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Waste to Art Pedagogy as an Educational Model for Strengthening Practical Skills Acquisition Among Fine Art Students

Güzel Sanatlar Öğrencilerinde Pratik Becerilerin Kazanımını Güçlendirmek İçin Bir Eğitim Modeli Olarak Atık Malzemelerden Sanat Eserleri Geliştirme Pedagojisi

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ABSTRACT

Although the lack of materials and resources remains a persistent challenge for students in the Department of Fine Art at Bawku Technical Institute (BTI), this study argues that locally available solid waste materials can improve students' practical skills. Using a mixed-methods approach grounded in New Materialism theory, the study examined how these materials improve practical skills through descriptive and project-based research activities. Krejcie and Morgan's (1970) formula determined a sample size of 82 (72 fine art students and 10 teachers) from a population of 100 BTI students, selected through simple random sampling. The study used a Likert-scale questionnaire, observation, and interviews as data collection instruments. The findings showed that the lack of resources and practical materials at BTI negatively affected students' practical skills and the department's development. Eighty-eight percent (88%) of respondents did not have any practical materials, eighty-six percent (86%) found the syllabus outdated, and ninety-two percent (92%) found practical lessons ineffective. However, the project-based component showed that solid waste materials (wood shavings, scrap wood, and garment waste) significantly enhanced students' creativity (87%), critical thinking (83%), and material literacy (82%). These findings call for the Department of Fine Art at Bawku Technical Institute (BTI) to integrate the use of solid waste materials, such as wood, fabric/clothing waste, and other unconventional materials, into routine practical exercises. Train art teachers and students in innovative, pedagogically grounded, material-oriented approaches that promote meaningful, project-based interaction with alternative resources that uphold the tenets of New Materialism. Institutional support is essential; it requires not only continuous investment in workshop infrastructure, tools, and processing equipment but also the establishment of public-private partnerships to ensure a steady supply of waste materials.

Keywords: Fine art education, solid waste, practical skills, Technical and vocational education and training, sustainable materials

ÖZ

Bawku Teknik Enstitüsü (BTI) Güzel Sanatlar Bölümü öğrencilerinin malzeme ve kaynak eksikliği sürekli bir sorun olmaya devam etse de, bu çalışma yerel olarak bulunan katı atık malzemelerin öğrencilerin pratik becerilerini geliştirebileceğini savunmaktadır. Yeni Materyalizm teorisine dayalı karma yöntem yaklaşımı kullanılarak, bu malzemelerin pratik becerileri nasıl geliştirdiği, betimleyici ve proje tabanlı araştırma faaliyetleri aracılığıyla incelenmiştir. Krejcie ve Morgan'ın (1970) formülü, basit rastgele örnekleme yöntemiyle seçilen 100 BTI öğrencisinden 82 kişilik (72 güzel sanatlar öğrencisi ve 10 öğretmen) bir örneklem büyüklüğünü belirlemiştir. Çalışmada veri toplama araçları olarak Likert ölçekli anket, gözlem ve görüşmeler kullanılmıştır. Bulgular, BTI'deki kaynak ve pratik malzeme eksikliğinin öğrencilerin pratik becerilerini ve bölümün gelişimini olumsuz etkilediğini göstermiştir. Katılımcıların %88'i hiçbir pratik malzemeye sahip olmadığını, %86'sı müfredatı güncel olmayan bulduğunu ve %92'si pratik dersleri etkisiz bulduğunu belirtmiştir. Ancak, proje tabanlı bileşen, katı atık malzemelerin (talaş, hurda ahşap ve giyim atığı) öğrencilerin yaratıcılığını (%87), eleştirel düşünme becerilerini (%83) ve malzeme okuryazarlığını (%82) önemli ölçüde geliştirdiğini göstermiştir. Bu bulgular, Bawku Teknik Enstitüsü (BTI) Güzel Sanatlar Bölümü'nün ahşap, kumaş/giysi atığı ve diğer geleneksel olmayan malzemeler gibi katı atık malzemelerin kullanımını rutin uygulamalı egzersizlere entegre etmesini gerektirmektedir. Sanat öğretmenlerini ve öğrencilerini, Yeni Materyalizmin ilkelerini destekleyen alternatif kaynaklarla anlamlı, proje tabanlı etkileşimi teşvik eden yenilikçi, pedagojik temelli, malzeme odaklı yaklaşımlar konusunda eğitmek gerekmektedir. Kurumsal destek şarttır; bu, yalnızca atölye altyapısına, aletlere ve işleme ekipmanına sürekli yatırım yapılmasını değil, aynı zamanda atık malzemelerin sürekli tedarikini sağlamak için kamu-özel sektör ortaklıklarının kurulmasını da gerektirir.

Anahtar Kelimeler: Güzel sanatlar eğitimi, katı atık, pratik beceriler, mesleki ve teknik eğitim, sürdürülebilir malzemeler

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Introduction

Art education lies at the heart of fostering creativity that drives innovation and enriches the cultural diversity of educational institutions. According to studies by Khadija (2024, p. 67) and Edusei (2004, p. 118), art education serves as a conduit for transmitting culture, artistic values, customs, and processes across generations while equipping students with employable skills. As noted by Swanzy-Impraim et al. (2023, p. 559), arts education makes learning meaningful by allowing students to relate what they study to their own lives and express that learning to others. Furthermore, art education combines aesthetic and applied practice within vocational and technical education institutions, equipping students to use specific artistic techniques in practical settings such as product design, craft-making, and visual communication (Asghari et al., 2025, p. 274). Emerging artists, as part of the ever-changing creative industry, need a mix of theoretical knowledge and a firm grasp of practical skills (Liggett, 2023, p. 10).

To prepare fine art students in technical institutes to meet the ever-growing demands of the creative market, a systematic examination of the state of practical skills acquisition in Ghana is necessary (Diabour et al., 2022, p. 43; Nimkulrat, 2010, p. 65). Human resource development constitutes the foundation of economic, social, and political advancement for every nation. Beghetto (2021) asserts that creative education is among the most underestimated spheres within higher learning, even though it is one of the most important constituents of personal development. Governments worldwide, particularly in sub-Saharan countries, have renewed their efforts to promote technical and vocational education and training (TVET). This focus derives from the recognition that TVET supports skills acquisition and enhances productive capacity, thereby enabling countries to compete effectively in the global economy (McGrath et al., 2019, p.468).

Atchoarena and Delluc (2002, p. 50) thus express serious concern about the emerging trend among African countries to move towards TVET, and educational stakeholders have pointed out that a misconception associating TVET with those who do poorly in academia encourages the belief that TVET is of lower quality for the less privileged. On the contrary, the World Bank, UNESCO, and the ILO (2023, p. 33) argue that TVET is an emerging alternative for many secondary school dropouts and a continuation for those who have completed basic education. By developing regional skills enhancement frameworks and emphasizing the importance of technical education in economic transformation, the African Union Development Agency (AUDA-NEPAD) has reaffirmed its commitment to demand-driven, practical TVET (AUDA-NEPAD, 2022, p. 1). The formulation of these reforms is based on the understanding that high-quality TVET programs are instrumental in directly delivering the employment, entrepreneurship, and problem-solving skills needed to support national development goals. Ghana's Commission for Technical and Vocational Education and Training (CTVET) is progressively implementing initiatives to enhance the relevance, quality, and accessibility of TVET, in line with the broader education reforms pursued by the nation (Aweso, 2023, p. 42; CTVET, 2021, p. 22).

Progress in the TVET sub-sector has led many policymakers in African countries like Ghana to place TVET at the forefront of development agendas and initiatives, such as "Education for All" (EFA) and the "Millennium Development Goals" (MDGs). However, to achieve the goals set out in these policies to make TVET a viable tool for economic growth and poverty alleviation in sub-Saharan Africa, significant political will and resource commitments are needed to implement them (Bhuwanee, 2006, p. 20; Palmer, 2009, p. 69; UNESCO, 2012, p. 78). Minenok et al. (2024, p. 1) also noted that academic institutions must hold art education dear as a vital and essential aspect that enhances culture and plays a central role in building imaginative capacity in individuals. Art education assumes a greater role within technical institutes, as it not only develops artistic talent but also prepares students for the demands of a cutthroat, dynamic creative industry (Maryam, 2023, p. 148).

Winaryati et al. (2020, p. 174) show the importance of integrating the "4Cs" (Creativity, Critical Thinking, Communication, and Collaboration) as necessary skills for succeeding in the twenty-first century. These skills, along with conventional academic knowledge, are being honoured in the preparation of students for a technology-led and fast-changing world. Campbell (2011, p. 18) shares a holistic framework for art education that encourages self-made expression and provides students with the skills to meet varying demands of the fast-paced joint creative and professional industry. In educational systems, art education provides a necessary foundation for students' overall development because it links technical efficiency with artistic expression (Huang et al., 2024, p. 461; Minenok et al., 2024, p.1).

This combination of artistic creativity and technical skill is expected to play a vital role in the context of Technical Institutes, imparting skills that meet the demands of a contemporary, highly competitive creative industry (Liggett et al., 2023, p. 8). Nevertheless, practical skills still receive greater emphasis in fine art study (Kassah & Kemevor, 2016, p. 88), such that there has been glaringly little attention to the peculiar struggles of the fine art programmes at Bawku Technical Institute (BTI). This is essential for developing art skills at BTI and for providing students with basic skills for entry into their different career pathways. While practical skills are highly valued, research on the complex issues affecting fine art students in Ghana, both in general and at BTI specifically, remains scarce.

This study seeks to fill a critical gap by providing a thorough appraisal of the current situation of practical skill acquisition among fine art students at the institute. The study investigates problems specific to the local setting and proposes workable solutions for fine art students to enhance practical skills by emphasizing the use of solid waste materials (Adom, 2024, p. 133; Fantinelli et al., 2024, p. 198). By drawing key conclusions, the study hopes to positively impact fine art education at the institution and enrich pedagogy. The purpose of this study is to use solid waste materials produced at BTI to help fine art students there develop their practical skills. The study thus seeks to answer the following research questions:

1. What is the current state of practical skills acquisition among fine art students in BTI?

2. What are the perceptions and attitudes of fine art students towards practical skills training?

3. To what extent can solid waste materials be used to enhance the practical skills of fine art students in BTI?

Theoretical Basis

New materialism, as a philosophy of motion, sees all forms, whether social, aesthetic, or scientific, as patterns of matter in motion (Gamble et al., 2019, p. 112). According to Lettow (2016, p.

106), New materialism is a present-day movement with theoretical import that moves away from traditional human-centered and language-dominated modes of interpretation in the Humanities and Social Sciences, to highlight an active role of matter in constituting meanings, realities, and social life; encouraging educators to recognise the agency of matter in learning environments that support the making of pedagogy responsive to material-discursive entanglements of education. New Materialism's origins can be traced to the late 1990s and early 2000s, developing as a critique of the "linguistic turn" in postmodern and poststructuralist theory (Lundborg & Vaughan-Williams, 2014, p. 3). It draws from a plethora of intellectual traditions, personalities and schools from Spinoza's monism, through assemblage theory propounded by Deleuze and Guattari, to technoscientific feminism of Donna Haraway, Actor-Network Theory of Bruno Latour, agential realism of Karen Barad (Müller & Schurr, 2016, p. 217), and vibrant matter theory of Jane Bennett (Bennett, 2010, p. 39). These theorists were all calling for a more inclusive understanding of the physical universe, in theory as well as in practice, by redefining matter as active, entangled, and meaning-making.

New Materialism has influenced many disciplinary fields, including education, feminist theory, environmental studies, and arts and design (Hood & Kraehe, 2017, p. 32). For instance, this perspective in art and education asks us to consider wood, fabric, or refuse as co-participants in the creative and educational processes rather than merely tools (Geert, 2025, p. 11). Moreover, Zembylas (2016, p. 539) shares that material entanglements, in which humans, objects, and environments constantly co-produce one another, are glorified, and bodily sensations and affects. Emotions are seen as forms of knowledge-making. This paves the way for rethinking the teaching and learning of practical skills in areas such as fine art and vocational pedagogy (Opoku-Bonsu et al., 2017, p. 11). Multiple researchers have assessed the artistic potential of solid waste materials such as wood and garment waste, in line with New Materialism principles. An example is Sonia Gomes, an Afro-Brazilian sculptor who works with found wood and secondhand textiles, a case in point for these philosophies. Gomes' process is material-led and intuitive, with the texture and memory inherent in the waste objects shaping the outcome (Palumbo, 2020, p. 1).

This study applies New Materialism theory as waste material is not just discarded objects but active participants in the artistic process. Hood and Kraehe (2017, p. 32) assert that these materials indeed have active roles in shaping form and meaning, thereby corroborating New Materialist theory. It also provides an example of an artistic process that fine art students can emulate towards sustainability and creative endeavour (Jusslin & Østern, 2020, p. 1). Janowicz (2020, p. 1) supports that the Material Cultures studio coordinated by Paloma Gormley, Summer Islam, and George Massoud also investigates waste materials of the timber industry: bark, straw, and pine needles for sustainability in design and construction. Its projects highlight how waste has cultural and structural value, supporting New Materialism's assumptions of the vitality and agency of matter

Katell Gélébart, an eco-designer, embraces a low-tech, craft-centred approach to transforming worn materials into wearable art in the domain of fashion and fabric arts. Gélébart aims to promote eco-art education while extending the expressive potential of clothing waste in her work (Chin, 2010, p. 1). This method of changing materials, developed by Katell Gélébart, is key to building skills and promoting sustainability in Ghana's fine art education. Many academic sources support this practical approach. For instance, a study by Donkor et al. (2021, p. 71; 2024, p. 279; 2025, p. 109) explores how different types of waste wood and plastics can increase appreciation for the material and boost creativity. This exploration highlights how perceived flaws in wood can encourage artistic activity.

This exploration directly supports the argument of New Materialism regarding the active collaboration between the histories and meanings of the materials used in creating the finished artwork. Ibrahim et al. (2025, p. 52) explored the integration of fabric wastes from tailoring shops in Kumasi into community art education initiatives. Ibrahim et al. found that exposing students to these resources enhanced their understanding of colour theory, design, and cultural symbolism, an unmistakable pedagogical benefit. The works of Ghanaian artist El Anatsui, who creates vast installations from wood and bottle caps, blur the boundaries between fine art, craft, environmental concerns, and material agency (Amedorme & Fiagbe, 2013, p. 253; Nnabueze, 2023, p. 1). All of these encourage the use of solid waste materials in fine art education because of their educational, environmental, and economic value (Kpodo et al., 2024, p. 7). New Materialism frames waste materials as co-authors in the creative process, offering a radically new approach to hands-on instruction in technical schools.

Accurate use of solid waste materials, such as wood and remnants from clothing trims produced by schools, provides a fresh New Materialism framework for fine art teaching to enhance practical skills among students at BTI. Material agency in outdoor learning contexts, according to Yeboah et al. (2017, p. 193) and Mensah et al. (2024, p. 2), shows that natural materials and other nonhuman items played a strong role in students' learning experiences, connecting them to their immediate environment and thereby elevating academic performance. Among the numerous easily accessible but often underused resources at BTI are wood waste from carpentry and joining workshops and cutting waste from the Department of Fashion and Design. From a New Materialist viewpoint, these materials possess unique tactile, aesthetic, and historical features that can be utilised in decision-making and skill development in art practices (Hood & Kraehe, 2017, p. 32). By providing fine art students with these leftovers, they will not only enhance their craftsmanship in sculpting, assemblage, textile design, painting, and mixed media, but also develop the ability to think critically and perceive material agency (Çebi, 2025, p. 59).

This teaching approach supports a hands-on, inquiry-based STEM education philosophy that regards local materials as the products of creativity and a practical knowledge approach (Xanthoudaki & Blanton, 2021, p. 33). When this is applied to the arts, it helps students see their locality as a real, live source of creative resources, rather than just a classroom. This move is supported by Jabel and Fox (2025, p. 555), which advocates for curriculum reform that considers real-world situations. It includes prospective dimensions through which BTI can institute a much more sustainable and contextually relevant training model that preferably equips students with flexible, entrepreneurial capabilities for the changing creative economy in Ghana by embedding locally sourced waste materials into the fine art curriculum. New Materialism suddenly enabled the wood and garment waste used in BTI to become more than functional; it became a transformative tool for education and deeper research into practical skills and sustainability, vested with a redefinition of art education with the related current theoretical and socio-environmental imperatives

(Asenso et al., 2020, p. 66; James & Kent, 2019, p. 375). This would be especially evident in northern Ghana, where material scarcity is so severe that it inhibits artistic experimentation. It also extends sustainability and conservation awareness as students begin to interrogate the values of reuse and resourcefulness when confronted with abandoned materials.

Methods

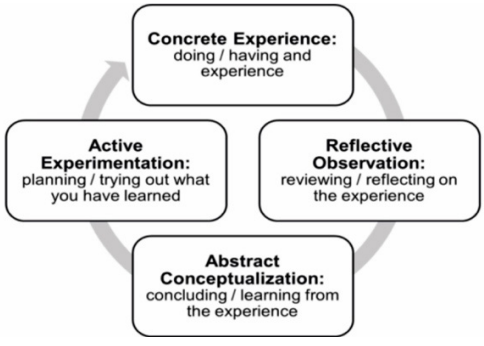
In fine art education, methods enable students to work with tangible materials, reflect on their artistic outcomes, and develop new concepts and skills through iterative practice, as shown in Image 1. The study is grounded in project-based learning and a cyclical learning process, based on David Kolb's (1984, p. 21) four stages of learning: concrete experience, reflective observation, abstract conceptualization, and active experimentation (University of Florida, n.d.).

Ethics committee approval was received for this study from the ethics committee of Department of Educational Innovations in Science and Technology, Kwame Nkrumah University of Science and Technology, Ghana (Date: January 12, 2024, Decision No: KNUST-IRB/2024/023).

Before the interviews, the consent form was prepared and signed to the participants.

Image 1.

Kolb's Experiential Learning Theory explores how these stages and styles can be measured and applied in education (Alharbi, 2021, p. 276)



Project-based learning (PBL) is a hands-on approach as it has become more popular for helping students improve their practical skills. It is especially effective when using recycled materials, promoting both creativity and sustainability (Ngereja et al., 2020, p. 330). PBL is particularly beneficial for fine art students, allowing them to explore ways to repurpose waste materials artistically. This method encourages art students to be more creative and enhances their critical thinking abilities (Boakye-Yiadom et al., 2025, p. 1). The study employed a mixed-methods design, with data collected through PBL activities. Both qualitative and quantitative methods helped this study gain a comprehensive understanding of the effectiveness of this type of practical skills training (Almulla, 2020, p. 1; Ozkan, 2023, p. 367). The qualitative method examined students' experiences and interactions with solid waste materials, while the quantitative method collected numerical data and conducted statistical analysis (Creswell & Creswell, 2017, p. 199). The mixed methods research design was informed by New Materialist principles, which view materials as active participants rather than passive tools. This perspective guided the selection of solid waste materials as pedagogical resources and informed the observational framework for documenting student-material interactions. The study used descriptive surveys to gauge the perceptions of both students and teachers and to inform improvements in teaching strategies (Bell, 2005, p. 8; Pertiwi & Nurhayati, 2024, p. 172). The researchers used a project-based learning method to evaluate students' experiences and learning outcomes.

The population of this study included 100 Fine art students and teachers of BTI. The researchers aimed to draw conclusions about how pedagogical approaches in art education affect the acquisition of vocational skills among students at technical institutes. So, the researchers focused on collecting data from every qualified fine art student and teacher in those particular grade levels within the technical institute. For data credibility, probability sampling and simple random sampling were employed for selecting a sample size of eighty-two (82), 72 fine art students and 10 teachers from BTI. A simple random sampling approach was used, meaning that every member had an equal chance of being selected (Noor et al., 2022, p. 78; Palinkas et al., 2015, p. 533). The researchers used Krejcie and Morgan's (1970) formula to determine the required sample size to ensure adequate representation of the respondents. This formula ensured that the findings were statistically significant and reflective of the larger population. The sample size was determined using Krejcie and Morgan's (1970) formula:

$s = X^2NP(1-P) / [d^2(N-1) + X^2P(1-P)]$

In addition, P = 0.50 and d = 0.05 (given as "50" and "05" in the text); $X^2 = 3.841$

Where:

s = required sample size

X^2 = the table value of chi-square for 1 degree of freedom at the desired confidence level (3.841)

N = the population size (100)

P = the population proportion (assumed to be 0.50 since this would provide the maximum sample size)

d = the degree of accuracy expressed as a proportion (0.05)

Applying the formula:

$s = 3.841 \times 100 \times 0.50 \times (1-0.50) / [0.05^2 \times (100-1) + 3.841 \times 0.50 \times (1-0.50)]$

$s = 3.841 \times 100 \times 0.50 \times 0.50 / [0.0025 \times 99 + 3.841 \times 0.50 \times 0.50]$

$s = 96.025 / [0.2475 + 0.96025]$

$s = 96.025 / 1.20775$

$s = 79.5$ (rounded to 80)

Based on this calculation, the minimum required sample size was 80 participants. To enhance representativeness and account for potential non-response, the researchers sampled 82 participants (72 fine art students and 10 teachers), slightly exceeding the calculated minimum. This minor over-sampling ensured adequate representation and improved the reliability of the findings. It is important to clarify that while the researchers aimed to include data from all qualified fine art students and teachers to achieve comprehensive coverage, the practical constraints of the study setting necessitated the use of probability sampling. Specifically, simple random sampling was employed to select participants from the accessible population, ensuring that every member had an equal opportunity to be included. This approach balanced the ideal of complete enumeration with the realities of fieldwork, maintaining both scientific rigour and practical feasibility.

The study also utilised questionnaires, observations, and inter-

views to collect data (Utibe, 2020, p. 15). The study used a Likert-scale questionnaire, which was effective for reaching a large population, while direct observation helped document how students interacted with solid waste materials. Finally, a structured interview helped gain insights into teachers' perceptions about training students on practical skills (Joshi et al., 2015, p. 396). The study used these instruments to triangulate data and ensure that the findings accurately reflected the opinions and experiences of fine art teachers and students regarding the use of solid waste materials in practical training. This data has been analysed using descriptive statistics such as frequencies and percentages. The qualitative data from the observations and interviews have been transcribed and analyzed thematically to identify recurring patterns and insights that connect to the research questions. The quantitative data from the questionnaires thus presented a numerical overview of students and teachers, while the qualitative data provided a richer, more contextualised perspective (Naeem et al., 2023, p. 1).

The triangulation of these data sources, such as questionnaires, observations, and interviews, enhances the study's findings (Donkoh & Mensah, 2023, p. 6). This mixed-methods approach provides comprehensive and nuanced coverage of the subject matter. The findings were then discussed against the background of existing literature, strengthening the understanding of the potential and challenges of using solid waste materials for fine art practical training at BTI. Before any study was conducted, it was essential to ensure that all participants (students, teachers, and other stakeholders) provided informed consent (Bos, 2020, p. 227). All participants were fully aware of the purpose, procedures, potential impacts, and their right to withdraw from the study at any time. The study also ensured participant anonymity by protecting participants' identities. The responses are anonymised, and the data is stored in a manner that prevents unauthorised access.

The researchers conducted the study at Bawku Technical Institute (BTI), located in the Bawku Municipality of Ghana's Upper East Region. The institution was established by the Catholic Church in 1967 to promote vocational education among the youth of the Upper East Region. It was the first technical institute in the Upper East Region. In 1979, the Department of Painting and Decoration, now known as Fine Art, was established at BTI, with just five students. Bawku and the neighbouring areas are known for their rich cultural heritage and diverse artistic traditions, making them a very special place for fine art education (Ghana Statistical Service, 2013, p. 1). Again, Boakye-Yiadom et al. (2025, p. 1) opine that indigenous knowledge has the potential to enhance African art education, and that reconnection to ancient ways will inspire creativity while maintaining ethnic identity. Similarly, Nweke and Boh (2024, p. 384) argue that the design of the curriculum needs to revert to its cultural base because traditions enshrine beliefs and values that are important for the development of the arts as a whole. Adom et al. (2024, p.161) state that art educators should use traditional African knowledge systems to encapsulate and pass on deep creative and philosophical ideas across generations. Sawyerr (2024, p. 80) outlines how the traditional apprenticeship system still plays a major role in articulating the values and discipline necessary in Ghana, in addition to practical skills. The introduction of fine art to this institution has produced many outstanding fine artists in the Upper East Region. In the region, as illustrated in Image 2, BTI plays a major role by training students with skills and knowledge vital for the world of work in various fields, including the creative industry.

Image 2.

Map of Bawku Municipal, Upper East Region, Ghana (Google Maps, 2025)

Results

Based on information collected from student surveys, teacher interviews, and observational data, the study's key discussion issues include the provision of practical training materials, student engagement, and available resources. It also considers the background of the study and the current state of practical skills acquisition among fine art students at BTI.

Practical Skills Acquisition Among Fine Art Students

Table 1:

Shows the responses of those who Strongly Agree, Agree. Neutral, Disagree, and Strongly Disagree with the current state of practical skills acquisition among fine art students at BTI

Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Practical training is not up to standard	34 (41%)	30 (37%)	0 (0%)	8 (10%)	10 (12%)
Practical is concentrated on painting instead of other fine art areas	42 (51%)	28 (34%)	0 (0%)	4 (5%)	8 (10%)
Practical lessons are not effective	30 (37%)	45 (55%)	0 (0%)	3 (4%)	4 (5%)
Lack of practical materials and tools	42 (51%)	30 (37%)	0 (0%)	6 (7%)	4 (5%)
Old syllabus is still being used for practical lessons	44 (54%)	26 (32%)	0 (0%)	5 (6%)	7 (9%)

Table 1 indicates that 78% of respondents either strongly agreed or agreed that the current practical training is inadequate, reflecting widespread dissatisfaction with its depth, relevance, and effectiveness. Additionally, 85% of respondents reported that the majority of practical training focuses on painting, at the expense of other fine art areas such as leatherwork, textile art, or mixed-media design, limiting students' exposure to a wide range of artistic techniques and practices, which is crucial for holistic skill development. Practical lesson teaching is deemed ineffective by 92% of the respondents. Differences abound in the reasons, all of which are interrelated, including inappropriate lesson designs, the absence of new methods, and inadequate interaction with resources.

The study also found a scarcity of resources, with 88% of respondents reporting they lacked the required practical materials and tools to support repeated practice and experimentation, a crucial canonical element of experiential learning and skill mastery. In addition, 86% of the respondents agreed that practical training is still based on an outdated syllabus, particularly in painting and decoration, which may not align with current artistic practices or prepare students for the requirements of the creative industry.

This is what is currently advised to the institution so that it can have resources for teaching fine art that include recycled wood and clothing waste in its curriculum, thus closing these gaps. This is in line with current methodologies, where teaching focuses more on material-centred, project-based, and constructivist learning. Those approaches will ensure creativity in innovation and environmental responsibility while improving skill acquisition, despite the New Materialism frameworks that will furnish learning with aspects of skill acquisition (Bennett, 2010, p. 39).

Perceptions and Attitudes of BTI's Fine Art Students Towards Practical Skills Training

Table 2:

Shows the responses of those who Strongly Agree, Agree. Neutral, Disagree, and Strongly Disagree with the perceptions and attitudes of fine art students towards practical skills training

Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Inadequate materials for practical work	35 (43%)	26 (32%)	0 (0%)	11 (13%)	10 (12%)
Less practical demonstration by the instructors	40 (49%)	25 (30%)	0 (0%)	10 (12%)	7 (9%)
Inadequate drawing equipment during lessons	33 (40%)	34 (41%)	0 (0%)	8 (10%)	7 (9%)
Inadequate time allocated for practical lessons	30 (37%)	45 (55%)	0 (0%)	3 (4%)	4 (5%)
Adequate workshop space is available	4 (5%)	6 (7%)	0 (0%)	30 (37%)	42 (51%)
Teachers spend most of the practical periods with students	44 (54%)	26 (32%)	0 (0%)	5 (6%)	7 (9%)
Some students do not get the opportunity to practice requisite skills	28 (34%)	32 (39%)	0 (0%)	12 (15%)	10 (12%)
Inadequate supply of basic hand tools	34 (41%)	30 (37%)	0 (0%)	8 (10%)	10 (12%)

From Table 2, several significant concerns among students about the conditions and delivery of fine art practical training are revealed by the data, seventy-nine percent (79%) of respondents reported that there is the lack of demonstration by instructors during practical sessions, which may lead to a gap between theoretical knowledge and actual practice, which could affect confidence and skill acquisition; eighty-one percent (81%) of respondents agreed that drawing equipment is inadequate, highlighting another major constraint in the learning environment; and a majority of respondents (75%) strongly agreed or agreed that there is an inadequate supply of materials for practical work, which significantly hinders the students' ability to engage in hands-on learning and limits the artistic exploration. Practical learning, especially in fine art, requires ample time for experimentation, revision, and mastery, which is somewhat accommodated in the current schedule. Time allocation was cited as a hurdle, with 92% of respondents feeling that the allotted time for practical lessons is simply insufficient. Practical learning, especially in fine art, requires enough time for experimentation, revision, and mastery, which, in the current scheme of things, seems impossible to accommodate.

The Use of Solid Waste Materials for Enhancing the Practical Skills of BTI's Fine Art Students

Table 3:

Shows the responses of those who Strongly Agree, Agree, Neutral, Disagree, and Strongly Disagree with, the use of solid waste materials for enhancing practical skills

Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Using solid waste materials makes students think creatively and innovatively	35 (43%)	36 (44%)	2 (2%)	4 (5%)	5 (6%)
Solid waste materials help students develop skills of experimentation	31 (38%)	30 (37%)	0 (0%)	10 (12%)	11 (13%)
Solid waste materials enhance students' skills of manipulation	40 (49%)	33 (40%)	0 (0%)	4 (5%)	5 (6%)
Solid waste materials help students adopt techniques suited to the material	30 (37%)	34 (41%)	0 (0%)	8 (10%)	10 (12%)
Solid waste helps students identify suitable materials for artistic work	35 (42%)	33 (40%)	0 (0%)	7 (9%)	7 (9%)
Using solid waste increases students' critical thinking	30 (37%)	38 (46%)	0 (0%)	5 (6%)	9 (11%)
Solid waste usage teaches students that not only original materials can be used for practical work	34 (41%)	36 (44%)	0 (0%)	8 (10%)	4 (5%)

However, a large percentage of respondents, specifically 86%, agreed or strongly agreed that most of their practical lessons are conducted with teachers, signifying the commitment and supportiveness of instructors, irrespective of institutional challenges in teaching and learning at the class level. However, variations were found in levels of student engagement, with almost 73% of respondents reporting that not all students get the chance to practice the required skills during lessons, which might be due to a lack of tools, insufficient workspace, or large student groups. In addition, seventy-eight percent (78%) of respondents indicated

that challenging tools are not sufficiently available for basic hand tools that would be used during practical training, thereby lowering the overall effect of practical training. A staggering 88% of respondents disagreed or strongly disagreed with the availability of adequate workshop space for practical training. As such, without the provision of these, students' learning has become passive and theoretical rather than active and skill-based.

The results show both positive teacher engagement and an inadequate institutional environment. In practical classes, students often find their teachers present and willing to help them. But there exists a major challenge, which is resource availability in terms of equipment, time, and space-all of which are necessary for successful skill development in fine art education. Investment in resources, curriculum evaluation, and institutional transformation are needed to address these challenges. Eventually, this will enhance students' creative development and employability in the visual arts industry by bridging the gap between theoretical education and real-world applicability.

Waste Materials used for Artefacts by BTI's Fine Art Students

Several types of solid waste collected for the study include sawdust, wood shavings, scrap wood, and clothing. As seen in Images 3 and 4, wood shavings were utilised for the artefacts. The students kept shavings separate and used the selected type. Once dyed green, the shavings were left to dry for three hours to allow complete drying. The tree trunk was made up of folded rags. The students drew trees on a flour sack and pasted them within the sketch using white glue. The students then soaked shavings in white glue before applying them to the drawn sack. The shavings were dried for a day before students could frame them on wood. The students painted the background with acrylic paint for the silkscreen.

Image 3.
Artworks made of tree and flowers by students using wood shavings (Field Survey, 2024)

Since it was challenging to obtain the debris, students used a small amount of wood scraps for the artefact. The goal of using wood scraps in art is to decorate walls. Before painting with a paint roller and attaching masking tape to the drawing lines, students made sketches on scrap wood. Before being varnished, certain wood fragments were abraded using abrasive paper. After learning some sculpture techniques, the students modelled some objects for testing using wood waste (wood shavings) and white glue. The ratio was 1:1/2 during mixing. It would be sticky and usable after one bowl of wood flour and half a bowl of glue.

Image 4.
Wood sculptures made by students with wood shavings on scraps of wood (Field Survey, 2024)

The students in the Department of Fashion and Design repurposed waste garments for artistic expression, producing works that depicted African heritage, including maps, portraits, and decorative patterns. The use of fabric in art highlights themes of cultural identity and sustainability. The waste garments collected from the BTI's Department of Fashion and Design were of various types. Still, they were all made from waste, and some were chosen for their colour and texture, while others were designed with lovely patterns and used as head wrappers (Gele), as indicated in Images 5 and 6.

Image 5.
Students washing and separating garments into different colours (Field Survey, 2024)

Image 6.
Portrait of the Head of Department of Fashion and Design, African map, Mama Africa, Flower, and painting of a woman made by students with waste garments (Field Survey, 2024)

Table 3 indicates that students hold highly positive perceptions regarding the benefits of hands-on training with solid waste materials for innovative education. Most students (87%) agree or strongly agree that using solid waste encourages original and creative thinking. This means that unusual materials act as a stimulus for creative methods in art-making, which aligns with the notions of problem-solving and experiential learning. In addition, 75% of students agreed to explore the use of solid waste items to try different approaches and evaluate the results. However, a minority of students (25%) disagreed, which may be attributed to a lack of experience with solid waste as an art medium or to a preference for traditional media. Currently, 89% of the respondents favoured using the solid waste products to improve manipulation skills. The fact that trash needs to be altered, remoulded, and reshaped makes it perhaps more difficult for learners to gain the confidence and dexterity to use and experiment with a wider range of tools and approaches. Further, 78% of the students maintain that solid waste affects the styles of art they adopt when using certain preferred materials. Practical engagement with the form, texture, and structure-key skills for fine art practice- is enhanced in this way of practical adaptation. Students also understood that working with solid waste enhances one's comprehension of material qualities and selection. Thus, more than 82% of respondents would agree that they also learned most about the appropriate material types for various artistic endeavours.

The finding shows advantages for cognition. A substantial 83% of participants reported that using solid waste enhanced their critical and reflective thinking skills, as they had to plan, solve problems, and employ unconventional creative processes. Lastly, 85% of respondents began asking whether there are acceptable methods for creating art other than using genuine or new materials. Such a realisation dovetails with current discourse on eco-art and creative reuse, which is particularly vital for deepening the sustainability and environmental consciousness of their work. The results strongly indicate that the use of solid waste materials does enhance students' growth in fine art practical skills. These materials foster creativity, experimentation, and material literacy, as well as dexterity and adjustment of technique. The process positions students as resourceful, flexible artists who can thrive in both abundance and scarcity while fostering their reflective thinking and sustainability attitudes. Such findings indicate the necessity of integrating alternative material use into curricular activities, as well as institutional support for fine art education. Thus, the use of solid waste materials may provide an interesting and ecologically considerate context for art education regarding material limitations.

Discussion

The findings addressing the first research question reveal the state of skills acquisition among fine art students at BTI. These problems in acquiring practical skills among fine art students at BTI indeed reflect larger issues in Ghanaian art education. Responses showed that the quality of practical training and specialisation in painting has been at the expense of other forms. Such concerns corroborate Amedorme and Fiagbe's (2013, p. 253) findings that most arts programmes remain overly theoretical and narrowly scoped. Within the framework of New Materialist theory, this denies students access to a range of resources, thereby limiting their capacity for creative development and embodied learning. This finding also affirms UNESCO's (2012, p. 78) statement that there must be a revision of art programmes across Africa to meet contemporary global industry standards. In the context of New Materialism, this outdated approach obstructs meaningful engagements with both material and practice within art education.

Additionally, the second major issue that became apparent was outdated curricula and perceived ineffectiveness in conducting practical lessons. A good number of respondents said that the present syllabus does not reflect recent developments in artistic practice; hence, their lessons are considered uninspiring and irrelevant. This finding goes to support Kassah and Kemevor's (2016, p. 88) criticisms as levelled against visual arts programmes in Ghana for their use of stale content and ineffective teaching methods; the lack of equipment to properly explore media, as well as the predominant use of walls as practicable surfaces, further inhibit student creativity and skill development. Again, Kassah and Kemevor discuss how art programmes in Ghana lack the necessary materials and equipment, which affects students' exploration of ideas and materials. New Materialist ideas endorse this view (Bennett, 2010, p. 39), highlighting materials as active agents in the learning process, and noting that a narrow material experience dilutes the transformative potential of art education. The integration of sustainable materials made from reclaimed wood and clothing waste offers a progressive solution to these constraints. This finding aligns with Mensah et al.'s (2024, p. 2) advocacy for eco-art practices to be inculcated in Ghanaian schools to nurture environmental sustainability through creativity and skills development. The mentioned method is further supported through constructivist and project learning paradigms, which promote action-oriented, hands-on inquiry. Besides that, further mentioned is an interdisciplinary collaboration supported by Adom (2024, p. 133) that engages environmental scientists, engineers, and artists jointly in the development of sustainable practices, consistent with Donkor et al. (2021, p. 71; 2024, p. 279; 2025, p. 109). The proposed changes are indeed pedagogically sound and contextually relevant to contemporary fine art education, given that the New Materialist framework upholds that materials themselves are fundamental in the formation of knowledge.

The second research question concerned the perceptions of fine art students regarding practical skills training at the BTI. The outcome of the study on hands-on training in fine art education points to structural inequities that are in congruence with broader academic studies being conducted in Ghana. These problems include the lack of appropriate workshop space, inadequate demonstrations, insufficient available teaching time, and a lack of materials. The limitations therein affect the quality of art training and constrain students' ability to realise their creative and technical potential. Research shows that these challenges are prevalent at various art colleges in Ghana, and calls for constructive changes.

Furthermore, the biggest obstacle to effective teaching in fine art remains the a lack of resources. Kemevor and Kassah (2016, p. 88) attribute this to poor planning and management of the resources within educational institutions, especially with art teaching. Besides, the unavailability of necessary resources not only interferes with practical engagement but also hampers students' academic performance and motivation. Therefore, proper management and supply of educational materials are essential to improving learning conditions. Skill development is further hindered by a lack of practical demonstrations and teaching time. This finding affirmed Aweso's (2023, p. 42) studies on internal quality control systems in educational colleges. Aweso asserted that most schools lack effective methods for tracking and maintaining educational standards or qualified personnel for quality assurance. Thus, with

limited ability to maintain instructional quality consistently and efficiently, the programmes for practical training and the achievement of learning objectives suffer. Moreover, limiting students from hands-on learning and creative inquiry, the lack of adequate workshop space worsens the situation.

Notwithstanding these drawbacks, teachers have shown immense commitment toward developing students and often making great sacrifices to facilitate their practical learning. Institutional reforms aimed at addressing these systemic concerns were proposed, including increased funding for educational resources, programme revisions that allow more time for practical training, and suitable workshop space. These reforms are indispensable for fostering students' artistic development and enhancing their employability in the fine art industry.

The third research question explored how the use of solid waste materials can help fine art students at BTI improve their skills. Studies show that when students use waste materials in art classes, they become more inventive and open to trying new things. This aligns with research by Kpodo et al. (2024, p. 7), which indicates that waste materials in art classes can enhance creativity and problem-solving abilities. Bennett (2010, p. 39) argues that materials actively influence the creative process rather than merely serving as passive tools, a view that aligns with experiential learning principles. Engaging with waste materials improves students' technical abilities and fosters their creativity. Research by Nimkulrat (2010; p. 65) supports the notion that using varied found materials enhances craftsmanship and material literacy. In New Materialist theory, students and materials have a dynamic relationship. Through hands-on experiences and adapting to each object's properties, students gain real-world skills. Incorporating solid waste into art projects also stimulates critical and reflective thinking. This supports the discussion on how uncertain materials require planning, evaluation, and adjustment. These processes show how reflection is integral to learning with materials, aligning with New Materialist views on the co-evolution of thought and material use. Moreover, valuing unconventional materials supports broader learning goals around resourcefulness and sustainability. Research by UNESCO (2012, p.78) underlines the importance of eco-friendly practices in art education. The results support the inclusion of recycled materials in the curriculum, address resource limitations, and prepare students to become adaptable, environmentally conscious artists in a fast-evolving creative industry.

Conclusions

Fine art education in institutions such as BTI contributes to economic empowerment, creativity, cultural identity, and mental well-being. Lack of practical exposure, an outdated curriculum, insufficient funds, and limited access to lecture equipment and materials have been equally detrimental to fine art students at BTI. These hurdles reduce students' chances of acquiring practical skills that enable one to fit into a present-day creative world where beauty and craftsmanship matter. According to this study, practical training is a core aspect for both teachers and students, but structural constraints limit this. So, solid waste materials, especially those of wood and clothing, now serve as affordable, alternative, and green replacements. This paradigm helps reinterpret materials as active participants in learning through the lens of New Materialism. Students are inspired to explore their environment as a reservoir of creative opportunities. This is done through framing trash as "vibrant matter," thus developing material literacy and environmental conscience. The paper endows the fine art curriculum with the capacity to transform the educational process by integrating solid waste materials into learning, ensuring continuous institutional support through partnerships and financing, and training teachers in modern, material-centric pedagogy. This, among others, would solve these problems and enhance practical training. Increasing student involvement could result from mentorships with local artists, workshops, and exhibitions. Other Technical and Vocational Education and Training (TVET) institutions in Ghana should emulate the best-practice model developed by BTI to advance the broader national goals of sustainability, youth empowerment, and growth in the creative industry.

It recommends curriculum reform that incorporates solid waste materials, such as wood and clothing waste, into everyday school teaching practices, thus helping offset the challenges encountered in practical fine art instruction at BTI. Aside from that, such lessons allow for sustainability, creativity, and experiential learning. This integrates art with the New Materialist standpoint, viewing materials as active agents in the learning process, making it all the more immersive and creative in practice. Institutional support becomes indispensable. Steady entry of financing, equipment, and materials will ensure that practical training remains continuous through public-private partnerships, government support, etc. In addition, capacity-building programs should be directed toward teacher education in innovative, material-focused pedagogies. Providing such skills would improve the overall quality of education while enabling meaningful, project-based engagement by students with alternative resources.

Furthermore, local artists should prioritise activities such as workshops, exhibitions, and mentorships to inspire students. So far, this is a great endeavour to change attitudes towards hands-on training and to create connections with the real world. Policymakers would then advocate such a resource-conscious, sustainable approach at the national level and across all other TVET institutions in the country. This would, in turn, carry forward the national objectives of environmental sustainability, innovation, and youth empowerment.

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References

Adom, D. (2024). Transforming Solid Waste into Artistic Marvels for Environmental Sustainability: Ghanaian Artists' Upcycling and Creative Reuse of Plastic Waste. In: Nasr, M., Negm, A. (eds) *Solid Waste Management. Sustainable Development Goals Series*. Springer, Cham. https://doi.org/10.1007/978-3-031-60684-7_8

Adom, D., Asare-Aboagye, I., Thompson, J. & Kquofi, S. (2024). Integration of Indigenous Knowledge Systems in African Higher Education in Ghana: A Post-CESA (2016-2025) Review. In book: *What Next for Africa's Higher Education? What Should Follow the Continental Education Strategy for Africa* (CESA 2016-2025) (pp.161-182). Ethics International Press Ltd.

African Union Development Agency (AUDA-NEPAD). (2022). *Skills Initiative for Africa: TVET Transformation Strategies.* African Union Development Agency (AUDA-NEPAD). https://www.nepad.org/skillsportal-foryouth/topics

Almulla, M. A. (2020). The Effectiveness of the Project-Based Learning (PBL) Approach as a Way to Engage Students in Learning. *SAGE Open*, *10*(3). https://doi.org/10.1177/2158244020938702

Amedorme, S. K., & Fiagbe, Y. A. K. (2013). Challenges Facing Technical and Vocational Education in Ghana. *International Journal of Scientific & Technology Research*, *2*(6), 253-255.

Asenso, K., Issah, S. & Som, E. K. (2020). The use of visual arts in environmental conservation in Ghana: The case of Adams Saeed. *Journal of African Art Education*, *1*(1), 66-83.

Asghari, H., Kilbrink, N., & Asplund, S. (2025). Learning about the use of tools in vocational education: Classroom observations of student teacher-interaction. *Scandinavian Journal of Vocations in Development*, *10*(1), 272–294. https://doi.org/10.7577/sjvd.5850

Atchoarena, D. & Delluc, A. (2002). *Revisiting technical and vocational education in Sub-Saharan Africa: An update on trends, innovations and challenges*. International Institute for Educational Planning/UNESCO. https://aau.org/wp-content/uploads/sites/9/2018/04/Technical-Vocational-Education-in-SSA-Trends-innovations-and-Challenges.pdf

Aweso, D. M. (2023). Internal Quality Assurance Policies and Practices in Colleges of Education in Ghana: Resource Dependency Theory Perspective. *British Journal of Education*, *11*(5), 39-54. https://doi.org/10.37745/bje.2013/vol11n53954

Beghetto, R. A. (2021). Creative Learning in Education. In: Kern, M. L., Wehmeyer, M.L. (eds) *The Palgrave Handbook of Positive Education*. Palgrave Macmillan, Cham. https://doi.org/10.1007/978-3-030-64537-3_19

Bell, J. (2005). *Doing your research project: A guide for first-time researchers in education, health and social science* (4th ed.). Open University Press.

Bennett, J. (2010). *Vibrant matter: A political ecology of things*. Duke University Press.

Bhuwanee, T. (Ed.) (2006). *Reforming Technical and Vocational Education in Sub-Saharan Africa Case Studies of Ghana - Mauritius - Tanzania and Zimbabwe*. UNESCO Regional Bureau for Education in Africa (BREDA).

Boakye-Yiadom, F., Donkor, E.K. and Mensah, R.O. (2025). Exploring the role of project-based learning in higher education to promote indigenous knowledge through sculpture students' engagement with Ghanaian Adinkra symbols. *Discover Global Society*, *3*, 4. https://doi.org/10.1007/s44282-024-00135-8

Bos, J. (2020). Research Ethics Step by Step. In: *Research Ethics for Students in the Social Sciences*. Springer, Cham. https://doi.org/10.1007/978-3-030-48415-6_10

Campbell, L. H. (2011). Holistic Art Education: A Transformative Approach to Teaching Art. *Art Education*, *64*(2), 18–24. https://doi.org/10.1080/00043125.2011.11519116

Çebi, S. (2025). From waste to art: A study on student creativity and creative expression through recycled materials in art education. *Art Vision*, *31*(54), 59-70. https://doi.org/10.32547/artvision.1542477

Chin, A. (2010, October 07). *Katell Gelebart: Art d'eco couture.* Designboom. https://www.designboom.com/design/katell-gelebart-art-deco-couture/

Creswell, J. W. & Creswell, J. D. (2017). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). SAGE Publications.

CTVET. (2021). *Ghana TVET report*. Commission for Technical and Vocational Education and Training. https://ctvet.gov.gh/wp-content/uploads/2022/09/GHANA-TVET-REPORT-2021SIGNED.pdf

Diabour, K. K., Navei, N., & Marifah, H. F. (2022). Visual arts education and national development: an inquiry into the popularity of visual arts programme in senior high schools in Upper West Region of Ghana. *International Journal of Humanities, Social Sciences and Education*, *8*(12), 42-55. https://doi.org/10.20431/2349-0381.0812005

Donkoh, S. & Mensah, J. (2023). Application of triangulation in qualitative research. *Journal of Applied Biotechnology & Bioengineering*, *10*(1), 6-9. https://doi.org/10.15406/jabb.2023.10.00319

Donkor, E. K., Apori, K. A., & Boakye-Yiadom, F. (2025). Artistic Use of Compositional Variations of Waste Wood. *Bodrum Journal of Art and Design*, *4*(1), 109-127. https://doi.org/10.58850/bodrum.1467266

Donkor, E. K., Micah, V. K. B., & Akomea, D. (2021). Plastic waste and its artistic context. *Detritus: Journal for Waste Resources & Residues*, *17*, 71–88. https://doi.org/10.31025/2611-4135/2021.14066

Donkor, E. K., Boakye-Yiadom, F., Ankrah, O. & Micah, V. K. B. (2024). Sculpture, circular economy and ecological reflections: redefining waste through sustainable art in Ghana. *World Art*, *14*(3), 279-303. https://doi.org/10.1080/21500894.2024.2367962

Edusei, K. (2004). An over view of visual art education in Ghanaian schools. *Journal of Science and Technology* (Ghana), *24*(2), 116-120. https://doi.org/10.4314/just.v24i2.32923

Fantinelli, S., Cortini, M., Fiore, T., Iervese, S., and Galanti, T. (2024). Bridging the gap between theoretical learning and practical application: a qualitative study in the Italian educational context. *Education Sciences*, *14*(2), 198. https://doi.org/10.3390/educsci14020198

Gamble, C. N., Hanan, J. S., & Nail, T. (2019). What is New Materialism? *Angelaki*, *24*(6), 111–134. https://doi.org/10.1080/0969725X.2019.1684704

Geert, P. v. (2025). *A complex systems view on the visual arts*. Cambridge University Press. https://doi.org/10.1017/9781009378970

Ghana Statistical Service. (2013). *2010 Population & Housing Census: Regional Analytical Report Upper East Region*. Ghana Statistical Service. https://www2.statsghana.gov.gh/docfiles/2010phc/2010_PHC_Regional_Analytical_Reports_Upper_East%20Region.pdf

Hood, E. J., and Kraehe, A. M. (2017). Creative Matter: New Materialism in Art Education Research, Teaching, and Learning. *Art Education*, *70*(2), 32–38. https://doi.org/10.1080/00043125.2017.1274196

Huang, L., Leung, S. K. Y., Li, J. W., & Wu, Z. (2024). How Does Comprehensive Art Education Facilitate Children's Creativity? A Mixed-Methods Study in China. *Early Education and Development, 36*(2), 460–476. https://doi.org/10.1080/10409289.2024.2404822

Ibrahim, M., Howard, E. K., Amos, E., Fobiri, G. K., Schall, M., & Oppong, D. (2025). Sustainable practices of fabric waste among small-scale garment enterprises in the Kumasi metropolis. *Sustinere: Journal of Environment and Sustainability*, *9*(1), 52–61. https://sustinerejes.com/index.php/a/article/view/411

Jabel, P., & Fox, J. (2025). Ghana's Standards-Based Curriculum Reform: National Insights from the Bono East Region Experience, IAFOR Journal of Education, *13*(3), 555–584. https://doi.org/10.22492/ije.13.3.22

James, A. St. J. & Kent, A. (2019). Clothing Sustainability and Upcycling in Ghana. *Fashion Practice*, *11*(3), 375–396. https://doi.org/10.1080/17569370.2019.1661601

Janowicz, M. (2020, August 08). *The Building Materials of the Future Might Be Growing in Your Backyard*. The Built Environment. https://www.untappedjournal.com/issues/issue-4/material-cultures-architecture-summer-islam-george-massoud

Joshi, A., Kale, S., Chandel, S., & Pal, D. K. (2015). Likert Scale: Explored and Explained. *Current Journal of Applied Science and Technology*, *7*(4), 396–403. https://doi.org/10.9734/BJAST/2015/14975

Jusslin, S. & Østern, T. P. (2020). Entanglements of teachers, artists, and researchers in Pedagogical environments: A new materialist and arts-based approach to an educational design research team. *International Journal of Education & the Arts*, *21*(26), 1-28. http://doi.org/10.26209/ijea21n26

Kassah, J. K. & Kemevor, A. K. (2016). The Challenges of Visual Arts Education in Ghana's Colleges of Education. *International Journal of Scientific Engineering and Applied Science* (IJSEAS), *2*(3), 87-98.

Khadija, S. M. (2024). The Role of Arts in Education: Enhancing Creativity and Critical Thinking. *Research Output Journal of Education*, 3(3), 66-70.

Kolb, D. (1984). *Experiential Learning: Experience as the Source of Learning and Development*. Prentice-Hall.

Kpodo, C. S., Ankyiah, F., Agbelengor, G. R., & Dah, S. (2024). Exploring Innovative Approaches and Interventions to Address Misconceptions and Promote Effective Visual Arts Education in Secondary Schools in Ghana. *American Journal of Education and Technology*, *3*(2), 7–11. https://doi.org/10.54536/ajet.v3i2.2524

Krejcie, R.V., & Morgan, D.W. (1970). Determining Sample Size for Research Activities. *Educational and Psychological Measurement*, *30*, 607-610. https://doi.org/10.1177/001316447003000308

Lettow, S. (2016). Turning the turn: New materialism, historical materialism and critical theory. *Thesis Eleven*, *140*(1), 106-121. https://doi.org/10.1177/0725513616683853

Liggett, S. (2023). Creativity and the Arts: Traditional and New Media. In: *Creativity in Art, Design and Technology. Springer Series on Cultural Computing* (SCC). Springer, Cham. https://doi.org/10.1007/978-3-031-24869-6_2

Liggett, S., Earnshaw, R., & Townsley, J. (Eds.) (2023). Creativity in art, design and technology. *Springer Series on Cultural Computing*. Springer Cham. https://doi.org/10.1007/978-3-031-24869-6

Lundborg, T. & Vaughan-Williams, N. (2014). New materialisms, discourse analysis, and international relations: a radical intertextual approach. *Review of International Studies*, *41*(1), 3-25. https://doi.org/10.1017/s0260210514000163

Maryam, S. (2023). Art Education and Students' Perception of Fine Art Teachers. *Al-Qamar*, 147-164. https://doi.org/10.53762/alqamar.06.04.e10

McGrath, S., Ramsarup, P., Zeelen, J., Wedekind, V., Allais, S., Lotz-Sisitka, H., … Russon, J. A. (2019). Vocational education and training for African development: a literature review. *Journal of Vocational Education & Training*, *72*(4), 465–487. https://doi.org/10.1080/13636820.2019.1679969

Mensah, R. O., Amponsah, K. D., Babah, P. A., & Jibril, H. S. (2024). Factors affecting students' academic performance and teachers' efficiency in Ghana; a case study of Wa senior high school. *Cogent Arts & Humanities*, *11*(1), 2412944. https://doi.org/10.1080/23311983.2024.2412944

Minenok, A., Zinkiv, I., Konovalova, I., Polska, I., & Karapinka, M. (2024). Art education as a means of forming cultural identity and civic consciousness. *Multidisciplinary Reviews*, 6, 2023spe008. https://doi.org/10.31893/multirev.2023spe008

Müller, M. & Schurr, C. (2016). Assemblage thinking and actor-network theory: conjunctions, disjunctions, cross-fertilisations. *Transactions of the Institute of British Geographers*, *41*(3), 217-229. https://doi.org/10.1111/tran.12117

Naeem, M., Ozuem, W., Howell, K., & Ranfagni, S. (2023). A Step-by-Step Process of Thematic Analysis to Develop a Conceptual Model in Qualitative Research. *International Journal of Qualitative Methods*, *22*. https://doi.org/10.1177/16094069231205789

Ngereja, B., Hussein, B., & Andersen, B. (2020). Does Project-Based Learning (PBL) Promote Student Learning? A Performance Evaluation. *Education Sciences*, *10*(11), 330. https://doi.org/10.3390/educsci10110330

Nimkulrat, N. (2010). Material inspiration: from practice-led research to craft art education. *Craft Research*, *1*(1), 63-84. https://doi.org/10.1386/crre.1.63_1

Nnabueze, A. (2023, April 13). *El Anatsui creates gigantic artworks from recycled materials - why the world fell in love with him*. The Conversation. https://theconversation.com/el-anatsui-creates-gigantic-artworks-from-recycled-materials-why-the-world-fell-in-love-with-him-202199

Noor, S., Tajik, O. & Golzar, J. (2022). Simple Random Sampling. *International Journal of Education & Language Studies*, *1*(2), 78-82. https://doi.org/10.22034/ijels.2022.162982

Nweke, P. O. & Boh, S. A. (2024). Exploring Cultural Influences on Curriculum and Education Reforms: Lessons for Nigeria's Future. *International Journal of Studies in Education*, *20*(1), 384-394.

Opoku-Bonsu, K., Jectey-Nyarko, Y. M., Anim, F. A. and Donkor, E. E. (2017). Rethinking materiality in pre-tertiary studio art education in Ghana. *Journal of Arts and Humanities*, *6*(12), 11. https://doi.org/10.18533/journal.v6i12.1311

Ozkan, Z. C. (2023). The effect of project-based learning in visual arts lesson on lesson outcomes and attitudes. *International Journal on Social and Education Sciences* (IJonSES), *5*(2), 367-380. https://doi.org/10.46328/ijonses.565

Palinkas, L. A., Horwitz, S. M., Green, C. A., Wisdom, J. P., Duan, N., & Hoagwood, K. (2015). Purposeful Sampling for Qualitative Data Collection and Analysis in Mixed Method Implementation Research. *Administration and Policy in Mental Health*, *42*(5), 533–544. https://doi.org/10.1007/s10488-013-0528-y

Palmer, R. (2009). Formalising the informal: Ghana's National Apprenticeship Programme. *Journal of Vocational Education & Training*, *61*(1), 67–83. https://doi.org/10.1080/13636820902820048

Palumbo, J. (2020, November 26). *Sonia Gomes Crafts Bold Textile Works from Strangers' Treasures*. Artsy. https://www.artsy.net/article/artsy-editorial-sonia-gomes-crafts-bold-textile-works-strangers-treasure s

Pertiwi, N. L. & Nurhayati, D. A. (2024). Exploring teachers' perception on project-based learning (pbl) in teaching speaking of report text at junior high school. *Journal of English for Academic and Specific Purposes* (JEASP), *7*(2), 172–185. https://doi.org/10.18860/jeasp.v7i2.28122

Sawyerr, N. O. (2024). A review of apprenticeship policies in Ghana. *International Journal of Innovative Research and Development*, *12*(10), 80-86. https://doi.org/10.24940/ijird/2023/v12/i10/oct23012

Swanzy-Impraim, E., Morris, J. E., Lummis, G. W., & Jones, A. (2023). Exploring creative pedagogical practices in secondary visual arts programmes in Ghana. *The Curriculum Journal*, *34*(4), 558-577. https://doi.org/10.1002/curj.201

The World Bank, UNESCO & ILO. (2023). *Building Better Formal TVET Systems: Principles and Practice in Low- and Middle-Income Countries*. The World Bank, UNESCO, and ILO. https://aau.org/wp-content/uploads/sites/9/2018/04/Technical-Vocational-Education-in-SSA-Trends-innovations-and-Challenges.pdf

UNESCO. (2012). *Transforming TVET from idea to action*. UNESCO-UNEVOC International Centre for Technical and Vocational Education and Training. http://unevoc.ru/wp-content/uploads/2016/11/Transforming_TVET_From_idea_to_action.pdf

University of Florida. (n.d). *Kolb's Four Stages of Learning. University of*

Florida, Center for Instructional Technology and Training. (2025, May 02). https://citt.ufl.edu/resources/the-learning-process/types-of-learners/kolbs-four-stages-of-learning/

Utibe, T. (2020). Impacts of Interview as Research Instrument of Data Collection in Social Sciences. *Journal of Digital Art & Humanities*, *1*(1): 15-24. https://doi.org/10.33847/2712-8148.1.1_2

Winaryati, E., Mardiana, M., & Hidayat, M. T. (2020). Conceptual framework of evaluation model on 4c's-based learning supervision. *International Journal of Learning, Teaching and Educational Research*, *19*(8), 173-193. https://doi.org/10.26803/ijlter.19.8.10

Xanthoudaki, M., & Blanton, A. (2021). Creative Learning in STEM: towards the design of an approach between theory and reflective practice. *Journal of E-Learning and Knowledge Society*, *17*(3), 33-42. https://doi.org/10.20368/1971-8829/1135559

Yeboah, R., Asante, E. A., & Opoku-Asare, N. A. (2017). Recycling solid waste materials to develop instructional resources for art education. *International Journal of Education Through Art*, *13*(2), 193-215. https://doi.org/10.1386/eta.13.2.193_1

Zembylas, M. 2016. Making sense of the complex entanglement between emotion and pedagogy: contributions of the affective turn. *Cultural Studies of Science Education*, *11*, 539–550. https://doi.org/10.1007/s11422-014-9623-y

Image References

Image 1.

Alharbi, B. (2021). Development of an ERP System Design Course to Improve Students' Learning Outcomes. *International Journal of Emerging Technologies in Learning* (iJET), 16(12), pp. 276–288. https://doi.org/10.3991/ijet.v16i12.22281

Image 2.

Google Maps. (2025). *Map of Bawku Municipal, Upper East Region, Ghana*. Google. https://www.google.com/maps/place/Bawku+Technical+Institute/@11.0513998,-0.2672836,16.78z/data=!4m6!3m5!1s0xe2a948c8846b43d:0x7221b4e801dac067!8m2!3d11.0511537!4d-0.2673787!16s%2Fg%2F11g_swg76?entry=ttu&g_ep=EgoyMDI2MDYwMS4wIKXMDSoASAFQAw%3D%3D

Image 3.

Field Survey (2024)

Image 4.

Field Survey (2024)

Image 5.

Field Survey (2024)

Image 6.

Field Survey (2024)

Yapılandırılmış Özet

Bu çalışma, Gana'nın Upper East Bölgesi'ndeki Bawku Teknik Enstitüsü'nde (BTI) güzel sanatlar eğitiminde önemli bir boşluğu ele almayı amaçlıyor. Buradaki öğrenciler, ciddi malzeme ve kaynak eksiklikleri nedeniyle sanatsal beceriler geliştirmede büyük zorluklarla karşılaşıyor. Uygulamalı eğitimin yaratıcı ve iş hayatına hazır sanatçılar yetiştirmek için çok önemli olduğu yaygın olarak kabul edilse de, BTI Güzel Sanatlar Bölümü, eski müfredat, yetersiz atölye tesisleri, yetersiz eğitim araçları ve geleneksel resim dışında sanatsal tekniklere sınırlı maruziyet nedeniyle sıkıntı yaşıyor. Bu zorluklar, Gana'nın Teknik ve Mesleki Eğitim Sistemi (TVET) içindeki sistemik sorunları yansıtıyor; burada sanat eğitimi genellikle teorik ve dar bir şekilde odaklanıyor ve öğrenciler, değişken yirmi birinci yüzyıl yaratıcı endüstrisinin taleplerine hazırlıksız kalıyor.

Bu çalışma, malzemelerin yaratıcı ve öğrenme süreçlerinde yalnızca pasif araçlar olarak değil, aynı zamanda etkin özneler olarak var olduğunu öne süren Yeni Materyalizm kuramına dayanmaktadır. Söz konusu kuramsal bakış açısı; anlam ve bilginin üretimi ve inşasında maddenin rolünü vurgulayan Bennett (2010, s. 39), Hood ve Kraehe (2017, s. 32) ile diğer araştırmacıların çalışmalarından beslenmektedir. Çalışma, atık malzemeleri yaratıcılık ve sürdürülebilirlik potansiyeli taşıyan "canlı madde" olarak yeniden yorumlayarak; kaynak kıtlığı sorununu ele alırken aynı zamanda çevresel farkındalığı ve yaratıcı keşif süreçlerini desteklemeye yönelik yenilikçi bir yaklaşım sunmaktadır.

Bu çalışma, tanımlayıcı anketler, proje tabanlı öğrenme aktiviteleri, gözlemler ve yarı yapılandırılmış görüşmeleri içeren karma yöntemli bir yaklaşım kullandı. Toplam 100 katılımcıdan (72 güzel sanatlar öğrencisi ve 10 öğretmen) 82 kişi basit rastgele örnekleme ile seçildi; örneklem büyüklüğünü belirlemek için Krejcie ve Morgan'ın (1970) formülü kullanıldı. Veri toplama araçları arasında Likert ölçekli anketler, doğrudan gözlem protokolleri ve görüşme kılavuzları yer alırken, kapsamlı ve detaylı bulgular elde etmek için üçlü doğrulama (triangülasyon) kullanıldı. Proje tabanlı bölümde öğrenciler, moda bölümünden elde edilen kumaş artıklarını ve ahşap atıkları (testere tozu ve artan parçalar) kullanarak sanat eserleri yarattılar; böylece sıradışı malzemelerin pedagojik değeri somut bir şekilde gösterilmiş oldu.

Çalışma, BTI'de pratik becerilerin kazanılmasında önemli zorluklar olduğunu ortaya koydu. Katılımcıların %92'si pratik dersleri etkisiz bulurken, %88'i uygulamalı öğrenim için gerekli malzeme ve araçların eksik olduğunu bildirdi. Müfredat büyük ölçüde resim üzerine yoğunlaşmış durumdaydı (katılımcıların %85'i bunu belirtti), oysa tekstil sanatı, deri işleri ve karma medya tasarımı gibi diğer güzel sanat dalları büyük ölçüde ihmal ediliyordu. Ayrıca, katılımcıların %86'sı, güncel sanatsal uygulamaları veya sektörel gereklilikleri yansıtmayan eski müfredatların hâlâ öğretimi yönlendirdiğini doğruladı.

Öğrencilerin pratik eğitimle ilgili görüşleri ek yapısal engelleri ortaya koydu. Katılımcıların %88'i yetersiz atölye alanından, %81'i yetersiz çizim ekipmanından ve %79'u öğretmenlerin pratik gösterim eksikliğinden bahsetti. Zaman tahsisi önemli bir sorun olarak öne çıktı; öğrencilerin %92'si pratik derslerin anlamlı deneyler yapmak ve beceri kazanmak için yeterli süreye sahip olmadığını belirtti. Tüm bu zorluklara rağmen, öğrencilerin %86'sı öğretmenlerin pratik derslerde adanmış ve destekleyici olduklarını kabul etti ve kısıtlı kaynaklara rağmen öğretime güçlü bir bağlılık gösterdiklerini ifade etti.

Proje tabanlı bileşen, oldukça olumlu sonuçlar verdi. Öğrenciler katı atık malzemelerle çalıştıklarında, %87'si yaratıcılık ve yenilikçi düşünme becerilerinin geliştiğini, %83'ü ise eleştirel ve yansıtıcı düşünme becerilerinin geliştiğini bildirdi. Malzeme okuryazarlığı önemli ölçüde arttı; öğrencilerin %82'si malzeme özelliklerini ve sanatsal amaçlar için seçimini daha iyi anladı. Atık malzemelerin uyarlanması, yeniden şekillendirilmesi ve yaratıcı problem çözme gerektirmesi nedeniyle, katılımcıların %89'unda manipülasyon becerileri gelişti. Dikkat çekici bir şekilde, öğrencilerin %85'i sanatsal çalışmalarda yalnızca orijinal malzemelerin kullanılıp kullanılamayacağını sorgulamaya başladı; bu da sürdürülebilir ve kaynak verimli sanatsal uygulamalara doğru bir paradigma değişimine işaret ediyor.

Bulgular, Gana'daki ve Sahra Altı Afrika'daki benzer bağlamlardaki güzel sanatlar eğitimi için önemli sonuçlar taşıyor. Katı atık malzemelerini entegre etmek, kaynak kıtlığına karşı pratik, sürdürülebilir ve maliyeti düşük bir çözüm sunarken aynı zamanda çevresel farkındalığı ve yaratıcı yeniliği teşvik ediyor. Çalışma, günlük pratik uygulamalara ahşap ve kumaş atıkları dahil eden sistematik bir müfredat reformu öneriyor ve böylece resim odaklı bir müfredattan, malzeme odaklı çeşitli öğrenme deneyimlerine doğru bir geçiş hayal ediyor.

Kurumsal destek şarttır; bu, yalnızca atölye altyapısına, aletlere ve işleme ekipmanlarına sürekli yatırım yapılmasını değil, aynı zamanda atık malzemelerin istikrarlı bir şekilde temin edilmesini sağlamak için kamu-özel sektör ortaklıklarının kurulmasını da gerektirir. Öğretmen mesleki gelişim programları, Yeni Materyalist ilkelerle uyumlu, yenilikçi, malzeme odaklı pedagojilere öncelik vermeli ve eğitimcilerin alternatif kaynaklarla anlamlı, proje tabanlı etkileşimi kolaylaştırmalarını sağlamalıdır. Ek olarak, ulusal politika yapıcılar, mesleki eğitim kurumlarında kaynak verimli ve sürdürülebilir yaklaşımları desteklemeli ve böylece çevresel sürdürülebilirlik, gençlerin güçlendirilmesi ve yaratıcı endüstrilerin büyümesi gibi daha geniş hedeflere katkıda bulunmalıdır.

Bu çalışma, Yeni Materyalizm temelli atık-sanat pedagojisinin, kaynak kısıtlı ortamlarda güzel sanatlar öğrencilerinin pratik becerilerini güçlendirmek için dönüştürücü bir eğitim modeli sunduğunu göstermektedir. Atığı atılmış malzeme yerine yaratıcı bir fırsat olarak yeniden tasavvur ederek, BTI kaynak zorluklarının üstesinden gelirken, öğrencileri Gana'nın gelişen yaratıcı ekonomisine hazır, esnek ve çevre bilincine sahip sanatçılar olarak yetiştirebilir. Model, pratik beceri geliştirme konusunda sürdürülebilir ve bağlama uygun yaklaşımlar arayan diğer mesleki eğitim kurumları için tekrarlanabilir bir çerçeve sunmaktadır.