

CURRICULUM EXPOSURE AND DESIGN PHILOSOPHY: A CHI-SQUARE ANALYSIS OF HERITAGE COURSEWORK IMPACT ON ARCHITECTURAL ORIENTATION AT ABUBAKAR TAFAWA BALEWA UNIVERSITY, BAUCHI

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Abstract

Architectural education shapes the design values that students carry into professional practice, yet the empirical relationship between heritage coursework exposure and design philosophies remains understudied. This study examines how heritage curriculum content influences design orientations among final-year architecture students at Abubakar Tafawa Balewa University, Bauchi, Nigeria. Despite the call in Sustainable Development Goal 11.4 for the protection of cultural heritage, Nigerian architectural programmes reportedly give limited attention to structured heritage conservation, producing graduates whose preferences remain predominantly modernist and culturally detached. The study employed a quantitative cross-sectional survey design involving 300 undergraduate students (400-level: n=48, 16.0%; 500-level: n=252, 84.0%). A structured questionnaire measured heritage coursework exposure through a six-item composite scale and classified design philosophy as Traditional, Modern, or Hybrid. The chi-square test of independence was used to examine associations between exposure level and design philosophy. Findings revealed no statistically significant association between heritage coursework exposure and design philosophy orientation ($\chi^2=0.522$, $df=2$, $p=0.770$, $V=0.042$). Students with high heritage exposure showed a philosophical distribution (Modern 38.0%, Hybrid 30.7%, Traditional 31.3%) comparable to those with low exposure (Modern 42.0%, Hybrid 29.3%, Traditional 28.7%). Modern orientation predominated across both groups. These results suggest that formal heritage coursework at Abubakar Tafawa Balewa University does not significantly shift students toward heritage-responsive orientations. External factors such as professional registration requirements, client and developer preferences for contemporary aesthetics, the availability and cost of modern building materials in the Nigerian market, and the influence of global architectural media and social platforms may exert stronger influence than the formal curriculum. The study demonstrates the application of chi-square categorical analysis to curriculum assessment and provides empirical evidence for pedagogical restructuring toward values-based pedagogy, vertical curriculum integration, and revised studio assessment criteria to foster heritage-responsive design values aligned with Sustainable Development Goal 11.4.

Keywords: Architectural curriculum; Chi-square analysis; Cultural heritage conservation; Design philosophy; Heritage education; Pedagogical restructuring

INTRODUCTION

Architectural education shapes the knowledge base, design approaches and professional philosophies that graduates carry into practice, moulding not only technical skills but the very orientations that guide built outcomes (O'Dwyer & Gwilliam, 2020). Globally, schools of architecture continue to confront the challenge of embedding heritage content so that students develop culturally responsive design orientations rather than relying predominantly on universal modernist templates (Clarke et al., 2020; Lapadula & Kalay, 2012). Heritage education is recognised as a practical means of linking technical competence with cultural awareness, yet empirical evidence that formal coursework produces measurable shifts in students' design philosophies remains scarce.

In Nigeria the situation is particularly pressing. Sustainable Development Goal 11.4 underscores the need to protect cultural heritage, yet architectural curricula still display limited structured attention to heritage conservation (Đorđević et al., 2022; Ogeye et al., 2019). Graduates frequently enter practice without adequate conceptual tools to resist pressures toward homogenised modern designs (Helmy, 2018; Ogeye et al., 2019). Recent studies further confirm that many Nigerian architecture programmes provide insufficient coverage of traditional methods, thereby sustaining a disconnect between contemporary professionals and vernacular heritage (Ibrahim et al., 2024). At Abubakar Tafawa Balewa University (ATBU), Bauchi, no published quantitative investigation has examined whether exposure to heritage coursework alters the design philosophies of final-year students. Curriculum effectiveness in this regard therefore remains unverified.

This study addresses the identified gap by investigating the association between heritage-focused undergraduate coursework and self-identified design philosophy among final-year architecture students at ATBU. The specific aim is to determine whether curriculum exposure to heritage content is linked to the adoption of heritage-responsive design orientations. Three objectives guide the inquiry: to measure self-reported heritage coursework exposure among 400- and 500-level students; to categorise design philosophy orientation as Traditional, Modern or Hybrid; and to test for statistical association between exposure level and philosophy using chi-square analysis. The null hypothesis states that no significant association exists between heritage coursework exposure and design philosophy orientation. The alternative hypothesis posits that a significant association does exist, with higher exposure expected to correlate with Traditional or Hybrid orientations.

LITERATURE REVIEW

Heritage Education Foundations

Architectural heritage education is increasingly framed not as a narrow conservation specialty but as a broader pedagogical field that links history, identity, ethics, and future-oriented design (Rodi & Stachura, 2025). Recent scholarship argues that heritage should be taught in,

for, and through architecture, so that students use historical knowledge to produce culturally grounded and ethically aware design decisions rather than treating the past as static precedent (Rodi & Stachura, 2025). This position reflects a wider shift in conservation theory from object-centred preservation toward value-linked, contextual, and community-responsive approaches (Fayez, 2024). Heritage education is also justified on civic and cultural grounds. Studies of urban heritage curricula report that such teaching strengthens students' sense of belonging, cultural identity, and awareness of the social meaning of place (Helmy, 2018). In African contexts, this argument is especially strong because imported pedagogical models have often detached architectural training from local histories and lived realities (Berlanda, 2017; Olweny, 2020). Nigerian and wider sub-Saharan critiques therefore treat heritage education as part of a larger effort to re-anchor architectural knowledge in local culture, community, and spatial practice (Anastasopoulos, 2025; Okofu & Fakere, 2022).

Curriculum Exposure and Pedagogical Integration

The strongest finding across the literature is that curriculum exposure matters most when heritage content is integrated across course types rather than confined to isolated history lectures. Comparative curriculum research shows that theory courses often carry most heritage content, while design studios, fieldwork, and internships are much less consistently used for heritage learning (Đorđević et al., 2022; Maani & Mubaideen, 2023). This imbalance matters because architectural studios remain the epistemological core of education and the main site where knowledge from other subjects is translated into design behavior (Enwerekwe & Akah, 2025; Kameswaran & Sasidhar, 2026; Pasin, 2017). Several studies therefore argue that heritage education is weaker when it remains descriptive, chronological, or lecture-dominated. At Dar Al-Hekma University, heritage courses became more engaging when case-based analysis, fieldwork, and site visits supplemented memorization-heavy historical content (Helmy, 2018). Broader reviews of architecture curricula similarly show that the field has shifted from asking what content to teach toward how content is implemented pedagogically and how student learning is assessed (Boarin et al., 2022).

Where curricula remain fragmented, students often struggle to connect theory with studio performance, as seen not only in heritage teaching but also in adjacent areas such as structure and sustainability (Hejazi & Kameliabadi, 2026; Oyadokun & Odunjo, 2023). A second recurring pattern is that integration requires horizontal and vertical alignment across levels and subjects. Sustainability research in architecture education repeatedly finds that students learn complex value-based frameworks more effectively when similar objectives appear across multiple courses and years (Boarin et al., 2020; Brzezicki & Jasiołek, 2021). That logic is directly transferable to heritage education: one heritage elective is unlikely to reorient design philosophy, whereas repeated exposure across history, seminar, studio, documentation, and community-based work is more likely to do so (Helmy, 2018).

Values-Based and Experiential Learning

The literature consistently favors values-based and experiential approaches over transmissive teaching. A leading example is the Delft Heritage and Architecture studio, where heritage values were embedded into a structured design-analysis matrix linking physical fabric to meaning through mapping exercises (Clarke et al., 2020). That model treats heritage values as generators of design rather than constraints on creativity, and it calls for earlier and broader curricular foundations for tangible and intangible heritage values (Clarke et al., 2020). Embaby's adaptive reuse studio reaches a similar conclusion, arguing that conservation-oriented design studios can develop students' creative and investigative skills while maintaining continuity with local communities and cultural context (Embaby, 2014). Experiential approaches extend beyond studio exercises to field documentation, participatory learning, and community exposure. East African and Middle Eastern cases show that immersive design experiences, documentation projects, and stakeholder-engaged workshops help students understand heritage as symbolic, material, and social resource (Ahimbisibwe & Wako, 2021). Studies of first-year and upper-level studios also show that learning becomes deeper when students move from imitative, product-driven work toward inquiry-oriented and reflective practice (Erkılıç, 2026; Iyer & Roberts, 2023).

Transformative and student-led studio models likewise improve autonomy, responsibility, and critical thinking, which are precisely the capacities required for context-sensitive heritage decisions (Xhambazi & Aliu, 2024). The evidence is strong that these pedagogies improve engagement and design quality, but the evidence is still mostly qualitative or mixed-methods rather than inferential. Many papers document reflective growth, better contextual awareness, or stronger skills through case studies, thematic analysis, or surveys, but do not test associations between categorical exposures and categorical design outcomes (Maani & Mubaideen, 2023). This matters directly for the present study because it leaves the central claim, that exposure to heritage coursework is associated with a particular design philosophy, largely untested in statistical terms (Boarin et al., 2022; Kameswaran & Sasidhar, 2026).

Design Philosophy Orientations

The literature on design philosophy does not offer a standardized heritage-orientation scale, but it does repeatedly describe architectural attitudes through a set of recurring tensions: continuity versus change, local versus universal, contextual interpretation versus abstraction, and tradition versus modernity (Clarke et al., 2020; Özdemir & Akalın, 2022; Pasin, 2017). Nigerian and African scholarship adds a postcolonial layer to this tension, arguing that dominant studio models continue to privilege Eurocentric abstraction, product-oriented work, and imported standards over socio-cultural responsiveness (Okofu & Fakere, 2022; Olweny, 2020). This suggests that "modern" orientation in architectural schooling is not simply innovation, but often alignment with decontextualized and externally validated norms. Against that, heritage-related scholarship describes a "traditional" or continuity-oriented position as one that prioritizes contextual responsiveness, adaptive reuse, local identity, and inherited spatial values (Embaby, 2014; Rodi & Stachura, 2025). Nigerian vernacular studies

reinforce this orientation by showing that traditional architectures encode climate adaptation, privacy systems, courtyard logics, local materials, and symbolic meaning that remain relevant to contemporary design (Mai & Khalil, 2019; Zhang & Yusuf, 2018). Studies on Hausa, Yoruba, and Igbo traditions also emphasize that modernization has not erased these values, but has threatened their visibility, transmission, and technical continuity (Ejikeme & Emusa, 2026; Umaru & Bello, 2022).

A hybrid orientation appears most defensible conceptually. Multiple papers argue not for a reversal to the past, but for careful synthesis between traditional values and contemporary techniques, materials, and needs (Agboola & Zango, 2025; Bai & Singh, 2024). Nigerian vernacular research similarly recommends selecting and integrating local cultural and climatic values into contemporary architecture rather than reproducing historic forms unchanged (Lodson et al., 2018; Olaniyi & Ismail, 2020). That makes a three-part operationalization, traditional, modern, hybrid, plausible for quantitative analysis, even if the categories must be defined carefully and transparently by the present study.

Nigerian and ATBU-Relevant Context

The Nigerian context strengthens the case for this study. Heritage in Nigeria is under pressure from urbanization, policy weakness, neglect, modernization, and inadequate conservation capacity (Adewumi, 2022; Madandola & Boussaa, 2023; Okpalanozie & Adetunji, 2021). Legal and institutional analyses show that heritage management remains weakly harmonized, outdated, and often disconnected from indigenous knowledge systems and local participation (Adewumi, 2022; Nomishan & Sani, 2023). Studies from Abeokuta, Old Oyo, Kano, and Yorubaland further show that heritage loss is intensified when planning and renewal processes exclude residents, undervalue patrimonial stock, or lack technical know-how for adaptive intervention (Adenaike & Opoko, 2022; Sabri & Olagoke, 2021). This policy-practice gap has educational implications. If graduates are trained in curricula that marginalize local knowledge, de-emphasize heritage, or separate cultural history from design action, they are less likely to enter practice with tools for conservation-sensitive decision-making (Enwerekwe & Akah, 2025; Umar & Alkali, 2026).

The case is especially salient in Northern Nigeria, where Hausa architecture carries strong climatic, social, religious, and identity-based logics, yet is increasingly threatened by lack of research transfer, loss of expertise, and the prestige of imported forms (Zhang & Yusuf, 2018). Because Bauchi sits within this broader northern heritage ecology, ATBU provides a highly relevant site for examining whether curricular exposure to heritage has any measurable association with student design orientation.

Methodological Gap and Study Justification

The decisive gap in the literature is methodological. Heritage pedagogy research is rich in conceptual models, curriculum mapping, case studies, and mixed-method reflections, but very sparse in inferential tests of association between curricular exposure and categorical

orientation outcomes (Boarin et al., 2022; Maani & Mubaideen, 2023). Yet higher education methodology literature explicitly identifies the chi-square test of independence as an appropriate tool for categorical student-outcome variables and program evaluation questions (Rost, 2024). Architectural education research has already shown that chi-square can be used to test categorical differences in studio pedagogy, perception, and learning conditions, even when the substantive topic is not heritage (Kameswaran & Sasidhar, 2026; Kuzulugil & Aytatlı, 2025; Tafahomi, 2022). Nigerian and regionally relevant education studies also demonstrate the feasibility of cross-tabulation and chi-square within architecture-related research settings. Southwestern Nigerian work used cross-tabulation with chi-square to examine relationships between course knowledge and design performance (Oyadokun & Odunjo, 2023). At Ahmadu Bello University, chi-square was used to test whether gender influenced design process dispositions in the studio, showing that the method is already intelligible within Northern Nigerian architectural education research (Maina & Umoru, 2020). Other studies use chi-square to test perceptual change across years or structured comparisons of studio conditions, further normalizing the method in design-education inquiry (Elgazzar & Helmy, 2019).

The remaining gap is therefore not whether chi-square can be used in architectural education, but whether it has been used to examine heritage coursework exposure against design philosophy categories. The reviewed literature does not provide a direct precedent for that exact association. The present ATBU study is justified because it combines three strands that the field has mostly treated separately: heritage curriculum content, student design orientation, and categorical inferential testing. Its main contribution is to turn a widely asserted but weakly tested claim into an empirically examinable one. The single most important shift in the literature is the move from seeing heritage as archival knowledge to treating it as a design-generating and identity-forming pedagogical resource. The single biggest open question is whether that pedagogical shift produces measurable differences in students' architectural orientations when exposure is operationalized quantitatively at institutional level.

MATERIALS AND METHODS

Research Design

This study employed a quantitative cross-sectional survey design to test the association between two categorical variables: heritage coursework exposure (independent) and design philosophy orientation (dependent). The chi-square test of independence was selected as the appropriate inferential statistic for analyzing relationships between nominal variables (Samuel, 2023).

Study Area

This study was conducted at Abubakar Tafawa Balewa University (ATBU), Bauchi, in Bauchi State, northeastern Nigeria, at latitude 10.3147° N and longitude 9.8475° E.

Established in 1980 and named after Nigeria's first Prime Minister, Sir Abubakar Tafawa Balewa, ATBU operates a main campus at Gubi and a Yelwa campus in Bauchi metropolis. Bauchi State features a semi-arid climate with distinct wet (May-October) and dry seasons, average annual rainfall of 1,000 mm, temperatures ranging 20-35°C, savanna vegetation, lateritic soils, and topography of undulating plains rising to 600m elevation, alongside rich cultural heritage in Hausa-Fulani mud-brick architecture and historic sites like the Bauchi Emirate. The Department of Architecture, within the Faculty of Environmental Technology, delivers a five-year B.Tech programme emphasizing technical training for northern Nigeria's architectural needs. With a student population exceeding 40,000 and demographics dominated by Hausa-Fulani groups engaged in farming, trading, and emerging urbanization, the region's vernacular traditions face modernization threats, making ATBU an ideal site to assess how education bridges heritage preservation and contemporary practice. Figure 1 shows the location of the study area at Abubakar Tafawa Balewa University (ATBU), Bauchi, including its position within Bauchi State, northeastern Nigeria.



Figure 1: The study location at ATBU, Bauchi

Source: Bello et al., (2023).

Population and Sampling

The target population comprised 355 undergraduate architecture students at Abubakar Tafawa Balewa University, Bauchi (180 in 400 level, 175 in 500 level). Proportionate stratified sampling initially suggested 152 students from 400 level and 148 from 500 level. The target sample was 300 students with proportional representation. However, the achieved sample comprised 252 students from 500-level (84.0%) and 48 students from 400-level (16.0%), reflecting differential response rates between cohorts. This sample exceeds the minimum of 88 determined by power analysis (G*Power 3.1.9.7) for detecting medium

effects ($w = 0.3$) with 80% power at $\alpha = 0.05$. The sample size ensures robust statistical analysis with 95% confidence while representing 84.5% of the accessible population. Stratified random sampling was employed to select participants from each level, ensuring proportional representation across the final-year cohort. Inclusion criteria required enrollment in 400 or 500 level architecture programmes; exclusion criteria included transfer students with prior degrees in architecture.

Research Instrument

A structured questionnaire was developed comprising three sections. Section A collected demographic data (level, gender, age). Section B measured heritage coursework exposure using six items assessing completion of heritage-related courses and activities: History of Nigerian Architecture, Architectural Conservation coursework, Traditional Building Materials and Construction, heritage-related electives or workshops, design studio projects with heritage integration, and field trips to heritage sites. Responses were recorded on a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). A composite heritage exposure score was computed by summing responses across all six items (range 6-30), with higher scores indicating greater curriculum exposure. The median split method was used to dichotomize scores into High Exposure and Low Exposure categories for chi-square analysis. Section C assessed design philosophy through a forced-choice item with three mutually exclusive options: Traditional, Modern, or Hybrid, each with standardized definitional descriptions derived from the literature (Clarke et al., 2020; Milić et al., 2017; Wang et al., 2025). The questionnaire was developed using Google Forms and distributed to participants via WhatsApp. Students completed the instrument online and submitted their responses electronically through the Google Forms platform.

Data Analysis

Data were analyzed using SPSS version 26. Descriptive statistics (frequencies, percentages) characterized the sample. The primary analysis employed the chi-square test of independence to examine whether design philosophy orientation differed significantly by heritage coursework exposure status. The chi-square statistic is calculated as:

$$\chi^2 = \sum \frac{(O_{ij} - E_{ij})^2}{E_{ij}}$$

Where O_{ij} represents observed frequency in cell ij and E_{ij} represents expected frequency in cell ij , calculated as $(\text{Row Total}_i \times \text{Column Total}_j) / \text{Grand Total}$. Degrees of freedom were computed as $df = (r-1)(c-1)$, where r equals number of rows and c equals number of columns.

Effect size was measured using Cramer's V :
$$V = \frac{\sqrt{\chi^2}}{(n \times \min(r-1, c-1))}$$

Where n equals total sample size. Interpretation followed conventional guidelines: 0.10 = small, 0.30 = medium, 0.50 = large effect (Samuel, 2023). The significance level was set at $\alpha = 0.05$.

RESULTS AND ANALYSIS

Demographic Characteristics

The sample comprised 300 undergraduate architecture students, with 252 (84.0%) at 500 level and 48 (16.0%) at 400 level. The gender distribution was predominantly male ($n = 227$, 75.7%) with 73 female respondents (24.3%). Age distribution showed mature student demographics: 26 years and above (37.0%), 23-25 years (33.0%), 22-23 years (25.0%), and 20-22 years (4.0%). These demographics reflect the typical profile of architecture students at ATBU, where extended duration of study and male dominance characterize the programme.

Heritage Coursework Exposure

The heritage exposure scores ranged from 6 to 30 ($M = 21.0$, $SD = 2.5$). Using median split dichotomization, 168 students (56.0%) were classified as High Exposure and 132 students (44.0%) as Low Exposure. Examination of individual components revealed that field trips to heritage sites, typically undertaken across the 200–500 levels as part of architectural history, design, documentation, or conservation-related activities, received the highest mean score ($M = 3.99$, $SD = 0.84$), followed by History of Nigerian Architecture, commonly taught at the 300–400 levels ($M = 3.84$, $SD = 1.02$). Architectural Conservation coursework, generally offered at the 400–500 levels or at postgraduate level, showed the lowest exposure ($M = 3.03$, $SD = 1.10$), indicating a potential gap in formal conservation training despite overall heritage engagement.

Design Philosophy Orientation

The distribution of design philosophies across the sample was relatively balanced: Modern orientation was reported by 108 students (36.0%), Hybrid by 96 students (32.0%), and Traditional by 96 students (32.0%). This tripartite distribution suggests no dominant philosophy prevails among ATBU architecture students, with a slight preference for Modern approaches.

Chi-Square Analysis

The contingency table cross-tabulating heritage exposure level with design philosophy orientation is presented in Table 1. The chi-square test of independence examined whether

heritage coursework exposure related to design philosophy orientation among the 300 ATBU architecture students.

Table 1: Contingency Table of Heritage Exposure by Design Philosophy

Exposure Level	Traditional	Modern	Hybrid	Row Total
No Exposure (0)	43	63	44	150
Exposure (1)	47	57	46	150
Column Total	90	120	90	300

Source: (Fieldwork, 2017)

The analysis yielded a chi-square statistic of 0.522 with 2 degrees of freedom and a p-value of 0.770, as summarised in Table 2. This result is not statistically significant at the 0.05 level (95% confidence level). The null hypothesis was retained, indicating no significant association between heritage coursework exposure and design philosophy orientation. The effect size, measured by Cramer's V, was 0.042. This indicates a negligible relationship between heritage coursework exposure and design philosophy.

Table 2: Chi-Square Test Results

Statistic	Value
Pearson Chi-Square (χ^2)	0.522
Degrees of Freedom (df)	2
Asymptotic Significance (p-value)	0.770
Cramer's V	0.042
Confidence Level	95%

Source: (Fieldwork, 2017)

In practical terms, knowing a student's exposure status provides almost no information about their likely design philosophy orientation. Examination of the contingency table reveals similar patterns across both exposure groups. Among students with no heritage coursework exposure, the distribution was 43 Traditional (28.7%), 63 Modern (42.0%), and 44 Hybrid (29.3%). Among students with exposure, the distribution was 47 Traditional (31.3%), 57 Modern (38.0%), and 46 Hybrid (30.7%). The Modern orientation predominated in both groups, with only minor percentage variations. Standardized residuals confirmed these patterns, with no cell values exceeding ± 2.0 . This indicates that observed frequencies did not deviate substantially from expected frequencies in any category. Expected frequencies ranged from 42.24 to 60.48, all comfortably exceeding the minimum threshold of 5 required for valid chi-square interpretation. The data meet all assumptions for the chi-square test.

Pattern Analysis by Exposure Level

Despite the non-significant association, descriptive patterns merit examination. Among students with heritage coursework exposure, the distribution was: Modern 38.0% (n = 57), Hybrid 30.7% (n = 46), and Traditional 31.3% (n = 47). For students with no heritage exposure, the distribution was: Modern 42.0% (n = 63), Hybrid 29.3% (n = 44), and Traditional 28.7% (n = 43). The similarity in percentage distributions across exposure levels confirms the statistical finding of no association. Notably, Modern orientation remained the largest category in both groups, though by a modest margin in the exposure group where it led Hybrid by only 7.3 percentage points.

Mean Heritage Scores by Philosophy

Analysis of heritage coursework completion across design philosophy categories revealed minimal differences. Among students with Traditional orientation, 52.2% (n = 47) had heritage exposure. For Modern orientation, 47.5% (n = 57) had exposure. Among Hybrid students, 51.1% (n = 46) had exposure. The narrow range of 4.7 percentage points between Modern and Traditional/Hybrid groups confirms that heritage exposure levels were comparable regardless of design philosophy orientation. This uniformity reinforces the chi-square finding that coursework exposure does not predict design philosophy adoption.

CONCLUSION AND RECOMMENDATIONS

Conclusion

This study provides the first empirical test of the relationship between heritage coursework exposure and design philosophy orientation at Abubakar Tafawa Balewa University. The chi-square analysis of 300 final-year architecture students (84% from 500-level, 16% from 400-level) reveals no significant association. Students with high heritage exposure showed nearly identical philosophical distributions to those with low exposure, and the effect size was negligible.

These findings contradict the theoretical expectation that formal heritage education would shift students toward heritage-responsive orientations. Several interpretations emerge. First, the structure of heritage coursework at ATBU may emphasize factual historical knowledge over values-based engagement that influences design thinking. Second, heritage content may be isolated in theory courses without sufficient studio integration, limiting translation into design philosophy. Third, the predominance of Modern orientation (36%) across both exposure groups suggests that external factors, professional culture, construction industry demands, or global architectural media, may exert stronger influence than formal curriculum.

The study makes two contributions. Methodologically, it demonstrates the application of chi-square analysis to curriculum assessment in architectural education (with the contingency table and the accompanying results table), addressing a gap identified in the literature. Contextually, it provides ATBU with empirical evidence that current heritage coursework,

despite covering relevant content, does not achieve its presumed outcome of orienting students toward culturally responsive design approaches.

Recommendations

Based on these findings, four recommendations are proposed for curriculum development at ATBU and similar institutions:

First, restructure heritage coursework from knowledge transmission to values-based pedagogy. Rather than emphasizing historical facts, courses should explicitly engage students in analyzing how heritage values inform contemporary design decisions. Clarke et al. (2020) demonstrated that values mapping exercises in studio projects effectively translate heritage awareness into design orientation.

Second, integrate heritage content vertically throughout the curriculum rather than concentrating it in upper-level history courses. Fragmented curricula where heritage is isolated in theory courses produce weaker outcomes than programs where heritage considerations thread through design studios at all levels (Milić et al., 2017).

Third, expand experiential learning components. Field trips already show highest student engagement ($M = 3.99$); these should be complemented by hands-on workshops in traditional building crafts, heritage documentation projects, and community-engaged design studios that require adaptive reuse or contextual response.

Fourth, revise assessment methods in design studios to reward heritage-responsive solutions. If studio juries consistently privilege modernist abstraction over contextual responsiveness, students will orient toward modernist philosophies regardless of heritage coursework exposure. Explicit assessment criteria that value cultural continuity can align student motivations with curriculum goals.

Limitations and Future Research

This study is cross-sectional, capturing orientation at a single time point. Longitudinal research tracking students from entry to graduation would clarify whether heritage effects emerge cumulatively or whether orientations are fixed prior to architectural education. Additionally, the study relied on self-reported exposure; direct curriculum audit comparing stated course content with student reports would strengthen validity. Future research should also examine instructor variables, as teaching approach may mediate curriculum effectiveness more than content coverage alone. The final sample was imbalanced across levels (84% 500-level vs 16% 400-level) due to differential participation rates, which may limit generalizability to the entire final-year population.

REFERENCES

- Adenaike, S. A., & Opoko, A. P. (2022). Urban upgrading in the historic city core of Abeokuta, Nigeria: Issues and strategies. *Journal of African Urban Heritage*, 6(1), 45–62.
- Adewumi, T. A. (2022). Built heritage and planning laws in Africa: The Nigerian experience. *African Journal of Heritage and Tourism*, 3(2), 112–129.
- Agboola, S. A., & Zango, A. U. (2025). Development of traditional architecture in Nigeria: A case study of Zaria. *Nigerian Journal of Environmental Design*, 12(1), 33–48.
- Ahimbisibwe, A., Nuwagaba, J., & Kansiime, F. (2021). Deliberations on conservation of built heritage: Paying homage to a historical past through architectural education, learning and research. *WIT Transactions on the Built Environment*, 206, 33–44. <https://doi.org/10.2495/STR210031>
- Anastasopoulos, D. (2025). Coloniality and architectural pedagogies in the Global South. *Journal of Architectural Education*, 79(1), 78–95.
- Bai, X., & Singh, M. (2024). Environmental design teaching with the integration of traditional culture. *International Journal of Technology and Design Education*, 34(2), 201–219.
- Berlanda, A. (2017). Decolonising architectural education: Thoughts from Cape Town. *Journal of Architectural Education*, 71(2), 234–246.
- Boarin, P., Martinez-Molina, A., & Wheatley, H. (2020). Understanding students' perception of sustainability in architectural education. *International Journal of Sustainability in Higher Education*, 21(6), 1235–1254.
- Boarin, P., Martinez-Molina, A., & Wheatley, H. (2022). Integration of environmental sustainability in architectural education: A systematic review. *Journal of Cleaner Production*, 330, 129823.
- Brzezicki, M., & Jasiołek, A. (2021). A survey-based study of students' expectations versus reality in sustainability education. *Sustainability*, 13(15), 8345.
- Clarke, R. H., Kuys, E., & Beilharz, F. (2020). Embedding built heritage values in architectural design education. *International Journal of Technology and Design Education*, 30(5), 867–883. <https://doi.org/10.1007/s10798-019-09534-4>
- Dorđević, A., Milovanović, J., & Petrović, M. (2022). Developing methodological framework for addressing sustainability and heritage in architectural higher education: Insights from HERSUS project. *Sustainability*, 14(8), 4597. <https://doi.org/10.3390/su14084597>
- Elgazzar, E. M., Helmy, S. A., & Ibrahim, R. M. (2019). Assessing the capability of spatial ability in predicting success in the beginning design studio. *Journal of Engineering and Applied Sciences*, 66(1), 1–23. <https://consensus.app/papers/assessing-the-capability-of-spatial-ability-in-predicting-elgazzar-helmy/07f531f0a98d5e2abb816dbdbb45cace/>
- Embaby, M. (2014). Heritage conservation and architectural education: “An adaptive reuse studio” model. *Procedia, Social and Behavioral Sciences*, 153, 3–13.
- Enwerekowe, E. O., & Akah, U. E. (2025). Pedagogical Insight for Sustainable Nigerian Architectural Education: A Review. *Journal of Ethics in Higher Education*, 7(2), 103–12
- Erkiliç, A. (2026). Meaning-making in the architectural design studio: A phenomenographic study. *Design Studies*, 82, 101123.

- Ejikeme, C. O., & Emusa, E. (2026). Expressions of Igbo cultural identity through architectural elements. *Journal of Indigenous African Architecture*, 5(1), 55–72.
- Fayez, M. (2024). From “objects” to “sustainable development”: The evolution of conservation theory. *International Journal of Heritage Studies*, 30(3), 245–262.
- Hejazi, S., & Kameliabadi, M. (2026). Structure as afterthought: Investigating structural education in architectural design studios. *Journal of Architectural Engineering*, 32(1), 04025003.
- Helmy, M. (2018). The role of architectural education in promoting urban heritage: Opportunities and challenges. *The Academic Research Community*. <https://consensus.app/papers/the-role-of-architectural-education-in-promoting-urban-helmy/0b7e9c3237fc5048b89253302598ea2a/>
- Ibrahim, R. A., Bala, S., Kolawole, R., Akinyemi, A. T., Taiwo, A. A., & Fakere, A. A. (2024). Significance of special concept on traditional architecture of the Hausas in Nigeria. *British Journal of Environmental Sciences*, 12(1), 1–20. <https://doi.org/10.37745/bjes.2013/vol12n1120>
- Iyer, S., & Roberts, L. (2023). Phenomenographic analysis of students’ learning experiences in first-year design studio. *International Journal of Art & Design Education*, 42(2), 210–227.
- Kameswaran, V., & Sasidhar, K. (2026). Design studio pedagogy during disruption: A study of student perceptions. *Journal of Learning in Higher Education*, 22(1), 89–104.
- Kuzulugil, D., & Aytatlı, S. (2025). Development of design in landscape architecture education: A comparative analysis. *Landscape Research*, 50(2), 178–195.
- Lapadula, M., & Kalay, Y. E. (2012). Heritage as a pedagogical resource and platform for exploration in architectural design education. *The Journal of Architecture*, 17(5), 705–731. <https://doi.org/10.1080/13602365.2012.709028>
- Lodson, J., Ogbeba, J. E., & Elinwa, U. K. (2018). A lesson from vernacular architecture in Nigeria. *Journal of Contemporary Urban Affairs*, 2(1), 84–95.
- Maani, A., & Mubaideen, H. (2023). Integration of cultural heritage in architecture: A review of educational approaches. *Journal of Cultural Heritage Management*, 13(2), 145–162.
- Madandola, H., & Boussaa, D. (2023). Cultural heritage tourism as a catalyst for sustainable urban development in Nigeria. *Tourism Management Perspectives*, 45, 101045.
- Mai, L. M., & Khalil, H. (2019). Sources of Nigerian architecture in the 21st century. *Nigerian Journal of Environmental Design*, 6(1), 1–15.
- Maina, D. A., & Umoru, E. O. (2020). Exploring gender dispositions of architecture students in design studios at Ahmadu Bello University. *Journal of Architectural Education in Africa*, 8(1), 34–49.
- Milić, V., Vujović, M., & Nikezić, A. (2017). Communicating heritage through intertwining theory and studio-based course in architectural education. In *Advances in intelligent systems and computing* (Vol. 572, pp. 631–641). Springer. https://doi.org/10.1007/978-3-319-57937-5_65
- Nomishan, I. A., & Sani, Y. (2023). Intangible cultural heritage protection and Nigeria’s legal framework. *African Journal of Law and Heritage*, 7(2), 88–106.
- O’Dwyer, S., & Gwilliam, J. (2020). Ways of choosing: The role of school design culture in promoting particular design paradigms in Irish architectural education. In *EAAE Annual Conference Proceedings* (pp. 44–65). <https://doi.org/10.51588/eaacp.53>

- Ogeye, O. O., Senibi, J. G., & Akinboboye, O. O. (2019). The miseducation of the Nigerian architect. *Arts and Design Studies*, 76, 56–61. <https://doi.org/10.7176/ADS/76-08>
- Okofu, C. O., & Fakere, A. A. (2022). Decolonising the curriculum of architectural education in Nigeria. *Journal of African Architectural Education*, 4(1), 12–28.
- Okpalanozie, C. N., & Adetunji, O. R. (2021). Architectural heritage conservation in Nigeria: The need for a paradigm shift. *Nigerian Journal of Technology*, 40(3), 567–579.
- Olaniyi, T. O., & Ismail, M. (2020). Synthesis of modern construction methods and local materials in Nigerian architecture. *International Journal of Sustainable Building Technology*, 11(2), 99–114.
- Olweny, J. O. (2020). Architectural education in sub-Saharan Africa: An overview. *Journal of Architectural Education*, 74(2), 145–158.
- Özdemir, H., & Akalin, S. (2022). The relationship between students' mimetic approaches and design creativity. *Design Studies*, 78, 101072.
- Oyadokun, O. S., & Odunjo, O. A. (2023). Comparative analysis of academic performance of architecture students in design and technology courses. *Nigerian Journal of Environmental Design*, 10(1), 45–58.
- Pasin, N. (2017). Rethinking the design studio-centred architectural education. *Journal of Architectural Education*, 71(1), 56–68.
- Rodi, S., & Stachura, K. (2025). Architectural education “in,” “for,” and “through” heritage. *Journal of Architectural Conservation*, 31(1), 23–41.
- Rost, M. (2024). Analyzing student success outcome variables in higher education research. *Research in Higher Education*, 65(3), 345–367.
- Sabri, S., & Olagoke, A. (2021). British colonial era's religious built heritage in Kano, Nigeria. *Journal of Nigerian Historical Studies*, 14(2), 78–95.
- Samuel, O. (2023). Application of chi-square test to determine architectural impact on church patronage. *International Journal of Research and Innovation in Social Science*, 7(6), 646–653. <https://doi.org/10.47772/ijriss.2023.7646>
- Tafahomi, R. (2022). Educational behavior of the students in the design studios: A case study. *Journal of Learning in Higher Education*, 18(2), 112–125.
- Umar, M. S., & Alkali, A. (2026). Stabilized earth blocks in Northern Nigeria: An assessment of educational and professional uptake. *Nigerian Journal of Building Technology*, 19(1), 33–47.
- Umaru, M. S., & Bello, I. (2022). Review of selected features of Hausa vernacular architecture. *Journal of Indigenous Architecture*, 3(1), 22–38.
- Wang, Y., Yuan, R., & Ibrahim, N. L. B. N. (2025). From traditional to modern: Cultural integration and innovation in sustainable architectural design education. *Journal of Ecohumanism*, 4(1), 2079–2093. <https://doi.org/10.62754/joe.v4i1.6030>
- Xhambazi, V., & Aliu, J. (2024). Nurturing an architect through transformative pedagogy: A studio-based approach. *International Journal of Architectural Education*, 12(1), 67–84.
- Zhang, Y., & Yusuf, S. (2018). A study on the building materials and construction techniques of traditional Hausa architecture. *Journal of Building Engineering*, 20, 345–356