

## Effects of Age and Gender on Academic Achievement of Vocational and Technical Education (VTE) Students of a Nigerian University

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### Abstract

Age and gender differences in students' enrolment in vocational technical education necessitated the study to determine their effects on students' academic achievement. Three research questions and one hypothesis tested at 0.05 level of significance guided the study. The survey design was adopted and the study was conducted in Anambra state. The population was 117 (44 males and 73 females) 2012/2013 graduates of the programme. Their computed degree results showing age, gender and final cumulative grade point average was collected from the Department and used for the study. Linear regression, ANOVA and Chi Square were used for data analysis. Findings of the study revealed that a linear relationship does not exist between the two predictor variables and the university VTE students' academic achievement and that their combined contribution is insignificant. However, the study revealed differences in the students' academic achievement as a result of age and gender. Based on the findings, the researchers conclude that age and gender have effects on the academic achievement of university VTE students which could be as a result of the fact that the programme involves Mathematics, science and ICT as reported by earlier researchers. Based on the findings and conclusion of the study, the researchers recommend, among others, that parents and the society should eliminate fears in all students, especially female students, towards the study of Mathematics, science and ICT related courses and that university VT lecturers should adopt teaching methods that enhance learning effectiveness for all students irrespective of age and gender.

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**Keywords:** age, gender, education, academic, vocational

### INTRODUCTION

Education is considered the first step for every human activity as it plays a vital role in the development of human capital as well as an individual's well-being and opportunities for better living. VTE is a program of study designed to equip students with practical skills in different occupational fields which will help them become self-reliant in the face of paucity of paid employment. Academic achievement or performance is used in the school to refer to students' success in learning specified curriculum content as revealed by continuous assessment and examination. According to Ali (2013), academic achievement is a measure of the degree of success in performing specific tasks in a subject or area of study by students after a learning experience. It is the outcome of education that indicates how well a student or class of students is doing academically.

Academic achievement is a major issue to teachers, students, parents and guardians as well as other stakeholders in the education industry. This concern cuts across all school subjects and all levels in the education system including primary, secondary and tertiary. A high academic achievement for any class of students is an indication of teaching/learning effectiveness while poor academic achievement, on the other hand, is an indication that the

teaching/learning process is everything but effective. There is, therefore, need to discover factors that can affect the academic achievement of students generally and especially those in vocational technical education programme. This is important for proper guidance of students' career choice in VTE given its potential of turning out graduates who can positively contribute to the fight against unemployment and poverty in the country. Consequently, this study focuses on the effects of age and gender on the academic achievement of university VTE students.

### REVIEW OF RELATED LITERATURE

Related literature to the topic of the study was reviewed under

#### Vocational Technical Education

VTE is a program of instruction offered at different levels of the education system to prepare people for specific jobs, crafts and careers at various levels. Akaninwo (2004) defined it as a type of education designed to prepare the recipients to be self reliant. Contributing, Uwaifo and Uwaifo (2009) and Ordu (2012) defined the programme as that type of education designed to prepare individuals for gainful employment as semi skilled or skilled workers or to advance the proficiency of individuals relative to their present or future occupations. The National

Council for Colleges of Education (2003) outlined the sub units of VTE to include business education, agricultural education, computer education, fine and applied arts, home economics education and technical education. Consequently, Ekpenyong (2008) highlighted the occupational areas as technical education covering engineering technology, electrical/electronic technology, building technology, and automobile engineering; business education covering secretarial studies/office technology and management, accounting and distributive education; agricultural education covering agronomy, soil science or agricultural engineering; and home economics education covering home science, food science, clothing and textiles, hotel and catering management.

The Federal Republic of Nigeria (2004) referred to vocational education as the form of education which can be obtained in technical colleges while Ihekwoaba (2007) explained that vocational education has vocational and technical aspects which are acquired at different places under different conditions. According to the author, VTE begins at the junior secondary school level where the vocational component is taught as 'Business Studies' while the technical component is taught as 'Introductory Technology'. However, actual VTE begins at the senior secondary school level to post secondary and tertiary levels in vocational centres, colleges of technology, polytechnics and universities.

In line with the scope of VTE highlighted above, major objectives of the programmes at the tertiary level of education are (a) to provide training in engineering, other technologies, applied sciences, business and management and (b) to provide the technical knowledge and skills necessary for agricultural, industrial, commercial and economic development of Nigeria (FRN, 2009). Bappa-Aliyu (2012) and Eze (2013) affirmed that VTE is one of the manpower training programmes currently emphasized in various countries around the world and is a popular means of producing trained manpower for economic and industrial growth of both developed and developing countries. They further observed that VTE is integrated in almost all educational levels; primary, secondary and tertiary in developed countries of the world due to its relevance. Supporting, Ezenwafor, Okeke and Okoye (2014) posited that VTE is capable of tackling the menace of unemployment and poverty in Nigeria by equipping students with practical skills for self-employment.

Dike (2006) observed that VTE has a long history and has thrived in many societies like the USA, India and the Asian Tigers who could not have become what they are without massive investment in that area of manpower training and development. The author, however, regretted that the neglect of the programme

in Nigeria is responsible for the lack of skilled workers in different fields, rising youth unemployment and other social vices in the country. In Nigeria, VTE teachers are usually trained in two categories of tertiary institution, namely, colleges of education (technical) and universities to use the brain, hand and mind effectively for the development of self and the society and the graduates are awarded the Nigerian Certificate in Education (NCE) and Bachelor of Science (B.Sc) degree and higher degrees.

### **Factors Affecting Students' Academic Achievement**

Academic achievement in different school subjects is an issue of great concern to students and teachers as well as parents and guardians at different levels of the education system every where. School pupils and students pursue high academic achievement in order to convince their parents and sponsors that they appreciate their efforts and are very hard-working. Teachers adopt different strategies to ensure effective teaching and learning so that their pupils and students attain high academic achievement. Parents, on their own part, desire and encourage their wards to aspire to outstanding academic achievement as they believe that high academic achievement is indicative of their wards' outstanding intelligence, interest in education and diligent study as well as their own literacy level and support. However, teachers and others involved in students' assessment know that, to some extent, high academic achievement in school subjects does not necessarily depict level of intelligence and good efforts on the part of students nor even effectiveness on the part of teachers although it is often the general assumption.

Simpson and Weiner (1991) defined achievement as attained success in any act while Hornby (2006) viewed it as the ability of an individual to reach a set goal through efforts, skill or courage. Ali (2013) stated that academic achievement is the outcome of education that indicates how well a student or class of students is doing academically. Furthermore, Trow in Ganai and Muhammad (2013) defined academic achievement as knowledge attaining ability or degree of competence in school tasks usually measured by standardized tests and expressed in a grade or unit based on pupils' performance. Students' academic achievement can be high or low (good or poor). Bakare (1994) defined poor academic achievement as achievement that falls below the expected standard. On the other hand, high academic achievement is achievement that measures up to or above the standard expected depending on the subjective yardstick of an examiner or examining body.

Kooi and Ping (2009), Ali (2013) and Ganai and Muhammad (2013) observed that students' academic achievement is affected by a host of factors which

include individual and household characteristics such as student's ability and motivation, age and gender, quality of secondary education received, quality of lecturers and their instructional strategies, class size, location and such environmental characteristics as lighting and ventilation, among others. Other factors mentioned include childhood training and experience, attitudinal differences, parental and teacher expectations and behaviors as well as differential course taking. Crosnoe, Monica and Glen (2004) and Ocho (2005) classified the foregoing factors as teacher factors, environmental factors, economic factors and student factors.

Anagbogu (2002) observed that there is a general belief that boys are superior to girls in terms of cognition and logical reasoning and even in academic performance. Supporting, Okeke (2003) asserted that factors that affect students' academic achievement in science subjects include sex role stereotype, masculine image and female socialization process and inability to withstand stress. Several studies have been conducted on the effects of age and gender on the academic achievement of students particularly in Mathematics, science and computer utilization which, according to Manning (1998), reveal certain stereotypes perpetuated by the society, school and family. Some of these studies reported that the two independent variables (age and gender) have effects on the dependent variable (academic achievement). For instance, the review conducted by Fennema and Lenon (1990) on age trends indicated that girls showed slight superiority in computation in elementary and middle school while differences favouring males emerged in high school and college. Further, the authors reported that gender differences were smallest and actually favoured females in samples of the general population but grew larger with increasing selective samples. They, therefore, concluded that gender differences in mathematics achievement are small but exist nonetheless with female students achieving less and male students achieving more.

Supporting the above, Ogunboyede (2001), Agboola (2006), Owolabi and Etuk-Irien (2009) and Zember and Blume (2011) reported gender difference favouring males while Ali (2013) reported that age was among other factors that significantly affected academic performance of graduate students. However, Abubakar and Adegboyega (2012) studied the effects of age and gender on academic achievement in college Mathematics using the cumulative grade point average of students as the dependent variable. The study revealed that a linear relationship exist between the dependent variable (CGPA) and the independent variables (age and gender) but gender did not have any significant effect on the academic achievement of the students. Ganai and Muhammad (2013), in a comparative study on

adjustment and academic performance of college students found that although male and female students differed significantly in mental health where the males were favoured, they did not show any difference in academic achievement.

VTE consisting of business, technical, agricultural and home economics education is a field of study in which Mathematics and ICT utilization are important because of the skills acquisition focus. Agboola (2006) reported that male students experience less anxiety about information and communication technology (ICT) and use it more than female students who show low level of confidence in its usage.

### **PROBLEM OF THE STUDY**

In the university under study and others in the same area, persistent gender disparity in student enrolment in VTE programmes (business and technical) has been observed with more females than males in the business programme and more males than females in the technical programme. The students are close in age brackets with a few isolated cases. This enrolment pattern gives the impression that gender and age are predictors of students' choice of career in VTE. Researchers have indicated that gender and age have effects on the academic achievement of students in different school subjects but particularly in Mathematics, science and computer usage (Zember & Blume, 2011; Jabor, Kungu, Bumfat, Nordin & Machtimes, 2011; Abubakar & Adegboyega, 2012). However, the extent to which this applies in VTE is not known and requires an empirical study which, to the best of the researchers' knowledge, is non-existent. Being VTE lecturers in a university, the researchers were motivated to conduct this investigation to determine whether age and gender have any effects on the academic achievement of VTE students in order to fill the existing gap in literature. .

### **RESEARCH QUESTIONS**

1. Are there any relationships between age, gender and academic achievement of university VTE students?
2. What is the individual contribution of each of the two predictor variables (age and gender) on the academic achievement of university VTE students?
3. What are the combined contributions of the two predictor variables (age and gender) on the academic achievement of university VTE students?

### **HYPOTHESIS**

There is no significant difference in the academic achievements of male and female university VTE students.

**METHOD**

The design used for this study was the survey design. The population was 117 (44 males and 73 females) 2012/2013 graduates of the Department of Vocational Education of Nnamdi Azikiwe University, Awka. The computed and approved degree results of the students containing the age, gender and final cumulative grade point average (FCGPA) which reflects the overall academic performance of each student was collected from the Departmental records. The students aged 25 years and below were considered to be within the age range for undergraduate programme while those above 25 years were outside the range. Linear regression analysis, ANOVA and Chi Square were used to analyze data at 0.05 level of significance.

**RESULTS**

Research Question 1: Are there any relationships between age, gender and academic achievement of university VTE students?

Students' FCGPA was used as measure of academic achievement (Y), age was obtained in years (X<sub>1</sub>) while gender was coded with 1 for male and 0 for female making up the second variable (X<sub>2</sub>). The three variables were used to run a multiple regression and from the outputs, a multiple regression model coefficient table was produced as shown in Table 1.

Table 1: Multiple Regression Model Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig
	B	Std Error	Beta		
(Constant)	3.721	.574			
Age	-.017	.023	-.067	6.483	.000
Gender	.183	.119	.144	.717	.475
				1.545	.125

a) Dependent variable: FCGPA

Table 1 shows that the multiple regression model estimates is  $Y = 3.721$ ,  $X_1 = -.017$  and  $X_2 = .183$ . ANOVA was used to test the model aptness (that is how well the dependent variable (Y) relate to the independent variables (X<sub>1</sub> and D<sub>2</sub>) as shown in Table 2.

Table 2: Analysis of variance (ANOVA) on the relationship between age, gender and academic achievement of university VTE students

Model	Sum of Squares	Df	Mean Squares	F	p-value
Regression	1.011	2	.505	1.339	.266 <sup>a</sup>
Residual	43.030	114	.377		
Total	44.041	116			

a) Predictors (Constant): Age and Gender

b) Dependent variable: FCGPA

Data in Table 2 show that the p-value of .266 is greater than the significance value of 0.05, hence we

conclude that the model does not show a significant relationship.

Research Question 2: What is the individual contribution of each of the two predictor variables (age and gender) on the academic achievement of university VTE students?

To address this research question, the Table of coefficients in the output (Table 1) was used which shows the coefficients for Age and Gender as -.017 and .183 with p-values of .475 and .125 respectively each of which is greater than the significance level of 0.05. This shows that the coefficients are both insignificant and should not be used for any linear regression relationship and implies that none of the two predictor variables contribute to academic achievement of the students.

Research Question 3: What are the combined contributions of the two predictor variables (age and gender) on the academic achievement of university VTE students?

A model summary as presented in Table 3 was used to treat this research question.

Table 3: Model summary on the combined contributions of age and gender on the academic achievement of university VTE students

Model	R	R Square	Adjusted R Square	Std Error of the Estimate
1	.151 <sup>a</sup>	.023	.006	.61438

a) Predictors (Constant): Age and Gender

Data in Table 3 show that a coefficient of determination value (R Square) of .023 was obtained which shows that only 2.3 percent of the changes in FCGPA can be attributed to age and gender as captured by the regression analysis. This R Square value is too low to be useful, therefore, the combined contribution of these two variables to academic achievement of the students is, virtually, non-existent (only 2.3 percent).

**Hypothesis**

There is no significant difference in the academic achievements of male and female university VTE students.

Chi Square was used to test whether gender has any significance effect on the academic achievement of students and a calculated value of 8.47 was obtained. The obtained data were cast on a contingency Table as shown in Table 4. Using the Chi Square test for association procedure, the expected frequencies are calculated and placed in parenthesis in the Table.

Table 4: Cross-tabulation (Contingency Table) on gender and performance of the students

Gender	Performance			Total
	2 <sup>1</sup>	2 <sup>2</sup>	3 <sup>rd</sup>	
Male	21(20)	18 (15.9)	0 (3.1)	39
Female	37 (38)	28 (30.1)	9 (5.9)	74
Total	58	46	9	113

Data in Table 4 show that male students tend to perform better than female students since the proportion of male students who had 2<sup>1</sup> and 2<sup>2</sup> is slightly more than females and no male student had a 3<sup>rd</sup> class. Since the calculated Chi Square value of 8.47 is greater than the tabulated value of 5.99, it means that there is relationship between academic achievement and gender and the hypothesis is rejected. Finally, analysis for non regression relationship was carried out between academic achievement and age and the result shows that there is relationship between the students' age and their academic performance.

### DISCUSSION OF FINDINGS

Findings of the study revealed that a linear relationship does not exist between the two predictor variables in the study (age and gender) and academic achievement of the university VTE students and that their combined contribution is insignificant or virtually none existent. However the study revealed significant difference in students' academic achievement as a result of age and gender. This means that relationship exists between the academic achievement of the university VTE students and their age and gender. The findings agreed with Agboola (2006), Owolabi and Ekuk-Irien (2009), Zember and Blume (2011), among others who reported that age and gender have effects on academic achievement of students in Mathematics, science and ICT. This could be as a result of the fact that VTE involves the three subject areas. The findings disagreed with Abubakar and Adegboyega (2012) and Ganai and Muhammad (2013) which revealed that linear relationship exists between the independent variable (students CGPA) and the dependent variables (age and gender) and that gender did not have any significant effect on the students' academic achievement.

### CONCLUSION

Based on the findings of the study, the researchers conclude that age and gender have effects on the academic achievement of university VTE students and that this is because the programme involves Mathematics, science and ICT as reported by earlier researchers.

### RECOMMENDATIONS

Based on the findings and conclusion of the study, the researchers recommend that

1. Parents and the society should eliminate fears in all students, especially female students, towards the study of Mathematics, science and ICT related courses.
2. University VTE lecturers should adopt teaching methods that enhance learning effectiveness for all students irrespective of age and gender.
3. Governments and proprietors of universities should ensure enhanced support for VTE through adequate provision of relevant instructional resources.
4. The National Universities Commission and the National Commission on Colleges of Education should ensure that VTE programmes are adequately equipped by denying accreditation to institutions with inadequate relevant equipment and resources.

### REFERENCES

- Agboola, A.K. (2006). Assessing the awareness and perception of academic staff in using e-learning tools for instructional delivery in a post-secondary institution: A case study. *The Public Sector Innovation Journal* 11(3), 51-63.
- Akaninwor, G.I. (2004). Self-learning methods as applied to the training of vocational technical trainers: Special methods of technology instruction. Port Harcourt: Wilson.
- Ali, S. (2013). Factors affecting academic achievement of students. *American Journal of Educational Research* 20131 (8), 283-289.
- Anagbogu, M.A. (2002). Educating the girl child. *Psychology News* (3), 17-18.
- Bakare, C.G.M. (1994). Some psychological correlates of academic success and failures. *African Journal of Research*, 2(1), 11-22.
- Bappa-Aliyu, M. (2012). Integrating e-learning in technical and vocational education: A technical review. *International Journal of Academic Research in Business and Social Sciences* 2(5), 52-58.
- Busch, T. (1995). Gender differences in self-efficacy and academic performance among students of business administration. *Scandinavian Journal of Educational Research* 39, 311-318.
- Considine, G & Zappala, G. (2002). Influence of social and economic disadvantage in the academic performance of school students in Australia. *Journal of Sociology*, 38, 129-148.
- Crosnoe, R., Monica, K.J. & Glen H.E. Jr. (2004). School size and the interpersonal side of education: An example of race/ethnicity and organizational context. *Social Science Quarterly*, 85(5),

- Dike, V.E. (2006). Youth unemployment in Nigeria: The relevance of vocational and technical education. NESG Economic Indicators, July to September.
- Edoziem, G.N.N. (1996). The role of education in national development. In A.N. Ndu and B.C. Emenogu (eds). Education and the Nigerian society. Awka: Meks Pub. Ltd.
- Ekpenyong, L.E. (2008). Foundations of technical and vocational education: Evolution and practice. Benin: Ambik.
- Eze, T.I. (2013). Language and culture in Technical Vocational Education and Training. Journal of Nigerian Language & Culture, 13(2), 1-16.
- Ezenwafor, J.I., Okeke, A.U. & Okoye, K.R.E. (2014). Utilization of e-learning resources for instruction by technology and vocational educators in tertiary institutions in south east Nigeria. Journal of World Educators, 5(1), 232-245.
- Federal Republic of Nigeria (2004). National policy on education (4<sup>th</sup> ed). Lagos: Nigerian Educational Research & Development Council.
- Federal Republic of Nigeria (2009). National policy on education (5<sup>th</sup> ed). Lagos: Nigerian Educational Research & Development Council.
- Ganai, M.Y. and Muhammad, A.M. (2013). Comparative study on adjustment and academic performance of college students. Journal of Educational Research and Essays 1(1), 5-8.
- Hornby, A. (2006). Oxford learners' dictionary of current English (6<sup>th</sup> ed). Oxford: University Press.
- Ihekwoaba, M.E. (2007). Entrepreneurship in vocational technical education (New ed.). Lagos: Mukugamu & Bros. Enter.
- Kooi, L.T. and Ping, T.A. (2008). Factors influencing students' performance in Wawason Open University: Does previous educational level, age group and course load matter? Accessed from [www1.open.edu.com/elt/23/2.htm](http://www1.open.edu.com/elt/23/2.htm) on 15/8/2014.
- National Commission for Colleges of Education (2003). Minimum standards for NCE teachers (4<sup>th</sup> ed). Abuja: Federal Government Press.
- Ocho, L.O. (2005). Issues and concerns in education and life. Enugu: Institute of Development Studies, UNEC.
- Ogunboyede, M.O. (2001). Women academic achievement: A case study of senior secondary school agricultural science students in Ekiti state Nigeria. Journal of Educational Research (1), 12-20.
- Okeke, E.A.C. (1990). Gender, science and technology in Africa: A challenge to education. Harvard: Harvard University Press.
- Ordu, P. (2012). Introduction to vocational education. Port Harcourt:Jef.
- Owolabi, J. and Etuk-Irien, O.A. (2009). Gender, course of study and continuous assessment as determinants of students' performance in pre-NCE Mathematics. ABACUS – The Journal of Mathematical Association of Nigeria 34(1), 106-111.
- Simpson, J.A. and Weiner, S.C. (1991). The Oxford English dictionary (2<sup>nd</sup> ed.). Oxford: Clarendon.
- Uwaifo, V.O. (1993). Teaching and training modalities in technical subjects. Paper presented at the campus seminar, Department of Vocational Teacher Education, University of Nigeria, Nsukka.
- Uwaifo, V.O. and Uwaifo, I.U. (2009). Training technology and vocational education teachers for the new 9-3-4 education system in Nigeria: Its problems and prospects. International NGO Journal 4(4), 160-166.
- Zembar, M.J. and Blume, L.B. (2011). Gender and academic achievement. Accessed from [222.education.com](http://222.education.com) on 15/8/2014.