

**KWAME NKRUMAH UNIVERSITY OF SCIENCE AND
TECHNOLOGY**

KUMASI

FACULTY OF STATISTICS AND ACTUARIAL SCIENCE

DEPARTMENT OF STATISTICS

A MINI PROJECT REPORT ENTITLED:

**INFLUENCE OF ROOMMATE SELECTION
AND CONFLICT RESOLUTION ON STUDENT
ACADEMIC PERFORMANCE AT KWAME
NKRUMAH UNIVERSITY OF SCIENCE
AND TECHNOLOGY**

BY

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LEVEL 300

ABSTRACT

University accommodation arrangements significantly impact student well-being and academic outcomes. This study investigated how roommate selection methods and conflict management capabilities influence academic performance among undergraduate students at Kwame Nkrumah University of Science and Technology (KNUST). Using a descriptive survey design, data were collected from 329 undergraduate students through an online questionnaire during the 2023-2024 academic year. The study employed chi-square tests and cross-tabulation analysis to examine associations between residential factors and Cumulative Weighted Average (CWA). Results revealed two significant findings: (1) students who selected their own roommates demonstrated significantly higher academic performance compared to those randomly assigned ($p=0.015$), and (2) difficulty in conflict resolution showed a highly significant association with academic outcomes ($p=0.001$), with students possessing effective conflict management skills achieving notably higher grades. Conversely, no significant associations were found between overall roommate relationship quality and academic performance ($p=0.387$) or between residential location (on-campus vs. off-campus) and CWA ($p=0.187$). These findings suggest that structural housing policies enabling student choice and conflict resolution skills development are more impactful than general relationship quality. The study recommends implementing choice-based housing systems and mandatory conflict resolution training programs at KNUST. Limitations include sample bias toward high-performing students and cross-sectional design constraints.

Keywords: Roommate selection, conflict resolution, academic performance, student housing, KNUST

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LIST OF ABBREVIATIONS

Abbreviation	Meaning
KNUST	Kwame Nkrumah University of Science and Technology
CWA	Cumulative Weighted Average
SPSS	Statistical Package for the Social Sciences
GPA	Grade Point Average
Off-campus	Located outside the university's main campus boundaries
On-campus	Located within the university's main campus boundaries

Chapter 1

INTRODUCTION

1.1 Background of Study

Academic success in Ghanaian higher education is crucial for determining future career opportunities and social mobility. Transitioning to university life often involves living with roommates, which can significantly impact students' well-being, academic performance, and overall adjustment to university life. The manner in which roommates are selected and how conflicts are managed may play pivotal roles in shaping these outcomes.

Research on student development in higher education systems has increasingly recognized the importance of residential arrangements. While studies in developed nations have examined roommate relationships extensively (McCorkle and Mason, 2009), research on roommate dynamics among tertiary students in sub-Saharan Africa remains limited. Existing literature shows that social relationships, including those with roommates, can influence academic achievement through various mechanisms including emotional support, study motivation, and environmental conduciveness (Alotaibi, 2023).

However, there exists a gap in understanding the specific impact of roommate selection autonomy and conflict resolution capabilities within African universities, where factors such as cultural diversity, communication styles, and institutional housing policies differ from Western contexts (Ntim, 2021). This study addresses this gap by focusing on two critical yet understudied dimensions: how students are paired with roommates and their capacity to manage interpersonal conflicts.

1.2 Problem Statement

At KNUST and similar institutions, students are often randomly assigned roommates or must navigate informal processes to secure accommodation with preferred peers. When conflicts arise in these shared living spaces—whether over study schedules, cleanliness, noise levels, or personal boundaries—students' ability to resolve disagreements effectively may directly impact their academic concentration and performance.

Despite the potential significance of these factors, there is limited empirical evidence on whether roommate selection autonomy and conflict management skills influence academic outcomes in Ghanaian universities. Understanding these relationships is essential for developing evidence-based housing policies and student support programs that promote both positive residential experiences and academic success.

1.3 Objectives of Research

1.3.1 General Objective

To investigate the influence of roommate selection methods and conflict resolution capabilities on students' academic performance at Kwame Nkrumah University of Science and Technology.

1.3.2 Specific Objectives

1. To assess the relationship between roommate selection method (chosen vs. randomly assigned) and academic performance (CWA)
2. To examine the association between conflict resolution difficulty and academic performance (CWA)
3. To evaluate whether roommate relationship quality is associated with academic performance
4. To determine if residential location (on-campus vs. off-campus) influences academic performance

1.4 Research Hypotheses

H_1 : There is a significant association between roommate selection method and students' academic performance.

H_2 : There is a significant association between difficulty in conflict resolution and academic performance.

H_3 : There is a significant association between roommate relationship quality and academic performance.

H_4 : There is a significant association between residential location and academic performance.

1.5 Significance of Study

This study provides empirical evidence on how roommate selection autonomy and conflict management capabilities influence academic outcomes in a Ghanaian university context. The findings have practical implications for:

- **Housing Policy Development:** University administrators and residential life coordinators can use these findings to design housing assignment systems that better support student success.
- **Student Support Programs:** The study identifies specific skills (conflict resolution) that warrant institutional support through training and intervention programs.
- **Student Empowerment:** Understanding these factors enables students to make informed decisions about housing arrangements and develop necessary interpersonal skills.
- **Academic Research:** The study contributes to limited literature on roommate dynamics in African higher education contexts.

1.6 Scope of the Study

Population: Undergraduate students enrolled at KNUST across all academic levels (years 1-6) and programs.

Geographic Location: Various halls and hostels on and off the KNUST campus in Kumasi.

Time Frame: Second semester of the 2023-2024 academic year.

Variables:

- *Independent variables:* Roommate selection method, conflict resolution difficulty, roommate relationship quality, residential location
- *Dependent variable:* Academic performance (CWA)
- *Control variables:* Gender, age, academic year

Methods: Quantitative survey research using an online questionnaire with Likert-scale items. Statistical analysis through SPSS employing chi-square tests and cross-tabulation.

Limitations: The study focuses exclusively on undergraduate students at KNUST and does not examine other factors influencing academic performance such as socioeconomic status, mental health, or institutional support services. Postgraduate students were excluded from the study.

Chapter 2

LITERATURE REVIEW

2.1 Introduction

The transition to university represents a pivotal period marked by increased independence, exposure to diverse social environments, and the pursuit of academic goals. Central to this experience is the formation of relationships, particularly with roommates, which can significantly impact student well-being and academic performance. While extensive research has examined peer relationships broadly, the specific roles of roommate selection autonomy and conflict management capabilities require deeper investigation, particularly in African contexts. This literature review employs a narrative approach to examine existing evidence on these relationships.

2.2 Theoretical Framework

2.2.1 Student Integration Theory

Astin's (1975) theory of student involvement emphasizes that students' experiences outside the classroom including residential arrangements significantly influence academic outcomes. The theory suggests that the quality of peer interactions and the residential environment contribute to students' sense of belonging and academic engagement. This framework provides foundation for examining how roommate selection and conflict dynamics affect performance.

2.2.2 Interpersonal Conflict Theory

Research on interpersonal conflict (Knapp and Hall, 2002) indicates that conflict itself is not inherently detrimental; rather, the management of conflict determines its impact. Students who develop effective conflict resolution skills can navigate disagreements constructively, while those lacking such skills may experience prolonged stress that interferes with academic focus.

2.3 Empirical Review

2.3.1 Early Research Foundations

Early investigations into roommate relationships produced mixed findings. Ohlson (1939), as cited by Pace (1964), examined whether roommates influence each other's academic achievement. Using a

limited sample of 172 students who requested to live together, Ohlson found no evidence that roommates resembled each other academically due to their association. However, the study lacked statistical rigor and did not control for important variables such as selection bias.

2.3.2 Roommate Selection and Academic Outcomes

More recent research has explored whether student choice in roommate selection matters. Hasan and Bagde (2013) found that students with capable roommates perform better academically, especially when roommates' skills align with academic goals. This suggests that compatible pairing, whether self-selected or carefully matched, can enhance outcomes.

The question of autonomy in selection, however, remains understudied. Students who choose their roommates may select peers with similar study habits, values, and lifestyles, potentially creating more harmonious living environments conducive to academic work.

2.3.3 Conflict and Academic Performance

Omonijo et al. (2015) conducted research at a faith-based university in Nigeria with 470 respondents. Using chi-square tests, the study concluded that roommate relationships associate with academic achievement, emotional stability, and resource management. The study suggested that relationship quality matters, but did not specifically examine conflict resolution mechanisms.

Quinn et al. (2023) employed a longitudinal design with 467 first-year college students (234 roommate pairs) in the United States. The study found that roommates influence each other's academic performance and emotional well-being over time. Importantly, the research suggested that the ability to navigate relationship challenges rather than avoiding conflict altogether predicted better outcomes.

2.3.4 Residential Location and Performance

Arora and Singh (2017) investigated factors influencing academic achievement among 117 engineering students in India. The study found that residence type played a significant role, with home atmosphere and distractions influencing grades. However, the study did not differentiate between on-campus and off-campus living arrangements specifically.

2.3.5 African Context

Research specifically examining roommate dynamics in African universities remains limited. Ntim (2021) noted that cultural diversity, communication styles, and social expectations in African institutions differ from Western contexts, suggesting that findings from developed nations may not directly apply. This gap highlights the need for context-specific research.

2.4 Gaps in Literature

Several critical gaps emerge from this review:

1. Limited research on roommate selection autonomy as a distinct factor influencing outcomes
2. Insufficient investigation of conflict resolution skills versus conflict avoidance

3. Scarcity of studies in African university contexts where cultural and institutional factors differ
4. Need for research controlling for sample bias toward high-performing students
5. Lack of comparative analysis between on-campus and off-campus residential experiences in African settings

Existing literature suggests that roommate relationships influence academic outcomes, but the specific mechanisms, particularly selection autonomy and conflict management capabilities remain underexplored. This study addresses these gaps by examining these factors within a Ghanaian university context, providing evidence to inform housing policies and student support programs.

Chapter 3

RESEARCH METHODOLOGY

3.1 Introduction

This chapter details the methodology employed in this study, including research design, population and sampling, data collection procedures, and analytical techniques.

3.2 Research Design

This study adopted a **descriptive survey research design** utilizing quantitative methods. This design is appropriate for examining associations between variables and describing characteristics of a population (Muijs, 2010). The cross-sectional nature of the study allowed for data collection at a single point in time, providing a snapshot of roommate dynamics and academic performance.

3.3 Study Setting

The research was conducted at Kwame Nkrumah University of Science and Technology (KNUST), Kumasi, during the second semester of the 2023-2024 academic year. KNUST is one of Ghana's premier public universities with diverse student population residing in both on-campus halls and off-campus hostels.

3.4 Target Population

The target population comprised all undergraduate students enrolled at KNUST during the study period. This population was selected because undergraduate students are most likely to experience shared accommodation arrangements that directly impact their daily academic activities.

3.5 Sample Size and Sampling Technique

A minimum sample size of 320 participants was determined adequate for the study based on statistical power considerations for chi-square analysis. The final sample consisted of 329 students who completed the survey.

A **convenience sampling** technique was employed, with the survey distributed through online platforms accessible to KNUST students. While this approach facilitated efficient data collection, it introduced potential sampling bias that is acknowledged in the study limitations.

3.6 Data Collection Instrument

An **online questionnaire** served as the primary data collection instrument. The questionnaire was divided into three sections:

1. **Demographic Information:** Gender, age, academic year, and CWA
2. **Residential Characteristics:** Location (on/off campus), number of roommates, selection method
3. **Roommate Dynamics:** Relationship quality, conflict frequency, conflict resolution difficulty, academic support, satisfaction with living arrangements

The instrument employed **Likert-scale questions** for attitudinal measures and closed-ended questions for categorical variables. The questionnaire was piloted with 15 students to ensure clarity and validity before full deployment.

3.7 Data Collection Procedure

The online questionnaire was distributed via student email lists and social media groups with permission from relevant university authorities. Participation was voluntary, and respondents were assured of confidentiality. Data collection occurred over a four-week period in the second semester.

3.8 Data Analysis

Data were analyzed using the **Statistical Package for the Social Sciences (SPSS)** version 26. The analytical approach included:

3.8.1 Descriptive Statistics

Frequencies, percentages, and cross-tabulations were used to describe sample characteristics and variable distributions.

3.8.2 Inferential Statistics

Chi-square tests of association were employed to examine relationships between categorical independent variables (roommate selection method, conflict resolution difficulty, relationship quality, residential location) and the dependent variable (CWA). The significance level was set at $\alpha = 0.05$.

CWA was categorized into four groups for analysis:

- First Class: 70-100
- Second Class Upper: 60-69

- Second Class Lower: 50-59
- Fail/Third Class: 0-49

3.9 Ethical Considerations

Ethical approval was obtained from the Department of Statistics, KNUST. Participants provided informed consent before completing the survey. Data were anonymized, and no personally identifiable information was collected. Participants were informed of their right to withdraw at any time without penalty.

3.10 Study Limitations

Several methodological limitations are acknowledged:

1. **Convenience Sampling:** May not fully represent the undergraduate population
2. **Self-reported Data:** Academic performance and relationship quality were self-reported, introducing potential bias
3. **Cross-sectional Design:** Cannot establish causality or examine changes over time
4. **Uncontrolled Variables:** Prior academic preparation, socioeconomic status, and mental health were not measured

Chapter 4

RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents the study findings, organized around the research objectives. The analysis begins with descriptive statistics characterizing the sample, followed by inferential statistics examining associations between roommate factors and academic performance.

4.2 Descriptive Analysis

4.2.1 Demographic Characteristics

The study sample consisted of 329 undergraduate students. Table 4.1 summarizes key demographic characteristics.

Table 4.1: Demographic Characteristics of Respondents (N=329)

Characteristic	Frequency	Percentage
Gender		
Male	191	58.1%
Female	138	41.9%
Age Group		
16-19	35	10.6%
20-23	231	70.2%
24-27	55	16.7%
28+	8	2.4%

Academic Year		
First Year	32	9.7%
Second Year	43	13.1%
Third Year	181	55.0%
Fourth Year	64	19.5%
Fifth Year	8	2.4%
Sixth Year	1	0.3%
Academic Performance (CWA)		
First Class (70-100)	86	26.1%
Second Class Upper (60-69)	168	51.1%
Second Class Lower (50-59)	63	19.1%
Fail/Third Class (0-49)	12	3.6%

The sample showed slight male predominance (58.1%) and was concentrated in the 20-23 age range (70.2%). Notably, third-year students comprised over half the sample (55.0%), and 77.2% of respondents reported high academic standing (first or second class upper). This overrepresentation of high-performing students is a limitation discussed in Section ??.

4.2.2 Residential Characteristics

Table 4.2 presents residential arrangement characteristics.

Table 4.2: Residential Characteristics (N=329)

Characteristic	Frequency	Percentage
Residential Location		
On-campus	90	27.4%
Off-campus	239	72.6%
Number of Roommates		
1 roommate	93	28.3%
2 roommates	74	22.5%
3 roommates	108	32.8%
4+ roommates	54	16.4%
Roommate Selection Method		
Chosen (friends)	203	61.7%
Randomly assigned	126	38.3%
Roommate Relationship Quality		
Very good	98	29.8%
Good	131	39.8%
Neutral	78	23.7%
Poor/Very poor	22	6.7%

The majority of students lived off-campus (72.6%) and had chosen their roommates rather than being randomly assigned (61.7%). Most students reported positive or neutral relationships with roommates (93.3%).

4.3 Inferential Analysis

4.3.1 Roommate Selection Method and Academic Performance

Table 4.3 presents the relationship between roommate selection method and academic performance.

Table 4.3: Roommate Selection Method and Academic Performance

Selection Method	70-100	60-69	50-59	0-49	χ^2	p-value
Friends	66 (76.7%)	94 (56.0%)	36 (57.1%)	7 (58.3%)	2*10.358	2*0.015*
Random	20 (23.3%)	74 (44.0%)	27 (42.9%)	5 (41.7%)		

*Statistically significant at $\alpha = 0.05$

A statistically significant association was found between roommate selection method and academic performance ($\chi^2 = 10.358$, $p = 0.015$). Students who selected their roommates (friends) were disproportionately represented among high achievers: 76.7% of first-class students chose their roommates compared to only 56.0% of second-class upper students. This 20.7 percentage point difference suggests that roommate selection autonomy is associated with better academic outcomes.

This finding aligns with research suggesting that students who choose compatible roommates create more supportive living environments (Hasan & Bagde, 2013). Possible mechanisms includes; shared study habits and academic values, reduced adjustment stress through familiar relationships, better initial compatibility reducing distracting conflicts, mutual academic encouragement and motivation

4.3.2 Conflict Resolution Difficulty and Academic Performance

Table 4.4 examines the association between conflict resolution difficulty and academic performance.

Table 4.4: Conflict Resolution Difficulty and Academic Performance

Resolution Difficulty	70-100	60-69	50-59	0-49	χ^2	p-value
Very easy	28 (32.6%)	53 (31.5%)	14 (22.2%)	1 (8.3%)	5*26.801	5*0.001**
Easy	31 (36.0%)	44 (26.2%)	18 (28.6%)	5 (41.7%)		
Neutral	24 (27.9%)	52 (31.0%)	18 (28.6%)	4 (33.3%)		
Difficult	1 (1.2%)	16 (9.5%)	11 (17.5%)	1 (8.3%)		
Very difficult	2 (2.3%)	3 (1.8%)	2 (3.2%)	1 (8.3%)		

**Statistically significant at $\alpha = 0.01$

A highly significant association emerged between conflict resolution difficulty and academic performance ($\chi^2 = 26.801$, $p = 0.001$). Students reporting "easy" or "very easy" conflict resolution constituted 68.6% of first-class performers compared to only 50.0% of students in the lowest performance category. Conversely, 25.8% of lower performers reported "difficult" or "very difficult" conflict resolution versus only 3.5% of first-class students. This is the study's most significant finding, indicating

that conflict management skills strongly associate with academic success. Importantly, a separate analysis (not shown) revealed that conflict *frequency* did not significantly predict performance ($p = 0.956$), suggesting that having disagreements matters less than how they are resolved. This supports conflict management theory (Knapp & Hall, 2002), which posits that constructive conflict resolution, rather than conflict avoidance leads to positive outcomes. The practical implication is clear: universities should invest in conflict resolution training rather than merely attempting to prevent conflicts through careful roommate matching.

4.3.3 Roommate Relationship Quality and Academic Performance

Contrary to expectations, no significant association was found between self-reported roommate relationship quality and academic performance ($\chi^2 = 4.233$, $p = 0.387$). Students with "very good" relationships were not significantly more likely to achieve higher grades than those with "neutral" or even "poor" relationships. This null finding is noteworthy and diverges from some existing literature (Sax et al., 2000). Possible explanations include social desirability bias where students may overreport relationship quality, subjective interpretation as "good" relationship may mean different things to different students, sample characteristics with 77.2% high performers and 69.6% reporting "good" or "very good" relationships creating restricted range that may have limited detection of associations, and the distinction between quality and functionality where relationship warmth may matter less than practical compatibility such as study habits, schedules, and noise tolerance. The contrast between this null finding and the significant conflict resolution finding suggests that *behavioral competencies* (how students manage disagreements) may be more predictive than *affective evaluations* (how students feel about the relationship).

4.3.4 Residential Location and Academic Performance

No significant association was found between living on-campus versus off-campus and academic performance ($\chi^2 = 1.695$, $p = 0.187$). This finding may reflect the specific context of KNUST and Kumasi, where off-campus housing is prevalent (72.6% of sample) and often involves similar shared accommodation structures as on-campus halls, geographic proximity to campus remains relatively consistent for most off-campus students in Kumasi, and the distinction between on/off-campus may be less meaningful than factors like roommate compatibility and study environment quality. This suggests that *where* students live matters less than *with whom* they live and *how* they manage shared living dynamics.

Chapter 5

CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

This study investigated the influence of roommate selection methods and conflict resolution capabilities on academic performance among 329 undergraduate students at KNUST, providing nuanced insights into residential factors that matter most for student success. A statistically significant association was found between roommate selection method and academic performance ($p = 0.015$), indicating that students who exercised autonomy in selecting their roommates demonstrated significantly higher academic performance compared to those randomly assigned, suggesting that student agency in housing arrangements contributes positively to academic outcomes through better initial compatibility, shared values, and reduced adjustment stress. The study's strongest finding was the highly significant association between difficulty in conflict resolution and academic performance ($p = 0.001$), with students reporting "easy" or "very easy" conflict resolution substantially overrepresented among high achievers (68.6% of first-class students), and critically, this effect was independent of conflict frequency—disagreements themselves did not predict performance, but the ability to resolve them effectively did. Contrary to expectations, no significant association was found between self-reported roommate relationship quality and academic performance ($p = 0.387$), suggesting that how students handle challenges matters more than how they rate the relationship overall, with possible explanations including measurement issues, sample characteristics, or a genuine pattern where functional compatibility supersedes affective relationship quality. Similarly, no significant association was found between residential location (on-campus vs. off-campus) and academic performance ($p = 0.187$), reflecting the KNUST context where off-campus housing involves similar shared accommodation structures. Overall, this study reveals that structural factors (autonomy in roommate selection) and behavioral competencies (conflict resolution skills) demonstrate clearer associations with academic performance than relational quality or physical location, with three key insights emerging: agency matters as student choice associates with better outcomes, skills trump circumstances as conflict management ability predicts success more than avoiding conflicts, and residential dynamics are more complex than simple satisfaction measures capture. The predominantly null findings for relationship quality and residential location highlight the complexity of roommate-academic performance relationships and suggest that individual differences and contextual factors may moderate these associations in ways not fully captured by this cross-sectional design. This study contributes to limited research on roommate dynamics in African university contexts, examining factors within Ghana's unique cultural and institutional environment where communal living is common and housing resources are constrained, providing actionable evidence for policy development across

sub-Saharan Africa.

5.2 Study Limitations

Several methodological limitations warrant acknowledgment. The sample demonstrated notable biases, with 77.2% of respondents being high performers (first/second class upper), 55% being third-year students, and 72.6% living off-campus, which may have limited the detection of associations that might be more apparent in academically diverse samples. The cross-sectional design prevented establishment of causality or examination of how roommate relationships evolve over time, while convenience sampling may not fully represent the undergraduate population. Academic performance was self-reported rather than verified through official transcripts, introducing potential recall or social desirability bias. The study did not control for potentially confounding factors including prior academic preparation, study habits independent of roommate influence, socioeconomic status, mental health, participation in academic support programs, and family background. Additionally, relationship quality relied on single-item subjective ratings, conflict resolution difficulty was self-assessed without objective behavioral measures, and CWA categorization may have reduced statistical power compared to continuous measurement. These limitations suggest that some null findings may reflect methodological constraints rather than true absence of relationships, and future research should address these through longitudinal designs, verified performance data, representative sampling, and measurement of confounding variables.

5.3 Recommendations

Based on study findings, the following evidence-based recommendations are proposed:

5.3.1 For KNUST Administration and Housing Services

1. **Implement Choice-Based Housing Systems:** Develop policies maximizing student autonomy in roommate selection, including an online matching platform and early registration periods for friend-based room selection.
2. **Establish Conflict Resolution Support:** Implement mandatory conflict resolution workshops during orientation and create a residential mediation program with trained peer mediators accessible to all students.
3. **Support Off-Campus Students:** Extend residential life programming beyond campus boundaries through resource centers and online communities, recognizing that 72.6% of students live off-campus.
4. **Adopt Data-Informed Policy:** Conduct regular assessments of housing satisfaction and academic outcomes to track which pairing methods yield best results over time.

5.3.2 For Students

1. **Exercise Roommate Choice:** When possible, select roommates based on compatibility in study habits and lifestyle preferences rather than friendship alone.

2. **Establish Clear Expectations:** Initiate early conversations about study schedules, quiet hours, cleanliness standards, and resource sharing.
3. **Develop Conflict Management Skills:** Attend university workshops, practice active listening, and address conflicts promptly rather than allowing resentment to build.

5.3.3 For Future Research

1. Conduct longitudinal studies tracking roommate pairs across multiple semesters to examine relationship evolution and cumulative effects.
2. Ensure representative sampling across all performance levels and use verified academic records rather than self-reported data.
3. Control for confounding variables including prior academic preparation, socioeconomic status, mental health, and personality traits.
4. Evaluate intervention effectiveness through quasi-experimental studies comparing choice-based housing programs versus random assignment outcomes.

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