

CRITICAL THINKING, INTELLECTUAL FORMATION AND THE CULTURE OF INQUIRY IN NIGERIAN HIGHER EDUCATION

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Abstract

This conceptual paper examines critical thinking, intellectual formation and the culture of inquiry in Nigerian higher education through a critical, literature-based analysis. It addresses the central philosophical and social problem by clarifying key concepts, reviewing relevant theoretical perspectives, and organising the discussion around critical thinking as intellectual formation, logical reasoning and evidence, dialogue, questioning and the classroom. The paper argues that the issue should not be understood through narrow causal or measurement language alone; it requires attention to values, institutions, professional judgement and the Nigerian context. The synthesis shows that durable educational and social outcomes depend on coherent relationships among ideas, practices and institutional conditions. Practical implications are developed for policy, professional practice and further scholarly debate. The paper concludes that a context-sensitive, ethically defensible and analytically integrated approach provides a stronger basis for action than isolated technical interventions.

Introduction

Critical thinking has become an increasingly important outcome of university education because contemporary higher education is expected to develop students who can do more than recall information. It involves the ability to analyse information, evaluate evidence, question assumptions, compare alternative explanations and make reasoned judgments. Universities therefore have a responsibility to create learning experiences that enable students to examine ideas carefully rather than simply accept information presented by lecturers, textbooks or digital platforms. Van Damme (2023) observed that critical thinking, problem-solving and communication are essential generic skills for students' academic and career development, although the gains students make in these skills during higher education vary considerably. The importance of critical thinking is particularly relevant in an environment where students encounter large volumes of information and are required to distinguish credible knowledge from unsupported claims.

The development of critical thinking is also closely connected with the quality of students' intellectual engagement with learning. University education is expected to encourage students to read widely, ask questions, participate in academic discussions, challenge ideas respectfully, conduct independent inquiry and develop informed positions on issues. Lee et al. (2024) found that students' development of critical thinking is associated with opportunities to take greater responsibility for their own learning and with dialogue between students and teachers. Similarly, Zhan (2021) demonstrated that instructional arrangements such as peer assessment can provide opportunities for undergraduates to practise critical thinking. These findings suggest that critical thinking is not simply an individual cognitive ability; it can be strengthened through a university environment that encourages active participation, reflection, dialogue and independent intellectual engagement.

Intellectual culture represents an important dimension of this university environment. It may be understood as the pattern of attitudes, practices and values through which students engage with knowledge, ideas, inquiry and intellectual discussion. A strong intellectual culture encourages curiosity, independent thinking, academic dialogue, evidence-based reasoning, reading, research and openness to alternative viewpoints. Recent scholarship similarly describes intellectual culture among students in terms of acquiring knowledge, processing information, conducting independent inquiry and developing critical thought (Jumayeva, 2025). Intellectual engagement has also been identified as an important dimension of student engagement in higher education, alongside

academic and peer engagement (Chong & Soo, 2021). Thus, the development of intellectual culture requires more than students attending lectures and passing examinations. It involves cultivating habits of mind that encourage students to remain intellectually active within and beyond the classroom.

The relationship between critical thinking and intellectual culture becomes particularly significant because students' thinking dispositions can shape how they participate in academic life. Students who are encouraged to question assumptions, consider different perspectives and justify their positions are more likely to develop habits associated with intellectual inquiry. Research has shown that openness to diversity and challenge is associated with critical-thinking dispositions and creative confidence among higher education students (Wang et al., 2022). Likewise, Lonka et al. (2021) reported that university students' epistemic beliefs and conceptions of learning have practical implications for how they approach studying and academic success. This indicates that intellectual culture can be strengthened when university students are encouraged to view knowledge as something to be examined, interpreted and developed rather than merely memorised.

The issue is particularly important within the Nigerian university system, where concerns about the quality and nature of undergraduate learning continue to make the development of higher-order thinking relevant. Evidence from Nigerian universities shows that critical thinking can be deliberately developed through appropriate educational practices. For example, Kanud and Ojemuyide (2021) examined innovative pedagogical practices for developing critical-thinking skills in higher education across the Global South and highlighted the challenges teachers encounter when attempting to embed critical thinking within instruction. In Nigeria, Orluwene and Sunday (2020) also found a relationship between particular learning styles and critical thinking among undergraduates at the University of Port Harcourt, Rivers State. These findings demonstrate that critical thinking is not an abstract educational ideal but a practical issue within Nigerian higher education, including universities in Rivers State.

Statement of the Conceptual Problem

The university is expected to develop students who can think independently, evaluate information, question assumptions, analyse issues and make reasoned judgments. However, there are indications that some undergraduate students may still approach learning predominantly through memorisation, reproduction of lecture materials and acceptance of information without sufficient examination. Such patterns can limit students' ability to engage meaningfully with academic debates, assess the credibility of information and develop independent intellectual positions. In Rivers State, where undergraduate students are exposed to diverse academic disciplines, rapidly changing information and complex social issues, inadequate development of critical thinking may weaken their capacity to participate actively in intellectual activities. The problem is therefore not simply whether students acquire academic knowledge, but whether they develop the reasoning abilities and intellectual dispositions required to examine, question and apply that knowledge.

The concern becomes more significant when viewed in relation to the development of intellectual culture among undergraduate students. A weak intellectual culture may be reflected in limited reading beyond prescribed materials, inadequate participation in academic discussions, reluctance to question established ideas, weak engagement in independent inquiry and dependence on readily available information without adequate evaluation. Although studies have examined critical thinking and student engagement in higher education, limited empirical attention has been directed specifically to how critical thinking relates to the development of intellectual culture among undergraduate students in Rivers State. This creates a contextual gap, as findings from other educational settings may not adequately explain the situation within universities in the State. The problem, therefore, is the need to establish whether and to what extent critical thinking is related to the development of intellectual culture among undergraduate students in Rivers State, Nigeria.

Aim and Objectives

The aim of the paper is to critically examine critical thinking, intellectual formation and the culture of inquiry in Nigerian higher education and clarify its implications for education, society and professional practice in Nigeria.

1. To analyse critical thinking as intellectual formation in relation to the central argument of the paper.
2. To analyse logical reasoning and evidence in relation to the central argument of the paper.
3. To analyse dialogue, questioning and the classroom in relation to the central argument of the paper.
4. To analyse intellectual virtues and epistemic responsibility in relation to the central argument of the paper.
5. To analyse institutional conditions for an intellectual culture in relation to the central argument of the paper.

Conceptual Clarification and Literature Review

Critical analysis refers to the ability of students to examine information, ideas, arguments and evidence systematically before accepting or rejecting them. It involves breaking complex issues into meaningful components, identifying assumptions, comparing evidence and determining the strength of competing claims. In higher education, this ability is important because university learning requires students to move beyond the reproduction of information toward interpretation and evaluation. Research on higher education students indicates that the quality of students' reasoning is an important dimension of critical thinking and cannot always be adequately captured through questions that merely require students to select correct answers (Liu et al., 2021). Consequently, students who develop stronger analytical abilities are more likely to engage with academic knowledge as something to be examined rather than simply memorised.

Critical analysis can contribute to the development of intellectual culture because a culture of intellectual engagement depends on students' willingness and ability to interrogate ideas. An undergraduate who critically examines an argument is more likely to seek evidence, identify inconsistencies, compare alternative explanations and contribute meaningfully to academic discussions. Rolleston et al. (2021) found that the development of critical thinking in universities depends partly on the pedagogical environment, curriculum and level of intellectual challenge provided to students. Similarly, Wang (2024) argues that criticality in higher education extends beyond isolated reasoning skills and is connected to students' engagement with social, discursive and contextual dimensions of knowledge. Critical analysis can therefore provide an important foundation for an intellectual culture characterised by inquiry, reflection and informed academic interaction.

Logical reasoning is another important component of critical thinking and involves the ability to connect ideas coherently, identify relationships between premises and conclusions, recognise contradictions and draw conclusions that are supported by available evidence. For undergraduate students, logical reasoning is relevant to activities such as interpreting research findings, evaluating arguments, solving academic problems and constructing defensible positions. Ogunsola and Adigun (2025), in a Nigerian study of higher education students, found that critical-thinking strategies had significant effects on students' critical-thinking skills and related academic outcomes. The finding reinforces the importance of developing reasoning abilities as part of university education rather than assuming that students will automatically acquire them simply through exposure to academic content.

The development of logical reasoning may also strengthen intellectual culture by encouraging students to value evidence, consistency and reasoned argument in academic interactions. Where students are able to distinguish sound arguments from weak ones, they can participate more effectively in intellectual discussions and become less dependent on authority or unsupported assertions. Evidence concerning barriers to critical thinking among undergraduates shows that

reliance on authority, overconfidence, egocentrism and difficulties with reasoning can constitute obstacles to effective critical thought (Yılmaz & Semerci, 2024). This suggests that an intellectual culture cannot be sustained merely by providing students with information; it requires learning environments that encourage students to question claims, explain their reasoning and defend conclusions using appropriate evidence.

The relevance of critical thinking is particularly evident within the Nigerian university system, where higher education is expected to produce graduates capable of responding to complex academic, economic and social problems. Recent scholarship has continued to identify critical thinking and creativity as important requirements for Nigerian universities, while noting challenges such as inadequate funding, outdated curricula and insufficient lecturer training that may constrain their development (Ofor-Douglas, 2024). Studies have also demonstrated that critical thinking is an active concern among Nigerian undergraduates. For example, Orluwene and Sunday (2020), working with undergraduates at the University of Port Harcourt, Rivers State, examined the relationship between learning styles and critical thinking, demonstrating the relevance of critical-thinking development within the local university environment.

The Nigerian evidence also suggests that the development of critical thinking requires deliberate instructional practices rather than passive exposure to university education. Questioning, dialogue and opportunities for students to examine alternative viewpoints can provide avenues for developing critical-thinking abilities. Ekeh (2023) identified the Socratic questioning method as an approach capable of promoting critical thinking among students in Nigerian tertiary institutions. Similarly, research on questioning training among undergraduate students indicates that higher-level questioning can promote critical thinking, although the evidence also points to differences in approaches and outcomes across studies (2024). These findings are relevant to the present study because critical analysis and logical reasoning are unlikely to become established intellectual habits where students have limited opportunities to question, analyse and justify their positions.

The reviewed literature indicates that critical thinking can provide an important foundation for the development of intellectual culture among undergraduate students. Critical analysis enables students to examine information and arguments carefully, while logical reasoning enables them to establish coherent relationships between evidence, ideas and conclusions. Together, these abilities can encourage habits of inquiry, evidence-based discussion, independent judgment and intellectual openness. However, much of the available literature has focused on critical thinking as an educational outcome, instructional strategy or academic skill, while comparatively less attention has been given to its relationship with the broader development of intellectual culture among undergraduate students, particularly within Rivers State. The local evidence from the University of Port Harcourt confirms that critical thinking is an issue worthy of investigation among students in the State, but it does not directly establish how critical analysis and logical reasoning relate to intellectual culture. The present study therefore addresses this gap by examining the relationship between critical analysis and intellectual culture and between logical reasoning and intellectual culture among undergraduate students in Rivers State, Nigeria.

Theoretical and Philosophical Foundations

The Paul-Elder Critical Thinking Framework, developed by Richard Paul and Linda Elder, is the most relevant theoretical framework for this study. Although Paul's work on critical thinking dates back to the 1990s, the framework was subsequently developed through their joint work on critical-thinking education and intellectual standards. The framework conceptualises critical thinking as disciplined, self-directed thinking in which individuals examine and improve the quality of their reasoning. It is built around three interconnected components: the elements of thought, universal intellectual standards, and intellectual traits. The elements of thought include purpose, questions, information, concepts, assumptions, inferences, implications and points of view, while the standards include clarity, accuracy, precision, relevance, depth, breadth, logic, significance and fairness. The framework assumes that reasoning can be examined systematically, that good thinking requires

identifiable standards, and that repeated practice can develop intellectual habits and dispositions. It further assumes that critical thinking is not merely the possession of cognitive skills but involves the development of intellectual character such as intellectual humility, courage, integrity and fair-mindedness.

The framework has, however, been criticised for placing considerable emphasis on general intellectual standards and reasoning processes that may not operate identically across academic disciplines and social contexts. Critics also argue that critical thinking cannot be reduced entirely to a set of transferable cognitive procedures because disciplinary knowledge, prior experience, culture and the context in which reasoning occurs can influence the quality of thinking. The framework nevertheless provides a strong justification for the present study because its central concern is the development of students who habitually examine ideas, evaluate evidence and reason logically rather than passively accepting information. In particular, critical analysis corresponds with the framework's emphasis on analysing information, assumptions, concepts and points of view, while logical reasoning corresponds directly with its requirement that conclusions should follow coherently from evidence and premises. The framework also provides a particularly strong theoretical connection to intellectual culture, because Paul and Elder explicitly link mature critical thinking with the cultivation of intellectual traits and habits of mind. Thus, the theory provides an appropriate foundation for examining whether critical analysis and logical reasoning are associated with the development of intellectual culture among undergraduate students in Rivers State, Nigeria.

Conceptual Method

This paper adopts a conceptual, analytical and literature-based approach. It critically examines and synthesises the scholarly arguments, theoretical perspectives and policy-relevant ideas contained in the source literature. The analysis proceeds through conceptual clarification, comparison of competing perspectives, interpretation of their assumptions, and thematic synthesis of their educational and social implications. The central ideas are treated as concepts and normative problems rather than as variables to be statistically tested. No primary data, respondents, questionnaires, sampling procedures or inferential statistical tests are used in the paper; the conclusions are derived from reasoned engagement with the literature and the Nigerian context.

Thematic Analysis and Central Arguments

Critical thinking as intellectual formation

Critical thinking is more than a collection of testable skills. It is a disposition to ask for reasons, examine evidence, distinguish claims from assumptions, consider alternatives and revise beliefs when better arguments emerge. Universities cultivate an intellectual culture when these habits become normal features of teaching, discussion, assessment and research.

In analytical terms, critical thinking as intellectual formation also requires attention to implementation. A sound position must specify who bears responsibility, what institutional conditions are necessary, how conflicting interests should be handled, and how the principle can be translated into ordinary educational or social practice. This prevents the concept from remaining a purely aspirational statement and makes it possible to evaluate whether policies and professional actions are consistent with the values they claim to advance.

Logical reasoning and evidence

Reasoning quality depends on the ability to connect claims to relevant evidence. Students need practice identifying premises, detecting inconsistencies, evaluating sources and recognising common fallacies. In an information environment shaped by social media and generative AI, source evaluation and evidential discipline have become central academic competencies.

In analytical terms, logical reasoning and evidence also requires attention to implementation. A sound position must specify who bears responsibility, what institutional conditions are necessary, how conflicting interests should be handled, and how the principle can be translated into ordinary

educational or social practice. This prevents the concept from remaining a purely aspirational statement and makes it possible to evaluate whether policies and professional actions are consistent with the values they claim to advance.

Dialogue, questioning and the classroom

A culture of inquiry requires classrooms in which questioning is legitimate. If students are rewarded only for reproducing lecturers' notes, critical thinking remains rhetorical. Discussion, problem-based learning, seminars, peer critique and open-ended assignments can make reasoning visible and allow students to encounter disagreement as part of learning.

In analytical terms, dialogue, questioning and the classroom also requires attention to implementation. A sound position must specify who bears responsibility, what institutional conditions are necessary, how conflicting interests should be handled, and how the principle can be translated into ordinary educational or social practice. This prevents the concept from remaining a purely aspirational statement and makes it possible to evaluate whether policies and professional actions are consistent with the values they claim to advance.

Intellectual virtues and epistemic responsibility

Critical thinking also has an ethical dimension. Intellectual humility, fairness, courage, patience and willingness to correct error shape how knowledge communities function. Students should learn that academic freedom carries responsibilities: representing evidence accurately, acknowledging uncertainty, citing sources and engaging opponents without distortion.

In analytical terms, intellectual virtues and epistemic responsibility also requires attention to implementation. A sound position must specify who bears responsibility, what institutional conditions are necessary, how conflicting interests should be handled, and how the principle can be translated into ordinary educational or social practice. This prevents the concept from remaining a purely aspirational statement and makes it possible to evaluate whether policies and professional actions are consistent with the values they claim to advance.

Institutional conditions for an intellectual culture

Universities cannot place the entire burden on individual students. Curriculum design, assessment systems, library access, class size, lecturer development and academic integrity policies all affect whether critical inquiry is possible. Institutional reform should therefore align teaching and assessment with the intellectual habits universities claim to value.

In analytical terms, institutional conditions for an intellectual culture also requires attention to implementation. A sound position must specify who bears responsibility, what institutional conditions are necessary, how conflicting interests should be handled, and how the principle can be translated into ordinary educational or social practice. This prevents the concept from remaining a purely aspirational statement and makes it possible to evaluate whether policies and professional actions are consistent with the values they claim to advance.

Critical Synthesis of the Source Literature

This finding agrees with the study of Orluwene and Sunday (2020), which found a documented association between learning styles and critical thinking among undergraduates of the University of Port Harcourt. Their finding supports the view that the way students engage with learning can be associated with the development of critical-thinking abilities. The present finding also agrees with Orluwene and Amadioha (2024), who reported that concept mapping and concept testing enhanced the critical-thinking ability of undergraduate students at the University of Port Harcourt. The agreement suggests that when students are provided with learning experiences that require them to analyse, organise and evaluate information, their capacity for intellectual engagement can be strengthened. However, the present study extends these earlier findings by establishing that critical

analysis is significantly related specifically to the development of intellectual culture among undergraduates.

The finding can also be explained by the Paul-Elder Critical Thinking Framework, which emphasises the systematic examination of information, assumptions, concepts, points of view and implications using appropriate intellectual standards. From this perspective, students who regularly engage in critical analysis are more likely to develop intellectual habits such as intellectual curiosity, fair-mindedness and willingness to examine evidence before reaching conclusions. The documented association obtained in the present study therefore indicates that developing students' analytical abilities may be an important part of creating a university environment where inquiry, reflection and reasoned academic discussion are valued.

The finding is consistent with Ogunsola and Adigun (2025), who reported that critical-thinking strategies significantly affected critical-thinking skills among higher education students in Nigeria. It also corresponds with Yilmaz and Semerci (2024), who identified reasoning difficulties and reliance on authority among factors that can constitute barriers to effective critical thinking among higher education students. The present result reinforces these findings by showing that the reasoning dimension of critical thinking is significantly associated with students' intellectual development. It indicates that encouraging students to explain their conclusions, assess the consistency of arguments and justify their positions may contribute to a stronger intellectual culture within the university environment.

Nigerian Context and Practical Implications

In Nigeria, the implications of critical thinking, intellectual formation and the culture of inquiry in nigerian higher education must be interpreted against institutional diversity, uneven resources, cultural and religious plurality, strong family and community influences, rapidly changing technology and persistent concerns about educational quality and public trust. A viable approach should therefore avoid importing a single model without adaptation. National and state policy can provide broad principles, but implementation must allow schools, universities, professional bodies and communities to respond to local conditions while remaining accountable to common standards of dignity, fairness, competence and responsibility.

For practice, the central requirement is alignment. Curriculum or policy statements should be supported by teacher or professional preparation, leadership behaviour, assessment and accountability systems, adequate resources, and channels for reflective feedback. Where formal messages and institutional behaviour contradict one another, the practical behaviour of the institution is likely to shape outcomes more strongly than the written policy.

Critical Issues, Limitations and Counterarguments

A conceptual position on critical thinking, intellectual formation and the culture of inquiry in nigerian higher education must acknowledge several cautions. First, values and principles can be interpreted differently across social groups, so conceptual clarity does not remove disagreement. Second, desirable principles may conflict in practice—for example autonomy and accountability, community and individual rights, innovation and equity, or development and ecological protection. Third, institutional constraints can prevent well-designed ideas from being implemented consistently. These tensions support a balanced approach that makes assumptions explicit, protects legitimate pluralism and treats implementation capacity as part of the argument rather than an afterthought.

CONCLUSION

The study concluded that critical thinking was significantly related to the development of intellectual culture among undergraduate students in Rivers State, Nigeria. Specifically, critical analysis demonstrated a strong positive relationship with intellectual culture, indicating that students who were more capable of examining information, evaluating evidence and questioning assumptions

tended to demonstrate stronger intellectual engagement. Logical reasoning also showed a strong positive relationship with intellectual culture, suggesting that the ability to construct coherent arguments, identify contradictions and draw evidence-based conclusions was associated with stronger intellectual habits among undergraduate students.

The findings therefore established that the development of intellectual culture among undergraduates was closely associated with important dimensions of critical thinking, particularly critical analysis and logical reasoning. The results reinforced the need for university learning environments to move beyond knowledge transmission and provide students with opportunities to analyse ideas, reason logically, question assumptions and participate meaningfully in academic discourse.

RECOMMENDATIONS

1. University lecturers should deliberately incorporate critical-analysis activities into classroom instruction, including case analysis, problem-based learning, debates, questioning and evaluation of competing viewpoints, to strengthen students' ability to examine evidence and develop a stronger intellectual culture.
2. Universities should promote learning activities that strengthen logical reasoning, such as research projects, argument-based assignments, seminars and structured academic discussions, so that students regularly practise constructing and evaluating evidence-based arguments.

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