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Original Article

Instructional Resources for Skill Acquisition in the Art of Millinery for Higher National Diploma: A Study of Fashion Design in Technical Universities in Ghana

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Keywords:

Instructional Resources, Millinery Art, Skills Acquisition, Students.

This study assessed the impact of instructional resources used in skills acquisition in millinery art in fashion design in technical universities in Ghana. The study examined the available instructional resources used in the skills acquisition in millinery art by higher national diploma (HND) fashion design students in five selected technical universities in Ghana. The study used a descriptive survey design. The study population was 249 students at HND Level 200 and 31 lecturers of millinery art in the five selected technical universities in fashion design departments. The study used multistage and stratified sampling techniques to collect data from the respondents. Data was collected using an observation checklist, a closed-ended questionnaire and a semi-structured interview guide. Descriptive and inferential statistics were applied to analyse data. The overall regression was statistically significant $R^2 = .508$, $F_{(20, 228)} = 11.794$, $p < 0.05$, indicating that the instructional resources used impacted millinery skills acquired. The study found that cutting scissors, milliners' pins and straw proofed statistically significant as predicted in the millinery skills acquired by the HND fashion design students, which implied that these were the instructional resources used most often; however, the study also discovered that the essential instructional resources were not available to be used in skills acquisition in millinery art in the technical universities. It was recommended that the technical universities support the fashion design departments to acquire the needed instructional resources for skill acquisition in milliner art.

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INTRODUCTION

The study of millinery art is a practical component of fashion design education that enables students to develop skills in creating headdresses to complement garments (Ajiginn, 2022; Chohan, 2021). Proficiency in millinery art distinguishes dressmakers from fashion designers. Competence in the art of millinery enables fashion designers to create garments for their clientele by incorporating millinery accessories. This allows them to showcase their designs fully to the fashion industry.

Millinery has been a longstanding component of fashion education in Ghana. The millinery art skill is consistently prominent in the fashion industry, whereas technical universities lag in this area. This situation is concerning due to its significant benefits for the fashion designer. Mugisha (2020) emphasises the significance of instructional resources in the successful implementation of curriculums. The successful execution of the curriculum is crucial for the realisation of a well-designed educational plan.

The acquisition of millinery skills relies on the availability, adequacy, and utilisation of instructional resources in the teaching and learning process. Instructional resources are essential for students to acquire, comprehend, and apply the fundamental information within a course (Njoroge, 2019). Educators possess the ability to either motivate or discourage students throughout their educational journey.

Instructional resources refer to materials and tools utilised by educators to facilitate teaching and enhance students' acquisition of knowledge and skills (Quarcoo et al., 2022). Visual and audio-visual aids encompass both concrete and non-concrete forms. These instructional materials

enhance the learning experience by motivating students to acquire the necessary skills. Effective teaching requires the alignment of three key components: learning objectives, assessments, and instructional activities (Abubakar, 2020). Neglecting any of these components has a negative impact on the process.

Fashion design students are trained to work in the fashion industry, and their lack of necessary skills negatively impacts their performance in the industry. Millinery art training aims to familiarise individuals with the tools, materials, and techniques used in millinery. This training enables them to design and construct millinery accessories that complement their garments. Effective skills acquisition requires institutions to provide the necessary instructional resources (Njoroge, 2019).

Instructional materials are essential for effective teaching as they provide students with the necessary information for learning and application while also engaging and motivating them to reach their learning objectives (Williams et al., 2013). Resources are crucial in education as they offer valuable information and skills to teachers and students, thereby improving the quality of training.

The acquisition of skills such as blocking and draping is contingent upon the availability of headblocks, including crowns, brims, and fascinator blocks, within educational institutions (Fowler, 2020). Instructional materials such as sinamay, crinoline, paper mat, buckram, millinery wire and stiffener are crucial for students' experiential learning and practice. The utilisation of instructional resources has the potential to engage students effectively both during and after the learning period. This study analysed the instructional resources for acquiring millinery art skills in technical universities.

Millinery art skills are essential to fashion designers, they help them to compete effectively in the fashion industry because it enables fashion designers to present a complete design idea, hence making a complete fashion statement. The elegant touch of millinery art skills to garments cannot be over-emphasised because millinery art skills distinguish between a dressmaker and a fashion designer.

Statement of the Problem

The importance of instructional resources in delivering content for skill-oriented courses cannot be overstated. Effective teaching and learning necessitate the presence of sufficient and appropriate instructional resources. The existing literature on fashion design technology in Ghana indicates a limited emphasis on millinery skills (Wovenu, 2017; Agordah, 2016; Foster & Ampong, 2012). Limited research in millinery poses challenges in terms of instructor competence, availability of resources, outdated learning materials, and ineffective instructional methods (Ayonmike, 2014). A potential factor that may impact the acquisition of millinery art skills in technical universities is competency-based training, and this can only be achieved if instructional resources are available, adequate, and utilised in the technical universities. Competency-based training has received significant attention in technical universities; however, it has been observed that the skills acquired by students do not align with industry requirements (Ananga, Adzahlie-Mensah & Tamanja, 2016). This calls for the need to assess instructional resources in millinery art training and millinery art skills acquired by fashion design students.

Purpose of the Study

The purpose of this research is to examine instructional resources for skill acquisition in the art of millinery in training HND fashion design students in technical universities in Ghana.

Objectives of the study are:

- Identify resources for skills acquisition in millinery art in fashion design at Ghanaian Technical Universities
- Examine how the resources are used for skills acquisition in millinery art in the technical universities.
- Establish the effects of instructional resources used on millinery skills acquired by fashion design students.

Hypothesis

H₀₁. There is no significant relationship between instructional resources used and skills acquired in millinery art in the Technical Universities.

LITERATURE REVIEW

INSTRUCTIONAL RESOURCES FOR SKILL ACQUISITION IN THE ART OF MILLINERY

Creating a well-resourced teaching and learning environment promotes effective educational practices. According to Kanyonga, Mtana and Wendt (2019), students are motivated to learn, and teachers can effectively fulfil their role by utilising resources that enhance knowledge and skill acquisition. According to Kanyonga et al.'s (2019) study, learners who have access to instructional materials and engage in skill exploration enhance their creative abilities. Such students also developed creative skills to improvise some of these resources to help them work on their own. Learners who have worked with instructional millinery resources such as brim and crown blocks can easily improvise by using different shapes in the home to make millinery accessories. According to Fowler (2020), headblocks can be easily improvised and even carved from styrofoam, depending on the milliners' taste.

Exploration enables students to acquire additional knowledge and skills, fostering continuous practice. According to Aston (2012), the acquisition of millinery skills involves the exploration of various fabric manipulations and

careful observation of their outcomes. This skill is essential for creating distinctive headdresses with a professional finish. Exploration has influenced fashion trends, which in turn impact instructional resources for education (Chepchumba & Cheruiyot, 2018). Outdated technology and limited resources hinder the ability to effectively transfer skills. The millinery industry has undergone significant changes over time (Fowler, 2020). New techniques and technologies have been introduced in response to market demand, and educational resources are being made available to learners in various forms. If the institutions do not make use of the instructional resources during teaching and learning, learners will find it difficult to improvise the needed tools to practise and acquire millinery art skills (Chohan, 2021).

Providing learners with appropriate resources facilitates the breakdown of complex skills into manageable stages, enabling effective practice and ultimately leading to successful outcomes. According to Likoko, Mutsotso, and Nasongo (2013), institutions that possess a greater quantity of teaching-learning resources tend to yield better academic performance among their students compared to institutions with fewer resources. This implies that fashion design departments that have enough instructional resources and use them in teaching millinery art will acquire a higher level of millinery skills than the institutions that do not have instructional resources (Likoko et al., 2013). This indicates that the fashion design departments that have enough instructional resources in millinery art have the potential to sustain and develop the interest of students in acquiring millinery art skills (Agordah et al., in press)

As indicated by Zhuwau and Shumba (2018), the importance of instructional resources in terms of availability, adequacy, and utilisation cannot be overstated. Sufficient instructional resources have a positive impact on an instructor's proficiency, which in turn affects curriculum implementation and leads to improved student achievement. It is only through the application of instructional resources that learners' basic skills can be developed into professional skills in millinery art

(Agordah et al., in press). According to Henriksen (2014), while the cost of acquiring millinery tools can be high, they can be considered a lifelong investment for a creative milliner with fabric manipulation and blocking/draping skills.

According to Potter (2016), essential tools for hats, such as hat steamers, hat stretchers, hat ovens, steam irons, and mannequins, are consistently necessary and do not become outdated unless they are no longer functional. Headblocks evolve, yet skilled milliners consistently create diverse headdress designs using a single headblock. According to Lyons (2012), learning is a multifaceted process that involves various factors such as learner motivation, infrastructure, instructional resources, teaching skills, and curriculum content. Instructional resources used in teaching and learning make learning real and help in creative idea development that facilitates effective practice of skills (Quarcoo et al., 2022). Hence, it is necessary to investigate the application of instructional resources in the acquisition of millinery skills by HND fashion design students, with the aim of enhancing their performance in the fashion industry. This study aims to address a research gap by examining the resources available in the fashion design department of technical universities for HND fashion design students to acquire millinery art. The goal is to enhance their performance in the industry.

RESEARCH METHODOLOGY

The study was done in five selected technical universities in five regions of Ghana. The study adopted a descriptive research design to evaluate the impact of millinery art instructional resources on students' millinery art skills. The study examined instructional resources, including their availability, frequency of use, millinery skills acquisition, and their impact on student learning. This investigation was conducted using a quantitative research approach. The data collection instruments comprised a questionnaire, a semi-structured interview guide and an observation checklist. The researchers created a close-ended questionnaire utilising a five-point

Likert scale. Data was collected from students using a survey, while data from lecturers who taught millinery art was collected through a semi-structured interview guide. The instruments assessed the availability, adequacy, and utilisation of instructional resources for acquiring millinery art skills in the fashion design programme of technical universities. The questionnaire's reliability was assessed using Cronbach's alpha test to evaluate the internal consistency of the instruments through the split-half method. The Cronbach's alpha coefficient for the nominal scale was 0.8, while for the ordinal scale it was 0.9. According to Burns and Bush (2010), a reliability test result is considered acceptable if it is 0.7 or higher.

Population and Sampling Procedure

This study examined HND Level 200 fashion design students from five selected technical universities in five regions of Ghana. The population amounted to 662 individuals. The HND L200 students were selected due to their recent completion of an eight-week industrial internship. A cluster sampling method was employed to choose the five most ancient technical universities from the southern, middle, and northern zones of Ghana. Three institutions were chosen from the southern zone, while one institution was selected from both the middle and northern zones, each of which had two institutions. The study utilised proportional random sampling to determine the sample size of HND fashion design students in selected technical universities. The sample size was calculated using the traditional statistical formula developed by Fox et al. (2007). The study's sample size was 249, and a systematic random sampling method was employed in the selection of student participants from the five technical universities. Gender distribution of the student population was used to calculate the sample size to ensure gender balance. The formula for sample determination

$$\text{was } n = \frac{Z_{\alpha/2}^2 \sigma^2 N}{e^2 (N-1) + Z_{\alpha/2}^2 \sigma^2}$$

Data Collection

Data collection occurred from October 2021 to January 2022, coinciding with the students' return from their industrial internships. The purpose of this action was to prevent any interruptions in data collection that could potentially impact the quality of the data (Omair, 2016). Concurrent collection of qualitative and quantitative data was conducted to ensure a comprehensive response to the research objectives, as these two types of data complement each other. The data collection focused on the availability, adequacy and usage of millinery art instructional resources in the technical universities. An observation checklist was used to collect data on availability and adequacy, while data on the use of instructional resources for skills acquisition in millinery art was collected using a five-point Likert scale.

Data Analysis

The qualitative and quantitative data were categorised based on the institutions they belonged to, using alphabetical labels (A, B, C, D, E) that corresponded to the order in which the data was collected. The data underwent coding and input using SPSS version 26. Subsequently, the data were examined for missing items, outliers, and general data entry errors. The data was analysed according to the specified objectives. Quantitative data was analysed through the use of frequency percentage tables and regression analysis. Semi-structured interviews were transcribed, cleaned, and checked for uniformity. The interviews were then analysed based on identified themes.

PRESENTATION OF FINDINGS

Demographic Information of Respondents

Overview of the participant's basic information *Table 1* shows the results from the analysis of demographic variables.

Table 1: Institution, gender, and age of respondents

Variable	Responses	f	%
Institution	A	50	20.1
	B	64	25.7
	C	40	16.1
	D	65	26.1
	E	30	12.0
Gender	Male	40	16.1
	Female	208	83.5
	No response	1	0.4
Age	20 – 22 years	63	25.3
	23 – 25 years	106	42.6
	26 – 28 years	55	22.1
	29 years and above	23	9.2
	No response	2	0.8

Source: Study data 2022

Table 1 shows that the majority (26.1%) of the students sampled are in institution D, followed by B – 25.7% and A - 20.1% of the total population of students sampled. The institutions with the lowest sample case (based on sample size calculation using the number of males and females) are C and E, respectively.

The majority of the students are female (83.5%), with age distribution majority (42.6%) of the students are between 23-25 years. The age of most

of the students found in the fashion design of the Technical Universities is between 20 and 25 years, and those between 20- and 22 years form 25.3% of the total population of students from these Universities. *Table 2* is the summary of demographic data on lecturers in millinery art.

The main areas covered in the analysis of the lecturers' demographic variables in this study were education, gender, rank, age, and teaching experience

Table 2: Education, gender, rank, age, and teaching experience

Variable	Responses	f	%
Educational Level	PhD	1	3.2
	Masters	30	96.8
Gender	Male	2	6.5
	Female	29	93.5
Rank	Assistant Lecturer	18	58
	Lecturer	9	29
	Senior Lecture	4	12.9
Age	35-40	10	32
	41-45	10	32
	46-50	6	19
	50 years and above	5	16
Experience	1-4 years	16	51.6
	5-8 years	9	29
	9 years and above	6	19

Table 2 The result shows that 98.8% are master's degree holders, 93.5% are female, 58% are assistant lecturers, most of them are between the age of 35-45 years, 64% and 51.6% have been teaching millinery art for 1- 4 years and 19% have been teaching millinery for nine years. Their experiences are good enough to provide good

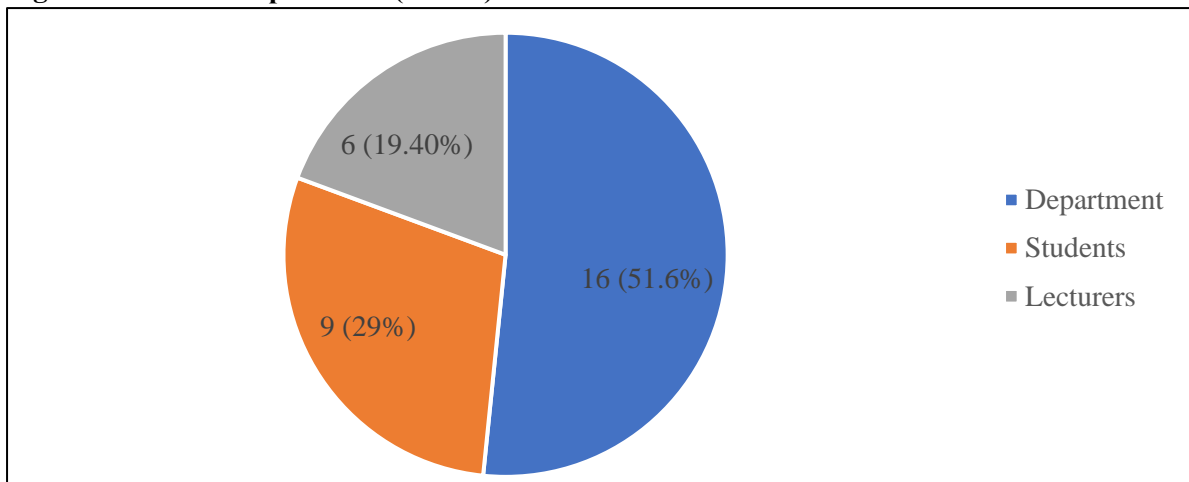
information on the millinery art instructional resources for millinery skills acquisition in fashion design.

Analyses of Participants' Views on Instructional Resources in Millinery Art Skills Acquisition.

Figure 1 shows the lecturers' views on the sources of their instructional resources used for teaching the art of millinery.

The results show that only 51.6% (n = 16) of lecturers get instructional resources from the department. As indicated in the results, 29% (n = 9) of the lecturers noted that the students provided instructional resources, while the remaining 19.4% (n = 6) of lecturers noted that instructional resources were provided by them. Two typical interview comments explained the matter.

Figure 1: Lecturers' provision (source) of instructional resources



The comments confirm the view that even when the departments provide resources, students need to buy some more, and this influences the student's ability to acquire enough skills in millinery art for effective practice in the fashion industry. That is, the availability of instructional materials influences what is taught and what is learnt at a particular time of the millinery skill acquisition process. This may also have affected the capacity of the students to practice millinery skills due to the high cost of millinery resources. As indicated by Fowler (2020), millinery instructional resources are expensive.

A typical comment was

For the number of years I have been in this institution, I cannot say that there was a time when we had the full complement of

One factor affecting the skills acquisition in millinery art is the cost of materials they must purchase. Even when the university provides ... the students necessarily must purchase some items on their own. This is affecting the skills acquisition process (Lecturer, D).

In most cases, students buy the materials. Innovative and resolute lecturers sometimes use their resources to buy items for practicals. ... We don't have enough time allocated for teaching. That is a big part of the problem (Lecturer, A).

instructional materials available. In fact, we always struggle to have some available. The students always must compliment. Sometimes, the students buy everything (Lecturer B)

I am not sure I can say we ever have the full complement of instructional materials. That will be a miracle. We should be discussing if we have been getting the materials, not talking about the full compliment. Either you buy the materials as a lecturer, or you ask the students to buy them. It is a perennial struggle, and we always shift the burden to students (Lecturer, C)

These comments were confirmed in the results from the analyses on the availability, adequacy, and utilisation of instructional resources for teaching millinery arts skills in Ghana technical

universities. The following figure shows the response rate of the availability of instructional resources for teaching millinery art skills.

The study found that all lecturers (100%, n = 31) reported a lack of sufficient instructional resources for teaching millinery skills in Technical Universities. Furthermore, a significant majority of lecturers (70.9%, n = 22) reported a lack of readily available instructional materials. Among them, 16.1% (n = 5) stated that instructional materials were rarely accessible,

while 12.9% (n = 4) remained undecided on the matter. This means all the students cannot follow millinery skills demonstration lessons effectively and will be challenged in acquiring the needed skills in millinery art in the institutions. After gaining an understanding of the instructional resources that are readily available for teaching millinery art skills, the research goes further to learn about the instructional resources that are readily available for student practice. The result is presented in *Figure 3*:

Figure 2: Availability of instructional resources for teaching millinery art skills

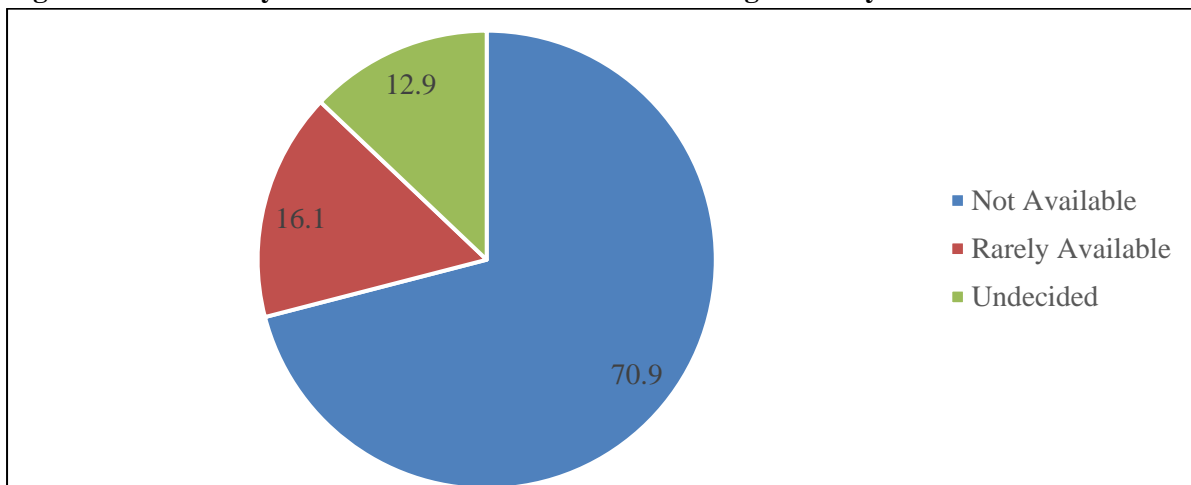
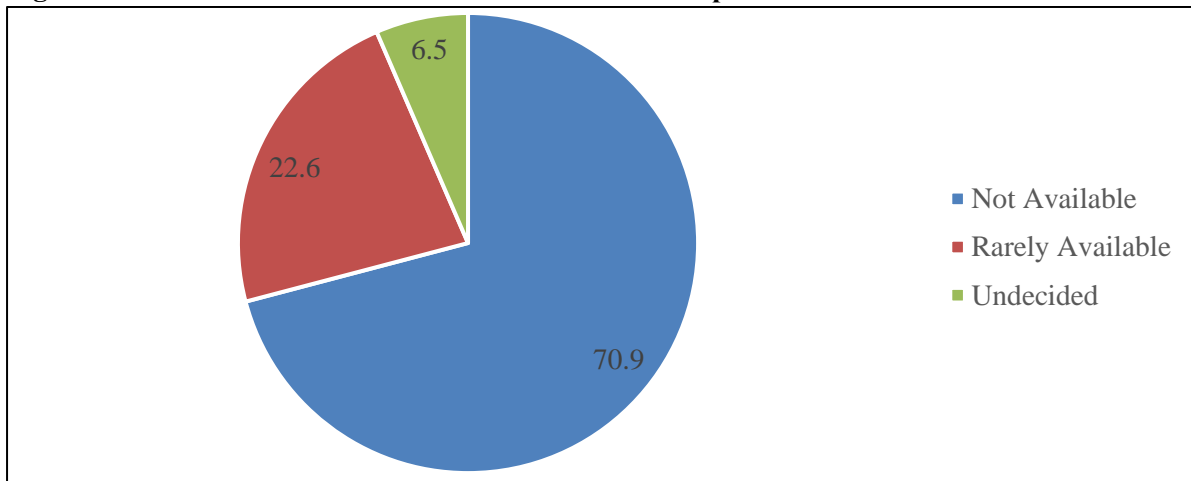


Figure 3: Instructional resources available for students' practise



In *Figure 3*, it is evident that a majority of the lecturers (70.9%, n=22) reported that there is a lack of resources for students to practise millinery art skills. A smaller percentage (22.6%, n=7) indicated that this situation rarely occurs, while a minority (6.5%, n=2) were undecided about the availability of tools for student practice. This situation confirmed that 77.4% of students cannot

practise millinery art skills on their own; this implies that such students cannot practise millinery art skills in the fashion industry. This is a serious problem that must be addressed. After gaining an understanding of the instructional resources accessible for students to use at the institutions, the study dug further to learn more about the instructional resources that are now

available in the institutions using the observation checklist. The results are as follows.

Table 3: Available instructional resources in the institutions

Instructional Resources	A	B	C	D	E
Hat steamer	0	0	0	0	0
Steam iron	1	1	1	1	0
Kettle	0	0	0	0	0
Brim blocks	1	1	1	1	0
Crown blocks	1	1	1	1	0
Fascinator blocks	0	0	0	0	0
Cutting scissors	1	1	1	1	1
Pliers	0	0	0	1	0
Mannequin	0	0	0	0	0
Hat stretcher	0	0	0	0	0
Milliners' needle	0	0	0	0	0
Milliners' pins	0	0	0	0	0
Textbooks	0	1	0	0	0
Buckram	1	1	1	1	0
Sinamay	1	1	1	1	0
Straw	0	0	0	0	0
Crinoline	1	1		1	0
Millinery wire	1	1	1	1	0
Sweatband	1	1		1	0

Key: Available = 1, Not Available = 0,

Table 3 reveals that none of the institutions possess sufficient instructional resources to teach millinery skills, as none of them have at least 50% of the required resources. Institution E offers only cutting scissors as an instructional resource. This elucidates the common practice of instructors and students typically supplying their materials. In addition, learners who could not provide the needed instructional materials would be faced

with challenges to effectively participate in class and hence may not learn much. After gathering data on the available instructional resources in educational institutions, the study proceeds to assess the adequacy of the instructional resources in the institutions.

Table 4 shows the adequacy of instructional resources in the institutions

Table 4: Adequacy of instructional resources in each institution

Instructional Resources	A	B	C	D	E
Steam iron	0	0	0	0	-
Brim blocks	0	0	0	0	-
Crown blocks	0	0	0	0	-
Cutting scissors	0	0	0	0	0
Pliers	-	-	0	0	-
Textbooks	0	0	0	0	-
Buckram	1	1	1	1	-
Sinamay	1	1	1	0	-
Crinoline	1	1	1	1	-
Millinery wire	1	1	1	1	-
Sweatband	1	1	1	1	-

Key: Adequate = 1, Inadequate = 0

Table 4 displays the adequacy of instructional resources within the institutions. The table indicates that the instructional resources were adequate for lecturers to demonstrate millinery techniques but inadequate for students to practise these techniques, as noted in the study. The implication is that students cannot practise the millinery art skills the lecture demonstrates in class; hence, learning mistakes cannot be corrected for effective skills acquisition in millinery art. Practical skills are best acquired when learners practise what they have been

taught, and mistakes are corrected by the lecturer. After learning about the adequacy of instructional resources in the institutions, the study also reveals how students perceive the use of instructional resources in the institutions in millinery art skills acquisition.

Table 5 illustrates instructional resources (materials and tools) used in the art of millinery class in the Technical Universities as indicated by the students.

Table 5: Students' views on the utilization of instructional resources

Instructional Resources	Responses (frequencies and percentages)				
	Always used	Used	Sometimes used	Not used	Not sure
Hat steamer	0(0%)	0 (0%)	0 (0%)	153 (61.4%)	96 (38.5%)
Steam iron	99 (39.8%)	38 (15.3%)	70 (28.1%)	28 (11.2%)	14 (5.6%)
Kettle	99 (39.8%)	39 (15.7%)	53 (21.3%)	46 (18.5%)	12 (4.8%)
Brim blocks	69 (27.7%)	28 (11.2%)	72 (28.9%)	63 (25.3%)	17 (6.8%)
Crown blocks	73 (29.3%)	30 (12.0%)	69 (27.7%)	65 (26.1%)	12 (4.8%)
Fascinator blocks	3 (1.2%)	18 (7.2%)	85 (34.1%)	130 (52.2%)	13 (5.2%)
Cutting scissors	156 (62.7%)	39 (15.7%)	33 (13.3%)	15 (6.0%)	6 (2.4%)
Pliers	129 (51.8%)	49 (19.7%)	39 (15.7%)	27 (10.8%)	5 (2.0%)
Mannequin	13 (5.2%)	29 (11.6%)	77 (30.9%)	121 (48.6%)	9 (3.6%)
Hat stretcher	0 (0%)	0 (0%)	0 (0%)	204 (81.9%)	45 (18.0%)
Milliner's needle	153 (61.4%)	46 (18.5%)	20 (8.0%)	21 (8.4%)	9 (3.6%)
Milliner's pins	146 (58.6%)	52 (20.9%)	21 (8.4%)	22 (8.8%)	8 (3.2%)
Textbooks	9 (3.6%)	76 (30.5%)	141 (56.6%)	19 (7.6%)	4 (1.6%)
Buckram	74 (29.7%)	32 (12.9%)	45 (18.1%)	82 (32.9%)	16 (6.4%)
Sinamay	73 (29.3%)	37 (14.9%)	41 (16.5%)	84 (33.7%)	14 (5.6%)
Straw	0 (0%)	0 (0%)	3 (1.2%)	227 (91.2%)	18 (7.2%)
Crinoline	77 (30.9%)	57 (22.9%)	50 (20.1%)	53 (21.3%)	12 (4.8%)
Millinery wire	126 (50.6%)	67 (26.9%)	21 (8.4%)	26 (10.4%)	9 (3.6%)
Sweatband	94 (37.8%)	99 (39.8%)	21 (8.4%)	26 (10.4%)	9 (3.6%)

Source: Study Data 2021

Table 5 displays the responses of students regarding the use of instructional resources in the instruction and acquisition of millinery arts skills in Ghanaian Technical Universities. The majority of items in the results were either unused or used infrequently. The most commonly chosen materials, either for always or sometimes use, were cutting scissors (78%), milliner's needle (78%), millinery wire (77%), and sweatband (77%). The remaining items include pliers (71%), steam iron (55%), kettle (55%), and crinoline (53%).

The items identified as rarely or never used were hat stretchers (0%), hat steamers (0%), and straws

(0%). Additional items that were found to have infrequent or occasional usage were fascinator blocks (8%), mannequins (16.8%), and textbooks (34.1%). The infrequently used materials included sinamay (44%), buckram (42%), crown blocks (41%), and brim blocks (38.9%). The result implies that most of the essential instructional resources in millinery art were occasionally and never used. This situation would make it very difficult for the students to acquire the necessary millinery art skills. Skills in blocking can only be acquired if the student learns how to use hat blocks (crown and brim) and fascinator blocks to practise with different millinery fabrics (Chohan

2021). Multiple linear regression was employed to examine the impact of instructional resources on the acquisition process of millinery art skills.

Relationship between Instructional Resources Used and Millinery Skills Acquired by HND Fashion Design Students

Table 6 shows the linear regression to establish the effects of instructional resources used to help students acquire millinery art skills in constructing millinery products. The overall

regression was statistically significant $R^2 = .508$, $F(20, 228) = 11.794$, $p < 0.05$, indicating that there is an effect of instructional resources used on millinery skills acquired. The table shows that with the inclusion of the interaction effect of millinery skills acquired, the value of R^2 remained the same, but adjusted R^2 decreased from .468 to .465, and the accuracy of this prediction also decreased with the F-value decreasing from 12.469 to 11.794, implying a decrease in the accuracy of the prediction.

Table 6: Effect of Instructional Resources on Millinery Skills Acquired.

Ability to construct millinery products	Coefficient	t-statistic	p-value	R^2	Adjusted R^2	F ratio
The model with effect						
Constant	6.840	5.388	.000	.508	.465	11.794
Utilisation of hat steamer	.109	.440	.660			
Utilisation of kettle	.108	.489	.625			
Utilisation of steam iron	-.417	-1.913	.057			
Utilisation of brim blocks	.460	1.005	.316			
Utilisation of crown blocks	.429	1.086	.278			
Utilisation of fascinator blocks	-.012	-.048	.961			
Utilisation of cutting scissors	.832	2.637	.009*			
Utilisation of pliers	.012	.039	.969			
Utilisation of mannequin	.142	.648	.517			
Utilisation of hat stretcher	.259	1.080	.281			
Utilisation of milliners' needle	-.244	-.692	.490			
Utilisation of milliners' pin	.745	2.000	.047*			
Utilisation of millinery textbooks	.120	.419	.676			
Utilisation of buckram	-.293	-.759	.448			
Utilization of sinamay	.163	.433	.666			
Utilisation of straw	-1.749	-2.875	.004*			
Utilisation of crinoline	.228	.764	.446			
Utilisation of millinery wire	-.160	-.596	.552			
Utilisation of sweatband	.340	1.008	.315			
Interaction	-2.016E-8	-.052	.958			

As indicated in Table 7 the multiple linear regression model predicted value (millinery skills) = $6.840 + (0.109 \text{ hat steamer}) + (0.108 \text{ kettle}) + (0.417 \text{ steam iron}) + (0.460 \text{ brim blocks}) + (0.429 \text{ crown blocks}) + (0.012 \text{ fascinator blocks}) + (0.832 \text{ cutting scissors}) + (0.012 \text{ pliers}) + (0.142 \text{ mannequin}) + (0.259 \text{ hat stretcher}) + (0.244 \text{ milliners needle}) + (0.745 \text{ milliners pins}) + (0.120 \text{ millinery textbooks}) + (0.293 \text{ buckram}) + 0.163 \text{ sinamay}) + (1.749 \text{ straw}) + 0.228 \text{ crinoline}) + 0.160 \text{ millinery wire}) + (0.340 \text{ sweatbands})$.

As indicated in Table 6, cutting scissors, milliners' pins, and straws statistically

significantly predicted the millinery skills acquired by the HND fashion design students in the technical universities. The data implied that these were the materials most often used as instructional resources. This confirms the results from the analysis of observation on the availability of instructional resources, the adequacy of instructional resources, and the use of instructional resources. The other implication is that most essential materials were not available to be used in teaching the art of millinery. As stated by Zhuwau and Shumba (2018), availability and

adequacy of instructional resources improves skills acquisition.

Furthermore, the R² for the model with the effect of utilisation of instructional resources on millinery skills acquired presents 0.508, which

also reveals that the independent variable explains 50.8% of the variability of the dependent variable millinery skills acquired. On the other hand, the accuracy of the data was 46.5%. The study further investigates the views of students on the millinery skills they have acquired.

Table 7: Students’ views on the level of millinery skills they acquired

Skill Prerequisites	Very poor	Fairly Good	Very Good	No response
Blocking	88 (35.3)	54 (21.7)	104 (41.8)	3 (1.2)
Fabric manipulation	52 (20.9)	40 (16.1)	152 (61.0)	5 (2.0)
Decoration	40 (16.1)	33 (13.3)	172 (69.0)	4 (1.6)
Hand stitching	35 (18.1)	32 (12.9)	169 (67.8)	3 (1.2)

Source: Study Data 2021

Table 7 indicates that only 41.8% of the students stated they had acquired very good skills in blocking millinery products. Skills in blocking in millinery is highly essential, without which the individual is challenged in practicing millinery art. Students need to acquire sufficient skills in blocking most of the millinery material, from the basic headblocks to the most complex designs, to compete effectively in the fashion industry (Fowler 2020). This is because effective practice of millinery art skills, which earn high workmanship, combines skills in blocking, fabric manipulation, decoration and hand stitching in a single millinery product. Hence, there is a need for fashion design students to acquire good to very good skills in all the skills to be able to compete effectively in the fashion industry.

DISCUSSION

According to Aston (2012), developing millinery art skills involves exploring various fabric manipulations and observing the resulting outcomes. This skill is essential for creating distinctive headdresses with a professional aesthetic. Consequently, the scarcity of instructional resources has resulted in a lack of initiative by instructors to assist students in acquiring millinery art skills.

Insufficient resources and outdated resources hinder the acquisition of skills effectively (Chepchumba & Cheruiyot, 2018). The availability of appropriate resources is crucial for facilitating the acquisition of complex skills and

enhancing instructional effectiveness. Institutions that possess a sufficient number of instructional resources tend to achieve better performance outcomes compared to those with limited resources (Likoko et al., 2013). Availability must be balanced with the adequacy and utilisation of instructional resources (Zhuwau & Shumba, 2018).

This study examines the instructional resources utilised for acquiring millinery art skills in technical universities. The study examined the utilisation of instructional resources and their provision, accessibility, sufficiency, and utilisation. The measurement was conducted using an observation checklist, interview guides, and a questionnaire. This study examined the availability, quantity, and utilisation of resources for training fashion design students in millinery art at technical universities in Ghana.

The findings indicate that 51.6% (n = 16) of lecturers receive instructional resources from the department, while 29% (n = 9) rely on students for these resources. The remaining 19.4% (n = 6) reported providing instructional resources themselves (see Figure 1). This situation tends to affect the art of millinery acquisition by students.

The interviews revealed that despite the university’s provision of instructional resources, students still need to purchase additional items for their studies. The cost of materials was another factor that influenced the effectiveness of skills acquisition in millinery art. This finding aligns

with Henriksen's (2014) research, which suggests that the cost of obtaining millinery tools can be high. Potter (2016) has found that the cost concerns surrounding millinery tools, such as hat steamers, hat stretchers, headblocks, brims, and mannequins, can be addressed as long as these tools are in working condition and readily available.

The study found that the presence of instructional materials affects millinery skill acquisition. The students' ability to practise millinery skills was hindered by the expensive nature of millinery resources. The issue raised was that instructors reported a lack of complete instructional materials for millinery skill training.

The instructional resource utilised various resources from the Fashion Design department, including those provided by lecturers/instructors and students. According to the results, all 31 lecturers (100%, $n = 31$) reported that they never had sufficient instructional resources to teach millinery art and support the acquisition of millinery skills in technical universities. According to *Figure 2*, 70.9% ($n = 22$) of lecturers/instructors reported that instructional materials are not easily accessible. Additionally, 16.1% ($n = 5$) stated that instructional materials were rarely available, while 12.9% ($n = 4$) were undecided.

The data reveals that a significant majority (70.9%, $n=22$) of the lecturers reported a lack of resources for student practice (*Figure 3*). The findings indicate that none of the institutions possess the necessary instructional resources for teaching millinery art skills. The primary instructional tool provided by Institution E is a pair of cutting scissors. *Table 3* indicates that the instructional resources available were sufficient for lecturers to demonstrate the millinery art but insufficient for students to practise and acquire the necessary skills. The scarcity of materials necessitates that lecturers and students typically procure their materials.

CONCLUSION

The severity of non-use of instructional resources varied among institutions. While some institutions utilised various instructional resources, institution E solely relied on cutting scissors for its millinery art class. This implies that the instructors at the institution were not adequately attending to the development of students' millinery skills acquisition. Based on the analyses, the lecturers of institutions *Table 4*; A, B, C and D compelled students to purchase instructional materials for skills acquisition in millinery art. Institution E, which exclusively employs scissors in its millinery art class, is characterised by lecturers who do not impose mandatory purchases of instructional materials on students. This situation presents a complex dilemma: whether or not to mandate students to purchase instructional materials.

Students' view on millinery art skills acquired is not the best because most of them have not acquired very good skills in blocking. In *Table 7*, only 41.8% of the students rated their skills in blocking as very good. This is because effective practice of millinery art skills, which earn high workmanship, combines skills in blocking, fabric manipulation, decoration and hand stitching in a single millinery art product. Hence, the need for the students to acquire very good to enable them to compete effectively in the fashion industry. This situation confirms that brim blocks, crown blocks and fascinator blocks are not always used (see *Table 6*) in the institutions for skills acquisition in millinery art in the technical universities.

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