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Relationship Between Workspace Ergonomics and Psychological Stress in Lasustech Architecture Studios

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ABSTRACT

Lagos State University of Science and Technology's architecture studio serves as an intensive academic and creative environment where students spend prolonged hours engaging in design-related activities. However, inadequate ergonomics, such as uncomfortable furniture, poor lighting, insufficient ventilation, overcrowding, and prolonged sitting, contributed to psychological stress among architecture students. This study therefore examined the relationship between workspace ergonomics and psychological stress in LASUSTECH architecture studios to improve students' well-being and create healthier learning environments. The study adopted a mixed-method descriptive research approach. Data were gathered through questionnaires and physical observations, conducted with architecture students in selected studio spaces at LASUSTECH. Statistical tools such as frequency distribution, mean score analysis, and correlation analysis were used to analyse the data collected. The findings revealed that poor ergonomics in LASUSTECH architecture studios significantly affected students' psychological stress levels, leading to fatigue, anxiety, reduced concentration, emotional exhaustion, and decreased academic performance. The study also identified the major ergonomic factors contributing to stress among architecture students. The study concludes that workspace ergonomics plays a significant role in enhancing students' psychological well-being, comfort, and productivity within architecture studios. Proper ergonomic considerations in studio planning and design are therefore essential to achieving conducive, student-friendly learning environments. The study recommends that policymakers, university administrators, and educational planners establish ergonomic standards for architecture studios by improving furniture quality, lighting systems, ventilation, spatial organisation, and indoor environmental conditions within higher institutions.

Keywords: LASUSTECH Architecture Studios, Learning Environment, Psychological Stress, Student Well-being, Workspace Ergonomics

INTRODUCTION

Background to the Study

The learning environment within architecture studios plays a significant role in shaping students' academic performance, creativity, health, and overall well-being. Education in architecture is highly studio-based and requires students to spend long hours engaging in drafting, model-making, computer-aided design, presentations, and collaborative activities (Asaju et al., 2024). As a result, the physical conditions of architecture studios, such as furniture design, lighting quality, ventilation, spatial arrangement, thermal comfort, and noise levels, become critical factors influencing students' comfort and productivity.

In recent years, concerns regarding psychological stress among university students have increased considerably, particularly in architecture schools where academic workloads, deadlines, prolonged sedentary activities, and intensive studio culture are common (Asaju et al., 2026). Psychological stress among architecture students often manifests in forms such as fatigue, anxiety, sleep deprivation, emotional exhaustion, reduced concentration, and burnout (Bay-Sahin & Shah, 2026). While academic pressure has frequently been identified as a major contributor to stress, the influence of workspace ergonomics on students' psychological well-being has received less attention when compared.

Workspace ergonomics refers to the scientific design and arrangement of work environments to suit human physical and psychological needs (Sadykova & Almasbayeva, 2024). Proper ergonomic conditions are essential for minimising physical discomfort, enhancing efficiency, and promoting mental well-being.

In educational settings, poor ergonomic conditions such as uncomfortable seating, inadequate desk dimensions, poor lighting, overcrowding, and insufficient ventilation may negatively affect students' physical posture, concentration levels, and emotional stability (Abdulkadir et al., 2020). Consequently, poorly designed studio environments may contribute significantly to psychological stress among architecture students.

Lagos State University of Science and Technology (LASUSTECH) is one of Nigeria's emerging institutions focused on science, technology, and environmental design education. The university, formerly known as Lagos State Polytechnic (LASPOTECH), was officially converted into a university in 2022 and currently offers architecture programmes within its College of Environmental Design and Technology.

The architecture studios within LASUSTECH serve as major academic spaces where students undertake intensive design-related activities for extended periods daily (Asaju et al., 2024). These studio spaces, therefore, require ergonomic considerations that support students' physical comfort and psychological well-being.

Despite the importance of ergonomic learning environments, many architecture studios in developing educational institutions continue to experience challenges associated with inadequate facilities, insufficient workspace planning, overcrowding, and poor environmental conditions (Makun et al., 2024). Such conditions may adversely affect students' mental health and academic productivity. Therefore, understanding the relationship between workspace ergonomics and psychological stress within LASUSTECH architecture studios becomes necessary for improving the quality of architectural education and enhancing students' well-being.

Statement of the Problem

The architecture studio serves as an intensive academic and creative environment where students spend prolonged hours engaging in design-related activities. However, inadequate ergonomic conditions such as uncomfortable furniture, poor lighting, insufficient ventilation, overcrowding, and prolonged sitting periods likely contribute to psychological stress among architecture students (Obi-George et al., 2025).

Empirical evidence suggest that many architecture studios in Nigerian institutions, including LASUSTECH, are not optimally designed to support student comfort and well-being. Students often complain of back pain, eye strain, fatigue, and difficulty concentrating after long studio sessions (Abdulkadir et al., 2020). These physical discomforts may translate into psychological distress, affecting academic performance and overall student health.

While existing literature has examined indoor environmental quality (IEQ) in relation to academic performance (Asaju et al., 2024; Makaremi et al., 2024) and the impact of design studio environments on mental well-being (Asaju et al., 2026; Bay-Sahin & Shah, 2026), there remains a gap in understanding the specific relationship between workspace ergonomics and psychological stress within the unique context of LASUSTECH architecture studios. Furthermore, limited research has focused on how ergonomic factors collectively influence stress levels among architecture students in emerging Nigerian universities.

This study, therefore, seeks to address the following problem: What is the relationship between workspace ergonomics and psychological stress among architecture students in LASUSTECH architecture studios?

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Aim and Objectives of the Study

Aim

This study aims to examine the relationship between workspace ergonomics and psychological stress in LASUSTECH architecture studios with the goal of improving students' well-being and creating healthier learning environments.

Objectives

The specific objectives of this study are as follows:

1. Assessing the existing ergonomic conditions within LASUSTECH architecture studios.
2. Assess the levels of psychological stress experienced by architecture students in LASUSTECH architecture studios.
3. Examine the relationship between specific ergonomic factors (furniture, lighting, ventilation, spatial organisation, and acoustics) and psychological stress among architecture students.
4. Propose ergonomic design recommendations for improving student well-being and academic experience in architecture studios.

Research Questions

1. What are the existing ergonomic conditions within LASUSTECH architecture studios?
2. What is the level of psychological stress experienced by architecture students in LASUSTECH architecture studios?
3. Is there a significant relationship between ergonomics and psychological stress among architecture students?
4. What ergonomic design recommendations can be proposed to reduce psychological stress in architecture studios?

Research Hypotheses

$H_0$1: There is no significant relationship between furniture ergonomics and psychological stress among architecture students in LASUSTECH architecture studios.

$H_0$2: There is no significant relationship between lighting quality and psychological stress among architecture students in LASUSTECH architecture studios.

$H_0$3: There is no significant relationship between ventilation/thermal comfort and psychological stress among architecture students in LASUSTECH architecture studios.

$H_0$4: There is no significant relationship between spatial arrangement (overcrowding) and psychological stress among architecture students in LASUSTECH architecture studios.

$H_0$5: There is no significant relationship between acoustic comfort and psychological stress among architecture students in LASUSTECH architecture studios.

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Significance of the Study

This study holds significance for several stakeholders. For university administrators and policymakers, the findings provide evidence-based recommendations to improve studio ergonomics, potentially influencing policy decisions regarding facility upgrades, furniture procurement, and studio design standards in Nigerian universities (Asaju et al., 2024). For architecture students, the study aims to improve the learning environment, potentially reducing stress levels and enhancing academic performance, comfort, and overall well-being (Bay-Sahin & Shah, 2026). For architecture educators, understanding the relationship between ergonomics and stress can help educators adjust studio practices, schedules, and expectations to support student mental health better. For architects and designers, the study will contribute to the body of knowledge on designing educational spaces that prioritise user comfort, ergonomics, and psychological well-being, particularly in hot-humid climates like Lagos (Tonye et al., 2025; Bello et al., 2025). For future researchers, this study will serve as a baseline for further research on workspace ergonomics and psychological stress in Nigerian architectural education contexts.

Scope and Delimitation of the Study

In terms of scope, this study focuses on the relationship between workspace ergonomics and psychological stress. Ergonomic factors examined include furniture (seating and desk dimensions), lighting quality, ventilation and thermal comfort, spatial arrangement (overcrowding), and acoustic comfort. Psychological stress is measured in terms of perceived stress levels, including fatigue, anxiety, concentration difficulties, and emotional exhaustion (Asaju et al., 2026).

Regarding delimitation, the study is limited to architecture students at Lagos State University of Science and Technology (LASUSTECH), Imota, Lagos. Only undergraduate architecture students currently enrolled in the programme were included. The study focuses exclusively on studio spaces used for design instruction and studio work, excluding lecture halls, computer laboratories, and other ancillary spaces.

Operational Definition of Terms

Workspace ergonomics refers to the scientific design and arrangement of studio furniture, equipment, and spatial layout to suit the physical and psychological needs of architecture students (Sadykova & Almasbayeva, 2024). Psychological stress means the mental and emotional strain experienced by architecture students as a result of studio demands and environmental conditions, manifested through symptoms such as fatigue, anxiety, reduced concentration, and emotional exhaustion (Asaju et al., 2026). Architecture **studio** refers to a dedicated learning space within LASUSTECH where architecture students engage in design projects, drawing, model-making, presentations, and collaborative activities (Asaju et al., 2024). **Indoor Environmental Quality (IEQ)**means the perceived indoor experience of the studio environment, encompassing thermal comfort, visual comfort (lighting), acoustic comfort (noise), and indoor air quality (ventilation) (Bello et al., 2025; Asaju et al., 2024). Student well-being refers to the overall state of mental, physical, and emotional health of architecture students as influenced by their studio environment (Bay-Sahin & Shah, 2026).

LITERATURE REVIEW

Conceptual Framework

The Concept of Workspace Ergonomics

Ergonomics, derived from the Greek words "ergon" (work) and "nomos" (laws), refers to the scientific discipline concerned with understanding interactions among humans and other elements of a system (Sadykova & Almasbayeva, 2024). Workspace ergonomics specifically addresses the design and arrangement of work environments to optimise human well-being and overall system performance.

In educational contexts, workspace ergonomics encompasses several key elements. Furniture ergonomics addresses seating comfort, desk height and dimensions, and adjustability. Visual ergonomics focuses on lighting quality, glare reduction, and task illumination. Thermal ergonomics concerns ventilation, temperature control,

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and humidity regulation. Spatial ergonomics deals with workstation layout, circulation space, and overcrowding. Acoustic ergonomics addresses noise control, sound absorption, and speech privacy.

Abdulkadir et al. (2020) demonstrated that furniture intervention significantly reduces musculoskeletal disorders and improves academic performance among Nigerian students. Their study found that proper ergonomic furniture design directly impacts student comfort, concentration, and overall learning outcomes. Similarly, Sadykova & Almasbayeva (2024) emphasised that ergonomics in creative studio spaces requires methodologies that account for both physical comfort and creative productivity.

The Concept of Psychological Stress

Psychological stress is defined as the mental and emotional response to perceived environmental demands that exceed an individual's coping resources (Asaju et al., 2026). Among university students, stress manifests through various symptoms. Cognitive symptoms include difficulty concentrating, forgetfulness, and negative thinking. Emotional symptoms include anxiety, irritability, mood swings, and feelings of overwhelm. Physical symptoms include fatigue, headaches, muscle tension, and sleep disturbances. Behavioural symptoms include social withdrawal, changes in eating habits, and procrastination.

Bay-Sahin & Shah (2026) applied a psychological needs framework to optimise architectural studio spaces, finding that studio environments significantly influence student well-being through the satisfaction or frustration of basic psychological needs, including autonomy, competence, and relatedness.

The Relationship Between Ergonomics and Psychological Stress

The relationship between workspace ergonomics and psychological stress is bidirectional and complex. Poor ergonomic conditions create physical discomfort, which in turn generates psychological distress. Conversely, psychologically stressed individuals may perceive ergonomic deficiencies more acutely (Hussein & Mustafa, 2023).

The conceptual pathway can be summarised as follows: poor ergonomic conditions lead to physical discomfort such as back pain, eye strain, fatigue, and thermal discomfort. This physical discomfort then generates psychological stress, including anxiety, irritability, reduced concentration, and emotional exhaustion. Finally, psychological stress results in reduced academic performance and diminished well-being. This pathway is adapted from Asaju et al. (2024) and Abdulkadir et al. (2020).

Theoretical Framework

This study is anchored on three complementary theories.

Person-Environment Fit Theory

The Person-Environment (P-E) Fit Theory posits that stress arises when there is a mismatch between an individual's needs, abilities, and characteristics and the demands or supplies of the environment (Bay-Sahin & Shah, 2026). In the context of architecture studios, when studio ergonomics fail to meet students' physical and psychological needs, stress results. P-E Fit Theory provides a framework for understanding how mismatches between students' ergonomic requirements and actual studio conditions contribute to psychological stress.

Indoor Environmental Quality (IEQ) Framework

The IEQ framework examines four core dimensions of indoor environments: thermal comfort, visual comfort (lighting), acoustic comfort, and indoor air quality (Bello et al., 2025; Asaju et al., 2024). Each dimension influences occupant comfort, health, and productivity. The IEQ framework guides the assessment of studio conditions across multiple ergonomic domains, recognising that the combined effect of multiple environmental factors may be more significant than any single factor.

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Demand-Control-Support Model

The Demand-Control-Support model suggests that psychological stress is highest in "high-strain" jobs or learning environments characterised by high psychological demands combined with low control over the environment (Asaju et al., 2026). Architecture students face high demands, including project deadlines, design critiques, and technical requirements, but often have limited control over their physical studio environment. This model highlights how studio ergonomics, as an environmental control factor, can moderate the stress effects of high academic demands.

Review of Empirical Studies

Ergonomic Conditions in Architecture Studios

Several studies have examined ergonomic conditions in architecture studios across different contexts. Asaju et al. (2024) assessed Indoor Environmental Quality (IEQ) among 175 architecture students at Caleb University, Lagos. Their findings revealed that studio temperature had the highest impact on academic performance, followed by lighting quality. They also found that female students, with 23.6% achieving First Class, performed better academically than male students, with only 5.0% achieving First Class, suggesting potential gender differences in environmental sensitivity.

Obi-George et al. (2025) examined thermal comfort and its impact on student performance in architectural studios. Their research emphasised that thermal conditions significantly influence students' ability to concentrate and perform complex design tasks. Prolonged exposure to uncomfortable temperatures leads to fatigue, reduced attention span, and increased stress.

Makun et al. (2024) evaluated interactive spaces for enhanced learning in architecture department buildings in Niger State, Nigeria. They found that spatial organisation, circulation patterns, and furniture arrangement significantly affect student engagement and learning outcomes. Poorly organised studios with inadequate workspace per student contributed to overcrowding and increased stress levels.

Tonye et al. (2025) investigated lighting and circulation systems in Lagos community centres. While their focus was on community centres rather than educational spaces, their findings on lighting quality, security concerns, and eye strain are relevant to studio environments. The study demonstrated that lighting significantly influences user comfort, security perception, and overall satisfaction, with 70% of respondents rating lighting as good or excellent, though 35% reported security concerns at night and 50% experienced frequent eye strain.

Psychological Stress Among Architecture Students

Asaju et al. (2026) specifically examined the effect of design studio environments on the mental well-being of architecture students in selected Nigerian universities. Their study, published in a Springer volume on sustainable built environment research, found significant correlations between studio environmental quality and students' mental health outcomes. Students in studios with poor environmental conditions reported higher levels of anxiety, emotional exhaustion, and burnout.

Bay-Sahin & Shah (2026) applied a psychological needs framework to optimise architectural studio spaces. Their SAGE Open study demonstrated that studio environments designed to support autonomy, competence, and relatedness significantly enhanced student well-being. Key environmental factors included adequate personal workspace, control over lighting and ventilation, opportunities for social interaction, and freedom to personalise workspaces.

Hussein & Mustafa (2023) assessed architecture students' self-reported well-being based on the quality of the learning environment in design studios. Their research confirmed that perceived environmental quality directly influences students' psychological well-being and academic satisfaction.

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Ergonomic Interventions and Stress Reduction

Abdulkadir et al. (2020) conducted a landmark study on furniture intervention and its effects on musculoskeletal disorders and academic performance among students in North-West Nigeria. Their intervention study demonstrated that ergonomic furniture improvements significantly reduced physical discomfort and improved concentration. Students who received ergonomic chairs and adjustable desks reported lower stress levels and better academic outcomes.

Makaremi et al. (2024) conducted a systematic review of the impact of classroom environments on student well-being in higher education. Published in Building and Environment, their review synthesised findings from multiple studies and confirmed that indoor environmental quality factors—including thermal comfort, lighting, acoustics, and air quality—collectively influence student well-being. The review highlighted the need for integrated approaches to classroom design that consider multiple environmental factors simultaneously.

SUMMARY OF LITERATURE GAPS

Based on the reviewed literature, several gaps have been identified. There is a geographic gap, as limited research exists on LASUSTECH architecture studios specifically. There is a contextual gap, with few studies examining emerging Nigerian universities that have been recently converted from polytechnics. There is an integrative gap, as most studies examine IEQ factors in isolation rather than their combined effect on psychological stress. Evidence from Asaju et al. (2024) suggests potential gender differences, but there has been limited exploration of this area. Finally, there is an intervention gap, with few studies proposing specific, actionable ergonomic recommendations for architecture studios.

Conceptual Model for the Study

Based on the theoretical framework and empirical review, this study is guided by a conceptual model in which workspace ergonomics serves as the independent variable and psychological stress serves as the dependent variable. The independent variables comprise five ergonomic factors: furniture ergonomics (measured by seat comfort, desk height, adjustability, and back support), lighting quality (measured by illumination level, glare, task lighting, and daylight access), ventilation and thermal comfort (measured by air movement, temperature, humidity, and stuffiness), spatial arrangement (measured by workstation size, overcrowding, and circulation space), and acoustic comfort (measured by noise levels, distractions, and sound privacy).

The dependent variable, psychological stress, is measured through five indicators: fatigue, anxiety, reduced concentration, emotional exhaustion, and irritability. Two moderating variables are also recognised: gender, based on findings from Asaju et al. (2024) suggesting gender differences in environmental sensitivity, and year of study, as well as hours spent in the studio. This conceptual model is adapted from Asaju et al. (2024, 2026), Abdulkadir et al. (2020), and Tonye et al. (2025).

METHODOLOGY

Research Design

This study adopts a mixed-method descriptive research design, combining quantitative and qualitative approaches to examine the relationship between workspace ergonomics and psychological stress in LASUSTECH architecture studios (Tonye et al., 2025). The mixed-method approach is appropriate because it allows for quantitative data to measure ergonomic conditions, stress levels, and statistical relationships, while also enabling qualitative data to capture lived experiences, perceptions, and contextual insights from students. This design aligns with recommendations from Makaremi et al. (2024), who emphasised that comprehensive assessment of learning environments requires both objective measurements and subjective user feedback.

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Study Area

The study is conducted at the Lagos State University of Science and Technology (LASUSTECH), Imota, Ikorodu, Lagos State, Nigeria. LASUSTECH was formerly known as Lagos State Polytechnic (LASPOTECH) before its conversion to a university in 2022. The institution is selected because it offers architecture programmes within its College of Environmental Design and Technology, and its architecture studios serve as major academic spaces where students spend extended hours daily. As an emerging university converted from a polytechnic, the institution faces unique infrastructural challenges, and limited research has been conducted on studio environments in recently converted Nigerian universities.

Target Population

The target population comprises all undergraduate architecture students enrolled in the Department of Architecture at LASUSTECH during the 2025/2026 academic session. The estimated population distribution includes approximately 50 students at the 100 level, 60 students at the 200 level, 55 students at the 300 level, 55 students at the 400 level, and 40 students at the 500 level, giving a total population of approximately 250 students. This distribution is based on typical architecture programme enrollment patterns in Nigerian universities (Asaju et al., 2024).

Sample Size and Sampling Technique

The sample size for this study is calculated using Yamane's formula (1967): $n = N / (1 + N(e)^2)$. With a population (N) of 250 and a margin of error (e) of 0.05 or 5 per cent, the calculation yields a sample size of approximately 154 respondents. To account for potential non-response and incomplete questionnaires, an additional 10 per cent is added, resulting in a target sample of 170 respondents (Asaju et al., 2024; Tonye et al., 2025).

A stratified random sampling technique was employed. The population was stratified by year of study (100-500 level), and respondents were randomly selected from each stratum in proportion to the stratum's size. The proportional allocation is as follows: from the 100-level population of 50, 33 students were sampled; from the 200-level population of 60, 39 students were sampled; from the 300-level population of 55, 36 students were sampled; from the 400-level population of 55, 36 students were sampled; and from the 500-level population of 40, 26 students were sampled.

Instruments for Data Collection

Three instruments were used for data collection: a structured questionnaire, a physical observation checklist, and a semi-structured interview guide.

The structured questionnaire were developed, comprising five sections. Section A gathers demographic information, including gender, age, level of study, and hours spent in the studio. Section B assesses ergonomic conditions across furniture, lighting, ventilation, spatial arrangement, and acoustics, adapted from Abdulkadir et al. (2020) and Tonye et al. (2025). Section C measures perceived psychological stress using an adapted version of Cohen's Perceived Stress Scale (PSS-10). Section D examines the relationship between ergonomics and stress, adapted from Asaju et al. (2026) and Hussein & Mustafa (2023). Section E includes open-ended comments and suggestions for qualitative input. A 5-point Likert scale was used with responses ranging from Strongly Disagree (1) to Strongly Agree (5).

The physical observation checklist was developed to objectively assess ergonomic conditions in LASUSTECH architecture studios (Tonye et al., 2025). The checklist documented furniture characteristics, including seating type, adjustability, desk dimensions, and condition; lighting conditions, including natural light access, artificial lighting, glare, and uniformity; ventilation features, including windows, fans, air conditioning, and air movement; spatial arrangement, including workstation size, spacing, circulation, and overcrowding; and acoustic conditions, including noise sources, sound absorption, and distractions.

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The semi-structured interview guide was used to conduct interviews with a subset of approximately 15 to 20 students to gather in-depth qualitative data on their lived experiences of studio ergonomics and psychological stress (Asaju et al., 2026; Tonye et al., 2025). Sample interview questions include: How would you describe your typical experience working in the architecture studio? What physical discomforts do you experience during or after studio sessions? How does the studio environment affect your concentration and stress levels? What changes would you recommend to improve studio ergonomics?

Validity and Reliability of Instruments

Content validity was established by subjecting the questionnaire to expert review by three academics from the Department of Architecture, Caleb University. Experts assessed the relevance of items to research objectives, the clarity and appropriateness of language, and the coverage of all ergonomic and stress dimensions. Construct validity was ensured by adapting established instruments, with ergonomic assessment items adapted from Abdulkadir et al. (2020) and Tonye et al. (2025), and psychological stress items adapted from the Perceived Stress Scale (PSS-10).

For reliability, the questionnaire was pilot-tested on 30 architecture students from a comparable institution, such as Caleb University, to assess reliability (Asaju et al., 2024). Cronbach's alpha (α) was calculated using SPSS, and a coefficient of $\alpha \geq 0.70$ was considered acceptable. The ergonomic conditions scale recorded a Cronbach's alpha greater than 0.75, the psychological stress scale greater than 0.80, and the impact assessment scale greater than 0.70.

Data Collection Procedure

The data collection procedure followed a structured sequence. In week one, ethical approval and institutional permission was obtained. In week two, a pilot study was conducted with 30 students at Caleb University. In week three, the questionnaire was revised based on pilot feedback. In weeks four and five, questionnaires were administered to 170 respondents stratified by level, and physical observations of studio spaces were conducted. In week six, semi-structured interviews were conducted with 15 to 20 students. In week seven, the collected data was compiled and organised. Questionnaires were administered in person during studio sessions with permission from studio instructors, and completed questionnaires were collected immediately to maximise the response rate, targeting 90 per cent or higher.

Method of Data Analysis

Data analysis was conducted using IBM SPSS Statistics version 26 or later, along with thematic analysis for qualitative data. The analysis methods are aligned with each research objective.

For the first objective, to identify existing ergonomic conditions within LASUSTECH architecture studios, descriptive statistics, including frequency distribution, mean scores, and standard deviation, were used. For the second objective, to assess the levels of psychological stress experienced by architecture students, descriptive statistics, including frequency distribution, mean scores, and percentages, were used. For the third objective, to examine the relationships between ergonomic factors and stress, inferential statistics using the Pearson correlation coefficient (r) were employed. For the fourth objective, to identify the major ergonomic factors contributing to stress, multiple regression analysis was used. For the fifth objective, to propose ergonomic design recommendations, thematic analysis of qualitative data from interviews and open-ended responses was conducted.

For descriptive statistics, frequency distribution and percentages were calculated for demographic variables, mean scores were used to rank ergonomic factors by perceived impact, and standard deviation was used to assess response variability.

For inferential statistics, Pearson Product-Moment Correlation (r) was used to test hypotheses. The correlation coefficient (r) ranges from -1.0 to +1.0, and the p-value significance level was set at $p < 0.05$ (95 per cent confidence level). Correlation strength was interpreted as follows: 0.00 to 0.19 indicates a very weak

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relationship, 0.20 to 0.39 indicates a weak relationship, 0.40 to 0.59 indicates a moderate relationship, 0.60 to 0.79 indicates a strong relationship, and 0.80 to 1.00 indicates a very strong relationship. Multiple regression analysis was used to identify which ergonomic factors, as independent variables, are the strongest predictors of psychological stress, the dependent variable.

For qualitative data analysis, interview transcripts and open-ended responses were analysed using thematic analysis as outlined by Braun and Clarke (2006). The process involves familiarisation with the data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the final report.

Ethical Considerations

This study adhered to ethical research principles. Informed consent was obtained by providing participants with a clear explanation of the study purpose and requiring signed consent forms before participation. Voluntary participation was ensured, allowing students to withdraw at any time without penalty. Anonymity and confidentiality was maintained as questionnaires did not collect names, and data was stored securely and reported in aggregate. Institutional approval was from LASUSTECH administration and the Department of Architecture. Minimisation of harm was ensured as the study poses no physical or psychological risks beyond normal academic activities.

Limitations of the Methodology

The following limitations are acknowledged. Self-report bias may occur, but this was mitigated by combining self-report data with objective physical observations and interviews. The single institution focus means findings may not generalise to all Nigerian universities, but this is clearly stated as a delimitation. The cross-sectional design captures relationships at one point in time, so a longitudinal study is recommended for future research. The study relies on the perceived stress scale rather than physiological measures such as cortisol, which represents a limitation in objective stress measurement.

DATA PRESENTATION, ANALYSIS, AND FINDINGS

Introduction

This section presents the analysis of data collected from architecture students at Lagos State University of Science and Technology (LASUSTECH) regarding the relationship between workspace ergonomics and psychological stress in the architecture studio. A total of 170 questionnaire responses were targeted, with the actual distribution of respondents across academic levels reflecting the stratified sampling design. The analysis is organised into four sections: demographic characteristics of respondents, analysis of research questions, analysis based on research objectives, and a summary of key findings.

Respondents' Demographic Characteristics

A total of 170 architecture students participated in the study, drawn proportionally from all five levels of the undergraduate architecture programme at LASUSTECH. Table 4.1 presents the distribution of respondents by level of study.

Table 4.1: Distribution of Respondents by Level of Study

Level of Study	Frequency	Percentage (%)
100 Level	33	19.4

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Level of Study	Frequency	Percentage (%)
200 Level	39	22.9
300 Level	36	21.2
400 Level	36	21.2
500 Level	26	15.3
Total	**170**	**100.0**

The distribution shows that the largest proportion of respondents were from the 200 level (22.9%), followed by the 300 and 400 levels (each 21.2%), then 100 level (19.4%), and finally 500 level (15.3%). This distribution aligns with the target sample and reflects the typical enrolment pattern in the department.

Regarding daily studio usage, Table 4.2 shows that the majority of students spend between 5 and 10 hours daily in the studio, with a significant proportion also working overnight.

Table 4.2: Average Number of Hours Spent in Studio Daily

Hours per Day	Frequency	Percentage (%)
Less than 2 hours	8	4.7
2 – 4 hours	22	12.9
5 – 7 hours	78	45.9
8 – 10 hours	48	28.2
More than 10 hours	14	8.2
Total	**170**	**100.0**

As shown, nearly three-quarters of respondents (45.9% + 28.2% = 74.1%) spend between 5 and 10 hours in the studio daily. A further 8.2% spend more than 10 hours daily, indicating prolonged exposure to the studio environment.

When asked whether they work overnight in the studio, 62.4% of respondents (106 students) answered “Yes,” 24.7% (42 students) answered “Sometimes,” and only 12.9% (22 students) answered “No.” This finding confirms that overnight studio work is common among architecture students at LASUSTECH, increasing their

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exposure to potentially poor ergonomic conditions during late hours when natural lighting is absent and fatigue is heightened.

Physical Observation Findings

Physical observations were conducted within selected LASUSTECH architecture studios to objectively assess existing ergonomic conditions.

Table 4.3 Physical Observation Assessment of Studio Environment

Parameter	Observation
Furniture Type	Fixed wooden chairs and tables
Adjustable Furniture	Not available
Seating Comfort	Poor
Desk Suitability	Moderate
Natural Lighting	Moderate
Artificial Lighting	Inadequate in some areas
Cross Ventilation	Limited
Indoor Temperature	High during afternoon periods
Workspace Density	High
Circulation Space	Restricted
Noise Sources	Student discussions and external activities
Storage Facilities	Inadequate

Interpretation

The observation findings support questionnaire responses indicating poor ergonomic conditions within the architecture studios.

The absence of adjustable furniture, limited ventilation, high occupancy density, restricted circulation space, and inadequate artificial lighting were identified as major environmental deficiencies. These conditions likely contribute to physical discomfort and elevated stress among students.

Analysis of Research Questions

This section addresses each of the research questions formulated for the study, using descriptive statistics derived from the questionnaire responses.

Research Question 1: What are the existing ergonomic conditions within LASUSTECH architecture studios?

To answer this question, respondents rated various ergonomic factors using a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree). The results are presented under five sub-headings: furniture ergonomics, lighting quality, ventilation and thermal comfort, spatial arrangement, and acoustic comfort.

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Furniture Ergonomics

Table 4.4: Distribution of Responses on Furniture Ergonomics (N=170)

Statement	1 (%)	2 (%)	3 (%)	4 (%)	5 (%)	Mean
Studio chairs are comfortable for long hours of work	34.1	28.2	20.6	11.2	5.9	2.27
Desk height is suitable for drafting and computer work	25.9	30.6	22.4	14.1	7.1	2.46
Studio furniture supports good sitting posture	31.8	29.4	21.2	12.4	5.3	2.30
I experience body pain after long studio sessions	4.7	10.6	18.8	32.9	32.9	3.79
Furniture arrangement allows easy movement within the studio	27.1	32.4	22.9	12.9	4.7	2.36

The findings reveal that most respondents disagreed that studio chairs are comfortable (62.3% combined disagree, mean 2.27). Similarly, desk height was deemed unsuitable by 56.5% (mean 2.46), and furniture posture support was rated poorly by 61.2% (mean 2.30). Conversely, a large majority (65.8%) agreed or strongly agreed that they experience body pain after long studio sessions (mean 3.79). Furniture arrangement was also rated negatively, with 59.5% indicating that movement is restricted. Overall, furniture ergonomics in LASUSTECH architecture studios are inadequate and contribute to physical discomfort.

Lighting Quality

Table 4.5: Distribution of Responses on Lighting Quality (N=170)

Statement	1 (%)	2 (%)	3 (%)	4 (%)	5 (%)	Mean
Natural lighting in the studio is adequate	20.0	28.8	25.3	18.2	7.6	2.65
Artificial lighting is sufficient for studio tasks	24.1	31.2	24.7	14.1	5.9	2.47
I experience eye strain while working in the studio	7.1	14.1	22.4	31.8	24.7	3.53

More than half of respondents (48.8% combined disagree) found natural lighting inadequate (mean 2.65), and 55.3% found artificial lighting insufficient (mean 2.47). Importantly, 56.5% agreed or strongly agreed that they experience eye strain while working (mean 3.53). Poor lighting quality is a significant ergonomic deficiency in the studios.

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Ventilation and Thermal Comfort

Table 4.6: Distribution of Responses on Ventilation and Thermal Comfort (N=170)

Statement	1 (%)	2 (%)	3 (%)	4 (%)	5 (%)	Mean
The studio has adequate ventilation	31.8	34.1	20.0	10.6	3.5	2.20
Studio temperature is comfortable during working hours	27.6	35.3	21.8	11.2	4.1	2.29
Heat within the studio causes discomfort	5.3	10.0	18.8	34.7	31.2	3.77

Ventilation was rated poorly, with 65.9% disagreeing that the studio has adequate ventilation (mean 2.20). Thermal comfort was also poor (62.9% disagree, mean 2.29).

However, 65.9% agreed that heat causes discomfort (mean 3.77). High temperatures and poor air circulation are major issues.

Spatial Arrangement and Overcrowding

Table 4.7: Distribution of Responses on Spatial Arrangement (N=170)

Statement	1 (%)	2 (%)	3 (%)	4 (%)	5 (%)	Mean
The studio provides adequate personal workspace	32.9	34.7	18.2	10.0	4.1	2.18
The studio is overcrowded during peak periods	4.1	8.8	15.9	35.3	35.9	3.90
Workspace arrangement supports collaborative learning	16.5	24.7	28.2	20.6	10.0	2.83
Lack of space affects my comfort and concentration	5.3	11.8	20.0	34.1	28.8	3.69

A large majority (67.6%) disagreed that adequate personal workspace is provided (mean 2.18). Conversely, 71.2% agreed that the studio is overcrowded during peak periods (mean 3.90).

Furthermore, 62.9% agreed that lack of space affects comfort and concentration (mean 3.69). Overcrowding is a critical ergonomic problem.

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Acoustic Comfort

Table 4.8: Distribution of Responses on Acoustic Comfort (N=170)

Statement	1 (%)	2 (%)	3 (%)	4 (%)	5 (%)	Mean
External noise distracts me during studio work	8.8	14.7	22.9	31.2	22.4	3.44
Noise contributes to my stress while working	7.1	12.9	21.8	34.1	24.1	3.55
Noise levels in the studio are manageable	20.0	30.6	24.7	16.5	8.2	2.62

More than half (53.6%) agreed that external noise distracts them (mean 3.44), and 58.2% agreed that noise contributes to stress (mean 3.55). Only 24.7% found noise levels manageable. Acoustic comfort is suboptimal.

Research Question 2: What is the level of psychological stress experienced by architecture students?

Psychological stress was measured using ten statements derived from the Perceived Stress Scale and additional impact statements. Table 4.9 presents the distribution.

Table 4.9: Distribution of Responses on Psychological Stress Indicators (N=170)

Statement	1 (%)	2 (%)	3 (%)	4 (%)	5 (%)	Mean
I feel mentally exhausted after studio work	5.3	11.2	18.8	34.7	30.0	3.73
I find it difficult to concentrate in the studio	7.6	14.1	22.9	32.4	22.9	3.49
I experience headaches or fatigue during studio work	8.2	15.9	24.1	31.2	20.6	3.40
I feel overwhelmed by studio demands	4.7	10.6	18.2	36.5	30.0	3.77
Studio conditions negatively affect my mood	6.5	12.9	21.2	34.1	25.3	3.59
I experience stress due to prolonged studio hours	5.3	10.0	17.6	35.9	31.2	3.78
Poor studio conditions reduce my motivation to work	7.1	13.5	20.0	33.5	25.9	3.58

All stress indicators had mean scores above 3.40, indicating moderate to high levels of psychological distress.

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The highest mean was for stress due to prolonged studio hours (mean 3.78) and feeling overwhelmed by studio demands (mean 3.77).

Over 60% of respondents agreed or strongly agreed with each of these statements. The studio environment clearly contributes to elevated psychological stress among architecture students.

Research Questions 3–4: Relationships between ergonomic factors and psychological stress

These questions examined whether specific ergonomic factors (furniture, lighting, ventilation, spatial arrangement) are related to psychological stress. Table 4.10 presents responses to direct impact statements.

Table 4.10: Perceived Impact of Ergonomic Factors on Psychological Stress (N=170)

Statement	1 (%)	2 (%)	3 (%)	4 (%)	5 (%)	Mean
Poor furniture design increases my stress levels	6.5	12.4	20.6	34.1	26.5	3.62
Poor lighting contributes to mental fatigue	5.9	11.8	21.8	35.9	24.7	3.62
High studio temperature affects my emotional well-being	4.7	10.0	18.2	37.1	30.0	3.78
Overcrowding contributes to anxiety and discomfort	3.5	8.2	16.5	35.3	36.5	3.93
Noise negatively affects my concentration and mood	4.7	10.6	20.0	36.5	28.2	3.73

All factors received high agreement percentages. Overcrowding had the strongest perceived impact (mean 3.93, 71.8% agreeing), followed by temperature (mean 3.78), noise (mean 3.73), and both furniture and lighting (mean 3.62 each).

These findings indicate significant positive relationships between poor ergonomic conditions and psychological stress.

Pearson Correlation Analysis

To determine the relationship between workspace ergonomics and psychological stress, Pearson Product-Moment Correlation analysis was conducted at a significance level of $p < 0.05$.

Table 4.11 Pearson Correlation between Ergonomic Factors and Psychological Stress

Ergonomic Factor	**r-value**	**Sig. (p-value)**	**Relationship Strength**
Furniture Ergonomics	0.612	0.000	Strong Positive
Lighting Quality	0.547	0.000	Moderate Positive
Ventilation/Thermal Comfort	0.683	0.000	Strong Positive

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Spatial Arrangement (Overcrowding)	0.741	0.000	Strong Positive
Acoustic Comfort	0.591	0.000	Moderate Positive

Interpretation

The analysis revealed significant positive relationships between all ergonomic factors and psychological stress among architecture students. Spatial arrangement (overcrowding) exhibited the strongest relationship with psychological stress ($r = 0.741$, $p < 0.05$), followed by ventilation and thermal comfort ($r = 0.683$, $p < 0.05$). Furniture ergonomics also showed a strong relationship ($r = 0.612$, $p < 0.05$), while lighting quality ($r = 0.547$, $p < 0.05$) and acoustic comfort ($r = 0.591$, $p < 0.05$) demonstrated moderate positive relationships.

Hypotheses Testing

The hypotheses were tested using Pearson Product-Moment Correlation at a significance level of 0.05.

Table 4.12 Summary of Hypotheses Testing

Hypothesis	p-value	Decision	CONCLUSION
H_{01}	0.000	Reject H_0	Significant relationship exists
H_{02}	0.000	Reject H_0	Significant relationship exists
H_{03}	0.000	Reject H_0	Significant relationship exists
H_{04}	0.000	Reject H_0	Significant relationship exists
H_{05}	0.000	Reject H_0	Significant relationship exists

Interpretation

The results indicate that all null hypotheses were rejected because their p-values were less than the 0.05 level of significance. Therefore, furniture ergonomics, lighting quality, ventilation/thermal comfort, spatial arrangement, and acoustic comfort all have significant relationships with psychological stress among architecture students in LASUSTECH architecture studios.

Multiple Regression Analysis

To identify the strongest predictors of psychological stress and to address Objective 4, a multiple linear regression analysis was conducted with psychological stress as the dependent variable and the five ergonomic factors (furniture ergonomics, lighting quality, ventilation and thermal comfort, spatial arrangement, and acoustic comfort) as independent variables. Tables 4.13, 4.14, and 4.15 present the model summary, ANOVA results, and regression coefficients respectively.

Table 4.13: Model Summary

Model	R	R^2	Adjusted R^2	Std. Error of the Estimate
1	0.836	0.699	0.690	0.472

Source: SPSS Output, 2025.

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The model summary (Table 4.13) indicates that the five ergonomic factors collectively explain 69.9% of the variance in psychological stress ($R^2 = 0.699$, Adjusted $R^2 = 0.690$), with a multiple correlation coefficient of $R = 0.836$, indicating a strong predictive relationship between workspace ergonomics and psychological stress.

Table 4.14: ANOVA

Model	**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
Regression	84.94	5	16.99	76.19	.000
Residual	36.57	164	0.223		
Total	121.51	169			

Source: SPSS Output, 2025.

The ANOVA results (Table 4.14) confirm that the overall regression model is statistically significant ($F(5, 164) = 76.19$, $p = .000$), indicating that the five ergonomic factors jointly and significantly predict psychological stress among architecture students at LASUSTECH.

Table 4.15: Regression Coefficients

Variable	**B**	**Std. Error**	**Beta (β)**	**t**	**Sig.**
(Constant)	0.423	0.187	–	2.261	.025
Furniture Ergonomics	0.187	0.058	0.198	3.224	.002
Lighting Quality	0.163	0.061	0.168	2.672	.008
Ventilation / Thermal Comfort	0.221	0.065	0.231	3.400	.001
Spatial Arrangement	0.289	0.062	0.298	4.661	.000
Acoustic Comfort	0.174	0.059	0.179	2.949	.004

Source: SPSS Output, 2025. Dependent Variable: Psychological Stress.

The coefficients table (Table 4.15) reveals that all five ergonomic factors are statistically significant predictors of psychological stress. Spatial arrangement emerged as the strongest predictor ($\beta = 0.298$, $t = 4.661$, $p = .000$), followed by ventilation and thermal comfort ($\beta = 0.231$, $t = 3.400$, $p = .001$), furniture ergonomics ($\beta = 0.198$, $t = 3.224$, $p = .002$), acoustic comfort ($\beta = 0.179$, $t = 2.949$, $p = .004$), and lighting quality ($\beta = 0.168$, $t = 2.672$, $p = .008$). These findings confirm that overcrowding and thermal discomfort are the most critical ergonomic contributors to psychological stress in LASUSTECH architecture studios, while lighting, though significant, exerts the smallest individual effect within the combined model.

Analysis Based on Research Objectives

Objective 1: Identify existing ergonomic conditions

As detailed in Section 4.3.1, the existing ergonomic conditions are predominantly poor. Key findings include:

- **Furniture:** Uncomfortable chairs, unsuitable desk heights, poor posture support, restricted movement (mean scores 2.27–2.46 for positive statements; 3.79 for body pain).

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- **Lighting:** Inadequate natural and artificial lighting, frequent eye strain (means 2.47–2.65 for adequacy; 3.53 for eye strain).

- **Ventilation & thermal comfort:** Inadequate ventilation, uncomfortable temperatures, heat-induced discomfort (means 2.20–2.29 for adequacy; 3.77 for discomfort).

- **Spatial arrangement:** Insufficient personal workspace, severe overcrowding, space-related comfort issues (means 2.18 for workspace; 3.90 for overcrowding).

- **Acoustic comfort:** Distracting external noise, noise-related stress, unmanageable noise levels (means 2.62 for manageability; 3.44–3.55 for negative impacts).

Objective 2: Assess levels of psychological stress

Psychological stress levels are high. The majority of respondents reported mental exhaustion (64.7% agreed), difficulty concentrating (55.3%), headaches/fatigue (51.8%), feeling overwhelmed (66.5%), negative mood effects (59.4%), stress from long hours (67.1%), and reduced motivation (59.4%). Mean scores ranged from 3.40 to 3.78 on a 5-point scale, indicating that stress is a pervasive issue among architecture students.

Objective 3: Examine relationships between ergonomic factors and stress

Strong perceived relationships exist between each ergonomic factor and psychological stress. Overcrowding showed the strongest association (mean 3.93), followed by thermal discomfort (3.78), noise (3.73), and both furniture and lighting (3.62). These results suggest that improving any of these ergonomic conditions would likely reduce student stress levels.

Objective 4: Identify major ergonomic factors contributing to stress

Based on the mean scores in Table 4.9, the major ergonomic factors contributing to psychological stress, ranked from highest to lowest impact, are:

1. **Overcrowding** (mean 3.93)

2. **High studio temperature** (mean 3.78)

3. **Noise** (mean 3.73)

4. **Poor furniture design** (mean 3.62)

5. **Poor lighting** (mean 3.62)

Overcrowding and thermal discomfort are the most critical stressors.

Objective 5: Propose ergonomic design recommendations

Open-ended responses from participants consistently highlighted three areas for improvement: comfortable and adjustable drawing boards/tables, adequate ventilation and cooling, better lighting, noise control, and storage facilities. Specific recommendations extracted include:

- Provision of adjustable-height drawing boards to accommodate different tasks and user statures.

- Installation of functional air conditioning or improved cross-ventilation systems.

- Upgrading artificial lighting to reduce eye strain, especially for overnight work.

- Reducing overcrowding by expanding studio space or limiting class sizes.

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- Implementing noise control measures (e.g., acoustic panels, designated quiet zones).
- Providing personal storage to reduce clutter and improve spatial organisation.

SUMMARY OF KEY FINDINGS

The analysis of data from 170 architecture students at LASUSTECH reveals the following key findings:

Demographic profile: Most students spend 5–10 hours daily in the studio, and nearly two-thirds work overnight at least sometimes.

Ergonomic conditions are severely inadequate across all dimensions. Furniture causes body pain (65.8% agreement), lighting causes eye strain (56.5%), ventilation is poor (65.9%), overcrowding is extreme (71.2%), and noise is distracting (53.6%). Mean adequacy scores for positive statements ranged from 2.18 to 2.65, well below the neutral midpoint.

Psychological stress levels are high. Over 60% of students reported mental exhaustion, feeling overwhelmed, and stress from prolonged hours. Mean stress indicator scores ranged from 3.40 to 3.78.

Strong relationships exist between poor ergonomics and stress. All five ergonomic factors were perceived as significantly contributing to stress, with overcrowding and high temperature having the strongest impacts (means 3.93 and 3.78, respectively).

Students unanimously desire ergonomic improvements. Adjustable furniture, better ventilation and cooling, improved lighting, noise control, and reduced overcrowding were the most frequently cited recommendations.

These findings confirm that workspace ergonomics in LASUSTECH architecture studios is a critical determinant of students' psychological well-being, and targeted interventions are urgently needed to create a healthier learning environment.

DISCUSSION OF FINDINGS

Furniture Ergonomics and Psychological Stress

The findings revealed that furniture ergonomics in the architecture studios are inadequate, as many students reported discomfort, poor posture support, and body pain after long studio sessions. This supports the findings of Abdulkadir et al. (2020), who reported that ergonomic furniture improves comfort and reduces physical strain among students.

Lighting Quality and Psychological Stress

Students generally perceived both natural and artificial lighting as inadequate and reported experiencing eye strain during studio work. This agrees with Tonye et al. (2025), who found that lighting quality significantly influences user comfort and productivity in learning environments.

Ventilation and Thermal Comfort

The study found that poor ventilation and excessive heat contribute to discomfort among students. This is consistent with Obi-George et al. (2025), who observed that thermal discomfort negatively affects concentration and performance in architectural studios.

Spatial Arrangement and Overcrowding

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Overcrowding was identified as the most significant ergonomic challenge affecting students. This finding aligns with Makun et al. (2024), who found that inadequate workspace and poor spatial organisation reduce comfort and learning effectiveness.

Acoustic Comfort and Psychological Stress

The findings indicate that noise negatively affects concentration and contributes to stress. This supports Makun and Lawal (2025), who reported that excessive noise adversely affects students' mental performance and emotional well-being.

Relationship Between Workspace Ergonomics and Psychological Stress

The study established that poor ergonomic conditions are associated with increased psychological stress among architecture students. This finding supports the Person–Environment Fit Theory, which suggests that stress occurs when the environment fails to meet users' physical and psychological needs.

SUMMARY: CONCLUSION AND RECOMMENDATIONS

Overview

This section presents the conclusion of the study examining the relationship between workspace ergonomics and psychological stress in LASUSTECH architecture studios. The chapter summarises the research, draws conclusions based on the findings, discusses implications, and offers actionable recommendations.

Conclusions

First, existing ergonomic conditions are inadequate across all dimensions, causing physical discomfort and body pain. Second, architecture students experience high levels of psychological stress including mental exhaustion, difficulty concentrating, and reduced motivation. Third, there is a significant positive relationship between poor ergonomics and psychological stress, confirming that ergonomic deficiencies have measurable psychological consequences. Fourth, the theoretical framework is validated, as mismatches between students' needs and studio conditions generate psychological strain. Fifth, the findings indicate a strong perceived relationship between workspace ergonomics and psychological stress among architecture students.

Recommendations

The following recommendations are derived directly from complaints expressed by students in their questionnaire responses.

Overcrowding (most frequent complaint): Reduce class sizes to 20–25 students per studio, create additional studio spaces, introduce scheduled time-tabling, and assign permanent individual workstations. Students stated: "Overcrowding at peak hour which leads to missing properties."

Heat and ventilation: Install functional air conditioning units in all studios, maximise cross-ventilation with ceiling fans, and establish regular maintenance. Students stated: "No ac" and "lack of ventilation."

Furniture: Procure additional tables and chairs for every student, replace drawing boards with height-adjustable units, provide ergonomic chairs with back support, and install personal storage lockers. Students stated: "Tables and chairs aren't enough" and "stool height to table height discomfort."

Noise: Establish designated quiet zones, install acoustic panels, and post noise guidelines. Students requested "noise control."

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Lighting: Upgrade artificial lighting to minimum 500 lux per workstation, provide individual task lamps for overnight work, and install blinds to prevent glare. Students requested "improved lightning" (sic).

Overnight hours: Provide overnight amenities (lighting, restrooms, water), create a separate break area, and review workload expectations. Students described "mental drain after hours of studio work."

Limitations

The study has three limitations: single institution focus limiting generalisability, cross-sectional design preventing causal conclusions and limited objective ergonomic measurements.

Final Remarks

The study demonstrates that workspace ergonomics is a central determinant of students' psychological well-being, not a peripheral concern. The findings point clearly toward achievable solutions including adjustable furniture, proper lighting, effective cooling, adequate space, and noise control. Improving studio ergonomics is not an expense but an investment in student mental health, academic success, and the future of architectural education in Nigeria.

Conflict of Interest Statement

The authors declare that Opeyemi A. Asaju, listed as a co-author of this paper, is also a co-author of two primary sources cited herein: Asaju et al. (2024) and Asaju et al. (2026). These self-citations are disclosed in the interest of transparency. All other authors declare no conflicts of interest related to this work.

REFERENCES

1. Abdulkadir, M., Lasisi, O. I., Ojile, P., & Adeyemi, A. J. (2020). The effect of furniture intervention on the occurrence of musculoskeletal disorders and academic performance of students in North-West Nigeria. SAGE Publications, *65*(1), 195-203.
2. Akinluyi, M. L., Fadamiro, J., Ayoola, H., & Alade, M. (2024). Efficacy of architectural space design for healing and humanisation in Lagos University Teaching Hospital, Nigeria. International Journal of Architecture and Urban Development, *14*(1), 5-18.
3. Ali, A. S., Chua, S. J. L., & Lim, M. E.-L. (2015). The effect of physical environment comfort on employees' performance in office buildings. Structural Survey, *33*(4/5), 294-308.
4. Asaju, O. A., Olusada, M., Adelore, C., Onamade, A. O., & Otunnoyo, G. A. (2026). The effect of the design studio environment on the mental well-being of architecture students in selected universities in Nigeria. In C. Aigbavboa, B. Awuzie, D. Aghimien, A. E. Oke, & T. Omotayo (Eds.), Facilitating inclusivity in multi-, inter-, and transdisciplinary sustainable built environment research in emerging economies (pp. 1585-1594). Springer. https://doi.org/10.1007/978-3-032-08992-2_133
5. Asaju, O. A., Onamade, A. O., Chukwuka, O. P., Odefadehan, C., & Alagbe, O. (2024). IEQ of studio environment on academic performance of architectural students at Caleb University, Lagos, Nigeria. Journal of Sustainable Architecture and Built Environment. 5(1) 1-7 https://bcsdjournals.com/index.php/mejrhss/article/download/672/404
6. Bay-Sahin, E., & Shah, N. (2026). Optimising architectural studio spaces: Applying a psychological needs framework to enhance student well-being. SAGE Open, 16(1) 1-22. https://journals.sagepub.com/doi/pdf/10.1177/21582440251407947
7. Bello, A. O., Pepple, T. D., Amusa, T. T., Obioha, U., & Asaju, O. (2025). Evaluation of the impact of natural lighting and ventilation on user comfort in Lagos office buildings. International Journal of Research and Innovation in Applied Science (IJRIAS), *10*(7), 1-12. https://doi.org/10.51584/IJRIAS.2025.100700130

ISSN 2278-2540 | DOI: 10.51583/IJLTEMAS | Volume XV, Issue VI, June 2026

8. Bhatti, O. S., Ul Haq, M., & Khan, F. (2024). Impact of office and workplace design on job performance of project employees in Architecture, Engineering & Construction (AEC) industry of Pakistan. Journal for Current Sign, 320-333.
9. Christopoulos, I., & Mulville, M. (2025). Impact assessment of the spatial layouts of studios on the students' learning experience at architecture schools in HE, in the UK [Conference contribution]. Leeds Beckett University. https://hdl.handle.net/10779/leedsbeckett.30438500.v1
10. Demirel, F., & Ozçetin, Z. (2024). A study on the acoustic comfort evaluation in educational buildings: Bozok University case. In Springer proceedings. Springer.
11. Feige, A., Wallbaum, H., Janser, M., & Windlinger, L. (2013). Impact of sustainable office buildings on occupants' comfort and productivity. Journal of Corporate Real Estate, *15*(1), 7-34.
12. Haynes, B. P. (2008). The impact of office layout on productivity. Journal of Facilities Management, *6*(3), 189-201.
13. Hussein, A. Y., & Mustafa, F. A. (2023). Architecture students' self-report well-being assessment based on quality learning environment in design studio. Cihan University-Erbil Scientific Journal CUESJ, *7*(1), 21-28.
14. Lee, P. J., Lee, B. K., Jeon, J. Y., Zhang, M., & Kang, J. (2015). Impact of noise on self-rated job satisfaction and health in open-plan offices: A structural equation modelling approach. Ergonomics, *59*(2), 222-234.
15. Makaremi, N., Yildirim, S., Morgan, G. T., Touchie, M. F., Jakubiec, J. A., & Robinson, J. B. (2024). Impact of classroom environment on student wellbeing in higher education: A systematic review. Building and Environment, *265*, Article 111958.
16. Makun, C. Y., Anikor, E. M., Obi-George, C. L., & Akande, O. (2024). Evaluation of interactive spaces for enhanced learning in architecture department buildings in Niger State, Nigeria. ArtGRID - Journal of Architecture Engineering and Fine Arts, *6*(1), 96-110.
17. Makun, C. Y., & Lawal, L. A. (2025). Effects of exposure to noise on mental performance and emotional well-being of students at a school in Kaduna, Nigeria. Federal University of Technology, Minna.
18. Obi-George, L. C., Ifebi, O. C., Adegoke, S. A., Nzewi, N. U., Eze, C. J., & Maduka, N. M. (2025). Examining the impact and perception of thermal comfort on student performance in architectural studios. Federal University of Technology, Minna. Journal of Technology in Architecture, Design, and Planning. 3(1) 1-12
19. Sadykova, Z., & Almasbayeva, A. (2024). Ergonomics of an art studio: Methodology for comfortable and productive creativity. Problems of Engineering and Professional Education, *72*(1), 50-59.
20. Stanton, A., Zandvliet, D., Dhaliwal, R., & Black, T. (2016). Understanding students' experiences of well-being in learning environments. Higher Education Studies, *6*(3), 90-99.
21. Tonye, T. A., Favour, I. I., Olaoye, G., Uju, P. C., Ibitoye, O. A., & Adekunle, S. B. (2025). The impact of lighting and circulation on movement systems in community centres. International Journal of Latest Technology in Engineering, Management & Applied Science (IJLTEMAS), *14*(8), 200-208. https://doi.org/10.51583/IJLTEMAS.2025.1408000025
22. Wargocki, P., Porras-Salazar, J., & Contreras-Espinoza, S. (2019). The relationship between classroom temperature and children's performance in school. Building and Environment, *157*, 197-204.
23. Yardimci, Y. C. (2024). A research on architects' comfort conditions in working environments. Sakarya University Journal of Science, *28*(3), 496-504.