

# A Comparative Study on Level of Competency Required By Lecturers and Students in the Use of Computer Aided Design for Pattern Drafting in Tertiary Institutions Nasarawa State

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**Abstract:** - This study was a comparative study on the level of competency required by Lecturers and students in the use of Computer Aided Design for Pattern Drafting. The sample size for the study was 123 respondent, these include Lecturers and students of the department of Home Science and Management, Nasarawa State University. Two research questions were answered. The instrument used for data collection was Lecturers and Students Questionnaire. Data collected was analysed using mean and standard deviation. Independent T-test was used to test the hypotheses. Responses from both Lecturer and Students indicated that competencies of lecturers and students on basic CAD knowledge were to a low extent whereas competencies on basic educational knowledge of lecturers and students were to a moderate extent. The study concluded that both lecturers and students have low competency level in teaching and learning of pattern drafting using Computer Aided Design for pattern drafting. Based on this findings, recommendations were made that school management should provide appropriate staff development policy to enhance training in Computer Aided Design for pattern drafting in tertiary institution in Nasarawa State.

**Keywords:** competency, lecturers, students, computer aided design, pattern drafting.

## I. INTRODUCTION

Patterns is a style, planor diagram used as a guide in making clothes. It is also a plan put on piece of paper drafted and cut to sizes and shapes used for cutting out fabric for sewing out dresses. It is the paper cardboard template from which the parts of a garment are traced into fabric before cutting out. Pattern cutting is the science of designing patterns (Igbo and Iloeje, 2003). It is the design of garment containing all instructions, allowances to accommodate the size of the wearer (Aldrich,2006). Drafting is the sketching of an image on paper to show a portrait of a work one intends to do. It is the engineering approach to producing pattern using a set of measurement obtained from a figure while following a set of instructions (Igbo and Iloeje, 2003). Pattern making is an art of manipulating and shaping a flat piece of fabrics to conform to one or more curves of the human figure. Pattern making is the bridge function between design and production (Okeke,

2009). A sketch can be turned into a garment via a pattern which interprets the design in the form of the garment component. It is the primary preparation for creating a cut-and sew woven garment. The initial measurement and adjustments are created on paper as a draft.

Computer is a very useful tool when used correctly it can increase accuracy, productivity and manage information (Beazley and Bond, 2003). This removes the time consuming tasks of drawing, planning and cutting patterns by hand. This will enable the clothing design, pattern construction, and product development to be integrated into a more continuous process. Istook (2000), stated that computer aided design for pattern drafting is a design tool, used for creating patterns. Computer aided design for pattern drafting is to enhance the development and manufacturing of clothing. It allows drafting of patterns to be generated rapidly and adjusted at the same time without diminishing (Istook, 2000). It provides better communication and integration between product development systems. Talib (2013) explains that pattern making has now reached digitalized level and it is playing an important role in the world of the fashion design industry.

Clothing computer aided design (CAD) came into existence in 1970 and has evolved into a better tool used for production, development and manufacturing. It has moved from the early stage of computer modelling to the modernized idea of Computer Aided Design (CAD) (Grolier, 2010). Computer Aided Design (CAD) is a device that performs technical services. They are mainly used in various processes such as garment design, pattern preparation, pattern grading and marker making. It is the clothing software that has attracted a considerable attention in the area of research over the years with the goal of saving production time and proving the quality of drafted patterns for production in the fashion and textile industry (Fozzard, 2005). Ondogan, (2006) stated that in the 1960s several brands of computers were introduced into the market, and textile engineers started to think about CAD. Leach, (2002) mentioned that, Computer Aided Design (CAD) is a tool that can be used for designing and drafting work and can also be used to sketch, rough ideas, although it

is more used to create accurate finish pattern. Hearle, (2003) intimated that the development of CAD paved way for creative designing. It started with the introduction of interactive computers called mini computers. They started using this computer in small group and the present day personal computers (PCs) have formed strong networks with one another. It became possible to see on screen what the designer had in mind at a period, no later than the time he could design by himself. Advances in technology and computer literacy in specialized fields are an important consideration for the contemporary industries and institutions of higher learning (Gillespie, 2009). Rapid pace of technological advancement in many industries, including the apparel industry, has forced businesses to demand for a computer-literate workforce (Smith & Necessary, 2006). Studies have shown that there are an increasing number of jobs that require the use of computer technologies (Fraser & Goldstein, 2000, MacAulay, 2003). This is because training and education are influenced by the labour market demand. In today's fast, inter-related and versatile economy, employers are looking for productive employees who are quick, creative, flexible and up-to-date with new technology. The technology that has had the greatest impact on the production system over the last decades is the computer technology. For any meaningful technological breakthrough to stand on its feet solidly in any organization like: schools, colleges, universities and the fashion industry in a developing country like Nigeria, computer aided design is paramount.

### *Problems*

It is clear that there is a problem both in teaching and learning of Clothing especially computer aided design for pattern drafting and in what students are able to learn. Some of the problems have been traced to many factors including the lack of knowledge on computer aided pattern drafting, the software, insufficient time allocated during practical classes and facilities and equipment for teaching and learning

### *Objectives of the Study*

The objective of the study was to compare the level of competency required by lecturers and students in the use of computer Aided design for drafting pattern. Specifically, the study was to compare;

1. Competencies required by lecturers in the use of computer aided design for pattern drafting.
2. Competencies required by students on the usage of computer learning pattern drafting.

### *Research Questions*

1. What are the competencies required by lecturers in the use of computer aided design for pattern drafting?
2. What are the competencies required by students on computer usage?

### *Hypotheses*

The following hypotheses were formulated and tested at 0.05 level of significance

**H<sub>01</sub>**:- There is no significant difference in the mean rating of the responses of lecturers and students on the competencies required in teaching and learning computer aided pattern drafting.

### *Significance of the Study*

This study would be significant to the following persons: clothing lecturers and students of Home Economics/Home Science and Management, Clothing/Garments producers Curriculum developers and schools where Home Economics are taught. The study will be of benefit to lecturers as it will assist them to collect and gather current information and issues about clothing and fashion activities. Students may develop patterns for various clothing items for sale.

## II. METHODOLOGY

### *Research Design and Area of Study*

The research design adopted for this study was a descriptive survey. Conducted in Lafia the state capital of Nasarawa State. Nasarawa State is located in North central region of Nigeria. It is boarded on the West by the Federal Capital territory Abuja, the North by Kaduna, the South by Benue and Kogi State and on the East by Plateau and Taraba State. Nasarawa state has tertiary institutions like Federal and State Polytechnics, College of Education in Akwanga, College of Agriculture Lafia, Nasarawa State University in Keffi and newly established Federal University. There are students from different states schooling due to proximity to other states and there is low income expenditure on clothing, feeding, transportation and housing. Two of the higher institutions offer Home Economics and one Home Science and Management, others Catering and hospitality. It is a growing state with need for upgrading the types of clothing produced. It is gradually becoming a very busy state.

### *Population for the Study*

The total population for this study was 123 lecturers and students of the department of Home Science and Management in Nasarawa State University Keffi and Home and Rural Economics college of Agriculture Lafia, Nasarawa State at the time of study. Department Record (2015/ 2016)

### *Sample and Sampling Techniques*

The entire population was used as sample for the study, the sample size was 123 respondents made up of all clothing lecturers and 300level to 400level students from the department of Home Science and Management in Nasarawa State University keffi and all clothing lecturers and students of HNDI –HNDII from the department of Home and Rural Economics, College of Agriculture Lafia. Purposive sampling technique was used to select samples. This is because the

respondents were specialist in clothing and the students have previous and present knowledge on pattern drafting.

#### *Instrument for Data Collection*

The instrument for data collections were two phased structured questionnaires titled: “Level Of Competency Required by Lecturers In Use Of Computer Aided Design For Pattern Drafting questionnaire” (LCRLIUOCADPDQ) and “Level Of Competency Required by Students In Use Of Computer Aided Design For Pattern Drafting Questionnaire” (SCRLIUOCAPDQ) developed by the researcher from the review of literature and competency evaluation questionnaire adapted by the researcher. Copies of the questionnaire were used to collect data amongst respondents on computer application in pattern drafting as well as other information that was necessary for the study. The questionnaire is divided into 2 sections. Section A contains demographic information about the respondents while section B deals with the view of respondents on the purpose of the study. Four point rating scale was used for section B for each copy of the questionnaire. Items for objective were group as; Great Extent (4), Moderate Extent (3), Low Extent (2), No Extent (1)

#### *Data Collection and Analysis Procedure*

Data were collected using a structure questionnaire, administered to the respondents by the researcher with the help of a research assistant. The researcher and the research assistant went to all respondents (lecturers and students) of the department of Home Science and Management, Nasarawa State University Keffi and College of Agriculture Lafia, to administer the questionnaires. The respondents were given one day within which to study and respond to the questionnaire. The method was adopted to ensure a high return rate. Therefore, questionnaires administered to both lecturers and students were properly completed and returned. Their views were retrieved in the copies of the questionnaire. Method of data analysis was specific to each of the research questions. Data collected for research questions one and two were analysed using mean and standard deviation. A criterion mean of 2.50 was established for the study such that a mean score of 2.50 and above signifies acceptance while a mean score below 2.50 signifies rejection. All percentage above 50 was accepted as good or high enough for acceptance. Data for research questions two were analysed using mean. A scale (1-4) was drawn to estimate level of competency required by lecturers teaching pattern drafting using CAD as follows: 0-1.5= no extent, 1.6-2.4 = low extent, 2.5-3.5 = moderate extent, 3.6-4.5 = great extent. Independent T-test was used to test the hypothesis at 0.05 level of significant.

### III. RESULTS

The results for the study is discussed based on the research questions.

*Research Question 1:* What are the competencies required by lecturers and students in the use of computer aided design for pattern drafting?

Table 1: Mean and Standard Deviation of Respondents on the Competencies required by Lecturers in Teaching Pattern Drafting using Computer Applications (N= 6)

S/N	Items	X	SD	Decision
<b>Basic CAD Knowledge</b>				
1	Can understand technical pack using computer application	2.33	0.41	Low extent
2	Can analyze garment sample using computer application	1.67	0.52	Low extent
3	Can take body and garment measurements using computer application	2.14	1.07	Low extent
4	Can prepare measurement chart using computer application	2.42	0.55	Low extent
5	Can select and use tools and materials required for pattern drafting using computer application	2.11	0.25	Low extent
6	Construct medium size basic block and pattern using computer application	1.33	0.52	No extent
7	Can grade patterns from basic block using computer application	2.22	0.37	Low extent
8	Can review shapes and specifications of all patterns using computer application	1.33	0.52	No extent
9	Can trace off basic pattern for grading using computer application	2.17	0.41	Low extent
<b>Basic Educational Knowledge</b>				
10	Can communicate with co-workers	2.53	0.82	Moderate extent
11	Can manage time	2.67	0.52	Moderate extent
12	Can work with a team	2.55	0.16	Moderate extent
13	Can follow health and safety requirements in garment construction	3.09	0.11	Moderate extent
14	Create pattern using basic blocks	3.17	0.34	Moderate Extent
15	Can make measurement chart according to the measurement taken	2.98	0.67	Moderate extent
16	Can label all the basic information on the block	3.02	0.53	Moderate extent

N=Number of Respondents, X= Mean of Respondents, SD= Standard Deviation of respondents.

0-1.5 (no extent), 1.6-2.4 (low extent), 2.5-3.5 (moderate extent), 3.6-4.5 (great extent)

Table 1 shows that some lecturers are to a low extent competent in teaching pattern drafting using computer aided pattern drafting in/ basic CAD knowledge have their mean in the range of 1.67 to 2.42. However, the table shows that some lecturers are to moderate extent competent in their basic educational knowledge as 6 out of the 7 items listed have their mean value ranged from 2.53 to 3.17.

**Research Question 2:** What are the students' competencies in computer usage?

Table 2: Mean and Standard Deviation of Students on students' competencies in computer usage (N=117)

S/N	Knowledge	X	SD	Decision
<b>Basic CAD Knowledge</b>				
1	Can learn technical pack using computer application	3.12	0.24	Moderate extent
2	Can analyze garment sample using computer application	2.14	0.13	Low extent
3	Can take body and garment measurements using computer application	2.23	1.07	Low extent
4	Can prepare measurement chart using computer application	1.78	0.19	Low extent
5	Can select and use tools and materials required for pattern drafting using computer application	2.41	0.55	Low extent
6	Can construct medium size basic block and pattern using computer application	2.13	0.42	Low extent
7	Can grade final patterns basic block using computer application	1.99	0.71	Low extent
8	Can review shapes and specifications of all patterns using computer application	1.89	0.62	Low extent
9	Can trace basic pattern using computer application	2.41	0.31	Low extent
<b>Basic Educational Knowledge</b>				
1	Can make measurement chart according to the measurement taken	3.22	0.61	Moderate extent
2	Can create pattern using basic blocks	2.54	0.49	Moderate extent
3	Can label all the basic information on the block	2.98	0.43	Moderate extent
4	Can work with a team when given assignment on pattern drafting	3.17	0.24	Moderate extent
5	Can manage time in learning pattern drafting	2.71	0.23	Moderate extent
6	Can communicate with other students during pattern drafting class	3.54	0.92	Moderate extent
7	Can follow health and safety requirements in garment construction during pattern drafting class	3.00	0.41	Moderate extent

N=Number of Respondents, X= Mean of Respondents, SD= Standard Deviation of respondents.

0-1.5 (no extent), 1.6-2.4 (low extent), 2.5-3.5 (moderate extent), 3.6-4.5 (great extent)

Table 2 shows students' competency on the computer usage for pattern drafting is to a low extent as 8 out of the 9 items on basic CAD knowledge have their mean ranged from 1.78 to 2.41. However, the table shows that the students are to a moderate extent competent in their basic educational knowledge as all the 7 items listed have their mean value ranged from 2.54 to 3.54.

#### IV. DISCUSSION

The result of the finding on the competencies required by teachers in teaching pattern drafting using computer aided design showed that the lecturers are not very competent in basic CAD knowledge. The finding of the study showed that the lecturers are to some extent competent in

basic educational knowledge like how to manage time and work as a team in the teaching of pattern drafting. This is supported by Kamua (2007) who in her study clearly indicated that there is deficiency in apparel CAD technology training in Universities.

The result of the study on the students' competencies in computer usage showed that the students lack competency in basic CAD knowledge like how to construct medium size basic blocks and pattern using computer application and how to prepare measurement chart using Computer. This finding is complimented by the finding of Antiaye (2003) who reported that students complained of high costs in procuring a computer and they seem to be making efforts to purchase and have found the study of CAD interesting. This is also supported by the finding of Aduwa-Ogiebean and Iyamu (2005) who identifies the high cost of computer hardware and software; weak infrastructure; lack of human skills and knowledge in Computer technology, and lack of relevant software appropriate and culturally suitable to Nigeria as the major stumbling block of the adoption of Computer technology in tertiary education in Nigeria.

#### V. CONCLUSION

The study compared the level of competency required by lecturers and students in the use of CAD for pattern drafting, both lecturers and students basic CAD knowledge are to a low extent competent in teaching and learning pattern drafting. While the educational knowledge of lecturers and students are to a moderate extent.

#### Recommendations

The following recommendations were made based on the findings of the study

1. School management should provide appropriate staff development policy to enhance training in Apparel Computer Aided Design.
2. Students should be sent on Industrial Training in clothing industry where they can have access to the use of computer aided pattern drafting.
3. Short term courses in CAD pattern drafting should be put together for clothing lecturers

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