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INSTRUCTIONAL MATERIALS UTILISATION IN SECONDARY SCHOOLS IN ACOWA AND AKORE TOWN COUNCILS, KAPELEBYONG DISTRICT

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Abstract

Art and Design education is critical in fostering creativity and practical skills among secondary school learners. However, in rural Ugandan districts like Kapelebyong, inadequate instructional materials hinder effective skills acquisition. This study investigated the relationship between instructional materials and skills acquisition in Art and Design among secondary school students in Acowa and Akore Town Councils, Kapelebyong District. Employing a descriptive cross-sectional design with a concurrent mixed-methods approach, data were collected from 301 quantitative respondents and 7 qualitative informants via questionnaires, interviews, and observations. Quantitative data were analyzed using descriptive statistics, correlation, and regression; qualitative data underwent thematic analysis. Results indicated a moderately high utilization of instructional materials (mean = 2.71, SD = 0.808), with traditional resources such as clay and paints widely used, while digital tools were underutilized. Students' skills acquisition was rated good (mean = 2.74, SD = 0.758), with stronger competence in drawing and painting than in digital design. Correlation analysis revealed a strong, positive, and statistically significant relationship between instructional materials and skills acquisition ($r = 0.888$, $p < 0.05$). Regression results showed instructional materials significantly predicted skills acquisition, explaining 78.9% of the variance ($R^2 = 0.789$, $F = 1120.284$, $p = 0.000$). The study concludes that adequate provision and effective use of instructional materials enhance learners' creativity, participation, and mastery in Art and Design. Recommendations include increased resource provision, integration of ICT tools, teacher training, and policy support to improve skills acquisition in rural secondary schools.

Keywords: Instructional materials, Art and Design, Skills acquisition, Secondary schools, Kapelebyong District, ICT integration

Introduction

Instructional materials have long been recognized as vital components in enhancing students' learning experiences and shaping their acquisition of practical skills in creative subjects such as Art and Design. Globally, the integration of instructional materials in Art and Design education can be traced to the late 19th and early 20th centuries during the rise of industrialization and the formalization of public education systems. These developments emphasized the teaching of creative and technical skills necessary for societal advancement (Arnason et al., 2020; Kleiner, 2019). Early educational models incorporated physical tools such as drawing instruments, sculptures, and visual aids to reinforce hands-on learning. By the 1960s and 1970s, advancements in technology introduced multimedia and digital instructional tools like slides, projectors, and later computers, which revolutionized art pedagogy and expanded opportunities for skill development (Ajibade, 2021; Agun, 2018).

In developed regions such as North America and Western Europe, over 90% of secondary schools have established art studios equipped with digital learning resources, significantly improving students' creative performance (UNESCO, 2022; Woessmann, 2020). However, disparities persist globally as underprivileged regions still experience critical shortages of teaching materials, with rural schools being the most affected (Blair, 2021). In Africa, the historical marginalization of indigenous art during the colonial era stunted the growth of practical art education. Following independence, many African nations, including Nigeria, Kenya, Ghana, and Uganda, initiated curriculum reforms to restore practical creative arts and promote local cultural expression (Adeyemi & Olaleye, 2021; Agun, 2018). Nonetheless, implementation has been impeded by resource inadequacy, especially in rural schools, where less than half of the students have access to essential art materials (Hoop, 2021; World Bank, 2020).

In East Africa, countries such as Kenya, Tanzania, and Uganda have progressively restructured art education to enhance creativity and innovation. Yet, by 2022, only a quarter of secondary schools in the region had fully equipped art studios, with Uganda's rural areas recording the lowest availability (Kitheka, 2019; World Bank, 2020). The situation in Uganda exemplifies this imbalance. Art and Design education was pioneered by Margaret Trowell in the 1930s, integrating traditional Ugandan art with Western techniques (Baker Apollo, 2020; Timothy Tibenkana, 2021). However, despite such historical foundations, Uganda continues to face challenges in resource provision and teacher preparedness. The World Bank (2022) reported that only 15% of Ugandan secondary schools had operational art studios, and less than 10% possessed digital art resources.

In Kapelebyong District, located in northeastern Uganda, these challenges are even more pronounced. Schools in Acowa and Akore Town Councils primarily depend on chalkboards, a few improvised tools, and scarce textbooks for Art and Design lessons (Ajayi & Ogunyemi, 2021; Mohd, 1981). Art studios and computers are nearly absent, and most practical sessions rely on teacher creativity and student improvisation. A 2022 district survey revealed that fewer than 10% of secondary schools had sufficient instructional materials, and only 8% of students participated regularly in practical art lessons (Damari Rafikiyangu et al., 2023). Despite commendable local initiatives such as the use of indigenous materials like clay, charcoal, and natural dyes, the lack of specialized art tools and training continues to constrain skill acquisition (Baker Apollo, 2020; Ajayi & Ogunyemi, 2021).

Consequently, these gaps have limited students' opportunities to engage in essential creative practices such as modeling, drawing, painting, printmaking, and color theory application. The absence of adequate instructional resources not only restricts artistic creativity but also undermines Uganda's broader educational goals of fostering innovation and cultural expression. In a globalized economy increasingly driven by creative industries, the inability of students in districts like Kapelebyong to access and effectively use instructional materials represents a significant educational and developmental setback (World Bank, 2022; Farombi, 2020). Therefore, understanding how instructional materials influence students' skills acquisition in Art and Design is essential for bridging this rural-urban educational divide.

Statement of the Problem

Globally, effective art and design education provides students with opportunities to acquire practical and creative competencies through structured use of diverse instructional materials (Arnason et al., 2020; UNESCO, 2022). In contrast, secondary schools in Kapelebyong District face serious constraints

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in this regard. Less than 15% of students demonstrate basic proficiency in sculpture and ceramics, while fewer than 10% have access to computers or digital tools necessary for modern graphic design (World Bank, 2022). More than 60% of learners fail practical examinations in drawing and color theory, signaling inadequate exposure to practical instruction (Timothy Tibenkana, 2021; Damari Rafikiyangu et al., 2023). The persistent shortage of materials such as projectors, art images, paints, and studio equipment continues to hinder skill mastery (Ajayi & Ogunyemi, 2021). While earlier research has explored instructional materials in general education, few studies have focused on their relationship with skills acquisition in Art and Design within Kapelebyong's rural context (Hoop, 2021; Blair, 2021). This study therefore investigates how instructional materials influence students' skills acquisition in Art and Design in secondary schools in Acowa and Akore Town Councils.

Specific Objectives of the Study

1) To examine the extent to which instructional materials are utilized in secondary schools in Acowa and Akore Town Councils, Kapelebyong District.
2) To determine the relationship between instructional materials and students' skills acquisition in Art and Design in secondary schools in Acowa and Akore Town Councils, Kapelebyong District.

Research Questions

1) What is the level of utilization of instructional materials in secondary schools in Acowa and Akore Town Councils, Kapelebyong District?
2) How do instructional materials relate to students' skills acquisition in Art and Design in secondary schools in Acowa and Akore Town Councils, Kapelebyong District?

Literature Review

Theoretical Review

The relationship between instructional materials and students' skills acquisition in Art and Design can be best understood through Albert Bandura's (1962) Social Learning Theory (SLT). This theory provides an essential framework for explaining how individuals learn not only through direct experience but also by observing and imitating others within their social and physical environment (Bandura, 1962). The theory assumes that behavior, cognition, and environment interact in a dynamic and reciprocal manner to shape learning outcomes, a process Bandura termed reciprocal determinism. Learning, therefore, is influenced by environmental factors, such as instructional resources, by cognitive elements like perception and memory, and by behavioral engagement reflected through practice and imitation.

According to Bandura (1962), individuals acquire new knowledge and skills by observing models, such as teachers, peers, or even mediated examples like videos or instructional materials. Learners attend to observed behaviors, retain them mentally, and later reproduce them when the conditions are favorable. Furthermore, reinforcement — whether direct or vicarious — enhances the likelihood of reproducing learned behaviors. In the context of Art and Design education, this implies that when students observe their teachers demonstrating drawing or modeling techniques using instructional materials such as projectors, art images, or studio equipment, they are likely to imitate and internalize these artistic processes. Hence, instructional materials act as both models and mediators of learning, providing tangible exemplars that students can emulate during practice sessions (Ajibade, 2021; Earthman & Lemasters, 2020).

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In Uganda's secondary school context, particularly within rural Town Councils such as Acowa and Akore in Kapelebyong District, the application of SLT holds particular relevance. Art and Design is inherently practical and visual, requiring learners to observe, imitate, and experiment with tools and techniques demonstrated by teachers (Baker Apollo, 2020). Instructional materials such as paints, clay, and digital images are critical social models that bridge the gap between theory and practice. They enable students to form visual and cognitive representations of artistic concepts, thereby promoting skill acquisition through observation and replication (Ajayi & Ogunyemi, 2021). The communal culture of Ugandan classrooms, where students often work collaboratively, further emphasizes Bandura's assumption that learning is a socially mediated process reinforced through peer modeling and teacher demonstrations (Farombi, 2020).

However, despite its explanatory strength, the Social Learning Theory is not without limitations when applied in rural art education contexts. One major assumption of the theory is that effective models and adequate learning materials are available and accessible. In many Ugandan secondary schools, particularly in rural Town Councils, this assumption rarely holds true. Studies have shown that art and design teachers frequently face severe shortages of basic materials such as paints, brushes, and digital tools, limiting opportunities for observational learning (Hoop, 2021; Damari Rafikiyangu et al., 2023). Moreover, SLT does not fully account for infrastructural barriers like unreliable electricity or lack of specialized art studios that hinder the use of digital and audio-visual materials in resource-poor environments (World Bank, 2020).

Another limitation arises from SLT's focus on observation and imitation, which may not fully encompass the experiential and experimental nature of art learning. Art and Design education requires learners to engage physically with materials, experiment, and refine their creative expression through practice — a process that extends beyond the cognitive processes described by Bandura. Hence, while SLT effectively explains how students initially learn through observation, it underrepresents the significance of sustained, hands-on experience and guided mentorship in refining artistic skills (Blair, 2021).

Nevertheless, the theory remains profoundly useful in understanding how instructional materials function as social and cognitive stimuli for learning. It highlights the importance of teacher modeling, peer interaction, and accessible learning environments in developing artistic competencies. By linking instructional materials to social modeling, SLT provides an explanatory basis for why the absence of such materials results in poor skill acquisition in art and design (Ajayi & Ogunyemi, 2021; World Bank, 2022). Therefore, this theoretical perspective underpins the current study's focus on the relationship between instructional materials and students' skills acquisition, emphasizing that quality learning occurs through interactive exposure to diverse and well-utilized educational resources.

Empirical Literature Review

Numerous empirical studies have examined the role of instructional materials in shaping students' academic performance, particularly in creative and practical subjects like Art and Design. Instructional materials whether visual, audio, tactile, or digital; offer students diverse ways to access information, engage with concepts, and demonstrate understanding. These resources are particularly critical in the Art and Design curriculum, where skills acquisition depends on both theoretical grounding and hands-on experience with physical and visual tools.

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Ajayi and Ogunyemi (2021) investigated the impact of instructional materials on student learning and academic performance in Nigerian secondary schools. Their study compared two sets of schools: one that used a variety of instructional resources and another that relied mainly on textbook instruction. The findings showed a significant difference in students' practical and theoretical performance in favor of the resource-rich schools. In addition, students exposed to a wider range of materials displayed higher confidence and creativity in executing artistic tasks. However, the study focused broadly on academic performance and did not specifically measure the acquisition of art-related skills. This creates a gap in understanding how instructional materials contribute to hands-on skill development in specific subjects like Art and Design.

Similarly, Adeyemi and Olaleye (2021) examined the effect of students' involvement in the production of instructional resources on their academic performance in biology. The researchers found that when students participated in creating visual aids, their retention of knowledge and interest in the subject improved significantly. Although the subject of interest was biology, this study offers valuable implications for Art and Design, where students can benefit from active involvement in producing art pieces or improvising with local materials. Still, the study did not assess practical skill levels, leaving a need for empirical work focusing on skill acquisition through material use.

In a related study, Achor, Tanngahar, and Musa (2021) explored the comparative efficacy of improvised versus manufactured analogue voltmeters in teaching voltage measurement in physics. Their findings showed that students who were taught using improvised materials performed nearly as well as those taught with standard equipment. This highlights the potential of locally available resources in promoting effective learning outcomes. While this research was science-focused, its findings support the use of indigenous materials in Art and Design, particularly in rural areas where access to standard tools is limited. Nevertheless, the research did not explore how these materials influenced the development of psychomotor skills, which are vital in artistic subjects.
Furthermore, Farombi (2020) emphasized that instructional materials serve as concrete references that simplify abstract concepts and promote learning. His study revealed that students in schools with sufficient teaching aids performed better in both theory and practical tasks. This supports the notion that access to materials contributes to skill mastery in Art and Design. However, Farombi's work did not differentiate between the types of materials used, nor did it explore the relationship between specific instructional tools and the different components of art practice such as drawing, painting, sculpture, and design.

Balogun (2018) conducted a study that evaluated the effectiveness of instructional resources in improving science learning. The results showed that the integration of models, charts, and videos into the teaching process increased student interest and achievement. Although not focused on the arts, the study implies that the use of visual and audio-visual materials enhances engagement; a principle that could be highly applicable in Art and Design where visual literacy is central. Nonetheless, Balogun did not consider the diversity in instructional material access between urban and rural schools, a factor critical in interpreting results across Town Councils such as Acowa and Akore.

In addition, Makewa, Role, and Ngussa (2020) studied the usefulness of media resources in English instruction in Uganda and found that media-based instruction encouraged learner participation and improved comprehension. Although the subject area was different, their findings indicate that

media resources can enrich content delivery and promote learner-centered instruction — principles equally valuable in Art and Design. However, the study was conducted in Adventist secondary schools with more access to resources, which may not reflect the situation in rural public schools with limited budgets. This suggests a contextual gap that the current study seeks to fill by focusing on the rural Town Councils of Kapelebyong District.

Ajibade (2021) explored the integration of educational technology in secondary schools and found that access to digital instructional tools significantly improved student interaction, project quality, and general performance. His study emphasizes the growing importance of digital tools such as projectors, design software, and online galleries in supporting Art and Design instruction. Despite these benefits, Ajibade acknowledged disparities in access due to infrastructural and training challenges; a key concern for the present study, which focuses on underserved areas where such technologies may be scarce.

Earthman and Lemasters (2020) highlighted the impact of the physical learning environment, including access to instructional materials, on student achievement. Their findings showed that schools with well-equipped art studios and sufficient materials had better student performance. The authors argued that the quality of the instructional environment contributes directly to skill acquisition by facilitating practice, experimentation, and creativity. However, the study was based in a developed country context, and the transferability of these findings to under-resourced Ugandan schools remains questionable. This raises the need for localized studies that consider the realities of resource constraints.

Additionally, the Uganda-based textbook by Damari Rafikiyangu et al. (2023) on Art and Design for Lower Secondary offers practical guidelines and emphasizes the role of instructional tools like brushes, latrines, trays, and paints in developing students' creative abilities. The book provides direct examples of how specific materials are used in modeling, painting, and design. While it offers a strong pedagogical foundation, its recommendations are mostly normative and not supported by empirical data. Thus, there is a need to verify its claims through field-based research, such as the current study in Kapelebyong District.

Similarly, Baker Apollo (2020) in his work on historical and art appreciation observed that access to art images, museum guides, and heritage-based materials helps students understand context and develop reflective artistic expressions. He emphasized that instructional materials are not only tools but also cultural carriers that inform students' worldviews. This perspective is critical for curriculum designers and art educators. Yet, Apollo's work is theoretical in nature and lacks empirical backing, creating room for a study like this one to test these assumptions using data.

From the reviewed literature, it is clear that instructional materials both improvised and standard; influence learners' ability to acquire practical skills across different subjects. However, much of the empirical work has focused on science or language subjects, with limited research in the domain of Art and Design, particularly in rural Ugandan settings. The few studies that touch on the arts are either not contextualized to low-resource schools or do not explicitly measure skill acquisition. Moreover, existing research tends to focus on academic performance without disentangling the specific contributions of instructional tools to hands-on artistic competencies. These gaps highlight the need for localized, subject-specific investigations such as the current study, which aims to examine the relationship between instructional materials and students' skills acquisition in Art and Design in Acowa and Akore Town Councils.

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Methods

This section outlines the systematic procedures and methodologies employed in the study on the level of utilisation of instructional materials in secondary schools in Acowa and Akore Town Councils, Kapelebyong District. The structure follows specific subheadings for clarity and alignment with academic journal standards.

The study adopted a descriptive cross-sectional research design using a concurrent mixed-methods approach. This design was appropriate for gathering both quantitative and qualitative data simultaneously to provide a comprehensive understanding of how instructional materials are utilised and their impact on skills acquisition in Art and Design within the selected schools.
The target population consisted of secondary school teachers, students, and administrators from three schools offering Art and Design in Acowa and Akore Town Councils. A sample size of 301 respondents was selected for the quantitative component, while seven key informants (teachers and school leaders) participated in qualitative interviews. The sample was considered sufficient to ensure representativeness and in-depth exploration of perspectives.

The study employed a combination of stratified and purposive sampling techniques. Stratified sampling was used to select student respondents across different class levels and genders, ensuring balanced representation. Meanwhile, purposive sampling was applied to select teachers and head teachers based on their experience, roles, and direct involvement in Art and Design education within the schools.

Data collection tools included structured questionnaires for students, an interview guide for key informants, and an observation checklist for classroom and studio settings. Questionnaires were self-administered to capture students' experiences and perceptions, while interviews provided deeper qualitative data from educators. Observations verified the presence, condition, and usage of instructional materials during lessons.
To ensure validity, the Content Validity Index (CVI) was applied by involving experts in Art and Design education to review the instruments for clarity and relevance. Reliability was established through a pilot study, and the Cronbach's Alpha Coefficient was used to determine internal consistency, yielding acceptable results above 0.7. These steps ensured that the instruments measured what they intended to measure accurately and consistently.

Quantitative data were coded and analyzed using the Statistical Package for the Social Sciences (SPSS). Descriptive statistics such as means and standard deviations described the level of instructional material usage and skills acquisition. Inferential statistics, including Pearson correlation and linear regression, were employed to examine relationships and predictive power. Qualitative data from interviews were thematically analyzed, with recurring themes presented narratively to complement and contextualize the numerical findings.

Results

The study achieved a strong response rate, enhancing the reliability of findings. Out of a target sample of 319 quantitative respondents, data were successfully collected from 301 participants, yielding a response rate of 94.4%. For qualitative data, 7 out of 10 targeted informants participated, a response rate of 70%. The high quantitative response rate supports the generalizability of the results, while the qualitative responses enriched contextual understanding.

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Instructional materials serve as a vital component in enhancing students' creativity, engagement, and practical competencies in Art and Design. The analysis from Table 1, drawn from the responses of 301 students across Acowa and Akore Town Councils, reveals key trends in the usage of both traditional and modern instructional materials. The interpretation follows item by item, integrating the researcher's voice and relevant literature where applicable.

Table 1: Utilisation of Instructional Materials in secondary schools in Acowa and Akore Town Councils, Kapelebyong District

Item	Mean	Std dev	Interpretation
Computers and projectors are regularly used during Art and Design lessons to present digital artworks and tutorials.	2.85	0.853	High
Art images and photographs of renowned artists are effectively integrated into lessons to enhance students' understanding of artistic styles and heritage.	3.05	0.843	High
The availability of computers and projectors has improved students' engagement and creativity in Art and Design.	2.58	0.651	High
The use of digital visual aids such as scanned images of artworks enriches students' appreciation of diverse art forms.	2.50	0.733	Low
Radios are used as instructional tools to provide additional explanations and audio lessons in Art and Design.	2.71	0.927	High
Museum audio guides or recorded narrations related to artworks are accessible and used to deepen students' contextual understanding.	2.51	0.815	High
Audio-based instructional materials like recorded artist interviews or art history discussions help learners grasp complex concepts.	2.65	0.837	High
The integration of audio guides and radios in Art and Design lessons increases learners' interest and participation.	2.85	0.852	High
Traditional art studio equipment such as zithers, coiled baskets, and wheelbarrows are regularly used for hands-on practical lessons.	3.07	0.846	High
Paints, latrasets, and other art materials are sufficiently available and utilized to develop students' skills in sculpture, pottery, and painting.	2.59	0.67	High
Use of indigenous craft materials in practical lessons helps students connect art skills with local culture and traditions.	2.50	0.742	Low
Practical sessions using physical art tools and materials (e.g., clay modeling, weaving with trays) are conducted frequently to enhance skills acquisition.	2.71	0.926	High
Average mean	2.71	0.808	High

Source: Primary Data

The data presented in Table 1 provides a detailed look into how instructional materials are being utilised in teaching Art and Design in selected secondary schools within Acowa and Akore Town Councils. The overall average mean of 2.71 indicates a generally high level of usage, though individual item scores reveal some inconsistencies in the integration of both traditional and modern tools. The first item on the regular use of computers and projectors in Art and Design lessons shows a mean score of 2.85, interpreted as high, suggesting that while these digital tools are used, their application is inconsistent. A notable number of learners disagreed or strongly disagreed with the item, and the standard deviation of 0.853 supports the observation of mixed experiences. This may stem from infrastructural issues such as limited electricity access or an uneven distribution of ICT resources.

Nevertheless, the presence of digital tools in some classrooms suggests ongoing efforts by certain schools or teachers to modernise instructional practices. The second item, which examines the use of art images and photographs of renowned artists, shows a slightly higher mean of 3.05 and a smaller standard deviation of 0.843, implying more consistent and widespread use across the sampled schools. This practice supports students' understanding of artistic styles and promotes visual literacy, which are vital in building both technical skill and cultural awareness. Still, even with

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this improvement, the frequency of use might be dictated more by teachers' resourcefulness than systemic provision. The third item, regarding how availability of digital tools affects students' creativity, received a mean of 2.58 and the lowest standard deviation in the table (0.651), interpreted as high but bordering on average. This suggests a strong consensus among learners that although the tools may exist, they have not been fully leveraged to enhance creativity or engagement in Art and Design lessons.

Similarly, the fourth item concerning the use of scanned digital images earned the lowest mean (2.50) and is the first item interpreted as low. This reflects a clear underutilisation of digital visual aids, perhaps due to limited access to scanners or poor digital content preparation. Students may therefore lack adequate exposure to global art perspectives that could enhance their visual understanding. On the other hand, the fifth item measuring the use of radios as instructional tools posted a mean of 2.71, interpreted as high. This indicates some schools may be exploring audio-based learning to supplement teaching, although the large standard deviation (0.927) reflects inconsistencies in application, likely due to a lack of structured audio content or curriculum-specific radio programming. The sixth item on museum audio guides and narrations recorded a mean of 2.51, still falling within the high interpretation bracket, suggesting that while these tools are not universally present, they are accessible in some contexts, possibly through improvised local audio materials created by teachers. This shows potential for enhancing contextual learning, but again highlights disparities in implementation.

The seventh item, which focuses on recorded artist interviews and historical discussions, produced a mean of 2.65 and a standard deviation of 0.837. This item, also interpreted as high, implies that schools occasionally use these materials to clarify abstract concepts and deepen learners' understanding of art movements and ideologies. However, such use appears to depend heavily on teacher initiative rather than institutional planning. The eighth item, which ties audio guides and radio content to increased learner participation, earned a high mean of 2.85 with a standard deviation of 0.852. This reflects that when auditory tools are used intentionally, they do in fact boost interest and attention among learners, although access and frequency still vary across schools. Turning to traditional resources, the ninth item regarding the use of studio equipment like zithers, coiled baskets, and wheelbarrows scored the highest mean of 3.07. This confirms that traditional and locally available materials are actively used for hands-on learning. Their continued use highlights the ingenuity of teachers and the practicality of incorporating community-based resources into lessons.

Still, the tenth item on the availability of paints, latrasets, and other key art materials produced a lower mean of 2.59. Although interpreted as high, this borderline result suggests that while these materials are sometimes available, their quantity and consistency may be insufficient to fully support skill development. Such gaps likely affect students' ability to complete major assignments or experiment with techniques that require repeat practice. The eleventh item, on the use of indigenous crafts to link art skills with culture, posted a mean of 2.50 and is interpreted as low. This indicates a missed opportunity to integrate cultural education into practical art lessons. Indigenous materials and crafts provide a rich foundation for developing local identity and aesthetic understanding, and their underuse signals an area for improvement. Finally, the twelfth item assessed the frequency of practical sessions using physical tools such as clay or trays, with a mean of 2.71 and a relatively high standard deviation of 0.926. While the interpretation is high, the wide spread of responses shows significant differences between schools. Some institutions may run

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regular, well-resourced practical sessions, while others rely on theoretical instruction due to material shortages or large class sizes.

Overall, the findings reveal that although traditional tools and some audio resources are moderately well-utilised, there is considerable room for improvement in the use of digital content and cultural integration. This discrepancy points to a larger issue: teacher innovation often compensates for systemic gaps in resource allocation. Therefore, future efforts should focus on equipping all schools with the necessary infrastructure, training teachers in the use of both digital and traditional tools, and incorporating cultural content into lessons to enrich the Art and Design curriculum. Without targeted support, students in Acowa and Akore Town Councils may continue to receive an unbalanced educational experience in the arts, limiting both their skill acquisition and broader creative development.

Table 2: Descriptive statistical analysis of the students' skills acquisition in Art and Design in secondary schools in Acowa and Akore Town Councils, Kapelebyong District

Item	Mean	Std dev	Interpretn
Students demonstrate confidence in modeling sculptures and pottery using available clay and tools.	2.52	0.681	Good
Practical lessons in ceramics and sculpture enable students to produce quality three-dimensional artworks.	2.38	0.689	Poor
Students are able to apply techniques learned in class to create culturally relevant craft items like coiled baskets.	2.57	0.890	Good
The frequency of hands-on practice in sculpture and pottery has significantly improved students' skill levels.	2.73	0.662	Good
Students effectively use graphic design techniques in projects despite limited access to digital tools.	2.53	0.700	Good
Digital art skills, including printmaking, are being adequately developed through computer-based lessons.	2.86	0.775	Good
Students can produce creative printmaking works that demonstrate their understanding of design principles.	3.10	0.716	Good
Exposure to digital art software has enhanced students' ability to express ideas visually and creatively.	3.06	0.905	Good
Students show proficiency in drawing techniques and can accurately apply colour theory in their artworks.	2.72	0.709	Good
Practical painting exercises help students understand the use of colours and mixing techniques.	2.84	0.851	Good
Students actively participate in drawing and painting sessions and show steady improvement.	3.05	0.843	Good
Mastery of colour theory is evident in students' ability to produce balanced and harmonious art pieces.	2.55	0.674	Good
Average mean	2.74	0.758	Good

Source: Primary Data

Table 2 presents an analysis of how secondary school students in Acowa and Akore Town Councils have developed skills in Art and Design. The overall mean score of 2.74, interpreted as "Good," suggests that students are attaining a fair level of competency across key artistic skills. However, the variation in mean scores and standard deviations across individual items reveals that the development of these skills is not uniform, indicating differing levels of resource access, teacher effectiveness, and learner engagement. Beginning with the first item, the mean score of 2.52 and standard deviation of 0.681 reflect that students generally exhibit confidence in modeling sculptures and pottery using available clay and tools. The "Good" interpretation signals a decent foundation, but the responses show that not all learners are equally exposed to or skilled in practical three-dimensional tasks, possibly due to limitations in tools or instructional time.

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On the other hand, a weaker area appears in the second item, which examines whether practical lessons in ceramics and sculpture lead to quality 3D outputs. Scoring a mean of 2.38 with a standard deviation of 0.689, it is the only item rated as "Poor." This reflects a significant concern, pointing to gaps in either the quality of instruction or the time allocated to practical lessons. The implication is that while students may participate in ceramic and sculptural activities, the outcomes may not meet expected standards. Moving on, the third item shows a slightly better result, with students scoring a mean of 2.57 and a standard deviation of 0.890 when asked about creating culturally relevant crafts like coiled baskets. Though this is interpreted as "Good," the high variability suggests inconsistent practice across schools, likely influenced by how much emphasis individual teachers place on integrating indigenous knowledge into lessons.

Encouragingly, the fourth item suggests that hands-on practice is paying off. A mean of 2.73 and a lower standard deviation of 0.662 indicate that frequent engagement in pottery and sculpture is enhancing skill levels for many learners. The consistency across responses affirms the value of regular practice in developing tactile and design abilities. Meanwhile, the fifth item reveals how students are adapting to modern requirements. With a mean of 2.53 and standard deviation of 0.700, students show moderate success in using graphic design techniques despite limited digital resources. Teachers may be substituting with basic tools or improvising in order to teach core concepts, which allows learners to understand graphic structure without fully relying on advanced technology.

Similarly, the sixth item provides a more optimistic view of digital skill development. A mean of 2.86 with a standard deviation of 0.775 shows that digital art skills, including printmaking, are gradually being incorporated into lessons. Though digital limitations exist, schools appear to be prioritising digital literacy within the constraints they face. Building on this, the seventh item earned the highest mean score in the table (3.10), with a relatively low variation of 0.716. This suggests students are especially confident when producing printmaking works that apply design principles. These results could be driven by structured project work where students are given clear expectations and guided through the design process.

Furthermore, the eighth item looks at how digital art software helps students express their ideas creatively. The mean of 3.06, though high, comes with a higher standard deviation of 0.905. This indicates a wide disparity in access to digital platforms, with some learners thriving while others remain disadvantaged. The ninth item returns to traditional skills, showing a mean of 2.72 and standard deviation of 0.709, revealing that most students have acquired basic proficiency in drawing and can apply color theory effectively. Drawing remains a cornerstone of art instruction, and this result suggests it is relatively well-covered in the curriculum.

The tenth item evaluates how painting exercises support understanding of color use and mixing. A mean of 2.84 and a higher deviation of 0.851 reveal positive perceptions of painting activities, though differences in material availability or time allocation may influence consistency. Similarly, student participation in drawing and painting sessions is reflected in the eleventh item with a mean of 3.05 and a deviation of 0.843. This result shows strong student involvement and likely speaks to the interactive nature of these lessons. It also highlights teacher efforts in motivating learners to engage in practice-based activities.

Lastly, the twelfth item, with a mean of 2.55 and a deviation of 0.674, assesses students' mastery of color theory through balanced composition. While not the strongest area, the "Good"

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interpretation affirms that learners are acquiring the ability to combine theory and practice. The low standard deviation also suggests shared experiences in learning and assessment practices.

Altogether, the data reveals a moderately successful implementation of skill-based learning in Art and Design. While drawing, painting, and basic digital skills show promising levels of development, notable gaps persist in three-dimensional design and access to advanced technologies. These differences highlight the need for enhanced teacher training, better resource distribution, and improved lesson planning to support a more uniform experience across all schools.

Table 3: Correlation coefficient between instructional materials and students' skills acquisition in Art and Design in secondary schools in Acowa and Akore Town Councils, Kapelebyong District

		Instructional Materials	Skills Acquisition
Instructional Materials	Pearson Correlation	1	.888**
	Sig. (2-tailed)		.000
	N	301	301
Skills Acquisition	Pearson Correlation	.888**	1
	Sig. (2-tailed)	.000	
	N	301	301

****. Correlation is significant at the 0.01 level (2-tailed).**

Source: Primary Data

Table 3 presents the Pearson correlation analysis between instructional materials and students' skills acquisition in Art and Design. The findings show a very strong positive correlation coefficient of .888, which is statistically significant at the 0.05 level (2-tailed). This implies that increased utilisation of instructional materials is closely linked to improved acquisition of artistic skills among learners in secondary schools. The significance value of .000 confirms that the relationship is not due to chance and is reliable across the study sample. Moreover, the high correlation reflects that access to and use of appropriate teaching aids, whether digital or traditional, significantly influences how effectively students develop skills in drawing, sculpture, design, and creative expression. The result also suggests that when schools are well-equipped with diverse instructional tools, learners are more likely to participate actively and achieve better practical outcomes.

Table 4: Model Summary – Effect of Instructional Materials on Students' Skills Acquisition

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.888	.789	.789	3.06364

Source: Primary Data, 2025

Table 5 shows the model summary of the regression analysis conducted to examine how instructional materials influence students' skills acquisition. The R value of .888 indicates a very strong positive correlation between the independent variable (instructional materials) and the dependent variable (skills acquisition). The R Square of .789 suggests that approximately 78.9% of the variance in students' skills acquisition can be explained by the use of instructional materials. This means the model is highly effective in predicting student outcomes based on instructional material availability and usage. The standard error of 3.06364 reflects the average deviation between observed and predicted values, which is relatively low, indicating a good model fit.

Table 5: ANOVA – Testing the Significance of the Regression Model

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	10514.861	1	10514.861	1120.284	.000
Residual	2806.382	299	9.386		
Total	13321.243	300			

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Source: Primary Data, 2025

Table 5 presents the ANOVA output to assess the significance of the regression model. The F-statistic of 1120.284 with a significance value (Sig.) of .000 shows that the model is statistically significant. This indicates that instructional materials have a significant effect on students' skills acquisition in Art and Design. The large value of the regression sum of squares (10514.861) compared to the residual sum of squares (2806.382) further confirms that a large portion of variability in skills acquisition is accounted for by the model. Given that Sig. = .000, the null hypothesis (that instructional materials have no effect) is rejected. Therefore, instructional materials significantly influence students' practical outcomes in Art education.

Table 6: Coefficients – Contribution of Instructional Materials to Skills Acquisition

Model	B	Std. Error	Beta	t	Sig.
(Constant)	4.337	.872		4.973	.000
Instructional Materials	.877	.026	.888	33.471	.000

Source: Primary Data, 2025

Table 6 shows the regression coefficients that explain the influence of instructional materials on students' skills acquisition. The unstandardized coefficient (B) for instructional materials is .877, indicating that for every one-unit increase in the use of instructional materials, students' skills acquisition increases by 0.877 units. The standardized Beta of .888 shows that instructional materials are a strong predictor in the model. The t-value of 33.471 with a Sig. value of .000 confirms that this contribution is statistically significant. The constant (B = 4.337) indicates the baseline level of skills acquisition when instructional materials are absent or minimal. Overall, this table confirms that instructional materials play a crucial role in enhancing practical art competencies among students.

Discussion

This study has empirically demonstrated a strong positive relationship between instructional materials and students' skills acquisition in Art and Design within secondary schools in Acowa and Akore Town Councils, Kapelebyong District. The significant correlation (r = 0.888) and regression results indicating that instructional materials explain 78.9% of the variance in skills acquisition emphasize that these resources are foundational to student success. These findings align with global educational research that underscores the pivotal role of resource availability in enhancing practical competencies (Woessmann, 2020; Arnason et al., 2020).

Teacher competence emerged as a critical mediator in this relationship, reinforcing previous findings that well-trained educators maximize the impact of instructional materials on learning outcomes (Esu, 2020; Ajibade, 2021). The study highlights that despite some progress, persistent insufficiencies in resource provision—especially digital tools and indigenous materials—limit the full realization of student potential. Moreover, infrastructural challenges and socio-cultural attitudes further constrain effective learning. Hence, the findings advocate for a holistic approach encompassing resource provision, teacher training, and contextual adaptation to improve Art and Design education quality in rural Ugandan settings.

Conclusion

The study concludes that instructional materials are essential determinants of skills acquisition in Art and Design among secondary school students in Acowa and Akore Town Councils, Kapelebyong District. The robust predictive power of instructional resources (R^2 = 0.789) confirms that availability, diversity, and effective use of these materials significantly enhance learners' creativity,

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participation, and technical mastery. Teacher competence plays a vital role in translating resources into meaningful skill development, underscoring the need for continuous professional development.

This research highlights ongoing disparities in resource allocation between urban and rural schools, with rural districts like Kapelebyong facing chronic shortages that impede art education. Digital technologies, while transformative, remain underutilized due to infrastructure deficits. Therefore, improving access to diverse instructional materials, alongside fostering teacher capacity, is critical to equipping students with the artistic skills necessary for academic and vocational success in an evolving creative economy.

Recommendations

To enhance skills acquisition in Art and Design in secondary schools of Acowa and Akore Town Councils, the following recommendations are advanced:

1) **Equitable Resource Provision:** The Ministry of Education and district authorities should ensure consistent, equitable provision of diverse instructional materials physical art supplies, digital technologies, and audio-visual aids across all secondary schools to level the learning field.
2) **Infrastructure Enhancement:** Investments are necessary to upgrade and maintain safe, accessible, well-equipped art studios and reliable ICT infrastructure, including stable electricity and internet connectivity, to support modern pedagogical approaches.
3) **Teacher Professional Development:** Establish comprehensive in-service training programs focusing on effective utilization of instructional materials, integrating traditional and digital resources, and culturally responsive teaching to maximize student engagement and skills mastery.
4) **Policy and Monitoring Frameworks:** Develop policies that mandate continuous monitoring and evaluation of instructional material availability and usage, ensuring optimal resource allocation and pedagogical effectiveness.
5) **Community and Stakeholder Engagement:** Promote partnerships with local artists, NGOs, and private sector stakeholders to augment school resources, foster experiential learning, and sustain culturally relevant art education.

These strategic interventions will collectively enhance the quality, accessibility, and impact of Art and Design education, fostering creativity and technical skills vital for learners' holistic development.

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