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# EFFECTIVENESS OF USING STOP, THINK AND TALK ACTIVITIES ON THE PERFORMANCE OF STUDENTS IN READING COMPREHENSION IN JUNIOR SECONDARY SCHOOLS IN FEDERAL CAPITAL TERRITORY (FCT) ABUJA

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## ABSTRACT

The study was carried out to determine the effect of stop, think and talk activities on the performance of students in reading comprehension in junior secondary schools in Federal Capital Territory (FCT) Abuja. The study was carried out using a quasi-experimental pretest-posttest research design. The target population of the study comprised of 16,925 JSII students. A sample size of 100 JSII students from two secondary schools in the Federal Capital Territory (FCT) Abuja, were purposely sampled in the study. Sixty five (65) students from Government Junior Secondary School, Apo and thirty five (35) from Government Junior Secondary School, Garki were used for the study. Both groups of students were taught for six (6) weeks. Government Junior Secondary School, Apo was assigned as the experimental group while Government Junior Secondary School, Garki was assigned as the control school. Students were pre-tested to establish their homogeneity before the commencement of the treatment. They were taught for six (6) weeks and were tested using retelling test as an instrument. Data collected from students' test scores was analysed using mean and standard deviation, while t-test was used to test the formulated null hypothesis at 0.05 level of significance. Findings of the study revealed that "stop, think and talk" activities had significant effect on students' performance in reading comprehension. In fact, the experimental group which was exposed to stop, think and talk activities had better understanding of the reading comprehension passages given to them. The result further revealed that students in experimental group were more active, responsive and paid more attention to details concerning the main ideas in the passages read. Based on the findings, it was recommended that teachers should be encouraged to use "stop, think and talk" activities in reading comprehension lessons. Such activities should be provided before, during and after every reading comprehension passage to enhance and facilitate students' reading abilities. Curriculum planners should provide activities that would encourage students to "stop, think and talk" to make reading comprehension lesson more purposeful and meaningful.

**Keywords:** Reading, Comprehension, Performance, Activities, Effectiveness

## INTRODUCTION

Comprehension is intentional thinking during which meaning is constructed through interactions between texts and readers. It is a process in which readers construct meaning by interacting with text through the combination of prior knowledge and previous experience (Pardo, 2004). Comprehending a text involves two phases, that is, construction and integration. In phase one of this process, the reader constructs meaning from text and in the second phase integrates this newly constructed knowledge into the existing prior knowledge network. Reading is a crucial form of communication through which the information required in teaching and learning situations and in everyday life can be acquired (Adeniji, & Omale, 2010). The teaching of reading needs to include a range of comprehension strategies. Although learning to translate letters into words is extremely important. Comprehension strategies involve the mental processes that good readers use to understand text (Yusuf, 2009).

There are various factors militating against the effective teaching and learning of reading comprehension in schools. Researchers (Yusuf 2016, 2013, Oyetunde 2009) have shown in their researches conducted in Nigeria, that poor methodology is one of the main causes of children's reading failure. According to them, children are failing to learn to read because they are not being taught reading in any meaningful way. Oyetunde and Unoh cited in Adeniji and Omale (2010) highlighted some impediments to positive reading habits and attitude. These include lack of materials, poor preparation of teachers, lack of interest, poor libraries or none at all, home background, poor method of teaching and lack of adult readers as models. Hence, teachers are always in search of enhanced methods of reading comprehension. Many children in Nigeria do not have the foundational skills such as word recognition, vocabulary development, and prior experiences that are considered necessary to

connect text with meaning (Yusuf 2013, 2016). All of the foregoing have necessitated the need to constantly carry out researches to find possible solutions to the perennial reading problems of children in Nigeria. It is against this background that this study was undertaken.

### **BACKGROUND TO THE STUDY**

Stop, think and talk activities are time-tested. These teaching strategies have been used for years to help students learn how to monitor their own thinking (Wilhelm, 2001). The stop, think and talk strategy helps students monitor their thinking and understanding of the text. This helps to improve students' comprehension. As they think aloud, they internalize what they are saying, which helps them learn. To begin, the teacher must model this strategy by orally communicating what they are thinking as they read. As teacher reads the text, she/he stops at certain points that may be confusing or challenging for students. Allow time for students to practice asking questions to themselves as they read the text. This can be done individually, with a partner, or in a small group.

Stop, think and talk activities are practical and relatively easy for teachers to use within the classroom. Teachers are able to model the stop, think and talk activities and discuss how good readers often re-read a sentence, read ahead to clarify, and/or look for context clues to make sense of what they read. Stop, think and talk activities slow down the reading process and allow students to monitor their understanding of a text (Wilhelm, 2008). Stop, think and talk activities help students learn to monitor their thinking as they read an assigned passage (Ann & Friedman, 2017). Students are directed by a series of questions which they think about and answer aloud while reading. This process reveals how much they understand a text. As students become more adept at this technique they learn to generate their own questions to guide comprehension.

Teaching reading comprehension using the stop, think and talk activities start with the listening, following directions, asking for help, ignoring distractions, and dealing with teasing skills and then move to other skills that students need to master (Wilhelm, 2001). As students continue to learn and use the skills in the stop and think activities, they will be able to make more good choices, more easily and more independently. Over time, they will become more effective self-managers, which can promote their comprehension reading skill. Although the use of stop, think and talk activities is widespread, existing quantitative research evidence for its effectiveness is limited. In view of this, further investigation is needed to determine its effectiveness in teaching reading comprehension. Therefore, this study was carried out to determine the effect of stop, think and talk activities on students' performance in reading comprehension in junior secondary schools in Federal Capital Territory (FCT) Abuja.

### **Review of Related Literature**

Teaching strategies are important only if they assist readers to comprehend and respond to text. In other words, stop, think and talk activities are a useful strategy when they help a reader through their zone of proximal development, assisting students to develop a particular strategy or set of strategies that student can yet use independently, and when these strategies help student to engage with a text important to their current purposes. Reading is more than just decoding, or sounding out words (Clum, 2005). Reading is also thinking about the words so as to understand them. A good reader for instance, think to understand what they are reading.

Comprehension is the understanding and interpretation of what is read. To be able to accurately understand written material, children need to be able to (1) decode what they read; (2) make connections between what they read and what they already know; and (3) think deeply about what they have read (Readingrockets.com, 2016). Reading comprehension according to Reading Study Group (2002) involves four components: (1) the reader, (2) the text, (3) the activity, and (4) the situational context. The first three essential components that is, the reader, the text, and the task occur within the fourth component of reading comprehension—the situational context. The reader is the one doing the comprehending, and the text is the reading material (such as, stories, nonfiction selections, and so forth). The activity refers to what kind of comprehension task, skill, strategy, or concept the reader is attempting to perform (such as, discovering the author's main idea, understanding a sequence of events, thinking about a character's intent in a story, and so forth).

The situational context of reading comprehension can be thought of in at least two ways. First, the actual setting where reading occurs at home, in a school classroom, the library, under a blanket at bedtime and so forth, affects how well one comprehends while reading. There is little doubt that children's reading comprehension is influenced by the setting in which they read (for instance, reading alone at home than if called on to read during a class activity could make children feel more focused and relaxed). Second, there is a social context associated with reading comprehension. In some cases, reading comprehension occurs individually. In other cases, however, reading comprehension can be part of a vibrant social activity in which people, teachers, parents, and children, read a text together and jointly construct meaning through discussion. Lively interaction about a text in

the company of others seems to be the optimal situational context to enhance students' reading comprehension (Beck, & McKeown, 2006).

The stop, think and talk process is simple as the teacher verbalizes what she/he is thinking then reads or figures out a problem. In turn, students get a glimpse into the mind of a skilled reader or problem solver. A classic study by Bereiter and Bird cited in Nell and Pearson (2000) showed that students who were asked to stop and think while reading had better comprehension than students who were not taught to stop and think according to a question and answer comprehension test. Effective teachers have been using this method for decades, as they model what they are thinking, so students can understand the process of how skilled readers can construct meaning from the text.

Initially, the teacher reads the selected passage as the students read the same text silently. At certain points the teacher stops and "thinks aloud" answers to some of the pre-selected questions (Howard, 2001; Ortlid & Norris, 2012). Teachers should demonstrate how good readers monitor their understanding by re-reading a sentence, reading ahead to clarify, and/or looking for context clues. Students then learn to offer answers to the questions as the teacher leads the stop, think and talk activities, students become familiar with the stop, think and talk process, they may work individually or in small groups. Teachers may choose to have students write down responses to the stop, think and talk activities which provide a record of learning.

### **Objective of the Study**

Therefore, the purpose of this study is to determine the effect of stop, think and talk activities on students' performance in reading comprehension in junior secondary schools in the Federal Capital Territory (FCT) Abuja, Nigeria

### **Research Question**

What is the effect of stop, think and talk activities on students' performance in reading comprehension in junior secondary schools in Federal Capital Territory (FCT) Abuja?

### **Research Hypothesis**

There is no significant difference in the effect of stop, think and talk activities on students' performance in reading comprehension in junior secondary schools in Federal Capital Territory (FCT) Abuja.

## **METHODOLOGY**

The study was carried out using a quasi-experimental pretest-posttest research design. The target population of the study is sixteen thousand nine hundred and twenty five (16,925) JSII students. A sample size of one hundred (100) JSII students from two secondary schools in the Federal Capital Territory (FCT) Abuja, were purposely sampled in the study. Sixty five (65) students from Government Junior Secondary School, Apo and thirty five (35) from Government Junior Secondary School, Garki were used for the study. Government Junior Secondary School, Apo was assigned as the experimental group while Government Junior Secondary School, Garki was assigned as the control school. Students were pre-tested to establish their homogeneity before the commencement of the treatment. The experiment lasted for six (6) weeks before students were tested using retelling test as an instrument. Data collected from students' test scores were analysed using mean and standard deviation, while t-test was used to test the formulated null hypothesis at 0.05 level of significance.

### **Treatment**

- Teacher encourages students to set a purpose for reading.
- Teacher motivates students to activate their background knowledge by asking relevant previous knowledge questions.
- Teacher guides students to stop, think and talk to their brains as they read the first paragraph of the reading comprehension passage.
- Teacher guides students by asking series of questions which they think about and answer aloud while reading.
- Teacher guide students to stop, think and talk to their brains as they read second, third and fourth paragraphs of the reading comprehension passage.

- Teacher encourages students to make themselves part of the story by visualizing and creating their own images in their brains as they engage in stop, think and talk activities.
- Teacher takes students back into the text to synthesize a coherent view of the text as a whole as they read through the passage from beginning to the end.
- Teacher guide students to make generalisations that goes beyond the text using stop, think and talk activities.
- Teacher encourages students to stop, think and talk to their brains as they read the passage all over again.

### Data Analysis and Results

Descriptive statistics of mean and standard deviation was used to analyse the research question raised in the study. The analyses are presented as follows:

**Research Question:** What is the effect of stop, think and talk activities on students' performance in reading comprehension in junior secondary schools in Federal Capital Territory (FCT) Abuja?

**Table 1: Descriptive statistics on the effect of stop, think and talk activities on students' performance in reading comprehension in junior secondary schools in Federal Capital Territory (FCT) Abuja**

Method	N	Pre-test Scores		Post-test Scores	
		Mean	SD	Mean	SD
Experimental Group	65	31.47	9.02	51.33	10.35
Control Group	35	30.48	9.88	31.50	6.94

Table 1 shows the effect of stop, think and talk activities on students' performance in reading comprehension in junior secondary schools in Federal Capital Territory (FCT) Abuja. The mean scores as displayed shows that students taught reading comprehension using stop, think and talk activities had a better performance mean scores in their pre-test and post-test. For instance, the mean score of students taught reading comprehension using stop, think and talk activities increased from 31.47 to 51.33 with corresponding standard deviation of 9.02 and 10.35, while the mean score of students in control group increased from 30.48 to 31.50 with standard deviation of 9.88 and 6.94 respectively. This shows the pre-test mean scores difference of 0.99 and post-test mean scores difference of 19.83. It also shows the mean gain of 19.86 for students in experimental group and mean gain of 1.02 for students in control group. The standard deviation at each level indicates that students' performance varied widely from each other.

**Hypothesis:** There is no significant difference in the effect of stop, think and talk activities on students' performance in reading comprehension in junior secondary schools in Federal Capital Territory (FCT) Abuja.

The post-test administered on students was marked, scored and tested using independent sample t-test. The summary of the analysis is presented in Table 2:

**Table 2: Summary of Independent sample t-test on the effect of stop, think and talk activities on students' performance in reading comprehension in junior secondary schools in Federal Capital Territory (FCT) Abuja**

Method	N	Mean	SD	Df	$\alpha$	t-cal	t-crit	Sig. (2-tailed)	Decision
Experimental	65	51.33	10.35	98	0.05	5.96	1.96	.001	Rejected
Control	35	31.50	6.94						

Table 2 shows that the students taught reading comprehension using stop, think and talk activities performed far better than their counterparts in control group in junior secondary schools in Federal Capital Territory (FCT) Abuja. The table show that the t-calculated value of 5.96 is greater than the t-critical 1.96, while the p-value is .001 ( $P < 0.005$ ). The null-hypothesis which states that there is no significant difference in the effect of stop, think

and talk activities on students' performance in reading comprehension in junior secondary schools in Federal Capital Territory (FCT) Abuja was rejected. The implication of this result is that the students exposed to stop, think and talk activities had better understanding of the reading comprehension passages given to them. In fact, students in the experimental group were more active, responsive and paid more attention to details concerning the main ideas in the passages read.

### DISCUSSION OF FINDINGS

This section briefly discussed the findings from the hypothesis tested in the study. Findings of the study revealed that the students taught reading comprehension using stop, think and talk activities performed far better than their counterparts in control group in junior secondary schools in Federal Capital Territory (FCT) Abuja. Therefore, the null-hypothesis which states that there is no significant difference in the effect of stop, think and talk activities on students' performance in reading comprehension in junior secondary schools in Federal Capital Territory (FCT) Abuja was rejected. This finding corroborates the findings of Ortlid and Norris (2012) that the use of think-aloud helps to enhance students' abilities of the thinking process thereby facilitating their comprehension of reading task. It also allows readers to connect meaning and understanding with written texts.

### CONCLUSION

Comprehension is a consuming, continuous, and complex activity, but one that, for good readers, is both satisfying and productive. Teaching reading comprehension using stop, think and talk activities has been proven to be effective in this study. The use of stop, think and talk activities stimulates students thinking process, thereby, facilitating and enhancing their comprehension and thinking process. Based on the findings of this study, one can conclude that students exposed to stop, think and talk activities had better understanding of the reading comprehension passages given to them. Therefore, teachers can promote students' reading comprehension by engaging students in stop, think and talk activities.

### RECOMMENDATIONS

Based on the findings of the study, the following recommendations were made:

1. Teachers should be encouraged to use "stop, think and talk" activities in reading comprehension lessons. Such activities should be provided before, during and after every reading task to enhance and facilitate students' comprehension.
2. Curriculum planners should provide activities that would encourage students to "stop, think and talk" to make reading comprehension lessons more purposeful and meaningful.

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## INFLUENCE OF SOCIO-CULTURAL FACTORS ON RURAL HOUSE FORM IN TARABA STATE OF NIGERIA

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### ABSTRACT

This study investigates the Influence of Socio-Cultural factors on Housing Form in Rural Environment Among various ethnic groups of Taraba State, Nigeria with the aim to understand the socio-cultural factors that influences housing form adopted by tribes. A population of 2,300,736 (NPC, 2006) and a sample size of 750 house-hold head were selected for this study comprised of 135(18%) Mumuye, 86(11.47%) Jukun, 120(16%) Tiv, 95(12.67%) Mambila, 175(23.33%) Fulani, 105(14%) Wurukum and 34(4.53%) belong to other minority tribes. A Multistage Sampling technique was employed in the process of data collection. The study is a descriptive survey design with the main instruments used in collecting the data was "Questionnaire and in-depth interview (IDI) with a reliability index of 0.818 and validity of 0.90. Results are presented using simple percentage and the hypothesis was analyzed using chi-square statistics. The findings revealed that Traditional Single Hut Form (TSHF) is synonymous to Mumuye ethnic group belongs to low income class, while Traditional Compound Form (TCF) is synonymous to Jukun and Fulanis ethnic group belongs to low and middle income classes. The Fulani ethnic group were the majority in the use Jointed Block of Traditional Form (JBTF) and Jointed Block of Modern Building Form (JBMBF) of middle income classes. This study area socio-economic activity is agrarian in nature; Mumuye ethnic groups were the majority in food crop farming followed by Tiv and Mambila ethnic group. Tiv ethnic group are the majority in cash crop farmland followed by Jukun ethnic group, The Fulani ethnic dominated the animal husbandry (pastoral Farmland), while Fish farming was dominated by Wurukum ethnic group. The hypothesis revealed that Housing forms are not the same among the various ethnic groups in the study area. The researchers therefore recommend that when Wurukum tribe in any part of the country need to be resettled by government it should be near fishing water source, Fulanis near grassing field, Mumuye, Tivs and Mambila ethnic groups near farmable land.

**Key words:** Socio-cultural, Housing forms, culture, Beliefs, influence.

### INTRODUCTION

Culture has several definitions, which can be said to converge at the fact that, it is the symbolic and learned aspects or ways of life and their complete design for living in human society. This is still based on the first definition as was used by Tylor in 1871 in which he defined it as a learned complex of knowledge, belief, art, morals, law, and customs and any other capabilities and habits acquired by man as a member of society (Rapoport, 1998; Scolt and Marshall, 2005; Otite and Oglonwo, 1979; Igbo, 2011; Jencks, 1993; Okau, 2012).

On the other hand the term rural means different things to different people and countries. However, within the context of this study it is seen in terms of low population, subsistence occupation predominantly of small scale farming and 'pastoralism', community of face to face interpersonal relationship of less ability to move easily and quickly from one setting to another, and of low technological innovation. Rural is identified with socio-economic backwardness, neglect and deprivation; and with houses designed by the user in his spare time and based on low investment, local materials, combined with the assistance of relations, friends and neighbours, reflecting cultural heritage of the peoples; also encapsulating traditional forms value. Despite the fact that this explanation of rural is becoming obsolete in the developed world as a result of several changes and development, it is still the situation of most developing world.

Most people naturally build houses to fulfil and meet their socio-cultural needs and relevance hence housing can be viewed as a predictor of a variety of behaviours (Galster and Hesser (1981), Amerigo and Aragonés (1990), Potter and Cantarero (2006) and Jiboye (2010) as societies establish an order on their living space and reflect their characters in these spaces. Spatial organization is a sign of the common attitudes and the hierarchy of their

different levels (Hillier and Hanson, 1984). Altman and Chemers (1980) in their various researches of the home around the world confirmed that family dwellings simultaneously satisfy the needs of the occupants for personal identity and for bonds with the community and culture at large. The socio-cultural value of man varies from one society to another, having both direct and indirect influence on his habitation. Man's status, occupation and other resources also affect the houses he builds for himself (Mills-tetty, 1989).

The socio-cultural values that can influence the housing form and patterns of a cultural group include: religion, occupation, leisure, neighbourliness, family size and marital patterns, security and safety, occupation, wealth and poverty and so on. Social status and culture of an individual are set of beliefs, customs, practices, behaviours, norms, values, myth, sanctions, taboos, restrictions, and so on that exist and direct human's action within any community.

The effect of socio-cultural values and lifestyles of the people are very much inherent in the determination of preferences as reflected by Dawan (1984) and Muller (1994) on the study of the resettlement scheme for Gwari people in Abuja, Nigeria and that carried out among the kitale dwellers in North West Kenya respectively. The studies revealed that the pattern and forms of the new dwellings provided for those being resettled were at variance and in conflict with the social and cultural value of the dwellers, therefore consequently abandoned for alternative locations. According to Awotona, Mills-Tetty and Ogunshaki (1994) opined that any housing design will invariably lack originality and relevance so long as it antagonistically contradicts cultural values and user's life styles.

Jiboye (2004) opined that socio-cultural factors and house form in Nigeria reiterated that there are some generalized patterns for houses in rural or urban location and in spite of numerous differences in building materials, customs, habits and beliefs, certain elements are common among the various Nigerian traditional house form.

Therefore, there is a need for a practical approach on carrying out research concerning housing forms which had been of cultural relevance to the people particularly the different ethnic groups of Taraba State of Nigeria. In this study, the intention is to understand how social status and culture of the various tribes influences rural housing form in rural area of Taraba State.

### **STATEMENT OF PROBLEM**

In human development man is continuously trying to reshape his immediate environment to suit his socio-cultural needs directed at his housing apparently producing variation in housing characteristic across different cultural areas and of course not without some resultant problems. Charalambons (1992) suggests that the cultural investment in space, both locally and globally, varied to a considerable degree between as well as within each ethnic groups. Adeyemi (1998) reported that the rural landscape was perceived visually as unwelcome and the buildings within the rural settings as substandard. The study area is a conglomerate of tribes and people that moved or lives in the land as a result of trade, nomadic life, tribal conflicts / wars, political movement and farming, all bringing different types of cultures and values, social system, their language and traditional houses to suit. The different tribes recognized themselves to be relatively distinctive and different from their neighbours, although their borders, between them are now becoming narrow, due to various social developments, like intermarriage, political influence and interaction, education, urban employment, tribal wars, draught, migration and looking for animals' green pastures. Setting out this principle, tribes reflects evolution of the people numerous origins of different cultures. It will be worthwhile, therefore, to undertake a study on the socio-cultural factors that influence rural house forms in such area.

### **PURPOSE OF THE STUDY**

The purpose of this study is to examine the socio-cultural factors that influence housing forms in relation to ethnic groups in Taraba State, while specific objectives are as follows:

1. to identify the various ethnic groups in the study area
2. to identify socio-cultural activities the people living in the study area
3. to find out the socio-cultural activities that influences their choice of housing forms
4. to examine the specific value on housing forms in the study area.

### **Research Questions**

In order to achieve the research purpose, a set of broad and more specific research questions have been raised in this section to guide the study.

1. What are the house forms synonymous with various ethnic groups?
2. Does marital status influence house forms in the study area?



3. Does Religious believe influence house forms in the study area?
4. What are specific values about house form in the study area of the tribes?
5. What are the common norms guiding housing construction in the study area?

## METHODOLOGY

### Research Design

This study adopted two research designs namely survey research design and historical research designs. Survey research allows data to be collected and analyzed only from a few people considered to be representative of the entire group. Historical research on its part is a procedure in which researcher conducts a systematic search for his documents in order to answer some questions about some past events which could lead to a better understanding of the present and the prediction of the future (Jegede, 1999 and Nworgu, 1991).

### Population and Sample

#### Population

A total population of 2,300,736 according to National Population Census (2006) from sixteen local government area of Taraba Satate. A total of 750 household head were sampled.

#### Sample

The sample size was made up of 750 household head which comprised of 135(18%) Mumuye, 86(11.47%) Jukun, 120(16%) Tiv, 95(12.67%) Mambila, 175(23.33%) Fulani, 105(14%) Wurukum and 34(4.53%) belong to other minority tribes.

#### Sampling Technique

Multistage sampling technique was adopted in this study classifies the study population into North, Central and South zones. In applying multistage sampling, the zones are taken as the Primary Samplings Units (PSU) from a purposively sampled was selected from each ethnic group. Then, further division of each of the selected secondary unit of Local Government areas (two Local Government Areas from each of the senatorial zone). According to Kitchin and Tate (2000) contend that sample size depends on the variability of the population to be sampled. They further argued that if one already knows something about the variability, one can estimate the size of sample needed in order to estimate population value with a certain degree of confidence. Multistage Sampling technique as mentioned was employed in the process of data collection. Multistage sampling plan is where the sampling is carried out using smaller and smaller unit. It can be said to be a complex form of cluster sample which involve dividing the population into clusters or groups with the clusters chosen at random and everyone within the chosen cluster is sampled. The three stages of samples were as follows: Selection of ethnic groups, Selection of localities and Selection of respondents.

The six ethnic groups selected do not have even geographic spread all over the sixteen local government areas and one development centre.

#### Instruments of Primary Data collection

Questionnaire and in-depth interview (IDI) were the direct methods used in this study for the collection of the primary data and they formed the major instruments. The questionnaire was divided into two sections and based on the research objectives, consisted of open and closed-ended questions.

## METHOD OF DATA ANALYSIS

The collected data were entered into Statistical Package for Social Sciences (SPSS) version 17.0 application software, simple percentage was used to answer the research questions based on socio-cultural factors influencing Housing form of the different ethnic origin were presented and discussed.

The simple percentage formula used is presented below:

$$P = \frac{OF}{TR} \times \frac{100}{1}$$

Where:

P = Percentage score

OF = observed frequencies

TR = Total respondents

**RESULTS**

**Research Question One**

What are the house forms synonymous with various ethnic groups?

Table 1: House forms across Ethnic Groups in Taraba State

Ethnic Groups	House Form						Row Total
	Traditional Single Huts	Traditional Compound	Jointed Block of Traditional Form	Jointed Block of Modern Building Form	Jointed block of mixed traditional and Modern Housing Form	Modern Housing Form-(flats, bungalow and others)	
Mumuye	52 (38.52)	37 (27.41)	33 (24.44)	5 (3.70)	6 (4.44)	2 (1.48)	135 (100)
Jukun	23 (26.74)	30 (34.88)	22 (25.58)	3 (3.49)	5 (5.81)	3 (3.49)	86 (100)
Tiv	45 (37.50)	44 (36.67)	20 (16.67)	5 (4.17)	3 (2.50)	3 (2.50)	120 (100)
Mambila	21 (22.11)	40 (42.11)	20 (21.05)	3 (3.16)	6 (6.32)	5 (5.26)	95 (100)
Fulani	20 (11.43)	82 (46.86)	52 (29.71)	15 (8.57)	3 (1.71)	3 (1.71)	175 (100)
Wurukum	41 (39.05)	28 (26.67)	25 (23.81)	4 (3.81)	3 (2.86)	4 (3.81)	105 (100)
Others	12 (35.29)	12 (35.29)	6 (17.65)	1 (2.94)	1 (2.94)	2 (5.88)	34 (100)
<b>Colum Total</b>	214 (28.53)	273 (36.40)	178(23.73)	36 (4.80)	27 (3.60)	22 (2.93)	750 (100)

Source: field survey 2015. Note that Percentages are in parentheses (%)

Table 1 revealed House forms of various Ethnic Groups in Taraba State, majority of the Mumuye ethnic group had 52(38.52%) of Traditional Single Hut Form (TSHF), while the Jukun and Fulanis ethnic group had 30 (34.88%) and 82 (46.86%) of Traditional Compound Form (TCF) respectively. The Fulani ethnic group were the majority in Jointed Block of Traditional Form (JBTF) and Jointed Block of Modern Building Form (JBMBF) with 52 (29.71) and 15 (8.57) respectively. In summary, 214 responses representing 28.53% of the respondents had Traditional Single Huts (TSH), 273 responses representing 36.40% of the respondents had Traditional Compound (TC), 36 responses representing 4.80% of the respondents had Jointed Block of Modern Building Form (JBMF), 27 responses representing 3.60% of the respondents had Jointed Block of Mixed Traditional and Modern Housing Form (JBMHF) and 22 responses representing 2.93% of the respondents had Modern Housing Form-flats, bungalow and others (MHF). This implies that

**Research Question Two**

Does marital status influence house forms in the study area?

Table 2: Marital Status influence on House forms

Marital Status	Traditional single hut	Traditional compound	Jointed Block of traditional form	Jointed block of modern building form	Jointed block of mixed traditional and modern housing form	Modern Housing form-Flat, bungalow and others	Total (%)
Single	176 (23.47)	14 (1.86)	0	0	0	0	190 (25.33)
Married	20 (2.67)	259 (34.53)	171 (22.80)	35 (4.67)	22 (2.93)	13 (1.73)	520 (69.33)
Separated	7 (0.93)	0	0	1 (0.13)	0	0	8 (1.07)
Widowed	10 (1.33)	0	2 (0.27)	0	0	0	12 (1.60)
Divorced	1 (0.13)	0	5 (0.67)	0	5 (0.67)	9 (1.20)	20 (2.67)
Total	214 (28.53)	273 (36.40)	178 (23.73)	36 (4.80)	27 (3.60)	22 (2.93)	750 (100)

Table 2 revealed marital status and house form, 190 (25.33%) are singles, 520 (69.33%) are married, 8 (1.07%) are separated, 12 (1.60%) are widowed and 20 (2.67%) are divorced. Marriage is a strong influencing factor that determines house form in the study area, out of the 520 (69.33%) married household head relationship with 20 (2.67%) had Traditional single hut, 259(34.53%) had Traditional compound, 171 (22.80%) had Jointed Block of traditional House form, 35 (4.67%) had Jointed block of modern building form, 22(2.93%) had Jointed block of mixed traditional and modern housing form, and 13(1.73%) had Modern Housing form-Flat, bungalow and others. This study finding is inline with Charalambons (2007) opined that culture being systems of human behaviour and thought focuses on attributes that people acquire not through biological inheritance but by growing up in a specific tradition (society), remains useful determining factor to house form.

### Research Question Three

Does Religious believe influence house forms in the study area?

Table 3: Married Respondents religious influence on House forms

Religion	House Form						Total
	Tradition al single hut	Traditional compound	Jointed Block of traditional form	Jointed block of modern building form	Jointed block of mixed traditional and modern housing form	Modern Housing form-Flat, bungalow and others	
Christianity	20 (3.85)	159 (30.58)	95 (18.27)	18 (3.46)	15 (2.88)	10 (1.92)	317 (60.96)
Islam	0	91 (17.5)	66 (12.69)	16 (3.08)	6 (1.15)	2 (0.38)	181 (34.81)
Traditional	0	9 (1.73)	10 (1.92)	1 (0.19)	1 (0.19)	1 (0.19)	22 (4.23)
Total	20 (3.85)	259 (49.81)	171 (32.88)	35 (6.73)	22 (4.23)	13 (25.19)	520 (100)

Table 3 revealed religious status and house form of the 520 (69.33%) married household head from table 2 above. Religions is another strong influencing factor that determines house form in the study area, based on the cluster of dispersal marriage is a core of culture in any society and it cut across all religion in the study area. 20 (3.85%) of the household head that had Traditional single hut enough to cater for their family, but majority of the of 259(49.81%) household head had Traditional compound. This study is in agreement with Kottak (2004) restated anthropologist Anthony F.C. Wallace's definition of religion as "belief and ritual concerned with supernatural beings, powers, and forces" influences house form.

#### **Research Question Four**

##### **What are specific values about house form in the study area of the tribes?**

Based on the researchers' interactive interviews with the respondents and observation of various ethnic groups in the study area it was observed that everybody in the area of study respects each other belief and the society values that bind them together.

The Mumuye ethnic group have value for children, children huts are always at the approach into the compound because they believe that the children will soon leave the compound after attaining appropriate maturity age to start their own. Secondly, the Mumuye people restrict other persons apart from the spiritual head from the shrine area (which is fenced in enclosed place with so many trees and woods inside). Thirdly, the Mumuye people have a burial place with the housing units because of their norms and believe.

The Wurukum ethnic group believes the ancestors dwell in some particular forest hence regarded as sacred and anyone viewing it contrary is a taboo. Secondly, whenever a twin is given birth, traditional pots always put at the entrance of the mothers hut to be used for worship festivals.

The Hausa/Fulani ethnic group kitchen always situated opposite living rooms as a custom and as a Muslim always have private, semi-private and public space of worship.

The Mambilla ethnic group dug graves outside and tunneled to the inside of the house, being a sign of respect and honour for the dead.

The Tiv ethnic group always has a central place resting hut in their compound for relaxation and their strong interaction ('ate). Secondly, the Tiv's bury dead youth at the entrance to the settlement and others within the settlement.

The Jukun ethnic groups live in booths during the Iya-puje festival (the festival in harvest thanksgiving) young adult normally settle away from the main family. The Jukuns buried their dead within the compound mostly unmarked.

#### **Research Question Five**

##### **What are the common norms guiding housing construction in the study area?**

Based on the researchers interactive interviews with the respondents and observation of various ethnic groups in the study area it was observed that everybody in the area of study respect the various ethnic group norms and avoid encroaching into another person's Land (Landed properties) was a common norm guiding housing construction in the study area.

### **DISCUSSION**

House forms synonymous with various Ethnic Groups in Taraba State, majority of the Mumuye ethnic group had 52(38.52%) of Traditional Single Hut Form (TSHF), while the Jukun and Fulanis ethnic group had 30 (34.88%) and 82 (46.86%) of Traditional Compound Form (TCF) respectively. The Fulani ethnic group were the majority in Jointed Block of Traditional Form (JBTF) and Jointed Block of Modern Building Form (JBMBF) with 52 (29.71) and 15 (8.57) respectively.

Marriage is a strong influencing factor that determines house form in the study area, out of the 520 (69.33%) married household head relationship with 20 (2.67%) had Traditional single hut, 259(34.53%) had Traditional compound, 171 (22.80%) had Jointed Block of traditional House form, 35 (4.67%) had Jointed block of modern building form, 22(2.93%) had Jointed block of mixed traditional and modern housing form, and

13(1.73%) had Modern Housing form-Flat, bungalow and others. This study finding is inline with Charalambons (2007) opined that culture being systems of human behaviour and thought focuses on attributes that people acquire not through biological inheritance but by growing up in a specific tradition (society), remains useful determining factor to house form.

Religions is another strong influencing factor that determines house form in the study area, based on the cluster of dispersal marriage is a core of culture in any society and it cut across all religion in the study area. 20 (3.85%) of the household head that had Traditional single hut enough to cater for their family, but majority of the 259(49.81%) household head had Traditional compound. This study is in agreement with Kottak (2004) restated anthropologist Anthony F.C. Wallace's definition of religion as "belief and ritual concerned with supernatural beings, powers, and forces" influences house form.

**The specific values about house form in the study area of each tribe** in the study area it was observed that everybody in the area of study respects each other belief and the society values that bind them together. The Mumuye ethnic group have value for children, children huts are always at the approach into the compound because they believe that the children will soon leave the compound after attaining appropriate maturity age to start their own. Secondly, the Mumuye people restrict other persons apart from the spiritual head from the shrine area (which is fenced in enclosed place with so many trees and woods inside). Thirdly, the Mumuye people have a burial place with the housing units because of their norms and believe.

The Wurukum ethnic group believes the ancestors dwell in some particular forest hence regarded as sacred and anyone viewing it contrary is a taboo. Secondly, whenever a twin is given birth, traditional pots always put at the entrance of the mothers hut to be used for worship festivals.

The Hausa/Fulani ethnic group kitchen always situated opposite living rooms as a custom and as a Muslim always have private, semi-private and public space of worship.

The Mambilla ethnic group dug graves outside and tunneled to the inside of the house, being a sign of respect and honour for the dead.

The Tiv ethnic group always has a central place resting hut in their compound for relaxation and their strong interaction ('ate). Secondly, the Tiv's bury dead youth at the entrance to the settlement and others within the settlement.

The Jukun ethnic groups live in booths during the Iya-puje festival (the festival in harvest thanksgiving) young adult normally settle away from the main family. The Jukuns buried their dead within the compound mostly unmarked.

Based on the researchers interactive interviews with the respondents and observation of various ethnic groups in the study area it was observed that everybody in the area of study respect the various ethnic group norms and avoid encroaching into another person's Land (Landed properties) was a common norm guiding housing construction in the study area is inline with Charalambons (2007) view.

### **CONTRIBUTION TO KNOWLEDGE, RECOMMENDATION AND CONCLUSION**

This study will be beneficial to government, architects and re-settlers consultants to understand the culture of the various ethnic groups in Taraba State. This paper recommends that government re-settlers should focus on social and cultural nature of the various ethnic groups in the North-east especial ethnic groups of Taraba State, Nigeria. The tremendous influence of religion, social class, cultural status, beliefs, family type and size were major factors that determines the people housing forms the rural communities of Taraba State. Thus, to avoid another settlement abandonment in the future of local communities re-settlers consultants should first understand the culture of the people to really cater for their social need, cultural needs and livelihood before relocating them.

The religion or worship method or belief of the people need always to be considered when proposing and providing houses for them in the rural area.

1. Provision of housing for the rural people must not divorce them from the socio-economic activities and vocations of their choice and familiarity especially provision of farmland.

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## INTERNET FACILITIES UTILISATION AND UNDERGRADUATE STUDENTS ACADEMIC PERFORMANCE OF FEDERAL COLLEGES S OF EDUCATION IN NORTH CENTRAL NIGERIA

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### ABSTRACT

The study was an assessment of undergraduate students utilization of internet facilities for academic purpose in the Federal Colleges s of Education in North central Nigeria. In achieving the goals of the study, four research questions and two hypotheses were raised. The study employed the cross-section survey research design approach in which both descriptive statistics and the Pearson-chi-square statistical tools were used in analyzing the research questions and hypotheses raised. The study also used the questionnaire for internet users (QIU) as tool for data collection from the sample of NCE and B.Ed undergraduate students of F.C.E. in North central Nigeria to which the stratified random sampling technique was employed in selection of respondents. Results of data analysis from the study shows that there is a significant difference in the internet literacy/exposure level; amount of time spent on the internet for academic purpose; and extent of utilization of internet facilities for academic purpose among the NCE and B.Ed undergraduate students of the Federal Colleges s of Education in North central Nigeria.

**Keyword:** Internet, facilities utilisation, undergraduate students, academic performance, North central Nigeria

### INTRODUCTION

In this age of Information and Communication Technology (ICT), the use of the internet has become the norms and culture; developing countries like Nigeria are not exempted from this trend. The craving for the internet stems from its central role in ICT with access to free online Journals, Magazines and other information resources anytime and anywhere for academic research. Nigerian Universities, Polytechnics, Colleges s of Education and other Tertiary Institutions, undergraduate find internet very useful for assignments, research including their final year project being an encyclopaedia of information and facts. The convergence of technologies, e.g. Computers and Internet services with database, data bank and files which can be used for academic purpose by stakeholders in education is increasing (Aman, 2003). In the drive in higher education to promote the use of information and communication technology (ICT), the role of the internet cannot be over emphasized. The internet provides educationist, scientist, lecturers and students, access to on-traditional sources of information at any point over the globe. It is becoming more and more convenient to access the internet. Trajkovski (2001) stated that about 5 years ago, only three million people were connected to the internet in the whole world, but now this number has grown to 300 million. The gap between the rich and the poor countries is now being replaced with the digital divide between those who can afford to be connected to the internet and those who can not afford to be connected to the internet.

In developing countries the internet has stood as one of the fastest means of retrieving and disseminating information amongst students, lecturers, and researchers in higher institutions. This has brought significant changes in the access of electronic information resources used in teaching and learning in these institutions. However, in the developed countries, the ICT situation is better than what we experience in the developing countries. According to Nwogu and Anunubi (2007), members of the academic community apply internet information to every academic work namely; research, teaching, improving knowledge and class work assignment. The situation in Nigerian higher

institution may not have being so, as a result of inadequate ICT infrastructure. Despite this there have been reported findings of the use of internet in academic achievement in Nigerian higher institution. According to Ugah and Okafor (2008) findings on the use of cyber-café for internet access show that 60% of the respondents use cyber cafés to gain access to internet facilities, students, lecturers, and researchers in Nigeria are aware of the impacts of internet, hence, according to Chiemeké and Umar (2007) findings on users perceptions of the use of academic libraries and online facilities for research shows that 150 out of 200 respondents use the internet for research. According to Nwogu and Anunobi (2007) study on use and evaluation of internet resources, students use the internet as their first source of information resources. Nwagwu, Adekunbe and Bello (2008) also found out that 92.7% respondents use the internet for educational purpose and 42.9% also use for leisure purpose. They also attach great importance to internet resources, as is the case in other countries. This was agreed by Musakali and Mutula (2007) who showed that in Kenya, the internet use among universities has greatly improved research activities in universities. Furthermore, in India, Safdar, Mohmood and Qutab (2010) conducted a research on internet use behaviour and attitudes of colleges students, the findings shows that 48% of respondents use the internet to update their knowledge. The internet is very important to undergraduate students in Nigeria, in helping them to have access to timely accurate and relevant information. At present, universities libraries in Nigeria experience under-funding that makes it very difficult for them to subscribe to enough journals and to buy enough textbooks to support the curriculum. Hence, students and academic institution access the internet to obtain information which libraries cannot provide on their shelves (Adomi, Omodeko & Otoló, 2004).

Despite the vast sources of information and resources on the internet, there is a low ICT usage in Nigeria (Yusuf, 2006; Ololube & Egbezor and 2007). However, numerous researchers (Parker, Chan and Sunder, 2007; Ololube, Obogo and Egedi, 2007; Neo 2000) have reported that economies such as the United States of America, Canada Germany, Japan, the United Kingdom, France, Italy, Singapore and Taiwan used ICTwidely and have been benefiting from its usage. Despite Modum (2005) report that the impact of computers in teaching and learning in Nigeria institutions is increasing, there is the need for consistent studies to monitor its utilization especially for academic purpose. According to the study by Global Information Technology as reported by Olalube, Ubogu & Egbezor (2007), USA stands at the top of the list of countries measured based on their level of preparation to participate and benefit from ICT development whereas Nigeria contest 90<sup>th</sup> out of the 115 economics that were surveyed between 2005-2006. Similarly, a study by Nigerian Information Technology Professionals in America in 2002 indicated that it may take Nigeria 50 years to catch up with America on the aspect of personal computer count per household (Yusuf, 2006). In view of the foregoing, this study aims at investigating the extent to which internet facilities are being used by undergraduate students in the Federal Colleges s of Education in North central Nigeria.

### **STATEMENT OF THE PROBLEM**

The use of internet facilities had become essential tool for teaching-learning process in education system. Both the teachers and students adopt internet facilities for note taking, assignment, research, community services and teaching. However, the problem of study focused on the need for adopting internet facilities, the extent of the usage and the impacts on the students academic performance in Federal colleges s of education in North central Nigeria.

### **PURPOSE OF THE STUDY**

The study is aimed at assessing the extent to which undergraduate students utilize internet facilities for academic purpose in the Federal Colleges s of Education in North central Nigeria. Specifically the study aims at achieving the following objectives:

1. To find out the internet literacy/exposure level between NCE and B.Ed. undergraduate students of the Federal Colleges s of Education in North central Nigeria.
2. To determine the time spent on the internet for academic purpose among NCE and B.Ed. undergraduate students of Federal Colleges s of Education in North central Nigeria.
3. To examine the relationship in the extent to which the internet is used for academic purpose among NCE and B.Ed. undergraduate students of Federal Colleges s of Education in North central Nigeria.
4. To find out the challenges of undergraduate students in the utilization of internet facilities for academic purpose in the Federal Colleges s of Education in North central Nigeria.

### **RESEARCH QUESTIONS**

In order to provide direction and sharpen the focus of the study, the following research questions were formulated to guide the researchers:



1. What is the internet literacy/exposure level between NCE and B.Ed. undergraduate students of the Federal Colleges s of Education in North central Nigeria?
2. What is the duration of time spent on the internet for academic purpose among NCE and B.Ed. undergraduate students of Federal Colleges s of Education in North central Nigeria?
3. What is the relationship in the extent to which the internet is used for academic purpose among NCE and B.Ed. undergraduate students of the Federal Colleges s of Education in North central Nigeria?
4. What are the challenges of undergraduate students in the utilization of internet facilities for academic purpose in the Federal Colleges s of Education in North central Nigeria?

### RESEARCH HYPOTHESES

1. There is no significant difference in the time spent on the internet between NCE and B.Ed. undergraduate students of Federal Colleges s of Education in North central Nigeria.
2. There is no significant difference in the extent of utilization of internet facilities for academic purpose between NCE and B.Ed. undergraduate students of the Federal Colleges s of Education in North central Nigeria.

### METHOD

#### Design of the Study

This study employed the cross-section survey design. The cross-sectional design is the type of design that permits the researcher to obtain data from a representative sample of a large population and use the data obtained to describe the population. Cross-sectional research design is known to be an effective tool in determining the opinions, attitudes, preferences and perception of respondents used in a study so it was found to be the appropriate design. Also, the cross-sectional survey research was found useful in a situation where the population is large enough and it enabled interpretation, synthesis and integration of useful data for sound conclusion (Ajayi, 2013). The population of the study consist of 133, 54 respondents comprising 4515 B.Ed. undergraduate students and 8839 NCE undergraduates students of the Federal Colleges s of Education in North central Nigeria. The sample of the study consisted of 1335 respondents comprising 452 B.Ed undergraduates' students and 883 NCE undergraduate students of the Federal Colleges s of Education, in North central Nigeria. The sample size of 1335 respondents represents 10% of the undergraduate students' population of the colleges as at the time of this research (2014/2015 Academic Session), following the recommendation of Ibanga (2002) that 10% to 20% of population is ideal for research sample in a survey. Stratified random sampling was employed with the aim of identifying differences that might exist among the samples selected as representatives of the five schools of the colleges . A self constructed questionnaire was used as instrument for data collection. This instrument termed the Questionnaire for Internet Users (QIU) is a 24 item questionnaire that enquired on the respondents basic bio data, experience of internet utilization, frequency of internet use, average time spent by respondents on the internet, the purpose for which the internet is being utilized, most frequent problems that are encountered by respondents during internet usage, the influence internet usage has on respondents academic efficiency/activities and level of satisfaction of respondents with the internet facilities at their disposal.

Three experts validated the instrument for content validity, two from educational technology and one from test measurement. These experts judged the adequacy of the items that were included in the instrument. Furthermore, these experts made modifications on QIU to ensure that the instrument was ideal for its intended purpose. Similarly, the measure of internal consistencies (reliabilities) of the instrument was established by using the Cronbach-Alpha method of estimating internal consistency which can be used for instruments having items of varying point values or attitude scale that provides responses such as strongly agree, strongly disagree with intermediate response options. The data generated was analyzed using the descriptive mean and Pearson chi-square for the research questions of the study while Pearson chi-square was also employed for analysis of the two null hypotheses of the study.

### RESULTS

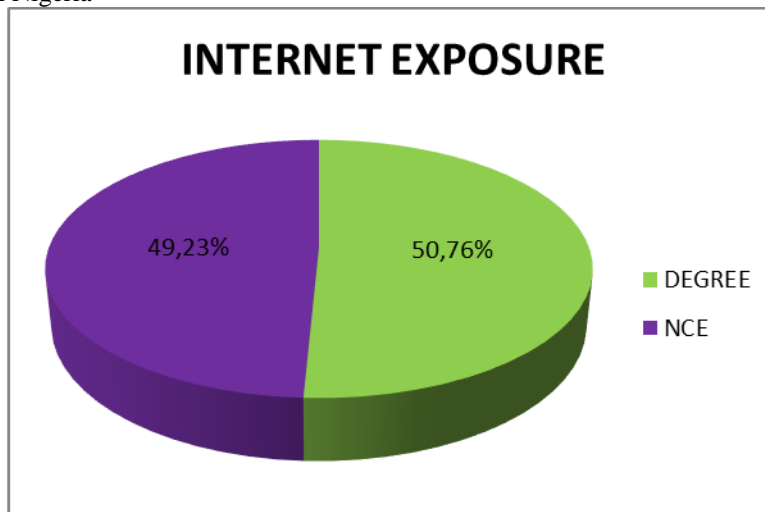
**Research Question One:** What is the internet literacy/exposure level between NCE and B.Ed. undergraduate students of the Federal Colleges s of Education in North central Nigeria?

Table 1 and figure 1 presents the results of data analysis in respect to this question.

**Table 1:** Chi-square test on internet exposure level between NCE and B.Ed. undergraduate students of F.C.E, in North central Nigeria.

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	30.000 <sup>a</sup>	25	.224
Likelihood Ratio	21.501	25	.664
Linear-by-Linear Association	1.209	1	.272
N of Valid Cases	6		

**Figure 1:** The Pie chart indicating level of exposure in percentage between NCE & B.Ed. Undergraduate student of F.C.E in North central Nigeria



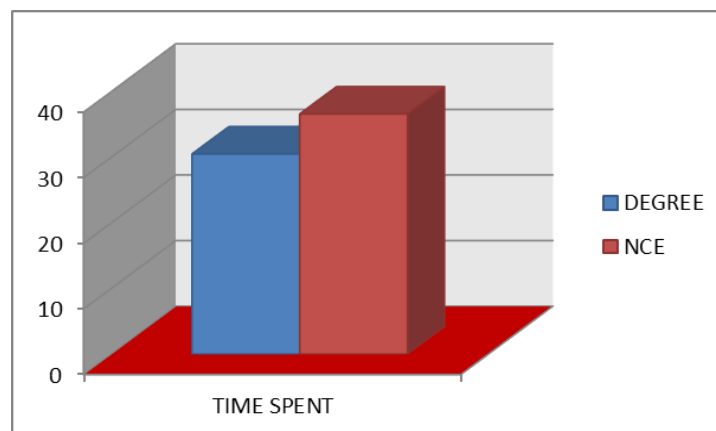
The results from **Table1** and **Figure1** above shows that there is significant difference in the internet literacy/exposure level of NCE and B.Ed. Undergraduate students of F.C.E in North central Nigeria.

**Research Questions Two**

What is the duration of time spent on the internet for academic purpose among NCE and B.Ed. undergraduate students of Federal Colleges s of Education in North central Nigeria?

Figure 2 presents the result of data analysis in respect of the relationship in time spent in the internet by NCE and B.Ed. Undergraduate students for academic purpose

**Figure 2:** A bar chart showing the relationship of time spent on the internet between NCE & B.Ed. undergraduate student.



The result from Figure 2 above shows that there is significant difference in the time spent on the internet between NCE & B.Ed. undergraduate student of F.C.E, in North central Nigeria.

**Research Question Three**

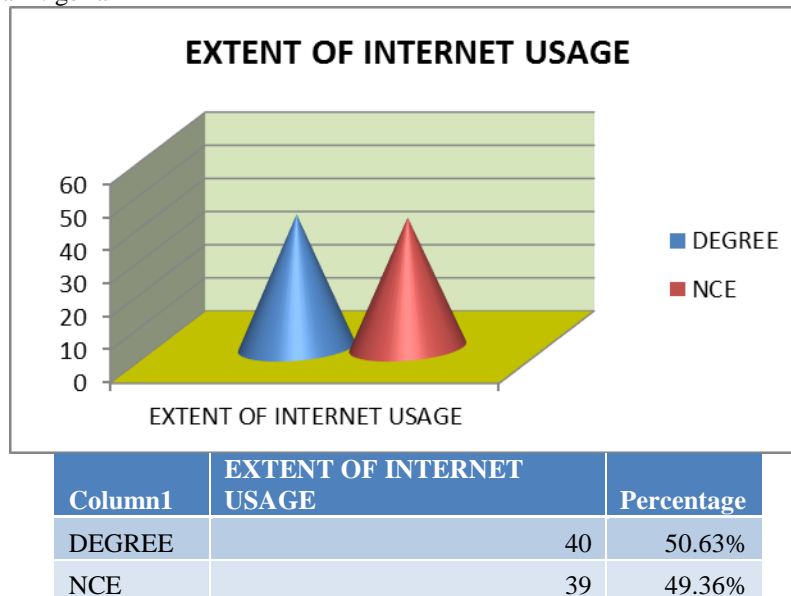
What is the relationship in the extent to which the internet is used for academic purpose among NCE and B.Ed. undergraduate students of the Federal Colleges of Education in North central Nigeria?

Table 2 and Figure 3 present the results of data analysis with respect to the research questions 3

**Table 2:** Pearson Chi-Square test on the extent of internet usage among NCE and B.Ed. Undergraduate students of F.C.E in North central Nigeria.

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	20.000 <sup>a</sup>	16	.220
Likelihood Ratio	16.094	16	.446
Linear-by-Linear Association	2.530	1	.112
N of Valid Cases	5		

**Figure 3:** Cone chart indicating the extent of internet usage between NCE & B.Ed undergraduate students of F.C.E in North central Nigeria



The results from table 2 shows that there is a significant difference in the extent of internet usage for academic purpose between NCE & B.Ed students since the Pearson Chi-square value of .220 is greater than the .05 level of significance. Furthermore Figure 3 indicates that there is a higher percentage in extent of internet usage among B.Ed undergraduates compared to their NCE counterparts in F.C.E in North central Nigeria.

**Research Question Four**

What are the challenges of undergraduate students in the utilization of internet facilities for academic purpose in the Federal Colleges of Education in North central Nigeria?

Table 3 present the results of data analysis with respect to the research questions four

**Table 3:** Challenges encountered by undergraduate students of F.C.E, in North central Nigeria in utilizing internet facilities for academic purpose.

S/N	Problems Encountered	NCE	B.Ed
i.	Slow access speed	80%	85%
ii.	Difficulty in finding relevant information	40%	35%
iii.	Overload of Information on the internet	10%	15%
iv.	It takes too long to view/download pages	75%	85%
v.	Privacy Problems	15%	10%

The result from table 3 indicates that both NCE and B.Ed undergraduate students of F.C.E, in North central Nigeria have more encounter with the problem of internet connectivity speed as is seen in items (i and iv) having 80% for NCE, 85% for B.Ed and 75% NCE, 85% B.Ed respectively.

**Hypothesis One**

The hypothesis states: There is no significant difference in the time spent on the internet between NCE and B.Ed undergraduate students of Federal Colleges s of Education in North central Nigeria. In testing this hypothesis, relevant data were collected using the research instrument for data collection and results of the data analysis for testing this hypothesis is presented in table 4 below.

**Table 4:** Pearson Chi-square test on time spent by NCE and B.Ed Undergraduate students, F.C.E, in North central Nigeria.

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	30.000 <sup>a</sup>	25	.224
Likelihood Ratio	21.501	25	.664
Linear-by-Linear Association	1.898	1	.168
N of Valid Cases	6		

From the result of analysis seen in Table 4 the Pearson Chi-Square P-value of .224 is significant at .05 level of significance on time spent on the internet for academic purpose between NCE & B.Ed. Therefore the null hypothesis is rejected

**Hypothesis Two**

The hypothesis states: There is no significant difference in the extent of utilization of internet facilities for academic purpose between NCE and B.Ed undergraduate students of F.C.E in North central Nigeria. In testing this hypothesis data were collected using the instrument for data collection (QIU) and the result of the data analysis are presented in table below.

**Table 5:** Pearson Chi-square test on extent of utilization of internet facilities among NCE and B.Ed undergraduate students of F.C.E in North central Nigeria.

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	12.000 <sup>a</sup>	9	.213
Likelihood Ratio	11.090	9	.270
Linear-by-Linear Association	.625	1	.429
N of Valid Cases	4		

From the results of analysis seen in table 5, the Pearson Chi-square test on extent of utilization of internet facilities among NCE and B.Ed Undergraduate students is significant sine .213 > P-value .05 level of significance.

**DISCUSSION OF FINDINGS**

The results of data analysis for the study shows that there is a significant difference in the literacy/exposure level between NCE and B.Ed undergraduate students of F.C.E. in North central Nigeria with the B.Ed students showing higher internet literacy level of exposure, this findings aligns with Kaur (2005) findings that more than two third of respondents are exposed to internet facilities for academic purpose. Findings of the study further buttresses

Siyanbola and Oladapo (2008) study on uses of internet for academic with further emphasis an literacy/exposure level between NCE and B.Ed Undergraduate students of F.C.E. in North central Nigeria.

Findings of the study also reveal that B.Ed Undergraduate students spend more time on the internet for academic purpose compared to their NCE counterparts as opined by Chandra (2000) that more than 25% of respondents used the internet 2-3 times a week for communication and information gathering as major purposes for using the internet.

The study also gathered that there is a significant difference in the extent to which internet facilities are utilized for academic purpose among the NCE and B.Ed Undergraduate students of F.C.E. in North central Nigeria in which the B.Ed students show a higher percentage of internet utilization. This findings relates to Kaur (2005) that a majority of students use the internet located at the Colleges for educational and research purpose. Furthermore this finding aligns with Oyedun (2007) that extent of use of internet facilities have improved to a considerable extent the academic performance of student.

Further findings of the study show that the most prominent of challenges encountered by students in the utilization of internet facilities for academic purpose is the problem of internet connectivity speed. This finding relates closely to Jagboro (2003), Kaur (2005) and Okey (2005) which reveals that poor connectivity due to poor infrastructure is a major constraint to utilization of internet facilities for academic purpose.

Finding of this research has also shown that there is a significant difference in the time spent on the internet for academic purpose between the NCE and B.Ed undergraduate students of F.C.E, in North central Nigeria. Hence the first null hypothesis was rejected. Also, the study revealed that there is a significant difference in the extent of internet facilities utilization among the NCE and B.Ed undergraduate students of F.C.E, in North central Nigeria. This lead to rejection of the second null hypothesis.

## **CONCLUSION**

Based on finding of this research the following conclusions are put forth:

1. NCE and B.Ed Undergraduate students of F.C.E. in North central Nigeria
  - a. are literate/exposed to internet facilities.
2. NCE and B.Ed Undergraduate students of F.C.E spend time on the internet for academic purpose.
3. B.Ed Undergraduate students of F.C.E. in North central Nigeria have higher literacy/exposure level and spend more time in utilizing the internet for academic purpose, compared to their NCE counterpart.
4. Internet facilities are available and being utilized for academic purpose in Federal Colleges s of Education, in North central Nigeria.
5. Slow internet connectivity speed due to poor instruction is among the major challenges of internet utilization for academic purpose in F.C.E. in North central Nigeria.

## **RECOMMENDATIONS**

Following the findings of this study it is recommended that students be further encouraged towards utilizing internet facilities for academic purpose through academic activities such as submission of assignments, compulsory enlisting on study chat groups, partaking in on-line research activities so as to enhance exposure/literacy level of students and to enable students interact and compete with their contemporaries all over the world. Further more students should be allowed free access to the internet facilities of the Colleges to enable them spend more time on the internet for academic purpose.

It is also recommended that academic activities of the Colleges s be geared towards maximizing utilization of internet facilities of the Colleges s so as to enhance student's extent of internet facility usage. These can be achieved through the implementation of students on-line bursary registration, on-line departmental and course registration, electronic seminar presentation and electronic correspondences' between staff and students. Furthermore, entry requirements into NCE and B.Ed programmes of the Colleges s should include a minimum registry of pass in computer studies, and students should be encouraged to acquire personal computers as part of study materials they will require in the course of running programmes of the Colleges s.

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# QUALITY MANAGEMENT IN HIGHER EDUCATION ADMISSION SYSTEM

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## ABSTRACT

The industry of higher education institutions such as colleges and universities are highly competitive amongst themselves for the best students, professors, researchers, industry partners, and athletic programs. Charged with attracting top quality clientele who will not only attend the institution, but help the university reach its objectives and goals, the marketing department becomes paramount to the organization's success.

For many years higher institution attendance has increased across the board. As more technical colleges and alternative career paths with specialized training become more appealing, statistical analysis indicates that higher institution attendance numbers are decreasing. If this trend continues, colleges and universities will be forced to become more competitive to entice high quality clientele to attend their organization. The importance of marketing the institution will become critical to ensure the continued success of the organization.

Higher education institutions can target ideal candidates for their university's programs through the use of statistical analysis techniques such as lead scoring, time series control, continuous improvement, and quality management tracking. Considered quality leads, ideal candidates possess a high likelihood of attending the university and garnering greater returns for the university through academic or athletic achievement.

**Keywords:** Higher education Quality lead Quality management tracking

## INTRODUCTION

Higher educational organizations, primarily colleges and universities, are extremely competitive in every aspect from academic prowess to athletic prestige. In order to provide the highest quality of service to customers and increase institutional prowess, these organizations are constantly searching for high caliber clientele including students, professors, coaches, and researchers. The more prestigious and sought after the university is, the higher the demand is for its services from prospective students, industry, and research groups. These organizations' marketing departments play a crucial role in attracting desired clientele. The marketing group must consider how they will use the abundance of available data on potential university clientele to determine and target quality leads. Quality leads have a high likelihood of attending the institution and will assist the university in its goal of increasing their prestige and prowess. By increasing prestige and prowess, the university will attract more quality leads and the process will come full circle.

Most higher education institutions offer diverse services ranging from art and communication to engineering and healthcare. In parallel with these diverse service offerings, the various service groups (departments) have differing definitions of ideal clientele. An ideal candidate for a university's nursing program can potentially differ from the ideal candidate for the university's basketball team. It is the marketing department's responsibility to cater the university to the ideal candidates of each group using the budget and information they have available. Quality management techniques, tools, and processes facilitate the marketing department's process to identify and target the ideal clientele. Utilizing these tools, the marketing department is able to cater their products and services to quality lead. By focusing on quality leads, the marketing department can increase the attendance of high caliber clientele that attend the university while simultaneously reducing resource expenses on marketing to unlikely or undesired candidates.

One of the ways in which universities can identify and increase the number of quality leads is by utilizing statistical analysis tools such as Lead Scoring and Time Series control to analyze data trends of prospective clientele and existing clientele. Through the use of these tools, the marketing department is capable of identifying unique trends relating to an individual discipline in ideal clientele and therefore can identify common characteristics of quality leads across various disciplines. This data can be used to forecast new marketing strategies, plan for strategy implementation, and develop decision matrixes on likely outcomes.

The marketing department can analyze the resulting statistical tools data, so long as the processes used to

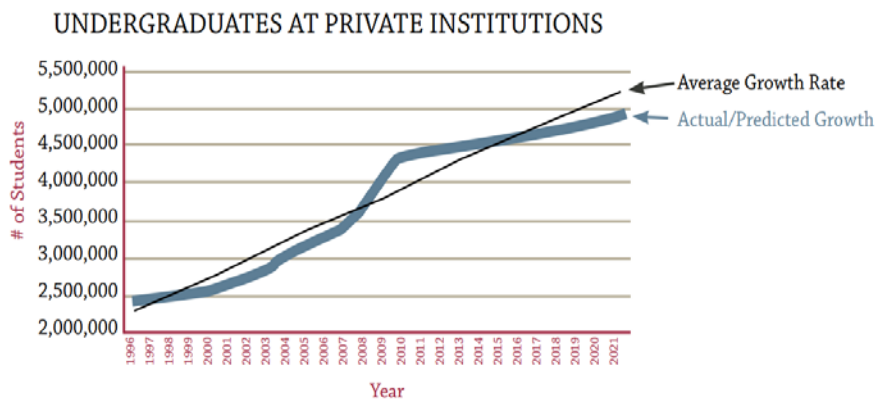
identify and develop marketing material is flexible enough relative to the analyzed data trends. By implementing a corporate culture of continuous improvement, the marketing department is able to incorporate real time data and feedback from the organization into its marketing strategy. Continuous improvement as a marketing strategy gives an advantage over competitor higher education institutions by empowering the marketing department to react swiftly to failed marketing strategies. It also can provide justification for embracing successful marketing approaches.

For tracking the statistical data trends, high quality prospective clients (leads), and continuously improving processes, a quality management system must be incorporated into the marketing department. This enables additional data analysis and statistic tools to be implemented for analysis and development of marketing material.

To date the advantages of implementing quality management into a higher educational institution's marketing department remain focused on the benefits of effectively seeking and attracting quality clientele. Additionally, the marketing department profits from implementing quality management practices derived from the data analysis of ideal clientele. The marketing department can then provide information to the university on the products and services that interest the university's ideal clientele. For example, the data collected on ideal computer science clientele has identified that having courses available online is an imperative factor for students when choosing which university to attend. From the data analysis, the university can choose to offer more online computer science courses. Based on the data collected, this decision will directly impact the number of ideal computer science students who are interested in and will ultimately attend the university..

**Literature Review**

Based on recent general public research performed for this case study, the following trends in Figure 1 below were forecasted in the education system as the average growth rate of University attendance will have a significant impact on student enrollment after 2014.



Source: NCES, "Projections of Education Statistics to 2021"

Figure 1: Enrollment Prediction Trend

The data trend forecasts that private university enrollment rate will continue to decline during the upcoming years. Private colleges have enjoyed a 38% increase in enrollment in last 8 years; however, the predicted rate for the next 8 years shows a 10% increase in registration. Additionally, recent findings identified that current college students demographics show that 60% of all attendees are under the age of 25, but that percentage is anticipated to decline 3% to 57% by 2021. A declining trend can also be found in high school graduates applying or attending private universities in the US, except for 18 states located in the Southern United States. Analysis predicts that within 5 years, by 2019, most of these high school graduates will choose to attend a college within 100 miles of wherever they call home. This carries bad news for colleges who depend on students attending out of state, as net tuition revenue goals may now be more difficult to reach especially for institutions with a smaller local population.

A survey carried in 2014 by the chief academic officers at both public -The American Association of State Colleges and Universities, and private -The Council of Independent Colleges institutions found that, diverse online programs are not offered in a majority of universities notwithstanding a rising demand for online courses



by new students. To highlight this point and shown in Table 1, the study affirms that 81% of public college and 87% of private colleges do not offer online computer science program, which is the 3rd most-desired program by students according to the study.

Fields of Study	AASCU	CIC
Psychology/counseling	84	71
STEM	81	92
Computer science	81	87
Social sciences	70	88
Liberal arts/humanities	71	83
Criminal justice/paralegal studies	71	72
Business	45	34
Education	43	48
Health professions	38	5

Table 1: Percentage of Programs Not Offered Online at Either the Graduate or Undergraduate Level

For educational institutions which offer both undergraduate and graduate degree, institutions would ideally like to keep enrollment rate up and respond accordingly to this trend by offering more in demand online courses to curb the declining trend in application rates. According to Leads recorded data from 2000 seen in Figure 2 below, we can observe that yearly leads have significantly increased in last fourteen years, particularly from 2007 to 2012. The highest leads score of 852,810 was achieved in 2012. However, this number declined from 852,810 to 717,080 in 2013. As you can see from this figure, there is a big jump starting from 2007, which is the year our case study institute launched internet marketing campaign on applications.

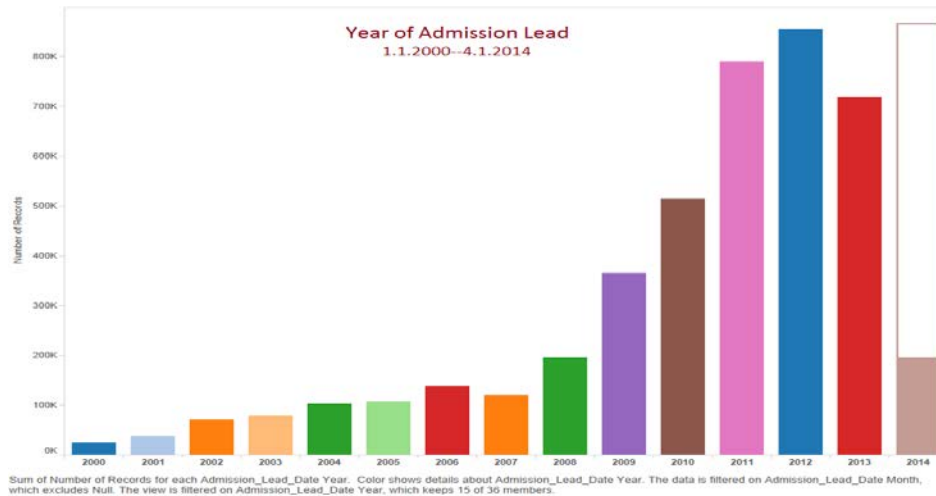


Figure 2: Student Lead Statistics

Figure 3 below depicts the web traffic record from Google Analytic dated January 2009 through Apr 2014. Yellow dots demonstrate a full traffic record including both organic and paid landing page visits, while the blue line illustrates only paid landing page visit. Based on the five year data displayed in Figure 3, analysis estimated an increased trend for both instances of visits. However this trend cannot be considered accurate as it relies heavily on data which may or may not directly correlate to marketing leads. The data shows that website traffic has experienced a dropoff beginning in October of 2012.

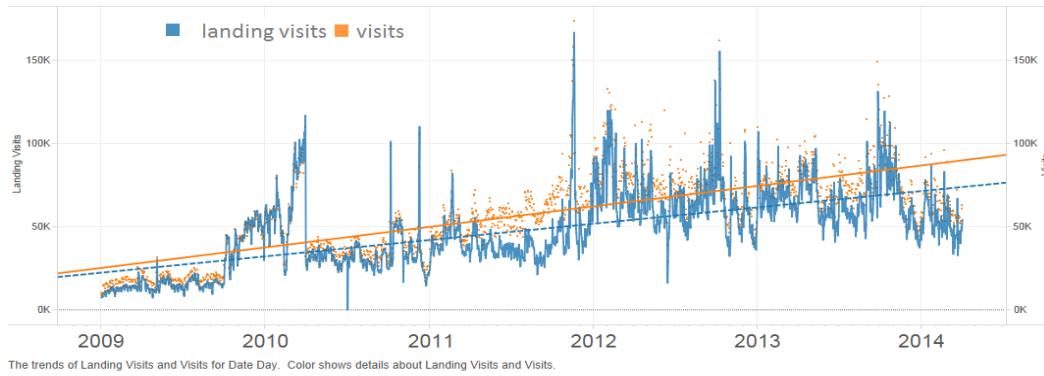


Figure 3: Website Traffic Trends: Sponsored and Unsponsored

Statistically analysis shows that the application enrollment rate is however significantly correlated to a potential students’ website visit, and the institutions website can be a very powerful tool for marketing and identifying quality leads. In this study we to use statistical analysis and quality improvement methods to determine how the marketing department can keep the trend from decreasing in following coming years and how to address any issues in the marketing department that are preventing continuous improvement. All analysis in this study is based on real data collected by the authors on a time basis.

Figure 4 below shows the website visits compared between 2012 and 2013. As both “website visits” and “number of leads” saw a drop-off in 2013, we must determine what changed, why, and ultimately forecast the new 2014 leads trend. Data from April 1<sup>st</sup>. 2012 to March 31<sup>st</sup>. 2013 are represented by a blue line, and data from April 1<sup>st</sup>. 2013 to March 31<sup>st</sup>. 2014, are represented by a green line. The graph is analyzed and the following trends were discovered.



Figure 4: Website Visit 2012 Vs 2013

Comparing the website generated lead difference between 2012 and 2013 and investigating if that related to the rate of decline. The leads trend seen in those twenty-four months are displayed in Table 2, below. The overall structure of each trend fluctuates in a weekly cyclical manner. The admitted leads trends chart, shown in Table 3 below, displays the same cycle as seen in Table 2. From comparing Table 2 and Table 3, we are able to conclude that the average leads of 2013 are significant lower than 2012, with a sig level <<< 0.05.

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	V2012	2027.6658	365	411.35304	21.53120
	V2013	1777.2767	365	379.19611	19.84803

Table 2: 2012 vs 2013 Paired Samples Correlations of Website Traffic Visits

		N	Correlation	Sig.
Pair 1	V2012 & V2013	365	.357	.000

Table 3: Stat test of 2012 vs 2013 Admitted Leads Data

Table 2 differs from Table 3 in one key regard. Beginning in January 2014, the leads of the 1<sup>st</sup> quarter of 2014 have maintained the records seen in the 1<sup>st</sup> quarter of 2013. It is imperative to keep in mind that data from 2013 shows that the number of unique web visits has decreased, which explains the increase seen in CPC over the last three months. However the admitted leads on Table 3 depict no change. Our curiosity was peaked when it was discovered that the data showed lower admitted leads rate (Table 3) when the overall leads number increased (Table 2).

In order to develop deeper understanding of the previous data our study analyzed a time series forecast of the 2014 leads trend. The first step in analyzing the data was to build an ARIMA model based on previous 2 data sets, which consisted of the leads trends for the spring of 2012 and the spring of 2013 and is shown in Table 4 below. Utilizing this second quarter data provided the opportunity to forecast the yearly trends based on 2012 and 2013. The obtained value was then compared to true value and shown in Figure 8.

**Model Description**

			Model Type
Model ID	Spring2012	Model_1	ARIMA(2,0,7)
	Spring2013	Model_2	ARIMA(2,0,7)

Table 4: Time Series Analysis Model Description

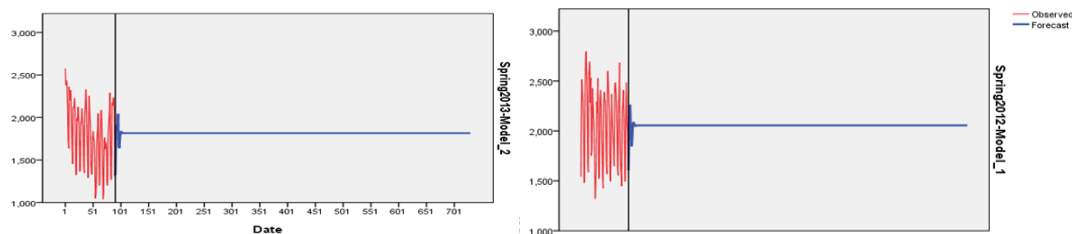


Figure 5: Time series prediction

**Model Statistics**

Model	Number of Predictors	Model Fit statistics	Ljung-Box Q(18)			Number of Outliers
		Stationary R-squared	Statistics	DF	Sig.	
Spring2012-Model_1	0	.512	36.207	15	.002	0
Spring2013-Model_2	0	.649	39.796	15	.000	0

Table 5: Model Fitting

In Figure 5, the blue line represents the forecasting value. By comparing the forecasted value to the real number, we can see that the forecasted leads of 2012 are greater than those forecasted originally back in 2000. The true number is 2027 in the year 2012 and the forecasted leads of 2013 was around 1800, while the true value for 2013 was actually 1777. From Table 5 above we are able to verify that our forecasting values are highly reliable. With both the sig levels <<< 0.05 (5%), we can conclude that our ARIMA model in Table 4 is highly sensitive and well supported. Now that we have verified the accuracy of our model, we will use this model in parallel with data derived from the first quarter of 2014 leads in order to predict the yearly trend of 2014 website visits.

**Model Description**

			Model Type
Model ID	1 <sup>st</sup> Qt 2014	Model_1	ARIMA(1,0,14)

Table 6: Time Series Analysis Model Description for Q1 2014

**Model Statistics**

Model	Number of Predictors	Model Fit statistics		Ljung-Box Q(18)			Number of Outliers
		Stationary R-squared	R-	Statistics	DF	Sig.	
Winter2014-Model_1	0	.560		27.255	15	.027	0

Table 7: ARIMA Model forecast of 2014 Based on Q1 2014 Model

The results of Table 7 indicate that the average leads of 2014 will be around 1900 after running the model shown in Table 6. It is imperative to note that the Sig level is 0.027, which means this result was less sensitive compared to previous results. The above analysis is focused only on Leads. By involving a second factor, internet traffic, we can conduct further analysis. We will introduce the idea of leads per 100 website visits, which we will call LPV( Leads per 100 visit) which is demonstrated by Figure 6. A high LPV rate means there is a high converging rate.

$$LPV = 100 \left( \frac{Lead}{Traffic} \right)$$

Figure 6: Lead per visit equation

Comparing the previous two years LPV we observe that starting in September 2013, LPV significantly increased. We can also conclude that the LPV of winter 2014 was significantly higher than winter 2013. Figure 6 plots this data, with the orange line portraying data collected April 1<sup>st</sup>, 2013 through March 31<sup>st</sup>, 2014 and the blue line represents data collected April 1<sup>st</sup>, 2012 through March 31<sup>st</sup>, 2013. We also conduct four statistical tests of the eight quarter LVP records. From the statistical analysis we can conclude that LVP of 1<sup>st</sup> quarter of 2014 was significant higher than other seven quarter’s LVPs. Following Figure 6 displaces the difference between leads total of year 2012 and 2013, compared at the same time. Figure 7 plots the LPV values between 2012 and 2013 with 2012 plotted in green and 2013 plotted in blue, and shows the relationship between LPV correlates to the admitted leads based on traffic visits.

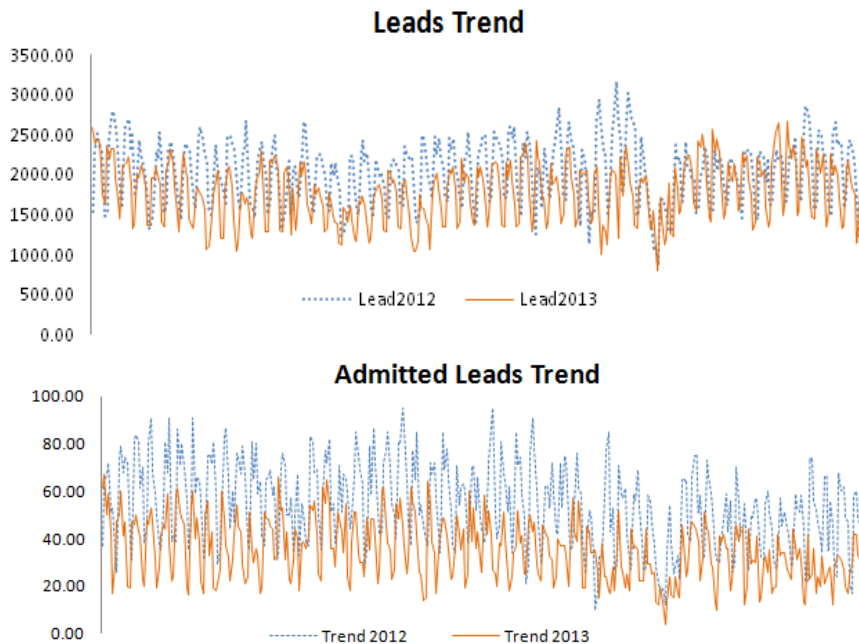


Figure 6: Lead Comparison 2012 vs 2013 Admitted Leads vs Total Leads

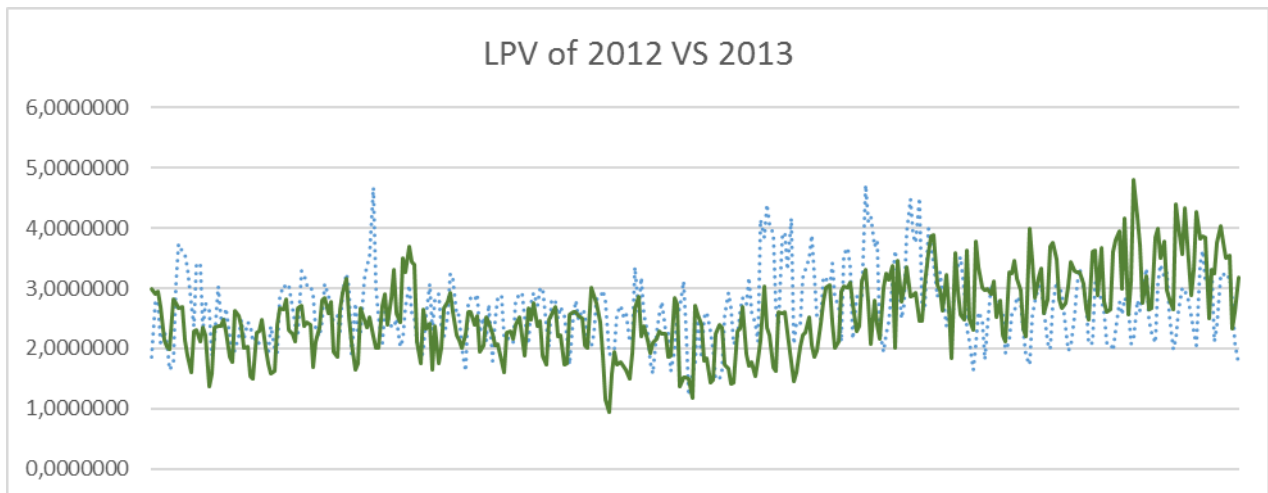


Figure 7: LPV 2012 vs 2013

From the analysis below we can see that the LVP of January through March 2014 is significantly higher than others.

**Paired Samples Statistics**

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	LVPS2012	2.5793	91	.53664	.05625
	LVPS2013	2.3814	91	.48804	.05116
Pair 2	LVPSU2012	2.4604	92	.43255	.04510
	LVPSU2013	2.1890	92	.43897	.04577
Pair 3	LVPFA2012	3.0014	92	.74665	.07784
	LVPFA2013	2.4892	92	.60713	.06330
Pair 4	LVPWI2013	2.6120	90	.47501	.05007
	LVPWI2014	3.2437	90	.57527	.06064

Table 8: LVP Analysis Across Quarter Year between 2012 and 2013

From the LVP analysis we observe that the predicting results of 2013 were determined by matching the true LVP value of 2.6120 for the entire year. The significant level of this model is <0.05. Based on this result, we conclude that our model is reliable and there exist a high probability that the predicted value of LPV in 2014 converges around 3.3. These predications of 2014's LPV based on 2013's LPV values is show in Figure 8 below.

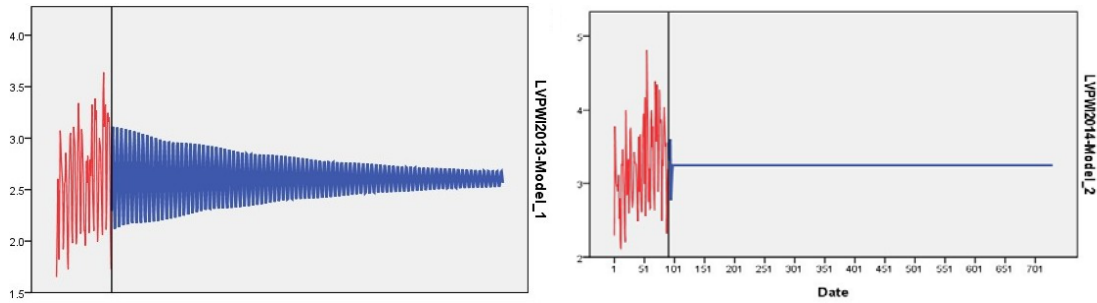


Figure 8: Time Seris Prediction of 2014 LPV

The results demonstrate that the LVP rate increased since Sep 2013, especially during the 1<sup>st</sup> quarter of 2014. These results match what was observed during the 1<sup>st</sup> quarter of 2014. If CPC and traffic remain constant, a high LVP rate could generate increased income and the ROI for the marketing department would increase. However, we must remain mindful of the fact that cost per click has seen a steady increase the past two years and that the web visit traffic is gradually slowing, especially compared to recent years. This data serves as justification for the marketing department of the institution to focus on ways to increase web site traffic to the university. Table 9 below is a paired samples test showing comparison of the 2013 actual LPV and the forecasted LPV for the rest of 2014 if an increase in site traffic is seen.

**Paired Samples Test**

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 LVPS2012 LVPS2013	-.19792	.65736	.06891	.06102	.33482	2.872	90	.005
Pair 2 LVPSU2012 LVPSU2013	-.27145	.54175	.05648	.15926	.38364	4.806	91	.000
Pair 3 LVPFA2012 LVPFA2013	-.51215	.82458	.08597	.34138	.68291	5.957	91	.000
Pair 4 LVPWI2013 LVPWI2014	-.63171	.67524	.07118	-.77313	-.49028	-8.875	89	.000

Table 9: LPV Paired Samples Comparison based on Model predictions with constant site traffic

The LVP of 2014 was predicted via time series model show in Table 9 above. We built another model shown in Table 10 with existing data sets for the LVP of 1<sup>st</sup> quarter of 2013 and LVP of 1<sup>st</sup> quarter of 2014 just for the first quarter of 2014 to understand traffic values effect on the model. Table 11 shows the comparison of the model and with a sig level of .027 for 2014 reflects that the model has some slight variance in forecast values based on what was seen in the first Quarter of 2014.

**Model Description**

			Model Type
Model ID	LVP1qt2013	Model_1	ARIMA(2,0,3)
	LVP1qt2014	Model_2	ARIMA(0,0,7)

Table 10: LVP 2013 Q1 vs 2014 Q1

**Model Statistics**

Model	Number of Predictors	Model statistics		Ljung-Box Q(18)			Number of Outliers
		Stationary R-squared	R-squared	Statistics	DF	Sig.	
LVP1qt2013-Model_1	0	.560		25.499	14	.030	0
LVP1qt2014-Model_2	0	.213		29.952	17	.027	0

Table 11: Statistical 2013 vs 2014

**Cost Trend**

Cost per click is another indication of how web site visits impact the marketing departments return on investment. The higher the CPC value the less revenue the organization receives upon click. Comparing the CPC trend between 2012 and 2013, we see a significantly higher CPC of 2013 compare to 2012. Using this information combined with the LPV analysis the marketing department can focus on strategies to decrease the CPC moving into 2014 which is needed based on the projected application rates in the upcoming years.

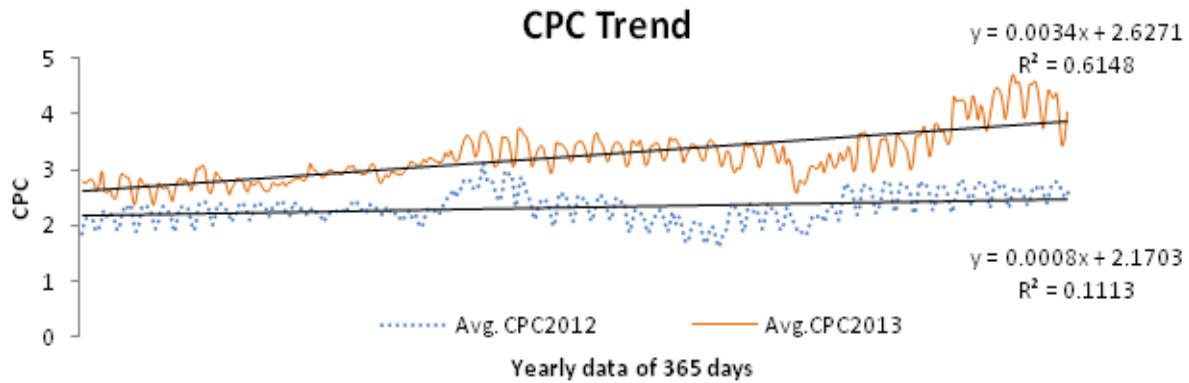


Figure 9: Cost Per Click Analysis 2012 and 2013

Another metric to investigate is the return of investment, which for marketing just like all other departments, is always looking for ways to get more and spend less in doing so. If we can decrease the cost per click in 2014 and beyond and increase the performance of the website, individual page visits, the marketing department should see a significant increase in revenue being generated, be able to improve the application rate total, and improve the lead quality. To determine whether the ROI on leads is better than that seen in previous years, such as 2012, we will analyze ROI trend showing in figure 10, although we must keep in mind that the number calculated in our model is the exact lead number, and therefore not accumulated.

We will limit our definition of ROI for the marketing department to the daily admitted active leads numbers (students whose status is still active) / (daily CPC \* daily traffic). A simple way to define ROI is our quality return divided by investment. If the ROI rate is increasing, this means we will achieve a better return. If the ROI rate is decreasing, this means that our investment was not worth the capital. The ROI trend in Figure 10 used same data as our previous charts. Figure 6 above uses an orange line to represent the data points from April 1<sup>st</sup>, 2013 through March 31<sup>st</sup>, 2014. The blue line represents the data points from April 1<sup>st</sup>, 2012 through March 31<sup>st</sup>, 2013. From Figure 10 we concluded that the ROI of 2012 is decreasing and the ROI of 2013 is increasing. More specifically, ROI declined starting in October 2012 and showed increasing trends beginning in September 2013.

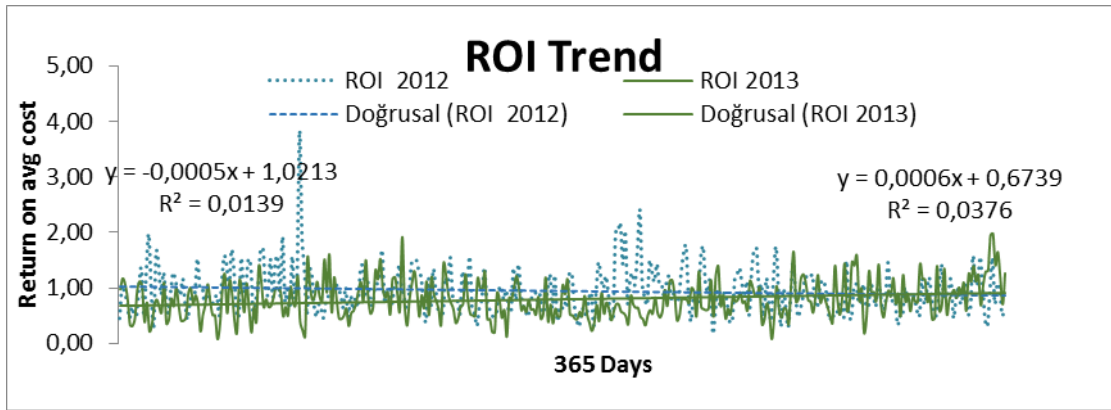


Figure 10: ROI trend across 2012 and 2013

### How to Improve ROI

In order to solve this problem the marketing department would like to lower the CPC value they are seeing at present day. As we have seen, the site visit is significantly related to the admission record, and that site visits also significantly relate to the website speed --In this case the website speed comes up to be a very important factor. One way to decrease CPC easily is to increase the performance (speed up) the website. Web and Mobile performance is not just an IT issue, it also affects the marketing and lead generation for the entire university. Slower IT infrastructure that is seen or experiences by potential leads will result in increased page abandonment, loss of revenue and etc [Compuware Tech]. Poor web performance will push potential customers to look to alternate service providers (competitors) which in this case study are other universities. From figure 11 below we understand that the visit loss is quite related to loading time, also related to revenue loss.

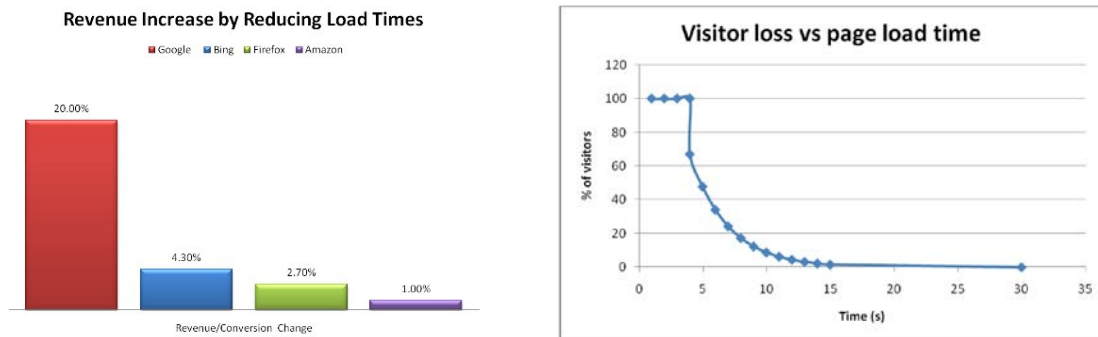


Figure 11: Revenue lost based on Web page load time

Based on real time speed tests which were generated on May 10th 2015, Only New York, Dulles, and Miami have a loading speed lower than 10 seconds and basically those all located in east coast. The statistics in Figure 12 is from google analytics.



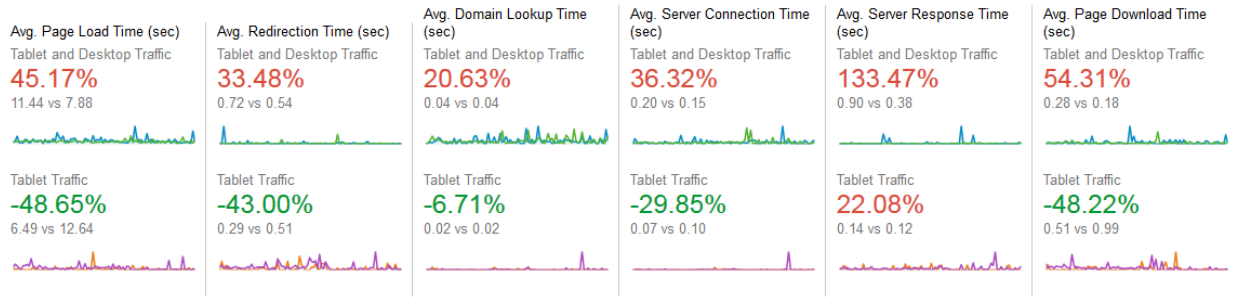


Figure 12: Web Page and Speed Tests impact on Web and Mobile Traffic

For locations like California, Denver and Oregon, average page load time is around 15 seconds, which is basically west coast and Midwest. For international location, average loading time is approximately 23 second. Going back to our previous research results in Figure 11, if the loading speed average is more than 10 seconds, the marketing department is going to lose 90% of its visitors. This could be one of the reasons why most of the universities leads are observed to be coming from east coast instead of west coast and international location. Additionally the marketing campaign's cost is also strongly related to site speed. The faster speed the university has, the less money is lost in marketing.

In the case we may now indicated, the most effective way to improve our web visits , university applications, and marketing departments ROI is to increase the performance (Speed) of the website. Additional math models could be used to prove this hypothesis. According to real data provide by Google analytics dated between March 2014- March 2015, the statistical analysis results of the universities cost per click is shown in Figure's 13 and 14 below.

**Regression Statistics: Model 5 for Cost\_per\_Click (1 variable, n=51)**

R-Squared	Adj.RSq	Std.Err.Reg	Case s	# Missing	t(2.50%,49)	Conf. level
0.133	0.115	0.459	51	0	2.010	95.0%

**Summary Table: Model 5 for Cost\_per\_Click (1 variable, n=51)**

Variable	Coefficien t	Std.Err.	t-Stat.	P-value	Lower95 %	Upper95%
Intercept	2.576	0.401	6.426	0.000	1.770	3.382
Avg_Page_Load_Time__sec	0.125	0.046	2.739	0.009	0.033	0.216

Figure 13: Google Analytics Cost per Click Statistical Analysis

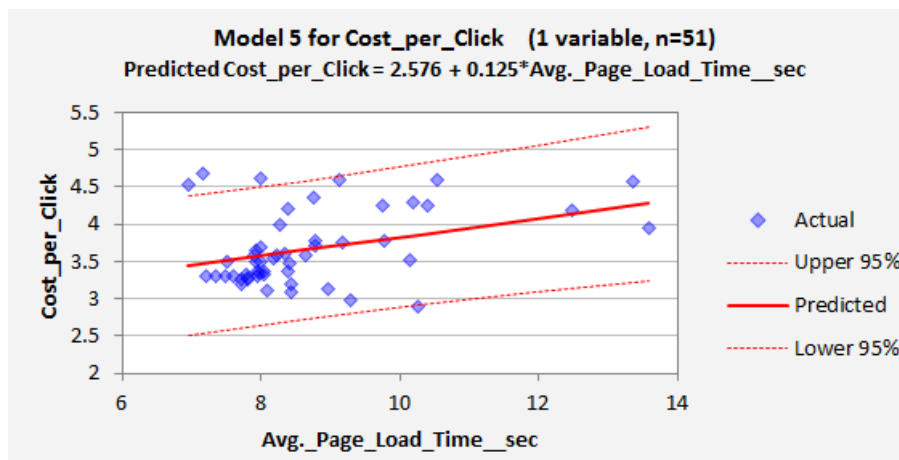


Figure 14: Google Analytics Cost per Click Statistical Model

## CONCLUSIONS

Stepping back from the detailed analysis we see that by using certain quality management techniques such as statistical analysis the marketing department studied in this case study was able to identify target goals for its metrics and hypothesize solutions to reach its goals. During this case study statistical analysis was extremely important to gaining insight into potential problems forthcoming by looking into the trends for university admission application rates and overall university attendance rates for the Country both of which were predicted to remain in decline in the upcoming 5 years. Once these issues were identified, quality management techniques such as root cause analysis and the five why's techniques were used to brainstorm solutions to combat the declining admission rate numbers. From there using general industry research on quality in marketing we were able to determine ways to increase the ROI of the marketing group by focusing on the web site traffic and using statistical analysis and models to understand how the admission rate trends could be impacted by generating more quality leads from the university web site.

Moving forward additional areas to implement quality management to increase the quality of the university marketing department would be the internal department processes used to determine and decide on which marketing strategies to use and to increase the effectiveness of those strategies by specifically targeting certain desired demographics. The analysis done in this paper could be supported by bolstering the data collected here with demographic information on potential clientele combined with data on the ideal clientele to determine the effectiveness of marketing strategies and initiatives. One other area to investigate for adding quality management techniques would be how the marketing department processes can be continuously improved based on what the statistical analysis is telling the marketing department on the effectiveness of specific marketing campaigns.

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## THE DEVELOPMENT OF COMPETENCES OF NURSING STUDENTS DURING THEIR FIRST PRACTICAL CLASSES

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### ABSTRACT

Nursing education devotes a lot of attention to the development of competence. The character and quality of students' clinical experience, in addition to knowledge, play an important role in this process. Nursing students' first experiences during the development of competence during the practical classes on the ward after practicing professional skills in simulated conditions is of utmost importance. The aim of this study was to assess the development of competence of nursing students during the first practical classes.

The study utilised a diagnostic survey and rating scales. The research tools included: an original questionnaire and ACS - Ascent to Nursing Competence Scale. The subjects were 322 first year undergraduate nursing students from universities in southern Poland. The fieldwork was carried out in 2016, after the students had completed their first block of practical classes.

Students rated their competence in the area of Knowledge and Skills as the highest, and their competences in the area of Need to belong to a group as the lowest. Younger students achieved higher scores in all subscales of the competence scale.

Supportive learning environment facilitates the development of competence of nursing students. The sense of self-efficacy and the sense of belonging to an interdisciplinary team of learners play a crucial role in this process.

**Keywords:** Competence, Student, Nursing

### INTRODUCTION

Developments in nursing create a need to test oneself in new environments and meet new requirements. Nursing competence is an important determinant in ensuring quality and safety of health care (White, 2003, Defloor et al. 2006, Sportsman, 2010, Ahmed, Adam & Al Moniem, 2011). Competence is a combination of technical knowledge, cognitive and social skills, motives, attitudes and needs. The most important competencies include critical thinking and problem-solving skills that allow the nurse to apply theoretical knowledge in practice in a diverse multi-disciplinary and multi-cultural environment. Great attention is paid in nursing education to the development of competencies (Hakimzadeh et al. 2012, Reid 2000, Kajander-Unkuri et al. 2013, Pijl-Zieber et al. 2014). The character and quality of the clinical experience of the student play an important role in the development of professional competencies. The experience gained during the practical training on the ward is of critical importance. Nurse education in Poland takes place in Bachelor's and Master's degree programs and is based on the standard of education of the Ministry of Science and Higher Education from 2012. In the first year of education, students take 175 hours of work in a skill lab, afterwards, they have 80 hours of practical training in a clinical ward under the supervision of an academic teacher. The main objective of clinical education is the students' acquiring nursing, professional and social skills (Levet-Jones & Lathlean, 2009, Benner et al., 2010, Chen et al., 2011). The learning environment, which should provide an opportunity to raise the level of competencies appropriate to the stage of education, plays a significant role in the development of competencies. Students' satisfaction with the clinical training increases their capabilities, desire to develop knowledge and to achieve competence (Hartigan-Rogers et al., 2007, Johansson et al., 2010, Henderson et al., 2012). Clinical education give students the opportunity to combine theory with practice and are a source of experience that makes it easier to achieve competence.

In addition to the teacher, it is the nursing team that not only shapes the experience of students, but also is a major supporting force on a clinical ward (Henderson, Heel & Twentyman, 2007). For students it is extremely important to be accepted by the interdisciplinary team, which translates into a sense of belonging to a team. Levett-Jones and Lathlean (2009) confirmed that the sense of belonging is conducive to the development of students' self-confidence in professional activities. The sense of belonging, the support received from teachers and co-workers at the ward create good conditions for the development of knowledge and professional competence. It was determined that the attitudes and behavior of nurses working at the ward towards the students affected their learning and socialization (Benner et al., 2010, Chen et al., 2011, Aghamohammadi-Kalkhoran, Karimollahi & Abdi, 2011, Raines, 2012), achieved competencies and confidence (Bradbury-Jones, 2011). Knowing the factors that determine the process of developing nursing competencies will contribute to improving the education of nursing students and the professionalisation of nursing care.

### Study objectives

The aim of this study was to assess the conditions of development nursing students competencies during their first practical classes.

### METHOD

The study was carried out using a diagnostic survey questionnaire and rating scales. The research tools included: an original questionnaire, ACS - Ascent to Nursing Competence Scale.

The original questionnaire covered socio-demographic variables (age, gender, place of residence).

ACS - Ascent to Nursing Competence Scale, in addition to evaluating professional competence, also assessed the conditions and attributes of the development of professional competencies of nursing students. It consisted of closed questions with answers to choose from based on a 5-point Likert scale, thematically divided into three subscales. The first subscale - Support (ACS W, W1-W6) allowed to determine the relationship of the students with their tutor / teacher and learning support for students at the beginning of the practical training on the ward. The second subscale - Need to belong to a group (ACS B, B1-B17) assessed the students' need to be included in the work of a group. It showed the necessary role of tutors/teachers for students' gaining a sense of acceptance by the medical team. The third subscale - Knowledge and Skills (ACS LW, L1-L13) allowed for the assessment of the students' knowledge and professional skills. All subscales of the ACS are characterized by moderately high criterion validity and reliability. The original version of the scale (McCoy, Levett-Jones & Pitt, 2013) was subjected to a multi-stage process of adaptation to Polish conditions by Brodowicz and Zarzycka. Scale consisted of 36 statements that a respondent evaluated from 0 to 4 points. Score 0 - definitely I do not agree, 1 - I disagree, 2 - I have no option, 3 - I agree, 4 - definitely I agree. (Brodowicz & Zarzycka, 2015).

The study involved 322 subjects who were the first year undergraduate nursing students at universities in southern Poland. The fieldwork was carried out in 2016, after the students had completed the first block of practical training classes. The students were enrolled in the first year of studies and had completed the practical classes in the Fundamentals of Nursing. The students were informed about confidentiality and anonymity of the research, and that participation was voluntary and that they could refuse/withdraw from the study at any time during the study. The study was approved by the Bioethics Committee (approval no. 122.6120.193.2015). Everyone agreed to participate in the study. Questionnaires received from respondents were evaluated individually and checked for completeness, data was coded, entered into the database and processed using IBM SPSS Statistics 20 for Windows. The adopted level of significance was  $\alpha = 0.05$ .

### FINDINGS

The great majority of the subjects were women (N = 300, i.e. 93.2% of the sample). Men formed 6.8% of the subjects (N = 22). The mean age of respondents was 20.89 years (SD = 2.47). Age of students ranged from 19 to 35 years old. Most often (N = 146, i.e. 45.3%), the subjects were 20 years old.

Analysis of the results of Ascent to Nursing Competence Scales demonstrated that most students assessed their competence in the field of Knowledge and Skills (M = 2.75, SD = 0.73) as the highest. Support was assessed at almost the same level (M = 2.74, SD = 0.82). Need to belong to a group was evaluated as slightly lower (M = 2.61, SD = 0.71).

Statistical analysis of the data contained in Table I allowed for a detailed examination of the results in the area of development of individual competencies. The average score on the Ascent to Nursing Competence Scale was 2.68 (ranging from 2.09 to 3.39). Higher average scores were obtained in the subscale of Knowledge and Skills - 2.75, then the Support subscale - 2.74, and the lowest in the subscale of Belonging to the group - 2.61. The standard deviations ranged from 0.71 to 0.82, which indicated a moderate diversity of results.

Analysis of the data allowed for a detailed examination of the data regarding received support and cooperation of the student with the teacher/nurse. Students most frequently pointed out that the teacher made them familiar with the operation of the ward at the beginning of practical classes (M=3.39), helped them to adjust to the environment (2.79) and made them feel welcome in the ward (M=2.75). In contrast, there were not introduced to all the ward staff (M=2.15) and did not feel welcome (by the staff) of the clinical ward (M=2.56). Moreover, the students stated that they had felt ignored by the medical staff when they started their practical training (M=2.82).

They agreed that the teacher was happy to devote their time to them (M=3.04), but also often feel like "odd ones" in the ward (M=2.97). They established a good relationship with the teacher (M=2.80), who showed their confidence in the students in relation to patient care duties (M=2.97). The subjects noted that were not supported in developing skills (M=2.77), but also frequently pointed out that the teacher encouraged them to do so (M=2.73). The staff did not support them enough in improving their skills (M=2.60) and during the practical training they did not feel like part of the team (M=2.54). They stated that the teacher didn't always thank them for their help at the end of the shift (M=2.47). Medical personnel were reluctant to devote time to them (M=2.34). They felt that they did not recognise the students' contribution to the work of the team (M=2.29). Moreover, they did not feel as important members of the team (M=2.25) and didn't experienced connection with the staff during the practical training (M=2.09). The results of this subscale indicate a weak sense of belonging to a group - the interdisciplinary team.

The respondents also recognized that during the practical training they were better able to combine theory with practice (M=2.91), and that duties were assigned to them in an appropriate manner, according to their knowledge and skills (M=2.84). They further stated that they felt they made an important contribution to patient care (M=2.82). They concluded that they were afforded an opportunity to gradually become independent at work (M=2.71), and encouraged to acquire new skills (M=2.80). They gained the conviction that thanks to completing their practical training they had the makings of a competent nurse (M=2.80). They felt more professionally talented after completing the classes (M=2.78). They harbored a slightly weaker belief that they had possessed time management skills (M=2.75) and felt confident enough to become gradually more independent (M=2.71). The respondents did not fully agree with the statement that they had achieved their practical training goals (M=2.62). They concluded that they had not had many opportunities to practice clinical skills (M=2.51).

It should be emphasized that the students highly appreciated the commitment and thoughtfulness of the teacher. They found their support to be extremely important for adapting to the new environment. The teacher created a sense of security and acceptance, and encouraged the development of skills. The students were convinced that thanks to the completion of the practical training and gradually becoming more independent they were better able to combine theory with practice. They further stated that they felt they made an important contribution to patient care. Table 1.

Table 1. Descriptive statistics for each item of the ACS (N=322)

subscales	Items	M	Me	SD
<b>SUPPORT</b>	W 6 / My tutor presented to me to the operation of the ward when I began the practical training	3.39	4	1.09
	In 5 / I was ignored by staff when I beginning my practical training	2.82	3	1.12
	W 3 / I was introduced to all the staff on the ward when I started the practical training	2.15	2	1.30
	W 4 / The staff made me feel welcome when I started the practical training	2.56	3	1.15
	W 2 / The teacher helped me to fit in the environment	2.79	3	1.03
	W 1 / The teacher made me feel welcome when I started the practical training	2.75	3	1.08
<b>NEED TO BELONG</b>	B 7 / The teacher thanked me for my help at the end of each shift	2.47	3	1.25
	B 2 / The staff were open to my questions	2.82	3	1.08
	B 17 / I felt like an odd-one out	2.97	3	1.12
	B 4 / I felt that the teacher trusted me in relation to patient care duties.	2.78	3	1.04
	B 5 / The staff supported me in improving my skills	2.60	3	1.00
	B 16 / I felt like an important member of the nursing team	2.25	2	1.07
	B 1 / The teacher was happy to devote their time to me	3.04	3	1.04
	B 8 / Medical staff were happy to devote their time to me	2.34	2	1.09
	B 9 / During the practical training I felt like part of the team	2.54	3	1.04
	B 15 / I felt that the medical staff recognised my contribution to the work of the team	2.29	2	1.04
	B 11 / I experienced a sense of connection with the staff during the course of the practical training	2.09	2	1.11
	B 12 / I was not been supported in developing my skills	2.77	3	1.04

<b>KNOWLEDGE AND SKILLS</b>	13 B / The teacher thought that I was competent	2.57	3	0.95
	B 14 / I felt included in the work of the ward	2.81	3	0.97
	B 10 / I felt that I fitted with the rest of the staff	2.54	3	0.98
	B 6 / The teacher encouraged me to develop my skills	2.73	3	1.01
	B 3 / I established a good working relationship with my teacher	2.80	3	0.96
	LC13 / The care duties were assigned to me according to my knowledge and skills	2.84	3	0.99
	LC5 / I had many opportunities to practice my clinical skills	2.51	3	1.07
	LC 3 / The practical training helped me in preparing for working as a nurse	2.67	3	0.96
	LC9 / I was encouraged to acquire new skills	2.80	3	0.89
	LC2 / During the practical training I was able to develop my time management skills	2.75	3	0.93
	LC 6 / The experience gained during the practical training allowed me to achieve professional competence	2.67	3	0.93
	LC 7 / I felt more professionally talented after completing the training	2.78	3	0.94
	LC11 / I made an important contribution to patient care	2.82	3	0.94
	LC4 / I believe that thanks to completing the training I have makings of a competent nurse	2.80	3	0.92
	LC 10 / During the practical training I felt confident enough to gradually become more independent	2.71	3	0.93
	LC 8 / I achieved my practical training goals	2.62	3	0.92
	LC12 / I had the opportunity to gradually become independent at work	2.82	3	0.88
	LC 1 / Thanks to the completion of the practical training I am able to better combine theory with practice	2.91	3	0.88

M- mean, Me - median, SD - standard deviation

Data analysis also demonstrated that the age of the respondents significantly differentiated the ACS scores. Older students obtained lower scores in the individual ACS subscales than younger people. They also felt less support from the teacher and the staff. Their need to belong was met to a significantly lower degree than in the case of the younger students. In terms of knowledge and skills, the older students demonstrated lower achievements than the younger ones - Table 2.

Table 2. ACS scores and age of the respondents (N = 322)

Age	ACS W	ACS B	ACS LW
<b>Rho</b>	-0.23	-0.28	-0.24
<b>p</b>	<b>&lt;0.0001</b>	<b>&lt;0.0001</b>	<b>&lt;0.0001</b>
<b>N</b>	322	322	322

Spearman's rho correlation coefficient. p - level of statistical significance p = 0.05. N - number of subjects

No significant gender differences were observed on any of the ACS subscales (ACS W p = 0.95, Z = -0.64; p ACS B = 0.54, Z = -0.66; p ACS LW = 0.35; Z = -0.94).

## CONCLUSIONS

The goal of nursing education is to develop the learners' ability to practice professional, holistic patient care. It is important that, in addition to theoretical knowledge, students obtain high levels of practical preparation and experience. Clinical experience gained through the application of theoretical knowledge in practice is the basis of nursing as a profession (Killam & Heerschap, 2013). The quality of clinical experience and knowledge affects the level of competence of future nurses (Mc Hugh & Lake, 2010).

The current study has demonstrated that nursing students rated their competence in the area of Knowledge and Skills as the highest, the results of the Support subscale were slightly lower and their competences in the area of Need to belong to a group as the lowest. The assessment of competence development carried out among nursing students demonstrated the need to strengthen competencies in the B subscale of the ACS (Belonging to the group - the interdisciplinary team). Results suggest providing individual interventions for those students, who need support in dealing with the challenges of the medical curriculum. It should be noted, however, that in assessing the need to belong to a group - the interdisciplinary team - there were several items that indicated a poor sense of belonging to that group among the subjects. Lack of positive relationship with the medical staff emerged as one

of the obstacles to effective learning mentioned by students in the research carried out by Levett-Jones and Lathean (2009), Kilam Heerschap (2013).

Brodowicz-Król et al. (2016) assessed holistic and professional competence of nursing students and noticed that there is a relationship between the competencies, especially in relation to the need to belong to a group. Borrot et. al (2016) clearly demonstrated that the experience gained during the course of clinical training significantly affected the formation of a sense of belonging to a group, and this, in turn, contributed to students' greater satisfaction with learning.

Development of professional competence is affected by many factors, internal and external. Our study revealed that the development of nursing competencies was determined by age. It was established that the level of competence in each of the studied areas decreased with age.

In the light of the current study it seems reasonable to say that attention to the sense of belonging to the interdisciplinary team play a key role in shaping the competence of nursing students. It should be remembered that support from the nursing staff on the ward can be a source of motivation for the students. Supporting, innovative, creative and highly personalized learning environment where students feel an integral part of the team is conducive to the process of socialization, reduces anxiety, creates self-confidence and enhances the willingness to learn, and thus the necessary professional competence.

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