful, practical and reachable goals for communicative use of English. (Brown, 2001, p. 120). In the same regard, in Hutchinson, et al, (1987, p. 19) work about English for specific purposes, they claim that "all decisions as to content and method are based on the learner's reasons for learning". This argument goes in the same line with our case as our students learn English for specific purpose but they don't learn general English. Thus, it is our duty to prepare materials that meet the specific needs of our students, as it is "the highest priority for today's college educators to make their students effective lifelong learners" (Sizoo, Arusa, &Wilfried, 2005, p. 527).

Raising EFL students awareness to the importance of learning English for their future life, plays a significant role in encouraging them to do their best and to try hard to be successful in doing so because " when learners know why something will be useful for them, even if they find it difficult, they are more likely to maintain their efforts until they have succeed". (Wharton and Race, 2000, p.5). Thus teachers are invited to make use of their students' areas of interest as "interest is a good criteria for selecting topics and texts to study in class. If students are learning for a specific purpose, this is a vital part of making class feel relevant for them" (Wharton and Race, 2000, p. 20). To sum up, it is essential to meet students' needs and desires in learning English by providing them with the most important topics which are required to learn to empower them with the appropriate tools to compete in the global world and

to stand out from the crowd by being distinguished, especially that vocational education major offered at Al-Huson University College, is the only program in Jordan that meets the UNESCO requirements of balanced education and it covers the need for specialized vocational teachers at the bachelor degree level ( Al- Momani and Alloh, 2012, p. 32).

### **Significance of the Study**

The significance of learning vocabulary stems from Confucius saying, " Without knowing the force of words, it is impossible to know more". Such words of wisdom relates well to the importance of vocabulary learning in general and in particular to the case of vocational education students as vocabulary is the key to boosting students' language capabilities for both receptive and productive skills. Vocabulary learners who suffer from limited vocabulary would yield a limited comprehension and communication abilities due to the shortage of words that they need to convey what they want to say. (Mutalib, et al, 2014, p. 362)

The significance of the present study stems from the following points: First, English is the language of modern science and technology and students all over the world need to learn English in order to be able to carry out many tasks such as reading and comprehending catalogs or user manuals that come with machines or other equipment, making appropriate use of the internet when looking for information needed in their studies especially that there is shortage of references of TVT in Arabic. Secondly, investigating this issue is important since Jordanian vocational students are required to pass the TOEFL test to be accepted in graduate programs in Jordanian universities. Thirdly, many vocational students are expected to work for foreign companies whether in Jordan or abroad and their mastery of English in this case would be an essential qualification without which their chances of getting the job are slim. From the above reasons we could say that such a study can shed some light on the weak points of vocational education program in Jordan and at the same time it could provide the chance to educators to improve the English materials given to vocational education students to match their needs for their future jobs by including the English vocational terms which are important in their education and future studies or jobs.

### **Limitations of the Study**

The generalization of the findings of the present study suffers from the following limitation: It is limited to the students registered in the first semester of the academic year 2014/2015 in Fundamentals of Vocational Education and Guidance, and Counseling in Vocational Education, two courses given at Al-Huson

University College of Education. A larger sample covering all the vocational students in the college and in Jordan would absolutely give more reliable results.

### Questions of the Study

The present study will try to give answers for the following questions:

- To what extent are the vocational education students aware of vocational Education terminology in English and are able to use them appropriately?
- Are there any significant differences between students' awareness and use of the vocational education terminology in English based on gender (male or female)?
- Are there any significant differences between students' awareness and use of the vocational Education terminology in English based on their stream at the secondary school (academic or vocational)?
- Are there any significant differences between students' awareness of the use of the vocational Education terminology in English based on their academic year level (freshman, sophomore, junior, or senior)?

## Methodology

### Sample of the Study

The subjects of the study were purposefully chosen from the students registered in the first semester of the academic year 2014/2015 in Fundamentals of Vocational Education and Guidance and Counseling in Vocational Education, two courses given at Al-Huson University College. Sixty-eight male and female students sat for the test.

### Instrument of the Study

The researchers used a test of vocational education terminology in English. The test was prepared by the researchers themselves. The material for the test was taken from a glossary for TVT terms (Al- Tamimi, et, al, p. 2007). The test consisted of two parts. The first part consisted of twenty-five questions that aimed at identifying students' awareness of the vocational terms in English as they were asked to choose the correct term that best matches the definition which was given in each question. The second part of the test also consisted twenty-five statements in which the students were asked to choose the correct term that best completes the statement.

## Validity and Reliability of the Instrument

To ensure the validity of the research instrument, a jury of six university instructors from Al-Huson University College, three of them teach English and three teach vocational education, were requested to validate the instrument. Their recommendations and comments were taken into account in modifying the instrument before it was used.

To assess the reliability of the instrument, the researchers used a test-re-test method where the test was applied to a pilot group of seventy students other than the subjects of the study. Two weeks later, the test was applied again to the pilot group. Then the correlation coefficient was computed. After giving the test to the pilot group for the sake of obtaining reliability, the number of questions was reduced to fifty.

Table 1: Reliability of the Test of the Study.

Cronbach's Alpha	N of Items	Dimension
0.91	25	Term's Definition
0.89	25	Term's Use
0.90	50	Exam

## Data Analysis Procedures

The researchers computed the total average mean score and the standard deviations of the students' achievement on the two parts of the test. T- Test was used to see if there are any significant differences in performance based on gender. ANOVA test was also used to determine if there are any significant difference based on secondary school stream and academic year levels.

## Findings and Discussion

Students' Awareness and Use of Vocational Educational Terms in English.

The first research question sought to investigate vocational education students' awareness of vocational education terms in English and their ability to use them appropriately. This question was answered by computing the mean scores and standard deviations of students' answers on the test which was divided into two parts. The first part catered for students' knowledge of the vocational term in English by choosing the right term that matches the definition provided to each term, while the second part catered for their ability to use the term correctly by filling a space with the correct term. Results in (Table 2) below reveal that all the learners are not fully aware of these terms in English

since their mean score was 12.23, and their ability to use those terms appropriately was even worse because their mean score was (9.33). These findings support the conclusion reached by Ababneh and Al-Momani (2011, p. 64) who maintain that vocational education Jordanian students are generally weak in English language terminology with regards to vocational education.

Table 2: Students' mean scores and standard deviations on the test.

Standard Deviation	Mean Scores	Part of the Test
3.70	12.23	First Part of the test
3.03	9.33	Second Part of the test
5.10	21.57	Total

### Gender Influence on Students' Awareness and Use of the Vocational Terms in English.

The second question aimed to find out whether the gender of the students affects their awareness and use of the vocational terms in English. To answer this question, a t- test for equality was computed to compare the mean scores of the students' responses according to their gender. Data obtained from (Table 3) below show that there were significant differences between students' awareness of vocational terms in English based on gender. This result could be attributed to the fact that both male and female vocational education students are weak users of English. Their weakness in the second part of the exam could be attributed to the fact that the second part actually required the students to be aware of the syntactical form of each sentence and to be able not only to choose the right vocational term, but also to choose the right form of the word whether this sentence needs a verb or a noun. Such result again supports the findings of another study conducted on vocational education students' knowledge of English, and the results revealed that the students suffered from insufficient knowledge in English grammar since it is the most complicated issue for foreign learners of English (Ababneh and Al-Momani, 2011, p. 62). In addition, Lozada (1998, p. 1) also supports this finding by saying "whether teachers like it or not, vocational classrooms are popular places for students with limited English proficiency".

Table 3: Mean Scores and T-test of Students' Responses on the Test According to their Gender.

Part of the Test	Gender	Mean scores	Standard De- viation	T	significance
First Part of the test	Male	10.75	3.92	1.92	0.06
	Female	12.77	3.50		
Second Part of the test	Male	8.38	3.26	1.49	0.14
	Female	9.68	2.90		
Total	Male	19.13	5.46	2.32	0.02
	Female	22.45	4.72		

### Students' Secondary School Stream Influence on Students' Awareness and Use of the Vocational Terms in English.

The third research question sought to identify any existing association between students' awareness and use of the vocational terms in English and their stream at the secondary school (academic or vocational). Analysis for this question employed a t- test for equality between the mean scores of students' responses according to their stream whether it was academic or vocational at the secondary school. The analysis reveals that there were significant differences due to the difference of the stream on the first part of the test in favor of the academic stream. This result seems to prove that students from the academic stream are better than those from the vocational one, never the less, the analysis also reveals that there were no significant differences on the second part of test as well as on their total performance that could be attributed to the difference in their stream (see Table 4). These findings go in the same line with what Duff (2005, p. 59) states "many secondary level programs do not provide adequate content –based language and literacy instruction for students, resulting in difficulties for them once they mainstreamed". Moreover, such findings support the claims of Lee (2007) who claims that pupils streamed into vocational education are considered to be the weakest amongst their peers in the other streams in the secondary level.

Table 4: Mean Scores and T-test of Students' Responses on the Test According to Secondary School Stream.

Part of the Test	Stream	Mean	Standard Deviation	T	significance
First Part of the test	Vocational	10.56	3.35	2.39	0.02
	Academic	12.95	3.64		
Second Part of the test	Vocational	9.06	3.02	0.46	0.65
	Academic	9.45	3.06		
Total	Vocational	19.61	5.25	1.99	0.05
	Academic	22.40	4.86		

### Students' Academic Year level and its Influence on Students' Awareness and Use of the Vocational Terms in English.

The fourth question attempted to identify if there is an association between the learners responses on the test and their academic year level of the students, that is, freshman, sophomore, junior, and senior. Mean scores and standard deviations of students' responses on the test were computed. Table 5 below shows the results and the number of the students distributed according to their academic year.

Table 5: Mean Scores and T-test of Students' Responses on the Test According to Academic Year Level.

Part of the Test	Academic year Level	Mean	Standard Deviation	F	significance
First Part of the test	freshman	8.00	-	2.98	0.04
	sophomore	9.17	5.23		
	junior	11.67	2.63		
	senior	13.17	3.60		
Second Part of the test	freshman	8.00	-	0.59	0.62
	sophomore	10.83	4.17		
	junior	9.28	2.40		
	senior	9.14	3.16		
Total	freshman	16.00	-	0.92	0.44
	sophomore	20.00	8.69		
	junior	20.94	3.33		
	senior	22.31	5.14		



Results presented in Table 5 reveal that there were significant differences between students' responses on the first part of the test at ( $\alpha = 0.05$ ) and their academic year level since the significant value of  $f$  was 2.98. To identify the main source of differences, Scheffe analysis was used. The analysis showed that the significant differences were between the freshmen and the seniors in favor of the seniors with a mean score of (13.7), as well as the sophomores with a mean score of (9.17) in favor of the seniors.

As for the second part of the test, no significant differences were found that could be attributed to the difference of the academic year (see Table 6). This result is reasonable since the seniors have nearly finished most of the requirements for graduation and were exposed more than the others to the vocational materials and courses. However, all the students show severe weakness in English, and this could explain the lack of differences on the second part of the test which not only measures their knowledge of the English terms, but also their ability to use them correctly in a context.

Table 6: Results of Scheffe Analysis of Students' Responses on the Test According to Academic Year Level.

Academic Year Level	Mean scores	Freshman	Sophomore	Junior	Senior
freshman	8.00		-1.17	-3.67	-5.17*
sophomore	9.17			-2.5	-4.00*
junior	11.67				-1.5
senior	13.17				

## Conclusions and Recommendations

A number of conclusions can be drawn from the findings of the present study. First, the study reveals that vocational education students' awareness of the vocational terminology is insufficient and their ability to use these terms is very weak. Second, gender plays a significant role in favor of female students when it comes to the awareness of the vocational terms, but when it comes to the use of those terms, the study shows that gender has no effect on students' performance because all vocational students are poor achievers in English. Third, vocational education students whose stream was academic at the secondary school were better than the ones from vocational stream in the secondary schools. This matches the claim of Lee (2007) that pupils streamed into vocational education are considered to be academically the weakest among the other streams in the secondary level. Finally, it was revealed from the study

that senior students were better than the other ones especially freshmen and sophomores since the seniors are exposed more than the other students to vocational materials and thus it is explainable why they did better in the test.

Based on the above conclusions, the authors offer a number of recommendations especially for vocational education programs taught in non-English speaking countries. First, there is a need to improve the vocational language skills of vocational education students by teaching them the vocational terms in English. This could be obtained by improving and developing the vocational education curricula at secondary schools as well as the courses taught at the university level by focusing on teaching the vocational terms in English since they are very important for the future of those students for their future careers and for their graduate studies because there is a shortage in vocational references in Arabic. Second, teachers and instructors are invited to guide and direct their students to make use of the English references available on the internet when they need to prepare reports or presentations as a way to expose the students and make them familiar with the English texts on one hand and to learn the vocational terms on the other hand. Finally, there is a crucial demand to reform the vocational education English courses in Jordan to meet the needs of the learners and the market in order to benefit from those courses in improving the job language and to foster their technical and vocational knowledge. In other words, there should be a collaboration between the English language instructors and the vocational education instructors to prepare appropriate materials that match both the needs and the goals of the learners and the institution.

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# **The Importance of Social Partnership in Vocational and Technical Education and Training**

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## **Abstract**

In the field of technical and vocational education and training (TVET) and employment social partners have a predominantly crucial role in policy making. Social partners represent business and the world of labor. Employment systems and job profiles are continuously changing, and their influence should be felt when skills have to be updated. Strong social partner participation is required in order to include more practical training in TVET and to boost the status of TVET in particularly developing countries. In this study, who social partners are, why and how social partners in vocational education and training should be involved in vocational and technical education and training are discussed and suggestions related to how more social partners can be involved in vocational and technical education and training are put forwarded in the frame work of social partnership samples both in Turkey and in the world.

*Key Words:* Technical and vocational education and training, social partnership

## **Introduction**

Vocational and technical education has a crucial role in enhancing economic productivity as it supplies future workers with required and appropriate knowledge and skills to enhance their productivity and thus to support economic development (Finch, 1993; Min, 1995). Besides, secondary technical and vocational education institutions are seen as constituting an important component in the development strategies of developing countries by governments to overcome youth unemployment with the skilled manpower and sustain industrial development (Ziderman, 1997). Accordingly, globalization of the economy, the human power movements in global scale, increasing international competition,

changes in demographic development and in the labor market are leading a need for reforming of TVET schools and new strategies on education, training policies and reforms (Ari and Balci, 2003; BIBB, 2004). Therefore, many countries stress the need to place a greater emphasis on TVET in the years to come and highlight the importance of providing attractive, qualified training programs and continuing training opportunities in order to enhance employability and occupational mobility; designing the TVET to conform more closely with the field of practice; adjusting the TVET closer to the requirements of the employment system and the corresponding labor market needs and preparing young people for degrees which comply with high standards while opening up forward-looking employment prospects (BIBB, 2004).

On the other hand, the social partners have a predominantly crucial role in policy making in the fields of technical and vocational education and training (TVET) and employment as the social partners represent business and the world of labor; employment systems and job profiles are continuously changing, and their influences need to be always felt when skills have to be updated (Nielsen, 2011). Thus, for vocational education and training in particular, it is of importance that governments, employers and trade unions should develop their capacities to work together in making and implementing vocational education and training policies by establishing strong partnerships between vocational institutions and business and industry to improve the status of TVET in especially developing countries (EFT, 2013).

In this study who social partners are, why and how social partners in vocational education and training be involved in vocational and technical education and training are discussed and suggestions related to how more social partners can be involved in vocational and technical education and training are put forwarded in the frame work of social partnership samples both in Turkey and in the world.

### **Social partners and partnership**

The term social partners generally refer to trade unions and employer organizations that exist to promote and protect the interests of their members (ETF, 2013). In other words, 'social partners' is a term generally used to refer to representatives of management and labor (employers' organizations and trade unions). Sometimes the government is included due to the tripartism (CEDEFOP, 2008). On the other hand, "social partnership can be defined as a tri or multi-partite arrangement involving employers, trade unions, public authorities (the state and/or local/regional authorities) and/or others (e.g. voluntary sector). Social partnership is usually concerned with areas of economic and social policy and might be based on a binding agreement or declaration

of intent” (Boyd, 2002). While the term social partnership today appears to cover a multitude of definitions in academic literature, the definition of social partners is unequivocal. Common denominators in all definitions are employers, employees and representation. The ILO uses: “Employers represented by employers’ organizations and workers represented by trade unions”. The commonly used EU definition is: “Employers’ associations and trade unions forming the two sides of social dialogue”. The OECD says: “Organizations of employers and employees representing specific or sectoral interests” (Nielsen, 2011). As it can be understood from the definitions above although the definitions are constructed differently, they are clear and do not contradict each other.

### **The reasons why social partners in vocational education and training be involved in vocational and technical education**

The key argument for a well-built and active role of the social partners in TVET and labor market policies is the fact that their active participation can effectively reconcile the worlds of work and education, help to identify present and promising qualification requirements in companies and transfer these into relevant training programs, ensure that TVET qualifications are universally recognized, primarily throughout their country but increasingly also beyond its borders and help to support learning processes, both in schools and dual systems or apprenticeships (Nielsen, 2011). Certainly, social partners represent labor markets as they are the main beneficiaries of vocational education and training. While the skills needs of labor markets develop and change, vocational education and training provision must keep pace with those developments and changes, which implies the need for detailed information on labor market trends that go beyond mere statistics. Employer and employee organizations are to provide this information. Social partners can therefore make labor market needs clear during the design of vocational training policy and enlighten what is expected from graduates entering the labor market. If vocational training and higher education meet the needs of the labor market at desired levels, everyone benefits – learners, enterprises and, hand-in-hand with economic development, society as a whole (ETF, 2013).

Although education cannot be accepted as the only factor that is likely to have a positive impact on the economy, countries like Turkey that have developed dramatically over the past 10 years, have invested a great deal in education, including vocational education. Accordingly, in Turkey the European Commission (EC) funded a project ‘Strengthening Vocational Education and

Training in Turkey' (SVET). Involvement of the social partners (trade unions and employers' associations) through social dialogue (consultation and negotiation linked with development of state policies) was an essential characteristic of the EU approach to TVET policy and implementation in order to make stronger and bring TVET in line with EU norms and to support developments in the process of Turkey's accession to the European Union (EU) (Stringfellow & Winterton, 2005). This project has initiated an institutional reform and has resulted in the involvement of social partners within TVET (CINOP, 2012). Besides, as Napier (2014) stated, "regarding quality and relevance, the SVET project in Turkey is a valuable example of a country systematically embarking on upgrading quality education, with an eye on standards and priorities at the regional and global levels" (Napier, 2014). Therefore, now in Turkey there is a great consciousness for the importance of good quality TVET, involving employers and employee organizations (CINOP, 2012). There are six main social partner organisations in Turkey. The employer organisations are united with one central employers' association and federated associations in most sectors: TISK (Turkish Confederation of Employer Associations). There is also a Chamber of Commerce and Industry, TOBB, and an artisan organisation, TESK (Confederation of Turkish Tradesmen and Craftsmen). The trade union side is more complex and divided between the major modern and moderate union confederation, TURK-IS (Confederation of Turkish Trade Unions), the more traditional and radical confederation, HAK-IS (Confederation of Turkish Real Trade Unions) and the modern and radical confederation, DİSK (Progressive Workers' Union Confederation) (MEB, 2006; Winterton, 2006).

Additionally, ties between the Turkish and the Dutch government have contributed to this transformation process in which social partners, ministries and education increasingly cooperate. The awareness of Turkish social partners for the importance of TVET has recently been strengthened in Turkish-Dutch projects i.e. MATRA and G2G projects. In a recent project, Colo (the association of the 17 Dutch Centers of Expertise on TVET) and two of its members, Kenwerk and Aequor have cooperated with the Turkish Vocational Qualification Authority (VQA) (CINOP, 2012). Thus, the SVET project has been a strong supporter of a system in which TVET schools and social partners (employers, employee organizations and government) work together more closely in Turkey.

## **The way how social partners in vocational education and training be involved in vocational and technical education and training**

Social partners participate in both policy making and the practical provision of training in the ETF's partner countries. They are involved in different ways at different levels of the system (national, regional and local). At national level, for example they are likely to play a consultative role in formulating vocational training policies or establishing occupational standards for different sectors, while at regional and local levels their involvement might take the form of analyzing labor market trends with a view to transferring this information into training and practical programs (ETF, 2013). As indicated in EFT's (2013) Social Partnership Issue of "Inform", the way how social partners in vocational education and training should be involved in vocational and technical education and training can be discussed under four sub-titles: work based learning, training centres and apprenticeship, cooperation, a tripartite process and key actors.

### **Work based Learning, training centers and apprenticeship**

Social partners often play a key dynamic role in supplying work-based learning, including continuing training, and active labor market policies, which can support the provision of training for company work forces or unemployed job seekers. The introduction of work based learning and a system of certified work placement companies with trained mentors, will give a very strong incentive. Thus, social partners and industry are involved in a practical manner and they will feel more associated with the TVET system (CINOP, 2012).

Social partners have an accepted role in providing suggestions on training content within the context of the development of national qualifications frameworks. For example, in Turkey and Ukraine, employers' organizations play an active part in the development of their national qualifications frameworks, which cover occupational standards and curricula. Trade unions on the other hand have often had a more passive (or only reactive) role due to the fact that vocational training and skills development seem to be low on their lists of priorities (CEDEFOP, 2008). In order to strengthen the TVET system via SVET project in Turkey, the main strategy was to build on the existing national arrangements and contribute to their ability to adapt to an international context. Thus, TVET qualifications had to be internationally transparent, address international as well as national, regional and local requirements, and VET teaching and training institutions and their programs had to be of international quality, both to retain students and to attract others from states that were trading partners (Gunbayi, 2014).



Usually, the development of skills takes place in the workplace. Work-based learning is naturally the responsibility of the employers who develop the skills of their staff. However, vocational training institutions are sometimes contracted by enterprises to provide specific staff training. Work-based learning can be accepted the most developed system of apprenticeship training (ETF, 2013). According to Ryan (1998) apprenticeship, which has an important place in TVET education, may be seen as a form of upper secondary vocational education, in which case the alternative is fulltime education, particularly vocational education. Alternatively, it may be viewed as training for young workers, after leaving school, in which case the alternative becomes either ordinary youth labor, including employment, unemployment and whatever training young workers typically receive, or participation in a labor market program for unemployed young workers (Gunbayi & Ozel, 2013). Apprenticeship programs are also those which provide benefits to learners and employers alike including: reductions of business and industry training costs, employees who are trained to meet the needs of new and emerging crafts and trades, labor and management representatives working with curriculum and instructors, certified programs, on-the-job training directly connected to classroom related and supplemental instruction (RSI) (CDE, 2014). It is of importance, of course, in building a stronger and larger apprenticeship program that the program should not be just effective for employers and the economy but that it also should produce successful results for apprentices themselves (LSC, 2009).

Apprenticeship in Turkey is a dual system based on labor market oriented training schemes, and is separated from the non-formal education (Vos & Unluhisarcikli, 2009). Although well-established in Turkey, VET and apprenticeship learning suffer from low attractiveness due to the insufficiency of updating the vocational and technical education school and apprenticeship programs according to the demands of the labor market. Thus, strong social partner involvement such as Chambers of Commerce, Trade Unions, Employment agencies, Employers' organizations and Individual organizations will be needed in order to improve the status of TVET apprenticeship in Turkey ((Petkova, 2011, Gunbayi & Ozel, 2013).

On the other hand, in some ETF countries, some employer organizations, enterprises and even trade unions have their own training centers. For instance in Russia, large enterprises such as RUSAL, the world's largest aluminum company, even have their own corporate universities. Russian Railways has more than 50 training centers and the biggest Russian trade union confederation, FNPR, has two universities (ETF, 2013).

## **Policy Cooperation**

For policy consultations with social partners and other stakeholders many ETF partner countries have established Economic and Social Councils, TVET Councils or Employment Councils. Some countries also have employment or training councils at regional or local level. At local level, social partners are sometimes members of school boards, advisory bodies or training institutions. For instance, Serbia has established the Council for Vocational Education and Adult Education, which is a tripartite body to develop the national qualifications framework and curricula. Serbian employers are involved in the policy development and strategic planning of vocational training. They also participate in the definition of occupational standards and examinations. Besides, sectoral social dialogue on vocational training exists in Croatia and Turkey. Croatia has 13 VET sector councils which started as voluntary bodies with a limited mandate. Their legal basis was established in 2009 and their task is to define national qualifications. Turkey has occupational standard committees and a Vocational Qualifications Agency (ETF, 2013). In the framework of SVET project in Turkey, programs prepared in the planned School Development model were benefited from the vocational standards set by the Turkish Employment Institute, Turkish Standardization Institute, and Vocational Standards Commission. A legislative proposal to establish the Institute for National Vocational Qualifications was prepared. The institute was responsible for establishing a common quality assurance framework and common principles for validation of non-formal learning. Vocational qualifications/standards were developed for 250 vocations (Karip, Pepin & Volkens, 2005). The SVET project also provided the pilot institutions with the opportunity to cooperate and exchange knowledge with similar institutions established in the EU (Balci, 2007). Similarly, overall in the partner countries in ETF, there is a lot of interest in sector initiatives including establishing skills councils. For example, the Republic of Moldova and Kyrgyzstan have recently established sector councils which are currently getting up and running (ETF, 2013). Thus if sector skill councils and school boards serve as effective cooperation platforms, vocational training can be updated to meet labor market needs.

## **A tripartite process**

In many ETF partner countries, dialogue is seen as a tripartite process in which public authorities also take part. Practical cooperation is based on the involvement of enterprises. Public authorities also invite individual experts or enterprises to participate in the development of qualifications or standards. In those countries, employer organizations and trade unions are autonomous

when representing the interests of their members, but there are constraints. Governments do not always welcome the independence of the social partners, while social partners are occasionally limited by their capacity to be involved in complicated policy issues. They often lack information to support their argumentation. They define the needs of their members as priorities and goals in their policy papers. Vocational and continuing training are independent issues but they are also linked to the wider agenda of an employer organization or a trade union. Trade unions in partner countries have so far only rarely defined links between vocational training and their agendas (ETF, 2013).

According to peer review report (ETF, 2004), social dialogue in Turkey is mainly organized through tripartite structures and government has a dominant position in those structures, while bipartite dialogue at the sectoral level and private enterprise level is marginal and the proportion of the workforce covered by collective agreements small (ETF, 2004; MEB, 2006; Winterton, 2006).

Although Turkey has ratified all eight core standards of the ILO (International Labor Organization), the Peer Review Report noted (ETF, 2004) that trade-union rights and collective bargaining are still not in line with the commitment undertaken on this issue. Despite modifications to the law, freedom of association and the right to collective bargaining are still restricted (ETF, 2004, Winterton, 2006).”

### **Key actors**

Social partner participation can be slowed down if employers and trade unions do not see themselves as key actors. It is of importance that all concerned parties, including governmental actors, should understand the benefits of their participation. The different roles and functions in cooperation at different levels of governance can be defined in agreements between the three parties, as happened in Albania in 2009. The representation of small and medium-sized enterprises (SME) and employers from the informal economy is an issue in many ETF partner countries, as they are rarely members of employer or business associations. Trade unionization is often concentrated in the public sector or big companies and unions rarely cover all economic sectors. These drawbacks can affect the part social partners can play in all areas of their work (ETF, 2013). Similarly in Turkey, the capacity of the civil service unions to contribute to the reform of the TVET system is severely limited by their apparent focus on struggling to get bargaining rights equal to the trade unions representing workers. Despite the relatively high trade union density in the public sector and the central involvement of public employees and civil servants in the VET system, training is not sufficiently high on their agenda. One of the problems for strengthening social dialogue is the limitation of trade union density and

the weak connection between density and collective bargaining coverage. According to the statistics of the Labor Ministry, union density is 58 per cent among workers because fewer than 5 million workers are eligible to be union members and there are 2.9 million members. Similarly, density is reported to be 50 per cent among civil servants, because the number of civil servants eligible to be union members is around 1.6 million and there are some 788,000 members (MEB, 2006; Winterton, 2006).

Perhaps one of the most important reports on social partnership in vocational and technical education and training in Europe was that of Danish Technology Institute (2007). From the 5th March to the 8th March 2007 a peer learning activity (PLA), which was a part of a program set up in the context of the Education and Training 2010 work program, was hosted by Austria in Vienna and Austria, Estonia, Germany, Iceland, Ireland, Italy, The Netherlands, Portugal, Romania, Slovenia and Sweden were represented in the activity. They discussed the issue Cooperation between Vocational Education and Training (TVET) schools and companies on the basis of partnership between schools and companies – the role of teachers and trainers and the consultants developed a number of recommendations for all actors in TVET in Europe: teachers, company trainers, school managers, social partners, VET policy makers in the member states and European TVET policy initiatives (Andersen & Hansen, 2007).

As it can be understood from recommendations in the report on social partnership in vocational and technical education and training, the cooperation between Vocational Education and Training (TVET) schools and companies on the basis of partnership between schools and companies can be enhanced and sustained effectively only if all responsible actors (teachers, company trainers, school managers, social partners, VET policy makers in the member states and European VET policy initiatives) play their roles effectively.

## **Discussion, Suggestions and Conclusion**

In this study who social partners are, why and how social partners in vocational education and training are? Involvement in vocational and technical education and training are discussed and suggestions related to how more social partners can get involved in vocational and technical education and training are put forwarded in the frame work of social partnership samples both in Turkey and in the world. Clearly, the school world and the TVET education system cannot alone deal with the responsibility for the provision of vocational education and training. Thus, the provision of good TVET is dependent on an efficient integration of theory, practice and work based learning, and on the integration of company needs, requirements and perspectives into learning and teaching (Andersen & Hansen, 2007). Furthermore, the involvement of social

partners is based on their awareness of the changing skills needed or the labor market – a precondition for employment and economic growth. They bring added value to the development of VET policies and practices if they argue these needs. Employers and trade unions also promote training in enterprises in many ways (ETF, 2013).

Moreover, since the social partners represent business and the world of labor and employment systems and job profiles are constantly changing, their involvement needs to be constantly supported when skills are to be updated (ETF, 2011). Certainly, it is a long lasting process to establish a good partnership between the world of schools and the world of labor. However, the context of partnership differs according to the countries. In countries where the partnership is in its developing stage, the goals set should not be too complex. In a developing stage, the schools and the companies should focus on performing their parts of the duties in the educational process well and inform the other part about objectives and achievements. Later, as cooperation and facilitating structures are more advanced, the parties can take steps toward a situation where school and company may assume dual responsibility for the whole education (Andersen & Hansen, 2007). Thus, sharing responsibilities and power is in the core of social partnership and this can be achieved in the framework of three steps.

The first step is that governments demonstrate their willingness to work with social partners. This can be expressed in various policies, documents and supported by appropriate legislation and practice. Secondly structures like vocational training or sector councils must be agreed together with social partners. Effective partnership goes beyond mere formal cooperation. The motivation of the stakeholders depends on whether they believe that their voices are likely to be heard. Thirdly, to enhance their involvement, the governments must establish a vision to which stakeholders can respond (ETF, 2013).

On the other hand, as Gunbayi (2011) suggested in his study called “Principals’ perceptions on school management: a case study with metaphorical analysis”, “the issue of centralized management in schools and principals’ complaints on the traditional centralized management can be diminished by decentralization or school- based management which allows quick response to local and school based conditions and which makes schools more innovative and productive (Gunbayi, 2011: 557).” Therefore, the governments should seriously consider decentralizing the management of public vocational institutions and encourage the expansion of private and community-supported vocational training institutions (Psacharopoulos, Tan & Jimenez, 1986). Promisingly, as manifested in the Danish Technological Institute report (2007), the trend in TVET is towards increasing decentralization with a view to stronger and more rapid adaptation to changes in work of labor needs for skills

and competences. At the same time, structural economic development points out that new types of skills and competencies requirements are continuously emerging. Therefore, TVET policy makers should consider new initiatives in order to further develop the qualifications and competences of TVET teachers as well as company trainers, in order to reflect the requirements of more decentralized and flexible systems with stronger and broader roles for TVET teachers and trainers (Andersen & Hansen, 2007).

In summary, improving the involvement of social partners is based on understanding that vocational training has close ties to the labor market and the economy. If governments are willing to authorize social partner organizations to be more involved in vocational training policies and implementation, they gain by developing expertise among their stakeholders. This can be used when developing occupational standards, qualifications and training. The promotion of work-based learning can improve the quality of learning outcomes in a cost-efficient way. Involving social partners should go beyond formal participation into a real contribution taken into consideration when decisions are made. Their contribution requires capacity, but without real involvement in policy work, social partners cannot be authorized (ETF, 2013). However, as Nielsen pointed out in ETF 2011 year book, “ETF partner countries often lack a tradition of genuine social partnership and there is some confusion about the very concept of a ‘social partner’, which can easily lead to a sub-optimization of the roles ascribed to these parties in TVET and labor market policies. Often, the social partners are too weak to play an influential role, while governments may be unwilling to engage in social dialogue. The potential of social partners in making TVET more responsive to actual labor market needs will have to become better understood in countries in transition, where a market economy requires improved signal systems connecting the worlds of labor (demand) and education (supply). Such ‘matching’ is indeed much needed everywhere (Nielsen, 2011:7).” Thus, the more social partnership involvement to TVET, the more sustainable TVET school system and the more employability opportunities.

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# **Status of Partnership between TVET Institutions and Industries in Delta State, Nigeria**

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## **Abstract**

This study examines the status of partnership between technical vocational education and training (TVET) institutions and industries in Delta State of Niger-Delta Region in Nigeria. Four research questions guided the study. Survey design was used in this study. The population of the study comprised of all the TVET teachers and lecturers in technical colleges and tertiary institutions in Delta State from which a sample of 200 TVET teachers and lecturers were randomly selected. Questionnaire was used to collect data and data were analyzed using mean scores and standard deviation. The study revealed among others, that partnership between industries and TVET institutions does not exist, and there are numerous challenges hindering such partnership. In conclusion, partnership between TVET Institutions and Industries can be established and sustained through collective efforts of TVET stakeholders.

*Keywords:* TVET, Institutions, Industries, Partnership, Delta State, Niger-Delta Region, & Nigeria

## **Introduction**

Public private partnerships (PPPs) is a contractual arrangement which is formed between public and private sector companies involving the private sector in the development, financing, ownership, and or operation of a public facility or service. According to Deich (2001) in Okoye and Okwelle (2013) a PPPs exists when the private sector joins with the public sector in pursuit of a common goal. In such PPPs, public and private resources are pooled and responsibilities divided so that the partners' efforts are complementary (Egbewole, 2011).

PPPs between technical vocational education and training (TVET) institutions and industries is simply the coming together of TVET institutions and industries to achieve goals and objectives of common interest as contained in the partnership agreement duly formulated and signed by both parties. This type of partnership is beneficial with TVET institutions, TVET personnel, TVET students, partner communities, industries, and the general public. Also, in this form of partnership the industries can use TVET institutions and personnel for training and retraining of their staff. Also, TVET institutions can send their staff to the industries for training and acquisition of occupational skills as well. Furthermore, the industries can provide training materials for TVET institutions in order to produce competent and employable TVET graduates that will be functional when the graduates are eventually employed in industries.

It becomes necessary to foster PPPs between TVET institutions and industries in Nigeria. In support, Okpor and Hassan (2012) citing Karean and Garba (2008), noted that in Nigeria and other developing countries sustainable access to technology development and product from such technology are best achieved through PPPs with vocational technical education also known as TVET. If vocational technical education is to be meaningful and successful in Nigeria, then relationships should be established between TVET institutions and industries to partner. Patrinos, Barrera-Osorio, and Guáqueta (2009) noted that, there are ways in which the TVET institutions and industries can join together to complement each other's strengths in providing educational services and helping developing countries such as Nigeria to meet the Millennium Development Goals for education and to improve learning outcomes. The researchers further explained that through PPPs, infrastructures are made available to schools. Therefore, PPPs are useful ways to increase the funding available for constructing or upgrading school buildings and often yield better value for money than traditional public sector investments (Patrinos, Barrera-Osorio, & Guáqueta, 2009). Some potential benefits that TVET institution-industry partnerships offer to society and stakeholders are established from the work of the researchers.

There can also be some challenges and risks involved in PPPs. These are, inputs to education, processes, and outputs are very different and require several different forms of contracts (including management, support, professional, operational, educational services, and infrastructure). One advantage of PPPs is that they can be a more cost-effective way to provide education than the traditional public sector approach. There are some instances in which this may not be the case. For example, contracting for facility availability may be more expensive than traditional procurement methods when the costs of awarding and managing contracts are particularly high. Also, if poorly handled, contracting can even reduce already low levels of government accountability and control (Kingdon 2007 in Patrinos, Barrera-Osorio, & Guáqueta, 2009).

For PPPs to live up to its potential of bringing many benefits to the educational sector, PPPs must be well designed. Poorly designed PPPs can expose governments to significant financial and policy risks, such as cost increases and unmet objectives. Governments can do several things to create an environment that is conducive to the establishment of well designed and successful PPPs in education. Furthermore, according to Patrinos, Barrera-Osorio, and Guáqueta (2009), the following are actions that governments can take to promote PPPs in education. These include: provide a sound basis for the establishment of the private school sector; provide subsidies to the private school sector; ensure that PPPs contracts give private providers considerable flexibility; establish quality assurance processes and provide families with information to help them to choose schools for their children; use a transparent-competitive-multi-stage process for selecting private partners in PPPs; separate the purchaser and provider roles within the education administrative agency; ensure that the PPPs contracting agency has adequate capacity; establish appropriate performance measures and include performance incentives as well as sanctions for inadequate performance in PPPs contracts; develop an effective communications strategy to inform parents about school characteristics, and the public about the benefits and objectives of PPPs; introduce a framework for evaluating the outcomes of contracts; and involve international organizations in encouraging the growth of PPPs.

However, several factors militating against TVET institution-industry partnerships in Africa, according to Massaquoi (2002), there are several reasons why the enabling institutional arrangements for institution-industry partnerships have not developed over the years it includes: weakness of the research infrastructure in some countries, which inevitably leads to a scarcity of scientific research of economic value of such partnership, nature of the local industries, which tend to be infant factories of the parent company normally located in Europe or North America. However in this study we examined the three core factors which are industries, the institution (Government owned TVET institutions), and the government.

In the view of Massaquoi (2002), most of the inhibiting factors may have their origin in the nature of the ownership of the local industries (that is factory units of multi-nationals) and the size (usually small) of local industries. The following are the major factors that constrain the active involvement of some industries in education. These include: scarcity of relevant human resource to undertake the evaluation of ideas and convert scientific knowledge into commercial technologies; industries also face difficulty in securing loans for the commercial development of scientific ideas and inventions; local industries do not have any policy for their relationship with local institutions.

According to Massaquoi (2002) university and research institutions (TVET institutions inclusive) which host the scientists (including TVET personnel)

have certain administrative structures and practices that adversely affect their own ability to promote University-industry partnership. These include: poor management of funds; the nature of the project administration; institutional politics (for example, departmental rivalries). Massaquoi further observed that, one key stakeholder in the university-industry partnership is the government. The latter has the responsibility to create the environment and climate for nurturing such partnerships. Government's main role is to promote the partnership through the institution of appropriate policies and institutional framework. It can also assist by providing financial support to scientific institutions to carry out research and developmental work. In connection with this, the following factors are known to inhibit the role of government in fostering university-industry partnership. These are: attitude of government officials towards local inventions and research; government policies towards local inventions and research; absence of science and technology policy in some countries; and political instability in some countries.

### **Purpose of the Study**

The purpose of the study was to examine the status of partnership between TVET institutions and industries in Delta State of Niger-Delta Region in Nigeria. Specifically, the study examined the:

1. Existence of partnership between TVET institutions and industries in Delta State.
2. Challenges to status of partnership between TVET institutions and industries in Delta State.
3. Strategies for introduction of partnership between TVET institutions and industries in Delta State.
4. Mechanism for sustaining effective partnership status between TVET institutions and industries in Delta State.

### **Statement of Problem**

Despite the call by researchers and international organization such as UNESCO-UNEVOC for partnership between TVET institutions and industries to foster the production of employable and competent graduates from TVET institutions across the globe and Nigeria in particular, no visible forms of partnerships have been established by TVET institutions and industries in Delta State. In support, Massaquoi (2002) argued that, in most African countries, partnership between local industries and universities is not very common. Therefore, this study examined the status of partnership between TVET institutions and industries in Delta State of Niger-Delta Region in order to

properly articulate any concerns and collect data to address such concerns. The idea is to make recommendations for improved partnership between TVET and regional industries and businesses.

### **Research Questions**

The following research questions guided the study:

1. What is the status of partnerships between TVET institutions and industries in Delta State?
2. What are the challenges faced by TVET institutions and industries in Delta State as partners?
3. What are the strategies to introduce successful partnerships between TVET institutions and industries in Delta State?
4. What are the mechanism for sustaining partnerships status between TVET institutions and industries in Delta State?

### **Scope of the Study**

The study was limited in scope to TVET teachers and lecturers (TVET educators) in TVET institutions in Delta State of Niger-Delta Region in Nigeria. The Niger-Delta, the *delta* of the *Niger River* in *Nigeria* is a very densely populated Region sometimes called the Oil Rivers because it was once a major producer of *palm oil*. The area was the British *Oil Rivers Protectorate* from 1885 until 1893, when it was expanded and became the *Niger Coast Protectorate*. The Niger-Delta is defined officially by the Nigerian government, and it extends over about 70,000 km<sup>2</sup> and makes up 7.5% of Nigeria's land mass. Historically and cartographically, it consists of present day *Bayelsa*, *Delta*, and *Rivers States*. Delta State is an *oil* and agricultural producing state of Nigeria, situated in the Niger- Delta Region. There are tertiary and pre- tertiary TVET institutions in Delta State. It comprise of government own universities, polytechnics, monotechnics, and technical colleges.

### **Significance of the Study**

The findings from this study will be beneficial to TVET institutions, teachers, and lecturers; Delta State Ministry of Education; Industries in Delta State; and Future researchers. TVET institutions, teachers, lecturers, Delta State Ministry of Education; and Industries will. These beneficiaries will find the study useful because the findings will bring about an insight on the state of partnerships between TVET institutions and industries and also how partnerships between TVET institutions and industries can be introduced and sustained.

Furthermore, it is hope that future researchers will make the findings of this study a reference point when conducting related research.

### **Methods and Procedure**

The population of the study comprised of all the teachers and lecturers in all the TVET institutions in Delta State. Two hundred TVET teachers and lecturers (TVET educators) were selected randomly using stratified random sample technique. The strata were teachers (TVET personnel from technical colleges) and lecturers (TVET personnel from colleges of education, polytechnics, and universities). A four-point scale questionnaire titled “Status of Partnership between TVET Institutions and Industries” SPTVETII with four sections and thirty seven items was used to collect data. The instrument was content and face validated by three experts from Delta State University, Abraka, Nnamdi Azikiwe University, Akwa, Anambra State and Rivers State University of Science and Technology, Port-Harcourt, Rivers State and was found to be valid. Also, test retest methods were use to ascertained the reliability of the instrument using Cronbach Alpha, a reliability coefficient of 0.69 was obtained. Data were collected by the researchers. Mean and standard deviations were used for the research questions. Furthermore, when the mean value of an item was 2.50 and above it represent ‘Agree’ response and below 2.50 was stood for ‘Disagree’ response.

### **Results and Discussion**

The results were presented based on the research questions.

**Research Question 1:** What is the status of partnership between TVET institutions and industries in Delta State?

Table 1: Response of TVET Educators on Status of Partnership between TVET Institutions and Industries in Delta State.

Item Statement	TVET Educators		
	Mean	S.D	Remark
My school have partnership with the following industries:			
Advertising	1.14	0.02	Disagree
Agricultural	1.31	0.28	Disagree
Automobile	1.29	0.19	Disagree

Aviation	1.40	0.40	Disagree
Banking	3.27	0.15	Agree
Cement	2.45	0.03	Disagree
Construction	2.38	0.09	Disagree
Electronics	1.12	0.00	Disagree
Furnishing	1.30	0.04	Disagree
Hospitality	1.21	0.07	Disagree
Insurance	1.15	0.09	Disagree
Oil and Gas	1.18	0.02	Disagree
Paint	1.09	0.12	Disagree
Plastic	1.30	0.16	Disagree
Power	1.18	0.16	Disagree
Publishing	1.31	0.07	Disagree
Telecommunication	1.18	0.02	Disagree
Textile	1.23	0.01	Disagree
Tourism	1.22	0.03	Disagree
Transportation	1.26	0.09	Disagree
Grand Mean & S.D	1.44	0.56	

The results in table 1 revealed that partnership between TVET institutions and industries do not exist in Delta State. Although, there exist some kind of partnerships between the TVET institutions and the banking industries, in the area of construction and management of school facilities such as information and communication technology centers, building and completion of hostels in institutions by the banking industries which the bank will manage for some time and later handover to the school. However, it was clear from table 1 that PPPs between TVET institutions and industries only existed with the banking sector and did not exist with other sectors in Delta State of Niger Delta Region. The status was that of uncommon existence. These findings is supported by Massaquoi (2002) who opined that, in most African countries such as Nigeria, partnership between local industries and universities is not very common.

**Research Question 2:** What are the challenges to status of partnership between TVET institutions and industries in Delta State?

Table 2: Response of TVET Educators on the Challenges to Status of Partnership between TVET Institutions and Industries in Delta State.

S/N	Item Statement	TVET Educators		
		Mean	S.D	Remark
	The following are challenges to status of partnership between TVET institutions and industries:			
1.	Immediate gains from the partnership	3.59	0.08	Agree
2.	Its time consuming	3.36	0.14	Agree
3.	Lack of finance	2.76	0.09	Agree
4.	Lack of interest by TVET institutions and industries to partner	3.26	0.00	Agree
5.	Poor government policies on participation in TVET	2.92	0.17	Agree
6.	Poor public relations practice by TVET institutions and industries	3.40	0.13	Agree
7.	Risk involvement	3.61	0.05	Agree
Grand Mean & S.D		3.27	0.32	

The results in table 2 revealed that status of partnership between TVET institutions and industries is faced with numerous challenges such as: immediate gains from the partnership; its time consuming; lack of finance; lack of interest by TVET institutions and industries to partner; poor government policies on participation in TVET; poor public relations practice by TVET institutions and industries; and risk involvement. In support of these findings, Massaquoi (2002) posited that there are several factors militating against TVET Institution-Industry Partnership in Africa. Examples include non enabling institutional arrangements for institution-industry partnerships-development over the years. This was because of attitudinal factor of stakeholders such as scientists, the industry, the institution (university), society, the general macroeconomic environment, and the government.



**Research Question 3:** What are the strategies to introduce partnership between TVET institutions and industries in Delta State?

Table 3: Response of TVET Educators on Strategies to Introduce Partnership between TVET Institutions and Industries in Delta State.

S/N	Item Statement	TVET Educators		
		Mean	S.D	Remark
	The following strategies can be used to improve partnership between TVET institutions and industries:			
1.	Formulation of government policies that will encourage industries to partner TVET institutions	3.20	0.05	Agree
2.	Award contract to industries that are in partnership with TVET institutions by government	3.78	0.13	Agree
3.	Establishment of special grant scheme for industries to partner TVET institutions	3.49	0.22	Agree
4.	Organizing seminars and workshops for industries and TVET institutions on the benefit of partnership by NBTE	3.24	0.19	Agree
5.	Reduction of tax for industries that are in partnership with TVET institutions by government	3.15	0.16	Agree
Grand Mean & S.D		3.37	0.26	

The results in table 3 revealed some strategies for introducing partnership between TVET institutions and industries in Delta State. The strategies are: Formulation of government policies that will encourage industries to partner TVET institutions; award of contract to industries that are in partnership with TVET institutions; establishment of special grant scheme for industries to partner with TVET institutions; organizing seminars and workshops for industries and TVET institutions by Nigerian Business and Technical Education (NBTE) on the benefit of partnership; and the reduction of tax for industries that are in partnership with TVET institutions by the government. These findings are in line with the recommendation from the report of the meeting on University-Industry Partnership in Africa held in Harare, Zimbabwe. In this report, it was stated that government role is to establish policies and create environments that support partnership as well as provide financial support to sustain the partnership created. One of the recommendations was that, government should give tax incentives to industries that support research and developmental work, this implies that government should give tax relief for a

reasonable period to industries that are producing products from local technologies (Massaquoi, 2002).

**Research Question 4:** What are the mechanisms for sustaining partnership between TVET institutions and industries in Delta State?

Table 4: Response of TVET Teachers and Lecturers on the Mechanisms for Sustaining Partnership between TVET Institutions and Industries in Delta State.

S/N	Item Statement	TVET Educators		
		Mean	S.D	Remark
	The following mechanisms can be used to sustain partnership between TVET institutions and industries:			
1.	Establishment of special ministry to manage and supervised partnership between TVET institutions and industries	3.38	0.38	Agree
2.	Establishment of TVET institutions and industries partnership intervention fund scheme	3.79	0.14	Agree
3.	Giving national award to industries that are in partnership with TVET institutions	3.35	0.62	Agree
4.	Granting of loans to TVET institutions and industries to fund partnership projects	3.42	0.53	Agree
5.	Imposition of tax for TVET institution and industries partnership	3.20	0.04	Agree
Grand Mean & S.D		3.42	0.21	

The results in table 4 revealed some mechanisms for sustaining partnership between TVET institutions and industries in Delta State. These are: establishment of special ministry to manage and supervised partnership between TVET institutions and industries; establishment of TVET institutions and industries partnership intervention fund scheme; giving national award to industries that are in partnership with TVET institutions; granting of loans to TVET institutions and industries to fund partnership projects; and imposition of tax for TVET institution and industries partnership. In support of the findings, in Patrinos, Barrera-Osorio, and Guáqueta (2009), opined that the principles for designing and implementing PPPs for effective and sustainable PPPs

include that: governments should ensure that the public agencies responsible for forming and overseeing PPPs have the resources, information, and skills required to design, develop, and manage the complex contracting processes. Also, Government should ensure that the purchaser and provider roles of the agency are separate. By so doing, the government can assign responsibility for PPPs to specialized agencies on partnerships and contracting education services if necessary. In addition, a sound general policy and regulatory environment, including high standards of public and corporate governance, flexible labor markets, transparency, and the rule of law, including protection of property and contractual rights, are essential for attracting the participation of the private sector in all sectors of the economy, including education.

### **Conclusion**

Based on the findings of this study, it was concluded that no partnership exist between the TVET institutions and industries in Delta State. Various challenges to partnership between TVET institutions and industries examined include, lack of fund, lack of interest by TVET institutions and industries to partner together, poor government policies on participation in TVET, poor public relations practice by TVET institutions and industries, and risk sharing pattern between TVET institutions and industries. Furthermore, it was concluded that stakeholders can help in introducing, and sustaining partnership between TVET institutions and industries in Nigeria by, formulating policies that will encourage industries to partner TVET institutions, award contract to industries that are in partnership with TVET institutions, establish special grant scheme for industries to partner TVET institutions, by Government, as well as, NBTE should organize seminars and workshops for industries and TVET institutions on the benefit of partnership, reduction of tax for industries that are in partnership with TVET institutions amongst others.

### **Recommendations**

For effective status to partnership between TVET institutions and industries in Delta State of Niger Delta Region in Nigeria, the following recommendations should be attended to by stakeholders:

- Establishment of special ministry to manage and supervised partnership between TVET institutions and industries.
- Establishment of TVET institutions and industries partnership intervention fund scheme.
- Giving national award to industries that are in partnership with TVET institutions.

- Granting of loans to TVET institutions and industries to fund partnership projects.
- Imposition of tax for TVET institution and industries partnership
- Creating of awareness forum for the benefit of partnerships between industries and TVET institutions.

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# **Process for Using Existing Resources to Implement Career Development in USA High Schools**

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## **Abstract**

Institutions of higher education and businesses have expressed concern over the lack of career preparation for high school students (Carnevale, Smith, & Strohl, 2010). Despite the challenges faced by high schools in providing students with career development opportunities, the schools can still provide some basic career development opportunities. This article describes a process school districts can use to increase the amount of career development activities offered to students in high schools. The proposed process which emphasizes the use of existing internal and external resources available in a district is something any school district can apply by reconfiguring existing resources. The process involves: 1) identifying student groups within a school, 2) connecting existing resources to student groups, and 3) implementing career development activities. Step three utilizes the traditional career development approach of assessing, exploring, searching and preparing for careers.

*Keywords:* curriculum development; high school; career preparation; internal resources

## **Introduction**

Research has established a serious need for career development in high schools. According to Parsons (2013) "...there is no part of life where the need for guidance is more emphatic than in the transition from school to work-the choice of a vocation, adequate preparation for it, and the attainment of efficiency and success" (p. 78). However, due to various reasons such as lack of time, inadequate financial and personnel resources, this much needed guidance is not being provided in most of our high schools.

In a previous article, Mupinga and O'Connor (2004) identified the justification for career development at the high school level. The authors established a serious need and developed a rationale for career development at the high school level. Considerable research and data indicate that students lack knowledge and experience in career development. In addition, considerable evidence exists concluding that schools must do a better job of connecting education with the workplace. This is evident for multiple groups of students regardless of their plans after high school. Also, this applies to all students in rural, suburban, and urban settings as well as all socio-economic levels.

This article details a process school districts can employ to effectively implement a career development program. The process can be implemented:

- i) With existing school resources and procedures
- ii) To meet the specific needs of various student groups.
- iii) To specific high school settings and student demographics.
- iv) With minimal resource allocation in personnel, facilities, supplies or equipment.
- v) To direct students to a number of paths to follow after high school.

While there has been a shortage of personnel to directly provide career development in high school, there are some education programs, such as career and technical education (CTE) that already incorporate career development into their curriculum. In recent years, CTE programs have expanded to include many students on the college preparatory path. However, only 4% of all high school students are enrolled in CTE programs. The remaining students are receiving almost no career planning services (Wagner, 2012). CTE students typically prepare a Career Passport which identifies their skills and preparation for a career cluster. Career passports have proven to be a very valuable and useful tool for CTE students (see, <http://www.123helpme.com/view.asp?id=35960>). The authors believe that career passports should be prepared for all students before they leave high school.

## Traditional Approach to Career Development

Traditional approaches to career development typically consist of four phases: 1) assessment, 2) exploration, 3) searching, and 4) preparation. This approach and phases are imbedded in the proposed model. A brief description of each phase follows:

**Assessment** – students must have some sense for their occupational interests and abilities. A frequent lament of many students (and adults) is “I don’t know what I want to do or be”. An accurate, realistic assessment of student’s interests and abilities is essential to addressing this lament. It is surprising the number of students who have no idea what they wish to be yet will chart a course anyway.

This phenomenon is usually a function of a student's career maturity level. Savickas (1984) defines career maturity as readiness to cope with vocational tasks. For example, some students may identify a particular occupation at an early age and pursue it. Other students take longer to settle into an occupation while other students spend years trying to find a niche. Career maturity assessments are available. There are many assessment tools available. There are many web-based career self-interest inventories available at no cost such as the Holland Self-Directed Search and the Values Identification Inventory.

**Exploration** – Students who have completed the assessment phase of career development should have some sense for the career cluster they wish to pursue. At this point, students need to begin to narrow their interests considering there are many, many career paths they could follow. However, students must also be aware that paths to careers are rarely direct and linear. In some cases students will know exactly what they wish to do. In most cases though, the path to a career often includes exploration, trial and error and learning from experience. According to Flexer, Baer, Luft and Simmons (2012), an individual's career development is a lifetime process that encompasses the growth and change process of childhood, the formal career education at school, and the maturational processes that continue throughout a person's working adulthood and into retirement. Students need to explore the breadth and depth of careers available to have a sense for the many opportunities available to them. In many cases, the path to a career includes many changes and adjustments. An example is the "Road Less Traveled" career exploration series in the *Around Kent* magazine (visit magazine at: [www.aroundkent.net](http://www.aroundkent.net)). Readers are encouraged to check out the archived section for the 'Road Less Traveled' articles. This series looks at real examples of people who took unusual paths to find their careers. Careers are often organized by industry or cluster such as arts/entertainment, health care, business and so on. In addition to career clusters, students can find profiles of occupations within each industry. The dictionary of occupational titles (<http://www.occupationalinfo.org/>) and many other sources are available to assist students in learning about careers and specific occupations.

**Searching** – The amount of information available to students is almost endless. As such, students need a search plan that is efficient and effective. There are many resources that can be used to search for available career opportunities. Many workforce information resources can be accessed to look for careers. These resources can be very specific to student interest as well as geographic preferences. Career Builder and Monster are two widely used resources.

**Preparation** – Students need to be properly prepared to meet with prospective employers. This preparation includes activities such as learning about the employer and the job, providing the employer with information on the candidate and honing interpersonal skills to make a good impression on the inter-

viewer. There are extensive resources available to students to prepare in each of these areas. For example, virtually all universities, community colleges and high school career centers have career services centers. These centers offer seminars, training videos, mock interview services and many other resources. Most of these are available to a high school at no cost. Some will even bring the services out to the high school thus eliminating costs associated with travel and school absences. Students should have a proper resume and/or portfolio to share with employers. Students should also practice interviewing skills via mock interviews. Appropriate attire, manners and interpersonal skills should be developed. Many employers lament the lack of career and interview preparation in both high school and college students.

### **The Proposed Model Approach**

The world of work no longer guarantees long-term career progressions within the security of hierarchical organizations. Most workers today are left anxious as they must navigate their futures in a largely contingent workforce (Savickas, 2011). Therefore, assisting students with their career development is no longer oriented to matching students to occupations; rather we must prepare students to construct their careers in order to bring meaningful and satisfying work into their lives. As such, students should be prepared to plan for careers rather than specific jobs or professions. If students think only about one occupation or profession such as accountant, teacher, lawyer, firefighter, then they need to broaden their approach.

#### **Career Framework**

A common framework for understanding careers is to examine them as part of 16 career clusters (see, <http://www.iseek.org/careers/clusters.html>). Students should be directed toward the following career framework as they think about career development (see, Figure 1, for a list of the career clusters).

The career development approach advocated by the authors consists of three primary components:

1. **Identify Student Groups.** This stage includes identifying the various student groups in a school to determine a “profile” of the career development needs of a particular school. The general needs and goals of each student group are identified in step one.
2. **Matching Student Needs with Career Development Activities** – many schools and communities have existing career development services and support available to students. This component of the model is to identify the available internal and external resources and services. Also, schools need to identify



Figure 1: List of Career Clusters Identified in the United States



Source: The National Career Clusters® Framework (<http://www.careertech.org/career-clusters>)

services they need to create and/or obtain. And, schools may need to reconfigure existing resources to meet student needs.

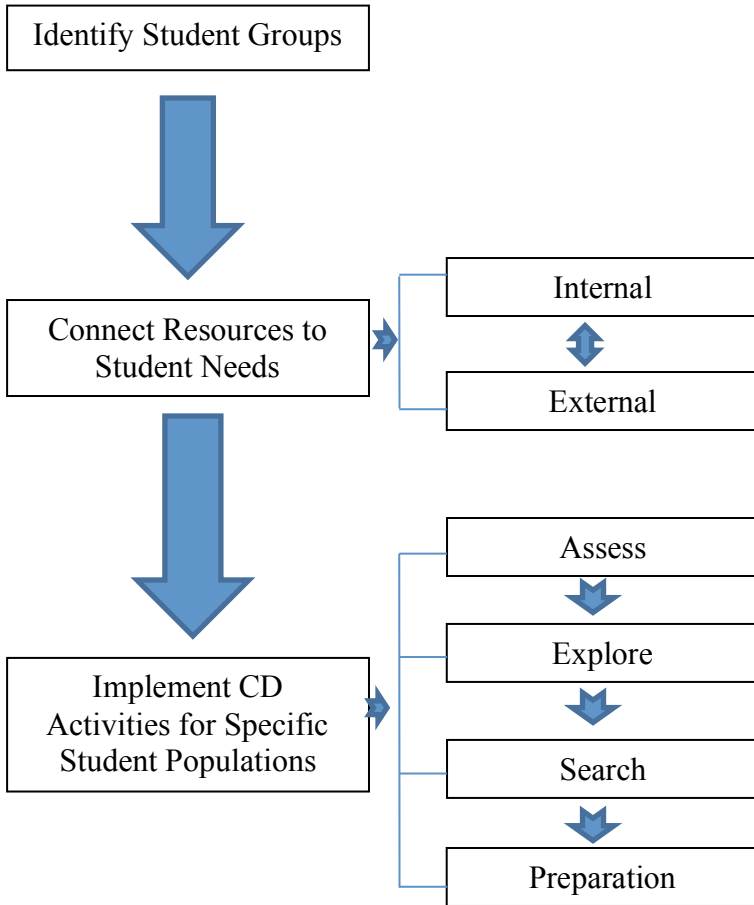
3. Implementing Career Development Activities- schools must mobilize resources and services to increase the amount of support students receive for career development. The traditional four phase approach to career development is imbedded in this step. Extensive resources are currently available. Also, many individuals and external groups can provide career development services and support if included. The roles for different internal and external groups of personnel in a school district are identified in this step.

### Implementing the Proposed Model

The proposed model includes the four phases of the traditional career development approach in Step 3. The specific student groups in a district and their goals are aligned with available resources. Each of the four phases is then described for each student group. The career development process can be organized to meet the needs of the groups unique to a specific school. For example, if a school has a high percentage of students who attend college and a low dropout rate, the career development approach would reflect that. Or, if a district has

many students entering the workforce or military right from graduation, the approach should address their needs for career development information and resources as well. Also, it is important to note that many students will navigate between and among the various paths after high school as illustrated in the following Figure 2.

Figure 2: Navigating Various Paths after Higher School



### Identify Student Groups

Each school has a unique profile of student groups. Each student group has a general goal related to the CD process. Each student should aspire to developing a good work ethic as well as a favorable attitude toward life-long learning. These two qualities are essential for all groups and paths after high school. Examples of student groups and their particular goals are as follows:

*Students with Disabilities:* More and more students with disabilities and special needs students are being mainstreamed into schools. Federal legislation such as IDEA (Individuals with Disabilities Education Act) and the ADA (American Disabilities Act) have also provided extensive career opportunities for students who were previously denied. The primary goals for this group of students it to secure employment and move from dependent to independent living. Depending on the disability, students can pursue a wide range of employment opportunities based on ability level.

*Students at-risk of dropping out:* The number of students at-risk in our schools is surprising. The National Center for Education Statistics (NCES) estimates that 8.2 percent (about 3.17 million) of all non-incarcerated 16 to 24 year olds in the United States were not enrolled in school and had yet to earn a high school degree (Aud et al., 2011). Adding to this number, 40 percent of all incarcerated 16- to 24-year olds and those who are undocumented, the number of 16-24 year olds drop-outs in the United States exceeds 4 million (Burrus & Roberts, 2012). Often, this group of students has a low socio-economic profile. They are often at high risk for dropping out of school. In some districts, this group can be as high as 50-60 percent of all students. This group needs to develop basic employability skills to enable entry level employment. Also, the emphasis for this group is on developing life-long learning skills in order to participate in employer based training/education.

*Students Seeking Immediate Employment:* There is a group of high school students who, for whatever reason, are only interested in obtaining employment right out of high school. Although the job opportunities for this group have declined over the years, there are still opportunities in some career fields. For example, students in cosmetology leave high school straight for jobs. This group needs solid employability skills along with specific occupational skills relevant to a current occupational group. Also, the ability to participate in employer based training is important.

*Students with Military Aspirations:* There are students who wish to enter the military directly from high school. Their needs are similar to the group that seeks immediate employment after high school. This group needs basic employability skills and desire to learn as the military has extensive training opportunities. For many students this is an excellent path. Some specific occupational skills may be helpful.

*Post-Secondary Training:* There are extensive opportunities for students who wish to complete occupational skill training in short-term programs. Many post-secondary schools offer timely training for occupations that are in high, immediate demand. This group needs employability skills and some specific occupational skills. The training programs usually lead to a diploma or industry certification. A good work ethic and the ability to learn are essential.

*Two-Year College:* Two-year colleges offer extensive programs that often directly related to occupations in high demand. Many of these occupations are referred to as “middle-skill”.

*University:* For many careers and professions, a baccalaureate degree (and beyond) is the only path. More and more students aspire to this level. However, not all students have the academic background, maturity and resources to be successful. In addition, there are many different university options. This makes it especially important that students make wise choices for this level of education and career planning.

## **Connecting Existing Resources to Student Needs**

A school should offer a suite of resources, activities and services to support career development for students. These resources can be internal or external. A culture of career development needs to be established so the following groups provide an integrated approach to assisting all students in seeking accurate career development information. All school personnel can contribute, for example:

- District leadership personnel – administrators, staff and school board members
- Academic Teachers – Career development across the curriculum
- CTE teachers – assist/lead CD efforts in schools acting as a resource
- Counselors – provide more career development services and less clerical and assessment tasks (which could be delegated to administrative staff)
- Counselor education programs at universities need to include more career development focused experiences

Each country may have a different assortment of resources including those not listed above. For example, in Canada specialized career counselors are available. A career passport could be used as a summary of all the CD services a student has received. Many schools already employ a number of career development services. In these cases, the school may need to realign them to meet the needs of different student groups. Or, schools may need to identify new services to be able to offer a full assortment of services to respond to the needs of student groups. Many schools already have the following resources in place.

### **Existing Resources**

There are a number of internal and external resources (that is, from within and external to the organization/school or school district) for career guidance and development. Existing internal resources include: i) advising students on college programs, academic curriculum, and preparing them for

college application and admission; ii) informing students about post-secondary financing that can be used to support advanced education and training; iii) developing career portfolios, which include test and grades results, examples of student work, and resumes and cover letters to prospective employers; iv) sponsoring workshops, classes, focus groups, and special presentations that focus on job skills and personal development; v) encouraging students to take an interest and motivation survey, (available at <http://www.assessment.com>) and then explore occupations that align with his or her results; vi) assigning students to do research on careers that interest them; vi) students can also visit the career resources at employment websites such as Career-Builder.com, Monster.com, Ohiomeansjobs.com, to investigate career “snapshots” and read about the required skill sets and educational backgrounds for various fields. Other internal resources for career development include:

*Career and Technical Education (CTE) Programs:* These programs, formally known as vocational education, are available in most schools in some format and they vary considerably between school districts. These programs are directly tied to specific occupational groups such health-care, hospitality, engineering and others. Since these programs teach through active learning, they allow students to make meaning of what they are learning (Hynes & Hirsch, 2012 p. 92) and are effective at working with a number of the student groups identified in step two of the career development process. These school-based career programs, mainly offered at the high school, have “the capacity to address the most pressing problems we face in education with a compelling rationale and a solid foundation of empirical evidence” (Perry & Wallace, 2012 p.35). The programs have effectively served students with disabilities, those at-risk of dropping out, and those who desire immediate employment after high school. In addition, many CTE programs prepare students for college including some that offer college credit while in high school.

*Work-Based Learning (WBL):* This term is used to encompass a variety of experiences that connect students with the workplace. They are for the most part contextual in nature giving students an opportunity to see exactly how content is applied in a real setting. Primary WBL experiences such as early placement, job shadowing, work placements, internships and cooperative or community-based work experiences are available in many schools to allow students to directly experience workplace situations.

*Career Development across the Curriculum:* Many schools are already trying to connect academic education with career development thereby infusing CD across the curriculum. For example, many English teachers will have students prepare resumes or write sample introduction letters to employers. Virtually, all academic teachers can incorporate some level of CD in their instruction. In this regard, CD is being taught across the curriculum. This may require some

professional development to enable teachers to infuse CD in their curriculum and teaching.

*Assessment Inventories:* A number of occupational assessment inventories are available often at no costs. Most are easy to administer and many are self-directed.

## External Resources

Extensive resources are available in all communities. In particular, the internet has made extensive resources for career exploration and searching available. Many of these are available at little or no cost. For example, Career One-Stop is one of many resources available (visit, <http://www.careeronestop.org/> for more information). This site and others offer comprehensive career exploration and searching services at no fee. Students can learn about careers in various clusters, specific occupations and even search for jobs in their local area. Visit <http://www.careerinfonet.org/explore/> to view the available resources at this site.

*Local Employers and Civic Organizations:* Each local community consists of numerous employers, employer groups and civic/service organizations that can partner with a school to deliver CD services. Community groups such as Chambers of Commerce, civic organizations such as Kiwanis, Business and Professional Women, Rotary, Lions and workforce/economic development groups are common in all communities regardless of size. These groups consist mainly of local citizens who work in local industries and are concerned about the overall economic health of a community. They often are eager and available to assist schools in learning about job opportunities in the area.

*Professional and Trade Associations.* These are abundant in all career clusters and most include employee development in their mission. These groups typically are advocates for an industry and all the people who work in it. They can be easily located by asking a local person who works in the industry about the groups available. Or, a simple internet search can locate them. For example, the National Restaurant Association (NRA) advocates for everything and everyone associated with the restaurant industry. They also have state associations. Most managers in restaurants, even small ones, are familiar with the group. A visit to the NRA website ([www.restaurant.org](http://www.restaurant.org)) will demonstrate the breadth and depth of services available. This particular site even includes an entire link to “restaurant careers”. Professional/trade associations want to see their industries expand and succeed. They know that locating and developing quality employees is essential to this goal and therefore, can be asked to assist.

*Career Fairs:* These have become commonplace in recent years. Career fairs bring together employers and job seekers. These are often sponsored by local media and or employer groups. They are usually conducted at a local hotel

and offer career development services, such as resume writing, on site at no fee. Many career fairs have become specific to particular career clusters such as manufacturing, health, information technology and others. Perhaps a career fair could be conducted at a school gymnasium.

*Employers Websites:* Many employers' websites give students an indication of the type and demand for employment in their area or other areas if they are planning to relocate.

## Implementing Career Development Activities

The implementation of the career development activities follows the traditional career development approach and its four phases: 1) assessment, 2) exploration, 3) searching, and 4) preparation. The next section identifies how the specific aspects of the four phases can be connected to the proposed model. Emphasis is on each of the seven student groups identified in step one. The general career development goal for each student group has been identified. There can be an overlap depending on the student's plans. Table 1 illustrates the four phases of career development can be matched with each of the seven student groups.

Table 1: Connecting the Four Phases of Career Development to each of the Student Groups

	Student with Disabilities	At-Risk- Students	Immediate Employment	Military	Post-Secondary	Two-Year College	University
ASSESSMENT							
-Match student aspirations or capabilities with specific jobs	*		*				
-Employability skills/Specific occupational skills	*	*	*		*		
-Employability skills-desire to learn/academic background	*	*	*	*			
-Occupational skills, academic background		*	*			*	

-Academic background, and pre-requisites					*	*	*
EXPLORE							
-Breadth & depth of careers.	*	*	*	*	*	*	*
-Narrow interests to occupations within industries	*	*	*		*	*	
SEARCH							
-Online searches of available career/employment/education opportunities	*	*	*	*	*	*	*
PREPARATION							
-Gather company information, job hunting skills, workplace skills	*	*	*				
-Conduct employer/student orientation as well as workplace skills	*	*	*				
-Preparation for training and further education	*	*	*	*	*	*	*
-Relevant pre-requisites/educational pre-requisites/interviewing skills					*	*	*

### Summary and Recommendations

American adults will spend the bulk of their lives at work. Also, Americans are living longer which means they will be working longer. And, jobs are constantly evolving and changing. Much of our quality life and overall satisfaction are directly related to the work we do. As such, it is critical that students make informed career planning decisions. The career development process described here provides a school district and its’ students with an approach that will give more students more and better career information and planning tools. The result will be more students who are better prepared for the careers they wish to pursue.

In the words of Frank Parson, considered to the father of career development, “the building of a career is quite as difficult as building a house. Yet few ever sit down with paper and pencil, with expert information and counsel, to plan a working career and deal with the life problem scientifically, as they would deal with the problem of building a house, taking the advice of an architect to help them (2013 p. x). Perhaps the starting point for career development, is to tap into existing resources, such as College Career Centers. Their services are often free to local high schools and all it might take is for one to ask for their services.

Here are some recommendations:

1. Schools seeking to implement the suggested framework should look into existing internal and external resources before deciding on their course of action.



2. School districts and communities need to take ownership of the career development process and implementation.
3. Inform the parents on career development changes, job outlook, and their role in steering their children in the right direction.

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# **Local Raw Materials for Improvisation of Equipment and facilities for Teaching and learning of Vocational and Technical Subjects in Nigeria**

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## **Abstract**

Methods employed by teachers in teaching vocational technical subjects depend to a very large extent on the type of resources available to them. When these resources which include tools, equipment machines, and teaching aids are inadequate, the teaching approach tends to be teacher-centered. Ready-made instructional materials are very scarce and even when they are available in the market, there is hardly enough funds to procure them for use in teaching and learning activities in schools in Nigeria. The only reasonable option left for teachers is to improvise these items to make learning more beneficial. This paper examines the values of instructional materials, reasons and benefits of improvisation and discusses materials available in our immediate environment that are suitable for improvising some basic teaching aids for effective teaching and learning process.

## **Introduction**

Technical education is viewed globally as an instrument of industrial development. This realization led to the departure from the system of education that laid emphasis on humanities and the formulation of the 1977 (edited in 2004) National Policy on Education in which Technical Education was given a prominent role. The aims of technology education as outlined in the National Policy include:

- (a) To provide trained man power in applied sciences, technology and commerce particularly at sub- professional grades.

- (b) To provide the technical knowledge and vocational skills necessary for agricultural, industrial, commercial and economic development.
- (c) To train people who can apply scientific knowledge toward the improvement and solution of environmental problems for use and convenience of man.

These are laudable objectives by any standard. Regrettably however, very little has been achieved in terms of attaining them. The factors affecting the attainment of the objectives are numerous, prominent among which are; poor planning, inadequate funding, lack of qualified teachers, inadequate facilities and inadequate instructional equipment or materials. The later stands out as a major source of concern especially for teachers in the field of Technology/ Vocational and Science Education for whom the description for some complex details with words alone is impossible or very difficult which adversely affects their ability to teach effectively.

If it is true that no society can develop above the level of its education, it will be logical to say that the poor state of our technological development is to a great extent a consequence of inadequate training at various levels of our educational institutions which lack of adequate instructional materials/ equipment is a key factor. Therefore this paper identifies basic materials found in our immediate environment that can be used for producing instructional equipment/materials useful in the teaching of vocational/teaching subjects in Nigeria schools.

### **The Importance of Instructional Aids/Materials in Technical Education**

All branches of education are affected negatively by the lack of adequate teaching aids/materials. However, the problem is more pronounced in the Technical Education sector. The Federal Republic of Nigeria (2004) refers to Technical Education as those aspects of educational process involving in addition to general education, the study of technologies and related sciences and the acquisition of practical skills attitudes and knowledge relating to occupations in various sectors of the economic and social life of the country.

This implies that technical education must be competency based and since skills acquisition is a major objective, relevant techniques must be utilized to impart the required skills/knowledge. Teachers have a critical role that goes beyond mere delivery of class or laboratory instruction. Teachers must devise and design methods of passing these skills with judicious application of teaching aids and equipment, (Ayuba, 1995). Technical Education is productive in nature, for people to learn to be productive they must have a worthwhile learning experience and a positive step towards the realization of the objective is through

the utilization of instructional materials. The utilization of instructional materials is an essential ingredient and very critical to the realization of some of the objectives of our National Policy on Education. It is in realization of this that the Federal Government made the establishment of Teachers Resources Centers, which are to be used in the development and testing of teaching materials one of the educational services (FRN, 2004).

Similarly, Adegbija (2000) noted that researches and learning theories have shown that the technology of education facilitates efficient learning and that now, more than ever, Nigeria needs technologically based instruction if we wish our educational policies to succeed. In consonance with the assertion above, Skinner (1968) also noted that we cannot improve education by mere change of policies or organizing its administrative structure. What increases a teacher's productivity and maximizes educational achievements is the technology of education. Teaching must be improved and nothing short of effective technology will solve that problem.

A major and often overlooked contribution of instructional aides to learning is that it provides the learner with the opportunity of using the items independently and as many times as desired once it has been presented to him/her in the classroom or laboratory by the instructor. This will enable the learner to benefit more effectively, more so now that it is clearly recognized that learning as a goal of education regularly performed by the student. Even in teacher presentation, instructional aides have proved to be of enormous benefit. Besides the fact that delivery of concepts is simplified, instruction time is drastically reduced since much more time will be required to describe the concepts verbally. The time saved can be put to more beneficial use in other worthwhile activities (Kemp, 1984).

### **Provision and Utilization of Instructional Materials**

The provision and utilization of instructional materials in Nigeria is somewhat stagnant in the sense that it is not in any way as widespread as it is in developed countries. Adegbija, (2000) notes that while these developed countries have made progress in defining the field to embrace professional recognition, growth and development; many developing countries such as Nigeria *are* still at infancy stage of development. It is very important that we make a concerted effort to catch up with these developed countries if we are to achieve any meaningful development in the field of education.

Different types of school equipment/teaching materials were invented in their original form for use in schools to facilitate effective teaching and learning. Unfortunately, most schools are not provided with these items. Since they are very valuable in terms of enhancing the quality of instruction, which is

necessary for achieving desired results especially in the field of Technical/Vocational Education, the only viable option left for teachers is to figure out a way of producing these items themselves so as to make learning more beneficial. This is in consonance with the view of Eshiet (1986) who stated that lack of necessary equipment is one of the major constraints responsible for the slow pace of progress in the growth and development of science and technology education at all levels. Indeed, if technological education is defective, that will naturally affect technological development in the country. What makes the situation more pathetic is that a basic step which can be taken by teachers themselves to remedy the situation is always taken for granted.

### **Improvisation and Reasons for Improvisation**

Improvisation is the provision, production or doing something quickly in times of need using whatever happens to be available (Hornby, 2004). This entails the provision of an item to serve the function of an original item, which is not available. Adeyemi (as cited in Saleeman, 2007 P.133) define improvisation as “the production of equipment from simple inexpensive local materials for the unavailable conventional equipment by the teachers”. To them, it is an activity requiring a variety of skills that must be initiated, designed and executed by the teacher. Adeyemi further highlighted how improvisation differs from local production of laboratory equipment in terms of the following attributes.

- (a) Relatively little equipment are produced for specific practical reasons
- (b) The equipment is to be designed constructed and used by the teachers
- (c) In case of adaptation of materials the teachers select, modify if necessary and use the equipment for practical lesson.
- (d) Improvised equipment is not mass produced for commercial purpose
- (e) Improvised equipment does not have to meet local or international standards which must be met by locally produced equipment (Bose, 2007).

The reasons why teachers should engage in improvisation are numerous but the main reason is inadequate or lack of instructional equipment/materials. The problem has been compounded by the rapid expansion in the educational sector, which is evident by the establishment of numerous schools without a corresponding increase in their funding. Nwosu (1995) noted that there is an increase in the number of institutions and the burden of running them has a source of concern for the educational sector especially that of funding science and technical education. Ayuba (1995) also noted that “these proliferations of schools with its attendant high demand for this equipment has made the teaching of Science and Technology ineffective”. This is responsible for the turning out of some graduates that lack practical skills in their areas of specialization. Saleeman (2007) also gave other reasons for improvisation. These include:

- (a) Absence of required standardized equipment
- (b) High cost of standardized equipment
- (c) Need to illustrate the universality of scientific enterprise. Experts believe that the use of improvised equipment makes people feel more at home with science
- (d) Development of problem solving skills in learners
- (e) Development of knowledge application skills
- (f) Make teaching easier and more effective
- (g) Provision of cheap and functional laboratory equipment
- (h) Inculcates scientific attitude in pupils

### **Raw Materials for Improvisation**

Materials that can be used to improvise items for teaching are numerous in our immediate environment. Most of these materials cost very little and some of them cost nothing. It is therefore essential that teachers study the environment carefully so as to locate those that will serve their purpose when the need arises.

According to Brown, Lewis and Harclerod (1989), the following materials can be used to produce a sand table which provides a basis for innumerable construction activities as instructional materials as shown in Table 1

Table 1: Improvised Items and Raw Materials

	Improvised Items	Raw materials
a.	Trees and shrubs	Bits of paper, shrub, twigs, pieces of sponge dyed pop corn
b.	Fences	Twigs or cut pieces of wood
c.	Lake	Mirrors, embedded in sand
d.	Telephone lines	Match sticks and thread
e.	Footbridge	Toothpicks or match sticks
f.	Roads	White sand, colored tapes
g.	Railroad tracks	Toothpick and string
h.	Boulders	Small pieces of rock

Saleeman (2007) also gave the following as examples of materials which can be used to improvise instructional materials and their functions.

Table 2: Improvised Materials, Raw Materials and Areas of Application

S/N	Raw Materials	Improvised materials	Areas of application
1.	Graduated feeding bottle	Measuring cylinder	Liquid measurement
2.	Plastic bottle	Funnel	Liquid transfer
3.	Flexible wire, plywood, metal, strip, battery, light bulb and paper clip	Circuit board	Simple electricity experiment
4.	Flexible iron rod and thread reel	Pulley	Simple machine
5.	Cut off bottom of empty insecticide tin	Concave and convex mirrors	Experiment on light/ rays images

### Recommendations

The following recommendations were made:

1. Teachers should strive to improvise equipment and materials whenever they are not provided using locally available resources.
2. Where teachers fail to improvise, the appropriate authorities within the organization should require them to do so.
3. Teachers who are deficient in skills required to improvise, should seek assistance from those who have such skills. That itself can serve as a learning process.
4. Students who are prospective teachers should be encouraged to learn the basic processes of improvising teaching and learning equipment/materials with local resources.

### Conclusion

The utilization of instructional materials is not adequate because these materials are not provided and teachers are not taking advantage of the numerous resources in the immediate environment to improvise. From the foregoing, it is highly expected that improvisation, which is a highly underrated and an often overlooked activity, will bring about a lot of improvements if its application is judiciously utilized and that will go a long way towards achieving most of the educational objectives set out by the National Policy on Education. This can be accomplished by utilizing the myriad of resources that abound in our immediate environment.

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# **Effects of Teaching Methods on Students' Psychomotor Performance in Brick/block-Laying and Concreting (BBC)**

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## **Abstract**

The purpose of this study was to find out the effects of teaching methods on students' psychomotor performance in Brick/Block-Laying and Concreting (BCC). One research question and two hypotheses guided this study. The quasi-experimental design, which involved pre-test, post-test, and non-randomized control group design was used in the study. Research sample was drawn from three rural government technical colleges in Delta State Nigeria. The instrument used for collecting data was Brick/Block-laying and Concreting Competency Assessment Instrument (BBCAI). The hypotheses generated for the study were analyzed using Analysis of Variance (ANOVA) at probability  $< .05$ . The findings revealed that students taught using blended teaching method received higher average mean score than those students taught using demonstration method. Based on the findings, it was recommended that the use of audio visual teaching aids should be used as a blend in teaching methods such as lecture and demonstration method of teaching.

*Keywords:* Psychomotor Performance, & Brick/Block-laying and Concreting (BBC), Lecture Teaching Method, Demonstration Teaching Method, and Blended Teaching Method

## **Background to the Study**

There has been a drastic fall in the standard of performance by students at all levels of education (technical college students inclusive) in Nigeria in the past decades (Emaikwu, 2012). The fall in the standard of education in Nigeria is traceable to many factors (Emaikwu, 2012). According to Etukudo (2006)

the situation is attributable to pedagogical approaches adopted by teachers in schools. In supporting similar position, Salau (2009) opined that poor performance in public examination is traceable to teaching techniques employed by teachers. According to Ogunniyi (2009), one of the most persistent and compelling problems besetting achievement in Nigeria is poor quality of teaching.

Teaching methods such as inquiry, project, lecture demonstration, lecture performance, problem solving, field trips, cooperative or group learning, excursion, remedial, laboratory and guided discussion and video instruction have been recommended for the teaching of science in schools (Adedoyin, 1990 & Ajewole, 1991). In Nigerian secondary schools, technical colleges included, lecture and demonstration methods have been the traditional methods used in teaching. In lecture method, the teacher gives out all the facts he/she wants the students to know and master, caring very little if at all whether or not, the students are actively participating and contributing to the success of the lesson (Akem, 2007). Demonstration method combines oral explanation with "doing" to communicate processes, concepts, and facts. Also, demonstration method of teaching is based on the simple but sound principle that we learn by "doing". In addition, blended teaching method is the combination of two or more teaching and learning interaction patterns in the teaching learning process (Iroriteraye-Adjekpovu, 2012).

Psychomotor skills are those skills or special abilities required by learner in human activities which can be acquired through learning and constant practice (Mkpa, 1992). The development of psychomotor skills requires practice and measurement and is rated in terms of speed, distance, procedures and techniques in execution of a process or manufacturing of a product such as solid sandscete blocks or both (Wolansky, 1985). Good teaching among other factors play significant role in enhancing performance, this study is attempting to find out which teaching method (lecture, demonstration and blended) will be more effective in the learning of psychomotor skills found in brick/block-laying and concreting by students.

Brick/Block-laying and concreting are among of the trade courses in the National Technical Certificate (NTC) curriculum in Nigerian technical colleges. These trades involve the skills required in accomplishing given tasks; in mixing of mortars, moulding of bricks/blocks, laying of bricks/blocks, rendering of walls, wall tiling, pointing to walls and laying of curved walls (arches). It also involves workability test on concrete (slump test), placing of concrete, application of admixture to concrete, compaction, curing of concrete and fixing of concrete joint materials (National Board for Technical Education (N.B.T.E), 2007).

## Literature Review

Onasanya, Daramota and Asuquo (2006) reported that there is no significant difference in the performance of students exposed to individualized CAI package and those exposed to the lecture method of instruction. Spotts (1992) posited that the multimedia, CAI and control group did not differ significantly in terms of achievement gains, which implies that there was no significant difference in the performance of samples of both the experimental and control group.

### Effectiveness of Demonstration Method

Adekoya and Olatoye (2011) reported that there is a significant effect of treatment on students' achievement in an aspect of Agricultural Science. Also the study revealed that demonstration method is the appropriate strategy of teaching pasture and forage science in agricultural science when compared to lecture and peer tutoring strategies. Similarly, Abdulhamid (2010) research revealed that demonstration method of instruction has significant effect on students' performance in Agricultural Science. Also, the findings of the study revealed that there is a significant difference in students performance taught agricultural science using demonstration and lecture method of instruction in favor of demonstration method of instruction. Agboola and Oloyede (2007) study revealed that significant difference exists between chemistry practical test using lecture demonstration method (LDM) and inquiry method compare with LDM. However, the study further revealed that there is a significant difference in performance of students in favor of lecture demonstration method. Akanyi (2004) acknowledged that students taught mathematics using activity method scored higher in achievement test followed by discussion method while field and lecture methods scored the least. This implied that there was a significant difference in the achievement test scores of students taught mathematics using various teaching strategies in comparison with activity method of instruction. Ojenja (2005) reported that students taught using demonstration method of instruction performed better than those taught with lecture method. Furthermore, Edu, Ayang, and Idaka's (2012) research revealed that students taught using project instructional method scored higher in the psychomotor performance test in basic electricity than their counterpart who were taught using demonstration teaching method.

### Effectiveness of Blended Method

Akerele and Afolabi (2012) research revealed video instruction contributed significantly in the students' attitudes towards the courses (Library Instruction

Programe LIB001). Similarly, Udosen, Itighise, & Enang (2012) study showed that there is a significant difference in the performance of hearing disabled students in English language taught using caption film instructional package (CFIP) and those taught using conventional sign language method in favor of CFIP. Interestingly, Theur, Greer and Turner (2011) research showed that the utilization of multimedia affect students performance positively when compared to the conventional method of instruction. More so, Osokoya (2009) study revealed that there is a significant difference between the mean score of students taught history with video tape instruction and students taught using conventional/traditional method of instruction. Also, the study revealed that gender has no effect on the treatment administered.

Uduosoro and Abimbade (1997), pointed out that students taught mathematics and physics with visual teaching aid achieved higher cognitively than those taught without computer. Salami (2007) study found out that the three groups were statistically significant at the 0.05 level. This means that the three groups were statistically different from each other in their post test scores after the experimental treatment which demonstrated that personalized system instruction had good impact on students' achievement in chemistry.

Similarly, Omiola, Enuwa, Awoyemi, and Bada (2012) study revealed that developed video instructional package can enhance students' understanding of physics concepts and acquisition of skills and improve their performance in the subject.

Jadal (2011) work revealed that there was high variation among the performance of the students of control groups. Also, the use of media results in a better achievement. Sadoon (2009) reported that the experimental group was taught by using technical audio- visual aids while the control group was taught by the traditional method. The results indicated that there was a significance difference between experimental and control groups in favor of the experimental group. Similarly, Aggarwal and Mahajan (2012) reported that there is a significant increase in understanding and performance of students who were given lecture along with audio visual teaching aids.

### **Statement of the Problem**

This study was prompted by the persistent poor performance of BBC students in National Technical Certificate (NTC) examination, a situation of the lack of occupational and employable skills among BBC graduates. Some scholars attributed the situation to teaching methods employed by technical college teachers. This assertion was buttressed by the report of National Business and Technical Examination Board (NABTEB, 2002) which stated that poor or inappropriate teaching methods employed by instructors to teach technical college students

is one of the probable causes of high failure of students. Similarly, Oranu (2003) posited that the teaching methods used in teaching are mostly lecture and demonstration methods. It is against these backdrops that this study sought to determine and compare the psychomotor performance of students' enrolled brick/blocklaying and concreting course with lecture, demonstration, and blended teaching methods in technical colleges in Delta State.

### **Purpose of the Study**

The major purpose of this study was to assess the effects of lecture, demonstration, and blended teaching methods on students' psychomotor performance in brick/blocklaying and concreting in Delta States rural technical colleges. Specifically, this study intends to achieve the following purposes to:-

1. Determine psychomotor performance of students instructed in brick/blocklaying and concreting using lecture, demonstration, and blended teaching methods in Delta State rural technical colleges.
2. Compare the psychomotor performance of students instructed in brick/blocklaying and concreting using lecture and blended teaching methods in Delta State rural technical colleges.
3. Compare the psychomotor performance of students instructed in brick/blocklaying and concreting using demonstration and blended teaching methods in Delta State rural technical colleges.

### **Significance of the Study**

The researchers believed that this work will be significant in its contribution to the advancement of knowledge, as such, it will be of great benefits to stakeholders such as: technical education teachers /instructors; Federal/State ministry of education; curriculum planners and developers; and future researchers. Technical education teachers/instructors and Federal/State ministry of education will benefit from this study because the study will expose them to the use of various teaching methods that can be used to cultivate psychomotor skills in brick/blocklaying and concreting. Also, it will make them to know which of the method of teaching that will be more effective for teaching psychomotor skills. To future researchers, the result of this study will be useful to future researchers when carrying out similar research. Also, the findings of this study will remain point of reference to other researchers when drawing inference from their studies.

## **Research Question**

The following research question was used for the study;

1. What are the mean pretest and posttest psychomotor performance scores of students instructed in brick/blocklaying and concreting using lecture, demonstration, and blended teaching method in Delta State rural technical colleges?

## **Hypotheses**

The following research hypotheses were tested at .05 level of significance:

1. There is no significant difference in the mean psychomotor performance scores of students instructed in brick/blocklaying and concreting using lecture and blended teaching methods in Delta State rural technical colleges.
2. There is no significant difference in the mean psychomotor performance scores of students instructed in brick/blocklaying and concreting using demonstration and blended teaching methods in Delta State rural technical colleges.

## **Research Design**

Quasi experimental research design was used for the study. Specifically, non-randomized, pretest-posttest control group design was used. The researchers find this design appropriate for this study because a true experimental research design which involves randomization for selecting research participants will disrupt academic activities of the technical colleges selected for the study if applied. Therefore, intact classes were used for the study.

## **Population of the Study**

The population of the study comprises of all the 108 Vocational Year 1 brick/block-laying and concreting students in all the three rural Technical Colleges in Delta State. The rationale for using this class is because, it is the foundation class and the students have no expertise in brick/blocklaying and concreting. Table 2 shows the distribution of Vocational Year 1 brick/block-laying and concreting students in the three rural technical colleges in Delta State.

Table 1: Study Population

Name of Institution	Number of Students
Otor-Ogor Technical College (Control Group 1)	35
Ofagbe Technical College (Control Group 2)	29
Issele-uku Technical College (Experimental Group)	44
Total	108

### **Instrument for Data Collection**

The instrument for data collection for this study is the Blocklaying and Concreting Competency Assessment Instrument (BCCAI) for Measuring the Psycho-Performance of Technical College Students in Blocklaying and Concreting Operations. This instrument was developed by Odu (2001) and was adapted for this study. However for the purpose of this study, four (4) operations were used from the instrument. These operations include Mixing of Mortar by Hand (8 items); Manufacturing of Solid Sandcrete Blocks by Manual Method (9 items); Placing of Concrete Strip Foundation (8 items); and Laying of Stretcher Bond up to Lintel Level (13 items). The modified BCCAI has a total of 38 items or skill tasks whose scoring is from 1-5. Also, the instrument has an overall score of 190 marks.

The instrument has been both content and face validated by Odu (2001). This was done by sending out copies of the initial draft to eight experts from University of Nigeria, Nsukka. The experts were requested to review and revise the items (if necessary), reword or delete or add items, and make general comments (Odu, 2001).

Test re-test method was used to establish the reliability of the instrument. Odu (2001) administered the instrument under practical examination condition to 24 students of BBC randomly selected from 2 of the technical colleges in Enugu state. After an interval of 2 weeks, the same instrument was administered to same BBC students. Using Pearson's Product Moment Correlation, the reliability of the instrument was found to be 0.75 coefficients.

### **Lesson Content**

The lesson topics that served as treatment for this study are mixing of mortar by hand; manufacturing of solid sandcrete blocks by manual method; placing of concrete strip foundation; and laying of stretcher bond up to lintel.

## **Experimental Procedure**

The experiment lasted for thirteen (13) weeks. The experiment was carried out in stages which took the following order:

1. Training of teachers on how to teach BBC using different teaching methods, collection of BBC students' data, and distribution of experimental materials (3week)
2. Pre- testing of BBC students for the study by the school teachers;
3. Administration of treatment by school teachers (4weeks); and
4. Post-testing of BBC students for the study by school teachers (1week);

## **Control of Extraneous Variables**

Campbell and Stanley (1996) have identified some major threats to internal validity. The researchers made efforts to forestall the possible threats to internal validity of the research design. The threats were controlled in the following ways:

1. **Experimental Bias:** The following conditions were laid down to minimize experimental bias:
  - (a) The same lesson topic was given to the control and experimental groups.
  - (b) The same psychomotor performance test was given to all the groups.
  - (c) The students did not have pre knowledge of their involvement in the experiment.
  - (d) The researcher was not directly involved in the test administration but observed how the test was being conducted by the school teachers.
  - (e) A school used only one teaching method. This helped to prevent the research participants from interacting with members of the other groups.
2. **Teacher Variability:** Lesson notes for the three methods titled Lecture Teaching Method (LTM), Demonstration Teaching Method (DTM) and Blended Teaching Method (BTM) were prepared by the school teachers which were critiqued by the researchers to ascertain their validity. Also, the use of different schools for each treatment by the normal class teacher teaching the students helped control teacher variability.
3. **Diffusion:** Diffusion occurs when participants in the groups communicate information about the treatment to their counterparts in such a way that will influence the outcome of the study. To eliminate this threat, the schools used for the groups were all situated at different towns to prevent the students in the groups from interacting with each other during the training period.
4. **Variability of Instructional Situation:** Homogeneity of instruction across groups is ensured as follows:



- (a) The researchers trained all the teachers on the instructional procedure that were used in the study.
- (b) The teachers were directed to use the lesson plans provided by the researchers.
- (c) The lecture, demonstration, and blended teaching methods research participants were taught the same topics and with the regular periods allotted to B/BC in the technical colleges' timetable.

5. **Instructional Situation Variable:** Instructional situation was the same for all the experimental groups, since intact classes from VOC YR 1 students were used and lesson notes bearing the same contents were also used. In analyzing the data, mean and standard deviation were used to answer the research question, while analysis of variance (ANOVA) was used to analyze the tow hypotheses.

## Results/Findings

The results were presented sequentially according to the research question and hypotheses

**Research Questions 1:** What are the mean pretest and posttest psychomotor performance scores of students instructed in brick/blocklaying and concreting using lecture, demonstration, and blended teaching method in Delta State technical colleges?

Table 2: Mean Pre-test and Post-test Score of Students Instructed in Brick/Block-Laying and Concreting Using Lecture, Demonstration, and Blended Teaching Method

Group	N	Pre-test Mean Score	Post-test Mean Score	Mean Gain Score
Lecture Method (Control Group 1)	35	27.26	53.86	26.26
Demonstration Method (Control Group 2)	29	25.89	84.66	58.77
Blended Method (Experimental Group)	44	28.52	100.13	71.61

\*Note: N= Number of Respondent

**Hypothesis 1:** There is no significant difference in the mean psychomotor performance scores of students instructed in brick/blocklaying and concreting using lecture and blended teaching method in Delta State rural technical colleges.

Table 3: Analysis of Variance of Mean Psychomotor Performance Scores of Students Instructed in Brick/Blocklaying and Concreting using Lecture and Blended Teaching Method in Delta State Rural Technical Colleges.

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	19899.805	23	865.209	.934	.576
Within Groups	10189.167	11	926.288		
Total	30088.971	34			

In Table 3, since the calculated p value (.576) was greater than the benchmark .05, the stated null hypothesis was therefore accepted. This implies that there was no significant difference in the mean psychomotor performance scores of students instructed in brick/blocklaying and concreting using lecture and blended teaching method in Delta State rural technical colleges.

**Hypothesis 2:** There is no significant difference in the mean psychomotor performance scores of students instructed in brick/blocklaying and concreting using demonstration and blended teaching method in Delta State rural technical colleges.

Table 4: Analysis of Variance of Mean Psychomotor Performance Scores of Students Instructed in Brick/blocklaying and Concreting Using Demonstration and Blended Teaching Method in Delta State Rural Technical Colleges.

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	14720.793	20	736.040	.532	.880
Within Groups	11075.000	8	1384.375		
Total	25795.793	28			

In Table 4, since, p (.880) calculated was greater than the benchmark .05, the stated null hypothesis was therefore accepted. This implied that there was no significant difference in the mean psychomotor performance scores of students instructed in brick/blocklaying and concreting using demonstration and blended teaching method in Delta State rural technical colleges.

## Discussion of Findings

The mean score and mean gain revealed that the various teaching methods employed in this study have effect. Blended teaching method has the highest effect, followed by demonstration method and the least is lecture teaching methods. These findings are in line with other researches such as the research works of Akerele and Afolabi (2012); Theur, Greer and Turner (2011); Osokoya (2009); Uduosoro and Abimbade (1997); Salami (2007); Omiola, Enuwa, Awoyemi, and Bada (2012); Jadal (2011); Sadoon (2009); and Aggarwal and Mahajan (2012). These studies revealed that there was high variation among the performance of the students; and the use of media results in better achievement. Also, there is a significant increase in performance of students who were given lecture along with audio visual teaching aids. Also, from the ANOVA analysis, there was no significant difference in the mean score of students instructed in BBC using lecture, demonstration, and blended teaching method. These findings are in line with other studies such as that of Onasanya, Daramota and Asuquo (2006); and Spotts (1992). These studies revealed that there is no significant difference in the performance of students exposed to individualized CAI package and those exposed to the lecture method of instruction.

As well, the studies of Adekoya and Olatoye (2011); Abdulhamid (2010); Agboola and Oloyede (2007); Akanyi (2004); Ojenya (2005); and Igbo (1993) are in disagreement with the findings of this study. Their studies revealed that there is a significant difference in students performance taught using demonstration and lecture method of instruction in favor of demonstration method of instruction. On a contrary, the work of Edu and Idaka (2012) is in disagreement with the findings of this study when the researchers in their study revealed that students taught using project instructional method scored higher in the psychomotor performance test in basic electricity than their counterpart who were taught using demonstration teaching method.

## Conclusion

Based on the findings of the study, it was concluded that teaching methods employed by technical subject teachers in teaching and learning technical oriented subjects have positive effects on students' psychomotor performance. Furthermore, it was concluded that the combination of different teaching methods with the use of audio visual aids such as video instruction enhanced students' psychomotor performance. This implies that blended teaching method helps to enhanced students psychomotor performance in Brick/Block-laying and Concreting (BBC).

## **Recommendation**

Based on the findings of the study, it was recommended that:

1. Technical teachers should design and develop suitable audio visual teaching aids to arguments the teaching and learning of skilled related subjects such as BBC.
2. Technical teachers should always combine different teaching methods to teach skill oriented subjects. This will help address the various types of learners such as the visual, auditory, and reading/writing learners.
3. Seminars, workshops and in-service training should be organized for technical subject teachers to enable them acquire necessary skills in the development and proper use of audio visual instructional aid for teaching and learning.
4. Seminars, workshops and in-service training should be organized for technical subject teachers to enable them acquire necessary skills in blended teaching methods and how to use various media in teaching and learning.

## **Limitations of the Study**

In an empirical study of this nature, there are always limitations which could arise from various factors such as human, material, time, and environmental.

1. The limitations faced as a result of human factors such as the use of intact class and different teachers. The training of teachers that implemented the treatment, students' interest, and the small sample size used for the different groups may have affected the results of this study.
2. Material resource posed such as non availability of hand tools and consumable materials in the technical colleges.
3. Time factor such as time spent in training the teachers for each group, time spent in the development of the B/BC instructional video, time spent in pilot testing of instrument, and the time spent in supervising and monitoring of the experimental process.
4. Environmental factors such as the geographical location (rural) of the technical colleges posed as a major challenge to this study due to poor road network and proximity of the schools to each other.

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# **An Investigation into Technology Education Teachers Access to and Utilization of Research Findings in Ebonyi State**

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## **Abstract**

This study investigated technology education teachers' access to and utilization of research findings. To investigate the problem of this study, three research questions covering aspects of teachers' perception, access and utilization of research were formulated. The descriptive survey method of research was used. A total of two hundred technology education teachers from twenty-two secondary schools in Ebonyi state took part in the study. One questionnaire of three sections was used. While one of the questionnaires was adapted, two of the questionnaires were constructed and subjected to content validity. The instruments were also subjected to the test-retest reliability through which coefficients of 0.83 and 0.84 were obtained respectively. Data collected were analyzed descriptively, using percentages, means and standard deviations. The findings of the study showed that teachers lacked access to research reports and do not utilize research findings in their daily classroom activities. They largely relied on their personal or professional experience even when they are aware of research findings that contradict such experience. The following recommendations were however made for improvement; the NERDC should take a step further in its operations to ensure teachers' utilization of research findings by providing school libraries equipped with current journals relating to technology education.

## **Introduction**

Since the early 1960s, there has been a rising tide of interest at strengthening Africa's potentialities in science and technology education. Okebukola (2003) asserted that the cardinal goal of this aspiration, was to catalyze socio-economic development using science and technology as tools. In recognition of

the importance of technological education to overall national development, the National Policy on Education (2004) recommends that greater proportion of education expenditure be devoted to technology education. This faith in technology as an instrument of development has given rise to increased attention in the teaching and learning of technology education. This has resulted to intense and rigorous research in technology education for several decades globally, and in Nigeria particularly (Kempa, 2002; Costa, Marques and Kempa, 2000; Ogunleye, 1995; Okebukola, 2003; Obioma, 1992). Technology education according to Inyiagu (2013) is an area of vocational education with content aimed at developing basic manipulative skills, safety practices and scientific knowledge needed for employment in industrial occupations, classroom and self reliance.

The role that research plays in technology education cannot be over-emphasized. According to Inyiagu (2010), it is the most important tool for advancing knowledge, for promoting progress, and for enabling man to relate more effectively to his environment, to accomplish his purpose and to resolve his conflicts. O'Brien (2003) asserts that research is an essential component for a well rounded academic culture in any higher education institution. By knowledge of and association with research and research methods, the teacher will be better able to arrange the conditions, materials, content of instruction, and the setting where optimal learning can best take place. It is also in this same spirit that NSTA (1998) argued that the role of research in technology teaching is to increase our understanding of teaching and learning to ensure that all students, pre-school through college, acquire the technical literacy requisite for life-long learning.

Given the decades and quantity of research in technology education particularly, one would expect exquisite performance in technology teaching and learning. However, on a very sad note, students' enrolment, interest and achievement in technical subjects or courses continue to suffer drastic set-backs (Aghenta, 1981; Ogunleye, 1995 and Inyiagu, 2014); and on the other hand, teacher's ability and proficiency in technology teaching keep on generating some doubts in the minds of many. Okebukola, (2003) and Anamuah-Mensah, (1993) revealed that technology teaching in Nigeria is in a pathetic state.

Effectiveness and competence in teaching has been linked to teachers' utilization of research information (Castro, 2000). Kempa (2002) has, however, expressed the view that the extent to which the findings from technology education research have found application in actual classroom teaching has, by and large, been rather limited for various reasons. Akpan (1999) maintained that, apart from the poor funding of research, the most neglected aspect of research in Nigeria is perhaps its dissemination and utilization. Kempa (2002)



discussing on poor utilization of research information outlined five possible reasons for technology teachers' non usage of research findings in their daily classroom activities. They are:

- Neglect by researchers of genuine "application studies" in favor of 'diagnostic' ones.
- Undue attention in researches on "fashionable areas" (e.g. pupils' misconceptions and alternative frameworks), without adequate consideration of the practical usefulness of the findings.
- Insufficient dissemination by researchers of the implications of their findings for the practice of technology education.
- Unawareness on the part of many technology teachers even experienced ones, of the findings from technology education research.
- Practitioners' inclination to rely on "common sense" and or "personal knowledge" in their practice of technology teaching.

Okebukola (2003) also expressed similar viewpoint, insisting that the theoretical rather than the practical value of research is often given prominence. In appraising the review on research studies in technology education, Ogunleye (1995) and Ivowi (1997) revealed that research studies in technology education are mainly descriptive in form and unlikely to make meaningful contribution towards classroom teaching and learning of technology.

Agbebi (2012) have reported that most technology educators have limited access to research literature. It has also been alleged that the result of most research studies lie buried in journals where they are published (Nzewi and Osioma, 1995; Akpan, 1999; Kempa, 2002). Various factors have been attributed to this state of affairs viz: lack of time on the side of teachers, teachers' lack of interest in research, non-availability of published research work to the practitioners' "doorpost" (Akpan, 1999). Osuafor (1999) strongly argued that unless practitioners have access to research-based information, the impact of technology education research on the practice of technology education will still remain an illusion to all concerned. The above indicate that, to a greater extent, research utilization by practicing technology teachers depends on how accessible research information is to technology teachers.

This study therefore, investigated the extent to which technology teachers' access and utilize research information in their classroom activities. In carrying out this study, answers were sought for the following research questions:

- To what extent do technology teachers have access to research reports?
- To what extent do technology teachers utilize research information in their classroom activities?

## **Method**

Twenty-two (22) public schools were studied. In all 200 technology teachers were involved in the study. One instrument, named Technology Teachers' Access to and Utilization of Research Information (QTTAURI), was used for the study. The questionnaire has three (2) sections A to B. Section A, a 4-point response grid namely; Often (4), Sometimes (3), Rarely (2) and Never (1), focused on teachers access to research information. Section B has two parts. Part 1 is a 22-item questionnaire (numbered 1 - 22) of commonly held pedagogical wisdom (although disputable on the ground of reported research findings) relating to technology teaching practices. The respondents assessed the validity of each of the statements using five-point response grid ranging from "Always True" (AT) at one extreme to "Always False" (AF) at the other. The purpose is to assess technology teachers' awareness and utilization of research information in their daily classroom activities. Teachers were to indicate in Part II of the instrument, the knowledge type used for assessing the validity of statements presented in Part I. The response grid include Common Sense Knowledge (CSK), Professional Knowledge (PK), Consensual Knowledge (CK), Transmitted Knowledge from mentors/tutors (TK), Official Professional Knowledge (OPK), Knowledge from Books (BK), Research Knowledge (RK), and Any other Knowledge (ANK).

The researcher administered the instrument with the assistance of the Head teachers, to all the technology teachers in the twenty-two (22) public secondary schools sampled for the study. A sample on how to complete section C was also given to each of the respondents to avoid confusion. Frequency counts, percentages, means and standard deviations were used for data analysis.

## **Results**

The results of the data analysis are presented in Tables 1, 2 and 3.

Table 1: Frequency, Percentage, Weighted Mean Ratings and Standard Deviation of technology Teachers' Access to Research Information

S/N	Statement	Often (4)	Sometimes (3)	Rarely (2)	Never (1)	$\bar{x}$	SD
1.	I attend educational public lectures/conferences/seminars/workshops.	22(11)	110(55)	64(32)	4(2)	2.75	.77
	I visit libraries for Journal article on educational issues	0(10)	78(39)	88(44)	14(7)	2.52	.77
3.	I browse the net for educational information.	8(14)	38(19)	70(35)	84(42)	1.85	
4.	I buy Journals to get information about new developments in technology teaching.	26(13)	36 (18)	82(41)	56(28)	2.16	.98
5.	I visit university library for research projects in technology education generally.	24(12)	84(42)	58(29)	34(17)	2.49	.91
6.	I belong to professional bodies or association like NATT	66(33)	78 (39)	20(10)	30 (18)	2.87	1.07
7.	My school buy Journals for placements in the library.	16(8.)	50(25)	80(40)	54(27)	2.14	.91
8.	I have training as a technology Teacher in the last five 15) years	44(22)	52(26)	34(17)	70(35)	2.35	1.17
9.	When researchers use me/my school or my students for research work, they communicate the results to me.	4(2)	24(12)	38(19)	134(67)	1.49	.78
	Weighted Average					2.29	

(Values in parenthesis represent percentages)

Table 2: Technology teachers' ratings of the validity of statements expressing pedagogical 'wisdom' as it applies to

S/N	Statement	At (1)	NK (2)	GT (3)	GF (4)	AF (5)	$\bar{X}$	SD
1.	Technology teaching ought to contribute to student's view about technology knowledge as something which changes	156 (78)	6 (3)	34 (17)	4 (2)	-	14.3	84
2.	Student's learning of technology concepts can be achieved through an inductive method based on objective observation done in the context of laboratory or workshop work.	140 (70)	16 (8)	38 (19)	6 (3)	-	1.55	90
3.	Technology teaching which takes into account student's alternative conceptions is more efficient than a teaching predominant by transmission	106 (56)	30 (15)	46 (23)	12 (6)	6 (3)	1.91	1.13
4.	Technology teaching ought to include controversies which have occurred in the history of technology.	102 (51)	44 (22)	32 (16)	20 (10)	2 (1)	1.88	1.07
5.	In order to be efficient technology teaching must include conceptual change strategies.	120 (60)	28 (14)	36 (18)	14 (7)	2 (1)	1.75	1.05
6.	Technological conceptual learning is a negotiated process between teacher and pupils' knowledge	114 (57)	42 (21)	30 (15)	8 (4)	6 (3)	1.75	1.05
7.	The development of student' technological competencies is more efficient if the teaching is based on problem solving rather than exercise	136 (68)	24 (12)	24 (12)	16 (8)	-	1.60	98
8.	Met-cognitive strategies help students in problem-solving activities	90 (45)	62 (31)	4 (2)	40 (20)	4 (2)	1.85	94
9.	Teaching which includes social and technological application is more relevant, educationally, than teaching which is only based on scientific concepts and principles	148 (74)	16 (8)	32 (16)	4 (2)	-	1.46	94

10.	Technology must have as one of its main aims to contribute to students understanding of every day phenomena.	158 (79)	6 (3)	30 (15)	4 (2)	2 (1)	1.43	86
11.	Laboratory work motivates pupils for technology learning	168 (84)	2 (1)	26 (13)	4 (2)	-	1.35	86
12.	Demonstrative laboratory work focused on the illustration of technological phenomena	158 (79)	8 (4)	28 (4)	4 (2)	2 (1)	1.42	88
13.	Discovery learning is more efficient than learning by transmission	134 (67)	16 (8)	48 (24)	2 (1)	-	1.59	.89
14.	Positive Reinforcement is an essential element to increase the strength of students for technology learning.	140 (70)	16 (8)	48 (24)	2 (1)	-	1.52	.84
15.	When students work in group they learn from each other	144 (72)	10 (5)	44 (22)	4 (2)	-	1.52	.87
16.	The more motivated students are the more they learn	148 (74)	14 (7)	24 (12)	10 (5)	4 (2)	1.54	1.02
17.	Topics taught in technology classes are intrinsically more difficult than those taught in other classes	126 (63)	20 (10)	32 (16)	12 (6)	10 (5)	1.80	1.20
18.	The earlier students start to learn technology the easiest it is its learning	154 (77)	18 (9)	16 (8)	6 (3)	6 (3)	1.46	.98
19.	There is a strong relationship between the number of students in class and the efficiency of technology teaching	160 (80)	18 (9)	18 (9)	4 (2)	-	1.33	.72
20.	Laboratory or workshop work is a fundamental component of any technology curriculum.	170 (85)	18 (9)	12 (6)	-	-	1.2	.60
21.	Problem solving is a fundamental component of any technology curriculum	148 (74)	30 (15)	20 (10)	2 (1)	-	1.38	.71
22.	In a technology curriculum, the development of attitudes and technological process is as important as the learning of technology concepts	146 (73)	26 (13)	24 (12)	4 (2)	-	1.43	.78
	Weighted Average					1.47		

Table 3: Knowledge Types Used by Technology Teachers for Assessing the Validity of Statements

S/N	CSK (1)	PK (2)	CK (3)	TK (4)	OPK (5)	BK (6)	RK (7)	ANK (8)	$\bar{x}$	SD
1.	146 (73)	10 (50)	28 (14)	8 (4)	-	2 (1)	6 (3)	-	1.65	1.36
2.	152 (76)	18 (9)	22 (11)	8 (4)	-	-	-	-	1.43	84
3.	98 (46)	32 (16)	40 (20)	18 (9)	12 (6)	-	-	-	2.07	1.26
4.	90 (45)	42 (22)	36 (18)	22 (11)	2 (1)	4 (2)	2 (1)	-	2.11	1.31
5.	130 (65)	22 (11)	34 (17)	10 (5)	2 (1)	2 (1)	-	-	1.69	1.09
6.	102 (51)	60 (30)	20 (10)	10 (5)	6 (3)	-	-	2 (1)	1.84	1.19
7.	108 (55)	50 (25)	22 (11)	16 (8)	4 (2)	-	-	-	1.79	1.05
8.	84 (42)	60 (30)	52 (26)	2 (1)	-	-	2 (1)	-	1.92	1.04
9.	138 (69)	12 (6.0)	42 (21)	6 (3)	2 (1)	-	-	-	1.60	95
10.	144 (72)	30 (15)	34 (17)	6 (3)	2 (1)	-	-	-	1.54	94

11.	144 (72)	30 (15)	18 (9)	6 (3)	8 (4)	-	-	-	1.49	96
12.	128 (64)	38 (19)	28 (14)	6 (3)	-	-	-	-	1.56	84
13.	116 (58)	42 (21)	42 (21)	2 (1)	-	-	-	-	1.63	81
14.	140 (70)	22 (11)	36 (18)	6 (3)	-	-	-	-	1.50	82
15.	144 (57)	38 (19)	42 (21)	18 (9)	-	-	-	-	1.70	1.90
16.	126 (63)	36 (18)	20 (10)	10 (5)	-	-	-	-	1.65	99
17.	66 (33)	40 (20)	30 (15)	4 (2)	32 (16)	2 (1)	20 (10)	-	2.39	1.47
18.	148 (74)	32 (16)	8 (4)	2 (1)	4 (2)	4 (2)	-	-	1.48	1.05
19.	132 (66)	46 (23)	20 (10)	-	-	-	-	-	1.46	71
20.	150 (75)	26 (13)	20 (11)	-	2 (1)	-	-	-	1.39	76
21.	142 (71)	36 (18)	20 (11)	-	-	-	-	-	1.40	68
22.	112 (56)	62 (31)	20 (11)	4 (2)	-	-	-	-	1.59	76
Weighted Average										1.68

Values in parenthesis represent percentages)

## Discussion

From table 1, it is evident that majority of the technology teachers returned 'sometimes' (3) and rarely (2) for all items (means scores range from 1.85 to 2.87 out of a total of 4) except for item 9 a mean score of 1.49. This implies that that research findings conducted in technology education are not communicated back to the teachers. A total of 67% of the teachers responded that researchers after using them and their school/students for research do not communicate the results to them. Out of the remaining 33%, 19% fell under the 'Rarely' response category. A simple conclusion that could be drawn from this finding is that technology teachers are in the dark with respect to research reports derived from the lot of educational research so far conducted. The fact also is that a whopping 77% of teachers, either never or rarely browse the net for educational information, with the later attracting the lesser percentage (35%).

Summarily, as indicated by the weighted average of 2.29, teachers rarely have access to research report. This finding supports that of Akpan (1999) that teachers have limited access to research findings. The average mean score of 1.47 as indicated in table 2, shows that a majority of the teachers chose the 'Always True' response category in their ratings of the validity or otherwise of the 22 items of commonly held pedagogical 'wisdom' in science teaching.

With the exception of statements 3, 4, 6, and 8 which gave rise to considerable divergence of views, at least in so far as answers are spread over four, if not five, of the response category, the teachers response were largely centered on the 'Always True (AT) and 'Generally True but with exceptions (GT)' response categories. It is reasonable here, to point out that, less than 1% of the teachers disagreed outright with any of the statements as only 0.5% returned the 'Always False (AR) response category and less than 4% returned the 'Generally False but with exceptions (GF)' response category. A simple conclusion that could be drawn is that about 87% agreed with these statements as only 8.2% chose the 'I Don't Know if the statement is true or false (NK)' response option.

It is not unreasonable also to argue that the statements which were overwhelmingly endorsed by the teachers (Nos. 1, 9, 10, 11, 12, 18, 19, 20, 21, and 22) suggest a generally held opinion with regard to technology education. They are positions that are frequently transmitted through teacher education programs and, for the most part, are entirely within teachers' professional knowledge and, more largely, within the confine of common sense. This is borne out by teachers' indication of the nature of the knowledge on which they have based their judgments about the validity of these statements. These are given in table 3. It is obvious from the data relating to the foregoing statements that, in the main, this knowledge was claimed to have been derived either from 'Common Sense (CSK)' or 'Professional Knowledge (PK)' or 'Consensual Knowl-



edge (CK) among science teachers. Only for one of the items (No 1) did some teachers refer to research report as their source of information, though not a significant percentage (3.0%).

While not trying to review the extent to which the individual statements used in the questionnaire are supported by research based evidence, teachers' mass approval of most of these statements does not assure their validity. For example, research results concerning the link between motivation and learning, by Fraser, Walberg, Welch & Hattie (1987) point to correlation coefficients of only moderate magnitude ( $r$  is usually in the region of 0.3), which suggest that other factors influence learning and learning effort as strongly as do motivation. The authors in addition showed that, the evidence that praise is a stimulus used to enhance learning and learning effort is only moderate.

As shown in Table 3, the response profiles for the different statement indicate that there are some variations in the type of knowledge base on which teachers relied for their judgments. However, the mean percentage values for the various response categories (CSK = 61% PK 17.5%) clearly point to teachers 'Common Sense Knowledge (CSK)' as the most important basis of their judgments. 'Professional knowledge (PK)' formed the basis of 17.5% of the ratings. Information deriving from 'transmitted knowledge' (TK) and from 'Consensual knowledge among teachers (CK) are almost on parity with 'Professional Knowledge' as a basis of teachers' judgments, in terms of the frequency to which teachers referred to it.

The next to the last response category concerned teachers' awareness of technology education research findings as a basis for their judgment. Table 3 shows that this kind of knowledge was referred to in just 0.68% of the judgments made. Information deriving from the book of science teaching or teaching generally accounted for only a disproportionate low percentage of 0.32%. It could be seen that, teachers mostly relied on 'common sense knowledge', 'professional knowledge', consensual knowledge among science teachers, and less frequently on transmitted knowledge from mentors/tutors for their judgment. The less dependent sources were 'knowledge from books' (BK), research knowledge' (RK) and knowledge from official professional programmers' (OPK). The 1.7% that relied on knowledge from official professional knowledge 'reveal how infrequent, either, teachers attend such programs or such programs are being organized. According to Driel, Verloop & Vos (1998) in Costa et al (2000) technology teachers' knowledge and beliefs are explicitly related to teachers' classroom practice. This finding therefore, show that technology teachers' utilization of research is, regrettably, very limited given the fact that they almost never relied on research knowledge as their basis for judging the statements raised in the questionnaire. This finding has given credence to the findings of Costa et al (2000) and Castro (2000) that Portuguese technology teachers are unaware of

research findings. It also supports the finding of Shkedi (1998) that teachers' utilization of research is highly minimal.

## Recommendations

To achieve this, the following are recommended.

1. A link should be formed between universities/research institutes and schools where the findings of educational research are discussed and ways of incorporating them into practical classroom teaching are communicated to the teachers.
2. School libraries should be equipped with current journals on issues relating to technology teaching and teaming.
3. The Nigerian Educational Research and Development Council (NERDC) should take a step further in its operations to ensure teachers utilization of research findings.
4. Teachers should be encouraged and be made to understand the need to engage in the browsing of the Internet so as to be aware of current research reports in education.
5. Providing opportunities for practicing technology teachers to participate in research activities with experienced research teams is recommended.
6. Teachers should be encouraged to belong to professional research associations as part of their professional development engagement.

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