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Students' Attitude towards E-Learning in Akwa Ibom State Polytechnic, Ikot Osurua, Nigeria

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ABSTRACT

E-learning is now emerging as an advanced paradigm for higher education. This study is conducted to measure the attitude of students towards e-learning in Akwa Ibom State Polytechnic, Ikot Osurua, Ikot Ekpene. The population comprises all the students admitted in the Polytechnic during 2014/2015 academic year. A stratified random sampling and cluster techniques are used to select a sample of 850 students from the Polytechnic. A well designed (structured) questionnaire is developed for data collection. The interaction effect between gender and programme of study, gender and stream of study, stream of study and programme of study and the secondary effect between gender, programme of study and stream of study are considered. The data are analysed on frequency table. Analysis of variance is employed to test the interaction effect. The results reveal greater frequency of acceptance of e-learning and that students' attitude towards e-learning is independent of gender, stream of study and programme of studies. The results do not show any significant difference in their attitude as expressed in the questionnaire. Hence, e-learning facilities should be provided in Akwa Ibom State Polytechnic to aid e-learning and the e-library orientation should be revolutionalized to enable students conceptualized the use of e-library.

Keywords: *E-Learning, students' attitude, Akwa Ibom State Polytechnic, gender, programme of study and stream of study.*

INTRODUCTION

The term "e-learning" has only been in existence in Nigeria since 1990's when the word was first utilized at Computer Based Training (CBT) systems seminar (Murphy and Walker, 2001). Other words also began to spring up in search of an accurate description such as "online learning" and "virtual learning ". Elina and Erikki (2007) point out that 'with e-learning, the lecturer has the ability to host a guest lecturer without having to spend much money. However, it can be done virtually with cameras for both

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the lecturers and the students, and with the use of microphones to facilitate the same level of interaction that will be possible if the lecturer were physically present in the room.' Berge (1998) states that benefit comes in when we replay the lecture, by so doing, we gain even more out of it. Students that missed out can watch it again for further understanding.

E-learning is learning which is enhanced, supported or accessed by the use of electronic media. Liaw and Huang (2011) state that on campus programmes typically involve blended learning, where a combination of e-learning and conventional teaching/ learning techniques are used to facilitate students understanding and learning. Newton (2003) points out that e-learning system has three main organs: improving access to education and training; enhancing the quality of teaching and learning and for higher education to maintain competitive advantage in a changing global labour market for graduates. Zahm (2000) defines e-learning as the form of teaching and learning which may represent a part of the whole of the education model in which it is used -that make use of electronic media and devices to facilitate access, promote evolution and improve the quality of education and training. In a long-run, the acquired experience in e-learning will provide a strategic opportunity for the institution to enter the new field of education. According to Nelasco, Arputharaj and Paul (2007), this system enables students to access diverse contents anytime and in any location. This gives students more control over their leaning experience, enabling them to gather the materials they need and study when they have time to do so. Moreover, e-learning platform based on network promotes personal knowledge accumulation and group knowledge sharing, can improve learning efficiency and facilitate the innovation of knowledge.

Research on e-learning reveals that there is significant links between attitudes and belief; links between attitudes and behaviours; that attitudes form the foundations of one's beliefs which influences one's behavior (Gotschall, 2000). Workman (2005) asserts that when people have favourable attitude towards a particular technology, those people are more likely to use that technology. He also argues that people are influenced by subjective norms; that is one's perception of significant towards a particular technology. Murphy and Walker (2001) note that since the internet was adopted and further developed as a means of communication by educational institution in the 1990's, academics have been aware of its massive potentials as a learning tool. When it comes to education, the model has been pretty straight forward-up until early 2000. Education was in a classroom of students with a teacher who led the process. Physical presence was a no-brainer, and any other type of learning was questionable at best (Walker and Murphy, 1997).

Yacob, Kadir, Zainudin and Zurairah (2012) describe computer evolution as

a process that radically changes the learning landscape. They also reiterate that e-learning is a basic educational tool or system that enables one to acquire knowledge anywhere and at anytime. Hall (1997) agrees with both Zahm (2000); Mitra and Steffensmeier (2000) that e-learning is mostly delivered through the internet, although in the past, it was delivered using a blend of computer-based methods like CD-ROM. Technology has advanced so much that the geographical gap is bridged with the use of tools that make one feel as if one is in the classroom. Porter (1997) states that e-learning offers the ability to share material in many kinds of formats, such as videos, slideshows and word documents, conducting webinars (live online classes) and communicating with lecturers via chat and massage forum is also an option available to users. Zahm (2000) observed that e-learning is considered by many as the only viable solution to the problem of delivering the resources required to facilitate lifelong learning. Box, Hunter, W. and Hunter J. (2005) agree that there is a plethora of different e-learning systems (otherwise known as Learning Management Systems (LMS) and methods, which allow for courses to be delivered. With the right tool, various processes can be automated such as the making of tests or the creation engaging contents. Mitra and Steffensmeier (2000) related that e-learning provides the learners with the ability to fit learning around their lifestyles, effectively allowing even the busiest person to further a career and gain new qualifications. One of the most outstanding debates in the field of education has been whether or not e can benefit from e-learning to actually learn. E-learning offers an alternative that is faster, cheaper and potentially better. This study intends to examine the attitude of the students towards e-learning in Akwa Ibom State Polytechnic, Ikot Osurua, Ikot Ekpene, Nigeria. Based on the above, the following hypothese are formulated for the study:

$H_0$1: There is no significant difference in the attitude of Akwa Ibom State Polytechnic students towards e-learning.

$H_0$2: There is no significant difference in the attitude of ND and HND students of Akwa Ibom State Polytechnic students towards e-learning.

$H_0$3: There is no significant difference in the attitude of Arts and Science students of Akwa Ibom State Polytechnic towards e-learning.

$H_0$4: There is no significant interaction effect between gender and programme of study.

$H_0$5: There is no significant interaction effect between gender and stream of study.

$H_0$6: There is no significant interaction effect between stream of study and programme of study.

$H_0$7: There is no significant secondary interaction between gender, programme of study and stream of study.

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METHOD

This study adopts survey research design. The population comprises all the students admitted in Akwa Ibom State Polytechnic for 2014/2015 academic session, which stood at 3200. Data were collected through a well designed questionnaire. The questionnaire was served to the selected respondents (students) of the Polytechnic. The sample consists of 356 respondents who were selected from different schools. The sample size was determined through Yamane (1967) simplified formula for calculating the sample size at 5% level of significance. The method of sample selection is as follows:

$$n_i = \frac{N_i}{N} \times n$$

Where: n_i = the proportional to size sample

N_i = the total sample size of the entire strata.

n = the desired sample size.

School of Applied Science $\frac{860}{3200} \times 356 = 96$

School of Business Studies $\frac{830}{3200} \times 356 = 92$

School of Communication Art $\frac{790}{3200} \times 356 = 88$

School of Engineering $\frac{480}{3200} \times 356 = 53$

School of Environmental Studies $\frac{160}{3200} \times 356 = 18$

School of Preliminary Studies $\frac{80}{3200} \times 356 = 9$

Factorial experiment was performed to study the interaction on the attitude of students towards e-learning with regard to gender, programme of study and stream of study. The courses offered by each of the schools make the students homogeneous in their characteristics though it could as well be described as clusters because of their groupings but for the purposes of this study and the intended objectives, it remains as described by the researcher. The factorial experiment was conducted with three factors each at two levels. This factorial experiment involves K factors each observed at 2 levels. The Roman/Latin capital letters are used to indicate the factors while the roman small letters are used to indicate the level of the factor.

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Example of 2^3 Factorial designs.

a	b	c	
-	-	-	(1)
+	-	-	(a)
-	+	-	(b)
+	+	-	(ab)
-	-	+	(c)
+	-	+	(ac)
-	+	+	(bc)
+	+	+	(abc)

The model: Yijk =ì+ Ai + Bj +Ck + ABij +Ck + Acji +BCijk +åijk £.

By expansion of product such as (a-1)(b-1) to obtain the factorial effect, subtract one from the letter containing the letter of the factor and add one.

Example A = (a-1)(b+1) = ab + a – b – (1)

B = (a+b)(b-1) = ab – a + b – (1).

Sum of squares for mean effect and interaction are obtain by using contrasts i.e. contrasts is used in estimating effect. Hence, sum of squares of any contrast:

$$SS_A = \{[ab + a - b - (1)]\text{-contrst}^2\} \over 2^k.r$$

Where r = number of replicate and k= the number of factors.

Where r = number of replicate and k= the number of factors.

$$TSS = \sum Y^2_{ijk} - \frac{Y^2}{2^K.\,r}$$

$$SSE = TSS - SS_A - SS_B - SS_C - SS_{AB} - SS_{AC} - SS_{BC} - SS_{ABC}$$

The data are analysed on frequency table. Analysis of variance was also employed to test the interaction effect.

RESULTS AND DISCUSSION

Table 2 shows the distribution of the designed questionnaires and the actual number that were returned by the respondents. Not all the distributed questionnaires were returned. Some were discarded during editing for lack of information. The response variables which have further been transformed through the employment of factorial experiment with the following factors and their respective levels are as shown in the tables below:

Factor A (Gender)	Male and Female
Factor B (Stream of Study)	Science and Arts
Factor C (Programme of Study)	ND and HND

Table 3 indicates an extraction of gender (male and female) and stream of study (Arts and Science) from the survey questionnaire. That is the number of male

and female who study science courses and the number of male and female who study Arts courses. The table shows that majority (62.43%) of the respondents are females, while 37.57% are males. An extraction of gender (male and female) and programme of study (ND and HND) from the survey questionnaire is presented in table 4. The table that majority of the respondents who are female students are also in the National Diploma (ND) programme, while the least who are male students also study at Higher National Diploma (HND) level. Table 5 shows an extraction from the administered questionnaire, which presents the stream of study and the programme of study. The table further indicates that majority of the respondents study science related courses, though 30.35% are in National Diploma (ND) level, 22.83% are at the Higher National Diploma (HND) level. The table also shows that majority (32.95%) of the National Diploma (ND) respondents study Arts related courses. While 13.87% of the respondents who study Arts related courses at the Higher National Diploma (HND) programme, 22.83% study science related courses.

From the Analysis of Variance on table 6, the test is insignificant at both 1% and 5% level, which therefore means that there is no significant difference in the attitude of Akwa Ibom State Polytechnic students towards e-learning. Equally, there is no significant difference in the attitude of ND and HND students of Akwa Ibom State Polytechnic students towards e-learning. In this study, factorial experiment was conducted with three factors each at two levels and was analyzed using the analysis of variance technique. The result of the analysis revealed that there was no significance difference in the attitude of students towards e-learning with regards to gender, stream of study and programme of study. Also there was primary and secondary interaction effect between gender and programme of study as well as stream of study.

Table 1: The samples from various schools.

School	**Number of Respondents**
Applied science	96
Business Studies	92
Communication Art	88
Engineering	53
Environmental Studies	18
Preliminary Studies	9
Total	**356**

Source: Survey, 2016

Table 2: The distribution of questionnaire with valid returns.

School	Stratum Size	Total Questionnaire Distributed	Valid Return
Applied Sciences	860	96	92
Business Studies	830	92	89
Communication Arts	790	88	85
Engineering	480	53	53
Environmental Studies	160	18	18
Preliminary Studies	80	9	9
Total	**3200**	**356**	**346**

Source: Survey, 2016

Table 3: The responses with regard to gender and stream of study

Gender/Study Stream	Arts	Science	Total
Male	62	68	130
Female	94	122	216
Total	**156**	**190**	**346**

Source: Survey, 2016

Table 4: Respondents with regard to gender and programme of study

Gender/Programme of Study	ND	HND	Total
Male	89	48	137
Female	115	94	209
Total	**204**	**142**	**346**

Source: Survey, 2016

Table 5: Respondents with regard to stream of study and the programme of study\.

Programme/Stream	Science	Arts	Total
ND	105	114	219
HND	79	48	127
Total	**184**	**162**	**346**

Source: Survey, 2016

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FACTORIAL EXPERIMENT OF THE STUDY

Treatment Combination With Response Values

Stream of study (B)

Science			Arts/Business		
190			156		
Programme of study (C)			Programme of study (C)		
ND	HND		ND	HND	
204	142		219	127	
Gender (A)					
Male	354	1 = 57 C = 85	b = 44	BC	=168
Female	470	a = 96 ac =153	ab = 49	abc	=171

Below is the treatment combination with their corresponding values.

A	B	C			
-	-	-	(1)	=	57
+	-	-	a	=	96
-	+	-	b	=	44
+	+	-	ab	=	49
-	-	+	c	=	85
+	-	+	ac	=	153
-	+	+	bc	=	168
+	+	+	abc	=	171

The mode: $Y_{ijk} = ì + A_i + AB_{ij} + C_k + AC_{jk} + ABC_{ijk} + £_{ijk}$

Computation of Sum of Squares:

$Contrast_A$ = (a-1) (b+1) (c+1)

= (abc + ac + ab + a - (1) – b – c - bc)

Average main effect of A

$$\frac{contrast_A}{2^k.r} = \frac{(abc + ac + ab + a – (1) –b – c - bc)}{2^3 \times 1}$$

$$\frac{171 + 153 + 49 + 96 - 57 - 44 - 85 – 168}{8} = \frac{115}{8} = 14.375$$

$SS_A = \frac{(contrast_A)^2}{2^k.n} = \frac{(14.375)^2}{16} = 12.91$

$contrast_A$ =(a-1) (b+1) (c+1)
= (abc + ac + ab + a – (1) – b – c - bc)

Average main effect of B

$\frac{contrast_B}{2^k.r}$ = $\frac{(abc + bc + ab + b – (1) –a – c -ac)}{2^3 \times 1}$

$\frac{171 + 168 + 49 + 44 – 57 – 96 – 85 – 153}{8} = \frac{41}{8} = 5.125$

$SS_B = \frac{(contrast_A)^2}{2k.n} = \frac{(5.125)^2}{16} = 1.64$

$contrast_A$ = (a-1) (b-1) (c-1)
= (abc+ ac + ab +a – (1) – b – c - bc)

Average main effect of C

$\frac{contrast_C}{2^k.r}$ = $\frac{(abc + bc + ac +c – (1) – a – b - ab)}{2^3 \times 1}$

$\frac{171 + 168 + 153 + 85 – 57 – 96 – 44 -49}{8} = \frac{331}{8} = 41.375$

$SS_C = \frac{(contrast_C)^2}{2^K.n} = \frac{(41.375)^2}{16} = 106.99$

$Contrast_{AB}$ = (abc + c + ab + (1) – a – b – ac - bc)

Aveage main effect of AB

$\frac{contrast_{AB}}{2^K . r} = \frac{(abc + c + ab + (1) – a – b – ac – bc)}{23 \times 1}$

$\frac{171 + 85 + 49 + 57 – 96 – 44 – 153 – 168}{8} = \frac{-99}{8} = -12.375$

$SS_{AB} = \frac{(contrast_{AB})^2}{2^K . n} = \frac{(-12.375)^2}{16} = 9.57$

$contrast_{AC}$ =(abc + b + ac+ (1) – a – c – ab – bc)

Average main effect of AC

$\frac{Contrast_{AC}}{2^k.r}$ = $\frac{(abc + b + ac + (1) –a - c –ab - bc)}{2^3 \times 1}$

$$\frac{171 + 153 + 44 + 57 - 96 - 49 - 85 - 168}{8} = \frac{27 - 3.375}{8}$$

$$SS_{AC} \quad \frac{(\text{contrast}_{AC})^2}{2^K \cdot n} = \frac{(3.375)^2}{16} = 0.711$$

$$\text{Contrast}_{BC} = (abc + bc + a + (1) - b - ab - c - ac)$$

Average main effect of BC

$$\frac{\text{Contrast}_{AC}}{2^k \cdot r} = \frac{(abc + bc + a + (1) - b - ab - c - ac)}{2^3 \times 1}$$

$$\frac{171 + 168 + 96 + 57 - 44 - 49 - 85 - 153}{8} = \frac{161}{8} = 20.125$$

$$SS_{BC} \quad \frac{(\text{contrast}_{BC})^2}{2^K \cdot n} = \frac{(20.125)^2}{16} = 25.31$$

$$\text{contrast}_{ABC} = (abc + c + b + a - (1) - ab - ac - bc)$$

Average main effect of ABC

$$\frac{\text{Contrast}_{ABC}}{2^k \cdot r} = \frac{(abc + c + b + a - (1) - ab - ac - bc)}{2^3 \times 1}$$

$$\frac{171 + 85 + 44 + 96 - 57 - 49 - 153 - 168 - 31}{8} = \frac{3.875}{8}$$

$$SS_{BC} \quad \frac{(\text{contrast}_{ABC})^2}{2^K \cdot n} = \frac{(-3.875)^2}{16} = 0.938$$

$$TSS = \sum Y^2_{ijk} - \frac{Y^2}{2^K \cdot r}$$

$$TSS = (57^2 + 96^2 + 44^2 + 49^2 + 85^2 + 153^2 + 168^2 + 171^2) - 823^2$$

$$TSS = 10490 - 4233.0 = 100668$$

$$SSE = TSS - SS_A - SS_B - SS_C - SS_{AB} - SS_{AC} - SS_{BC} - SS_{ABC}$$

$$SSE = 100668 - 12.91 - 1.64 - 106.99 - 9.5 - 0.711 - 25.31 - 0.938$$

$$SSE = 100310$$

Table 6: ANOVA TABLE

Source of Variation (SV)	Degree of Freedom (d.f)	Sum of Squares (SS)	Mean sum of square (MSS)	F - ratio	F – tab 1%	5%
A (Gender)	1	12.91	12.91	0.001166	11.3	14.7
B (Stream of study)	1	1.64	1.64	0.00021	11.3	14.7
C (Program of study)	1	106.99	106.99	0.01371	11.3	14.7
AB	1	9.57	9.57	0.00123	11.3	14.7
AC	1	0.711	0.711	0.00009	11.3	14.7
BC	1	25.31	25.31	0.0032	11.3	14.7
ABC	1	0.938	0.938	0.00012	11.3	14.7
Error	8	62409.853	7801.23			
Total	**15**	**62567.938**				

CONCLUSION

This study was about the analysis of students' attitude towards e-learning with regards to gender, stream of study and programme of study with selected students (respondents) of Akwa Ibom State Polytechnic, Ikot Osurua, Ikot Ekpene, Nigeria. Hence, it is recommended that e-learning facilities should be provided in Akwa Ibom State Polytechnic to aid e-learning and that the e-library orientation should be revolutionalized to enable students conceptualized the use of e-library. This school management should also put in place adequate policies to ensure that e-learning is made free and compulsory to students in order to meet with the global educational practice.

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