

Impediments and Strategies for Acquisition of Competence in Pattern Making among Clothing and Textiles Students for Apparel Production in Nigeria

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ABSTRACT:

This study investigates the impediments faced by students in Anambra State, Nigeria, in their quest to acquire pattern making competencies and identifies effective strategies for improvement. Guided by two research questions and two hypotheses, the study adopted the ex-post facto research design using the descriptive survey method. The population size of three-hundred and sixty-three (363) students is made up of thirty (30) students from Federal College of Education, Umunze, forty (40) students from Nwafor Orizu College of Education, Nsugbe, twenty-four (24) students from Anambra State Polytechnic, Mgbakwu, and two hundred and fifty-nine (269) students from Federal Polytechnic, Oko. No sampling was done because of the manageable size of the population. This research unveils the critical impediments students face, including outdated curricula, inadequate resources, lack of alignment with industry standards, and faculty members' limited expertise in pattern making. Additionally, it identifies strategies for enhancing students' competencies, such as promoting cooperation between educational institutions and industry, equipping laboratories with modern facilities, and encouraging faculty development through refresher courses. The study reveals no significant difference in the impediments faced by students in Colleges of Education and Polytechnics, suggesting that these challenges are consistent across various educational institutions. Similarly, no significant differences were found in the strategies for improving competencies, indicating that the identified solutions are applicable across different institution types. Collaboration between educational institutions, government authorities, and industry stakeholders is crucial to ensure the successful implementation of these strategies, fostering a brighter future for students and the industry at large.

Keywords: *Impediments, Strategies, Acquisition, Competence, Pattern Making, Clothing and Textiles, Students, Apparel Production.*

INTRODUCTION:

The clothing and textiles industry in Nigeria is a dynamic and growing sector with significant potential for economic development. The field of clothing and textiles encompass the industry, and art related to the design, production, and distribution of clothing, textiles, and related products, from the creation of fashion designs and patterns to the manufacturing of textiles and garments, as well as the marketing and retailing of these products (Azonuche, 2019; Azonuche, Okoruwa & Ogbonyomi, 2022). Fashion design in polytechnics and clothing and textile programs in colleges of education and universities share a common goal: nurturing creative minds in the realm of clothing and textiles. Polytechnics focus on practical skills, teaching students the art of

pattern-making, sewing, and garment construction. In contrast, colleges and universities provide a more comprehensive education, delving into the theoretical aspects, history, and cultural significance of fashion and textiles.

As a vital component of the nation's economy, it provides skills, employment opportunities and contributes to both domestic and international trade (Azonuche, 2020). The clothing and textiles industry is a major driver of job creation globally. As a labor-intensive industry, it provides jobs for millions of people, especially in developing countries (Chen, Memon, Wang, Marriam & Tebyetekerwa, 2021). The growth of the industry can significantly contribute to job creation, particularly in regions where clothing and

textiles production is a primary economic activity, making it a crucial player in both local and global employment opportunities. However, the successful development of this industry is contingent on the competence of its workforce (Rahmaningtyas, Joyoatmojo, Kristiani, Murwaningsih & Noviani, 2023), particularly in the area of pattern making (Zhu, Wang, & Jiang, 2022; Al-Liati & Al-Dabagh, 2021), a fundamental skill essential for large-scale garment production (Hossain & Shah, 2023).

With a rapidly growing population and an increasing demand for clothing and apparel, there is a burgeoning need for skilled professionals in the field of pattern making. Skilled professionals in the field of pattern making are essential for several reasons. First, they bridge the gap between creative fashion design and practical garment production (Bicho, Pereira, Belino & Miguel, 2022; James, Roberts & Kuznia, 2016), ensuring that designers' visions become wearable realities. Second, these experts play a crucial role in achieving proper fit, comfort, and aesthetics in clothing, which are vital for customer satisfaction (Jankovska & Park, 2019; Liu, Wu, Zhu, Wang, Zeng, Tao & Bruniaux, 2022). Third, they enhance production efficiency by creating accurate templates for mass garment manufacturing (Bellemare, 2018; Withanaarachchi & Silva, 2023). Lastly, as fashion technology evolves, skilled pattern makers are needed to adapt to new software and techniques, keeping the industry competitive (Nouninou, Asadollahi-Yazdi, Baret, Nguyen, Terzi, Ouazene, Yalaoui, F. & Kelly, 2023). Their expertise is fundamental to both the quality of clothing and the success of the fashion industry.

Pattern making is the cornerstone of apparel production, serving as the bridge between creative fashion design and the realization of wearable garments. Pattern making is a critical skill within the apparel production process, serving as the foundation for creating well-fitted and aesthetically pleasing garments (Lei & Li, 2022). It involves the creation of templates or patterns that serve as blueprints for the assembly of clothing items. Competence in pattern making is crucial for ensuring that garments fit well, are aesthetically pleasing, and can be produced efficiently (Zhu, Wang & Jiang, 2022; Jin, Fan, Zheng, Chen, Liu, Jiang & Zhang, 2023). However, the acquisition of this competence among clothing and textiles students in Nigeria faces notable impediments, which have far-reaching implications for the industry's growth and the prospects of its workforce.

Anambra State, located in southeastern Nigeria, is no exception to the broader challenges facing the clothing and textiles education sector in the country. Despite the potential for growth and innovation in the

apparel production industry, students in Anambra State, as in other regions of Nigeria, encounter impediments that hinder their ability to acquire the necessary competencies in pattern making for large-scale garment production. These impediments have significant consequences not only for students' education and future careers but also for the broader development of the clothing and textiles sector in the state and the country as a whole.

Impediments to competence acquisition in pattern making can encompass various factors. Many educational institutions in Nigeria, including Anambra State, may face challenges in providing students with the necessary tools, equipment, and materials for effective pattern making education. Inadequate resources can limit students' hands-on learning experiences (Kyere, 2017; Spyropoulou, Glaroudis, Iossifides & Zaharakis, 2020). Educational programs in clothing and textiles may not always align with current industry standards and trends. An outdated curriculum may fail to equip students with the latest techniques and technologies in pattern making (Mehrmohammadi, 2013). Faculty and instructors in clothing and textiles programs may not always possess the requisite expertise in pattern making or may face challenges in staying up to date with evolving industry practices (Yokochi & Okada, 2021). Pattern making in the contemporary fashion industry often involves the use of computer-aided design (CAD) software. A lack of access to this technology or insufficient training in its use can impede students' competence development. Limited collaboration between educational institutions and the apparel production industry can hinder students' exposure to real-world practices and industry expectations.

The motivation for the study on impediments and strategies for the acquisition of competence in pattern making among clothing and textiles students in Nigeria stems from the critical importance of a skilled workforce to the clothing and textiles industry's growth and the broader economic development of the country. However, the competence gap in pattern making hinders the industry's progress and the employability of graduates. Various gaps and challenges have been identified in the existing literature, highlighting the urgency of this study. For instance, Ogbu (2015) observed a lack of necessary resources and tools in educational institutions, while Mehrmohammadi (2013) identified the continued use of outdated curricula. Additionally, Yokochi and Okada (2021) emphasized faculty members' lack of pattern making expertise, and Zhu, Wang and Jiang (2022) collaborated by Bicho, Pereira, Belino and Miguel (2022) underlined the limited access to critical technology such as computer-aided design (CAD) software. Moreover, the Nigerian Institute

of Social and Economic Research (NISER) (2023) highlighted the absence of substantial collaboration between academia and the industry. This study therefore aims to investigate the specific impediments faced by clothing and textiles students in Anambra State in their pursuit of pattern making competencies and identify tailored strategies to enhance their education and future career prospects.

Hypotheses:

- There is no significant difference between the mean (\bar{X}) responses of students in Colleges of Education and Polytechnics on the impediments to the acquisition of the competencies in pattern making for large scale garment production.
- There is no significant difference between the mean(\bar{X}) responses of Colleges of Education and Polytechnics students on the strategies for improving the competencies in pattern making for large scale garment production.

Methodology:

The study adopted the ex-post facto research design using the descriptive survey method. Ex-post facto research design deals which events that has occurred, while the survey method is a systematic method for gathering information from (a sample of) entities for the purpose of constructing quantitative descriptors of the attributes of the larger population of which the entities are members. The population of the study was 363 subjects, which comprised of all the Clothing and Textiles students in Federal and State Colleges of Education and Polytechnics in Anambra State. The

population size of three-hundred and sixty-three (363) students is made up of thirty (30) students from Federal College of Education, Umunze, forty (40) students from Nwafor Orizu College of Education, Nsugbe, twenty-four (24) students from Anambra State Polytechnic, Mgbakwu, and two hundred and fifty-nine (269) students from Federal Polytechnic, Oko. No sampling was done because of the manageable size of the population. All the 363 Clothing and Textiles students were involved in the study. This included the Clothing and Textiles students in the 2 Colleges of Education (Federal College of Education, Umunze, and Nwafor Orizu College of Education, Nsugbe) and 2 Polytechnics (Anambra State Polytechnic, Mgbakwu, and Federal Polytechnic, Oko) in Anambra State was used for the study. The data collected from respondents were coded and inputted in SPSS, Version 23, and analyzed with frequency counts, percentages, mean (\bar{X}) scores, Standard Deviation (SD), Improvement Need Index (INI), and t-test statistical tools.

The research instrument used to collect data from the respondents was a structured questionnaire. The questionnaire was subjected to face validation through the comments and suggestions of five experts, that is, the supervisor, three other lecturers from the Department of Vocational Education (Home Economics and Agricultural Education Units), and an expert from the Department of Measurement and Evaluation, Faculty of Education, Delta State University, Abraka. Their comments and suggestions were used to produce the final instrument that was used for the study. The reliability of the questionnaire was determined with the use of Split-half reliability method.

RESULTS:

Demographics:

Table 1: Biodata of Clothing and Textiles Students in Anambra State (n = 320).

Variables	Frequency (F)	Percentages (%)
Type of School		
College of Education	62	19.4
Polytechnic	258	80.6
Total	320	100
Location		
Rural	64	20
Urban	256	80
Total	320	100
Sex		
Male	5	1.6
Female	315	98.4
Total	320	100

Source: Field Work (2021)

Table 1 presents the biodata of Clothing and Textiles students in Anambra State. Out of the 320 students that responded to the questionnaire, 80.6% are from Polytechnics in Anambra State, while the remaining 19.4% are from Colleges of Education. Responses on location shows that 80% are from rural areas, and 20% are from urban areas. Responses regarding their sex revealed more females with 98.4%, while the males are just 1.6%.

Research Question 1

What are the impediments to students' acquisition of the competencies in pattern making for large scale garment production in Anambra State?

Table 2: Mean (\bar{X}) Responses of Clothing and Textiles Students on the Impediments to the Acquisition of Competencies in Pattern Making (n = 320)

S/N	Impediments	\bar{X}	SD	Remark
1.	Lack of interest in the subject	2.46	1.10	Disagreed
2.	Inadequate time allotted for practical activities	2.48	1.05	Disagreed
3.	Inadequate available facilities	3.51	0.50	Agreed
4.	Obsolete learning resources	3.52	0.50	Agreed
5.	Lack of good light system to empower available equipment	3.47	0.50	Agreed
6.	Inability of lecturers to utilize modern learning facilities to teach	2.47	1.15	Disagreed
7.	Using lecture method to teach skills in pattern making	2.47	1.10	Disagreed
8.	Lecturers do not come to lectures regularly	2.49	1.12	Disagreed
9.	Lack of alignment of curriculum with industry standards	3.56	0.50	Agreed
10.	Inadequate capacity development for instructors	3.48	0.50	Agreed
11.	Unbalanced student-instructor ratio	2.48	1.11	Disagreed
12.	Lack of any coherent policy, objectives, learning content leading to massive failure	2.60	1.11	Agreed
13.	Poor attitude of learners generated by gender differences	2.44	1.11	Disagreed

Key: \bar{X} = Mean; SD = Standard Deviation

Result in Table 2 showed the responses of students on the impediments to the acquisition of competencies in pattern making for large scale garment production in Anambra State. Six (6) out of the thirteen (13) items, that is, item 9, 4, 3, 10, 5, and 12 had mean (\bar{X}) scores greater than the acceptable cut-off mean (\bar{X}) of 2.50 which is agreed. This indicates that they are the impediments to students' acquisition of the competencies in pattern making for large scale garment production. The remaining seven items, that is, item 13, 1, 6, 7, 2, 11, and 8 had mean (\bar{X}) scores greater than 2.50, which is disagreed, indicating that they are not impediments to students' acquisition of the competencies in pattern making for large scale garment production in Anambra State.

Research Question 3

What are the strategies for improving students' competencies in pattern making for large scale garment production?

Table 3: Mean (\bar{X}) Responses of Clothing and Textiles Students on the Strategies for Improving the Competencies in Pattern Making (n = 320)

S/N	Strategies for Improvement	\bar{X}	SD	Remark
1.	Cooperation between educational institutions, industry, private agencies that run these programmes should be encouraged to make them more relevant	3.81	0.39	Agreed
2.	Government should equip laboratories with equipment, facilities required for teaching garment pattern making	3.72	0.45	Agreed
3.	Maintaining materials, tools, equipment used for teaching garment making in the clothing laboratory at all times	3.53	0.50	Agreed
4.	Carrying out demonstrations in the clothing lab with necessary teaching materials	3.54	0.50	Agreed

5.	Providing regular power supply to laboratory for effective usage of equipment	3.50	0.50	Agreed
6.	Providing adequate space for students during practical lessons	3.46	0.50	Agreed
7.	Availability of lab-attendants, cleaners to enhances the teaching-learning process	3.53	0.50	Agreed
8.	Replacement of faulty equipment should be carried out regularly	3.48	0.50	Agreed
9.	Using the appropriate method for teaching major concepts in pattern making	3.49	0.50	Agreed
10.	Modern equipment like computers should be acquired to teach computer-aided pattern making	3.62	0.49	Agreed
11.	Lecturers should go for refresher courses to be abreast with modern methods of teaching pattern making	3.67	0.47	Agreed

Key: \bar{X} = Mean; SD = Standard Deviation

Result in Table 3 presents the responses of students on the strategies for improving their competencies in pattern making for large scale garment production. All the items had mean (\bar{X}) scores greater than the acceptable cut-off mean (\bar{X}) of 2.50, which is agreed, showing that cooperation between educational institutions, industry, private agencies that run these programmes should be encouraged to make them more relevant, equipping laboratories with equipment, facilities required for teaching garment pattern making, among others, are strategies for improving students' competencies in pattern making for large scale garment production in Anambra State.

Hypothesis 1: There is no significant difference between the mean (\bar{X}) responses of students in Colleges of Education and Polytechnics on the impediments to the acquisition of the competencies in pattern making for large scale garment production.

Table 4: The t-test Analysis of the Mean (\bar{X}) Responses of Students in Colleges of Education and Polytechnics on the Impediments to the Acquisition of Competencies in Pattern Making

School	N	\bar{X}	SD	Df	T	p	Decision
Colleges of Education	62	3.63	0.49	318	1.28	0.20	Not Significant
Polytechnics	258	3.54	0.50				

Significant Level = (P > 0.05)

Key: N = Number of respondents; df = degree of freedom; t = t-value; p = table value

Result in Table 4 showed a t-value of 1.28 and a p-value of 0.20 at 0.05 alpha value. The null hypothesis was accepted because the p-value is greater than the alpha value. This implies that there was no significant difference between the mean (\bar{X}) responses of students in Colleges of Education and Polytechnics on the impediments to the acquisition of the competencies in pattern making for large scale garment production.

Hypothesis 2: There is no significant difference between the mean (\bar{X}) responses of Colleges of Education and Polytechnics students on the strategies for improving the competencies in pattern making for large scale garment production.

Table 5: The t-test Analysis of the Mean (\bar{X}) Responses of Students in Colleges of Education and Polytechnics on the Strategies for Improving the Competencies in Pattern Making

School	N	\bar{X}	SD	Df	t	P	Decision
Colleges of Education	62	3.81	0.40	318	-0.14	0.81	Not Significant
Polytechnics	258	3.81	0.39				

Significant Level = (P > 0.05)

Key: N = Number of respondents; df = degree of freedom; t = t-value; p = table value

Table 5 shows a t -value of -0.14 and a p -value of 0.81 at 0.05 alpha value. Since the p -value was greater than the alpha value, the null hypothesis was accepted. Thus, there was no significant difference between the mean (\bar{X}) responses of Colleges of Education and Polytechnics students on the strategies for improving the competencies in pattern making for large scale garment production.

DISCUSSION OF RESULTS:

Finding identified six (6) impediments to students' acquisition of the competencies in pattern making for large scale garment production. These include lack of alignment of curriculum with industry standards, obsolete learning resources, inadequate available facilities, inadequate capacity development for instructors, lack of good light system to empower available equipment, and lack of any coherent policy, objectives, learning content leading to massive failure. The findings are in agreement with Ada, et al. (2008), Afianmagbon and Obiukwu (2014), Obinnim and Pongo (2018), Uwameiye (2019), who stated that the major factors influencing students' acquisition of skills are obsolete and non-functional equipment, lack of good light system, uncondusive teaching environment, curriculum not aligned with industry standards, among others.

It also showed that the remaining seven items are not impediments to students' acquisition of the competencies in pattern making for large scale garment production in Anambra State. These include: poor attitude of learners generated by gender differences, lack of interest in the subject, inability of lecturers to utilize modern learning facilities to teach, using lecture method to teach skills in pattern making, inadequate time allotted for practical activities, unbalanced student-instructor ratio, and lecturers do not come to lectures regularly. These findings contradict Arubayi and Obunadike's (2011) report that student's lack of skills are due to their lack of interest in the subject. Furthermore, there was no significant difference between the mean (\bar{X}) responses of students in Colleges of Education and Polytechnics on the impediments to the acquisition of the competencies in pattern making for large scale garment production. This means that the same problem is plaguing the acquisition of competencies in pattern making in Colleges of Education and Polytechnics in Anambra State.

Findings from the study identified eleven (11) strategies for improving students' competencies in pattern making. The highest mean score was recorded for encouraging cooperation between educational institutions, industry, private agencies that run these programmes. This finding was supported by Arasinah, et al. (2014) who suggested that cooperation should be encouraged between educational institutions, industry and private agencies that run these programmes to make them more relevant,

increase credibility, and ensure materials and equipment are in accordance with the industry standard.

Other strategies include that Government should equip laboratories with equipment, facilities required for teaching garment pattern making, Lecturers should go for refresher courses to be abreast with modern methods of teaching pattern making, modern equipment like computers should be acquired to teach computer-aided pattern making, among others. These findings are in line with Awowede (2015), Amankwa, et al. (2015), Azonuche (2021) who stated that equipping laboratories with the needed equipment and facilities, maintaining the equipment, teaching with demonstrations, regular power supply, allocating more hours to practical works, among others are the strategies that can be utilized to improve the teaching of pattern making to students. There was no significant difference between the mean (\bar{X}) responses of Colleges of Education and Polytechnics students on the strategies for improving the competencies in pattern making for large scale garment production. This implies that same strategies can be employed to effectively teach pattern making to students in Colleges of Education and Polytechnics.

CONCLUSION:

In conclusion, this study on "Impediments and Strategies for Acquisition of Competence in Pattern Making Among Clothing and Textiles Students for Apparel Production in Nigeria" has provided valuable insights into the challenges faced by students in Anambra State in acquiring pattern making competencies and has identified strategies for addressing these challenges. The findings of this study have shed light on the impediments faced by students in their pursuit of pattern making competencies. Key impediments include the lack of alignment of the curriculum with industry standards, obsolete learning resources, inadequate available facilities, insufficient capacity development for instructors, a lack of good lighting for effective equipment utilization, and a lack of coherent policies and objectives. These impediments contribute to students' struggles in acquiring essential skills for large-scale garment production.

On the positive side, the study has highlighted several strategies that can significantly enhance students' competencies in pattern making. These strategies include encouraging cooperation between educational institutions, industry, and private agencies, equipping laboratories with modern equipment, maintaining

materials and tools for teaching, conducting demonstrations with necessary teaching materials, providing regular power supply for laboratories, allocating adequate space for practical lessons, and ensuring the availability of lab attendants and cleaners. Furthermore, the acquisition of modern equipment such as computers for teaching computer-aided pattern making and the ongoing professional development of instructors through refresher courses are essential strategies for improving the education of pattern making. Moreover, the study found no significant difference between students in Colleges of Education and Polytechnics, indicating that the challenges and potential solutions are relevant across different types of institutions.

In light of these findings, it is clear that addressing the impediments and implementing these strategies is vital for improving students' competencies in pattern making, not only in Anambra State but also across Nigeria. By enhancing the education and training of future professionals in the clothing and textiles industry, this study contributes to the sector's growth, promotes employability, and ultimately supports the broader economic development of Nigeria. It is recommended that educational institutions, government authorities, industry stakeholders, and policy-makers work collaboratively to implement these strategies and mitigate the identified impediments. This will help create a more skilled and competitive workforce, better prepared to contribute to the dynamic and growing clothing and textiles industry in Nigeria. The future of the sector and the success of its students depend on such concerted efforts.

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