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Research Article

Enhancing Student Engagement and Learning through Differentiated Instruction: A Study on Educational Planning and Administration in Nigerian Higher Education

Angelina Okewu Ogwuche

Department of Educational Administration and Planning,

Joseph Sarwuan Tarka University, Makurdi, Nigeria.

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Abstract

This study investigates the practice, effectiveness, and institutional determinants of differentiated instruction (DI) in Nigerian higher education institutions, with a focus on its role in enhancing student engagement and informing educational planning and administration. Differentiated instruction is a pedagogical approach that adapts content, process, products, and learning environments to accommodate learners' readiness levels, interests, and learning profiles. Despite global recognition of DI's benefits, its adoption within Nigerian higher education remains underexplored. A mixed-method research design was employed, involving 150 university lecturers and 200 undergraduate students from six universities across Nigeria. Data were collected through structured questionnaires and analyzed using descriptive statistics, independent samples t-tests, and multiple regression analyses. Results revealed that the average frequency of DI strategy usage among lecturers was low (24.2%), with multiple learning modalities being the most commonly employed method. Student engagement was significantly higher in DI-based classrooms ($M = 4.18$, $SD = 0.41$) compared to traditional lecture-based environments ($M = 3.02$, $SD = 0.57$), with a large effect size (Cohen's $d = 2.16$), indicating both statistical and practical significance. Furthermore, multiple regression analysis identified administrative policy ($\beta = 0.47$), lecturer training ($\beta = 0.42$), and availability of teaching resources ($\beta = 0.36$) as significant institutional predictors of DI implementation ($R^2 = 0.61$, $p < 0.001$). The findings underscore the transformative potential of differentiated instruction in fostering inclusive, student-centered learning environments in higher education. However, limited practice among lecturers highlights the need for enhanced institutional support, capacity building, and policy alignment. The study recommends that university administrators integrate DI into academic planning, lecturer training, and resource allocation to promote equitable and effective teaching practices. These insights contribute to the broader discourse on educational reform and the pursuit of quality and inclusive higher education in Nigeria.

Keywords: Differentiated Instruction, Student Engagement, Educational Planning, Higher Education, Learning Outcomes, Nigeria.

Correspondence to: Angelina Okewu Ogwuche, e-mail: angienath2005@yahoo.com

Introduction

In the 21st-century knowledge economy, the role of higher education has evolved from merely transmitting knowledge to fostering innovation, creativity, and lifelong learning skills. Nigerian higher education institutions (HEIs), like many around the world, are increasingly tasked with meeting the diverse needs of learners in large, heterogeneous classrooms. Traditional one-size-fits-all instructional models have proven inadequate in promoting meaningful engagement and personalized learning outcomes, especially within the context of large public universities in sub-Saharan Africa.

Differentiated instruction (DI) has emerged as a transformative pedagogical approach that tailors content, process, product, and learning environments based on students' readiness, interests, and learning profiles (Tomlinson, 2014). DI acknowledges that learners differ in their cognitive abilities, prior experiences, motivations, and aspirations, and therefore need diverse instructional pathways to achieve shared academic goals. Numerous studies have confirmed that DI enhances learner engagement, improves academic achievement, and promotes inclusive education (Subban, 2006; Hall et al., 2003). The central premise of DI lies in its flexible approach to teaching and assessment, where instructors proactively plan varied strategies to reach all learners in a heterogeneous classroom (Heacox, 2012).

Research by Anderson (2007) and Tomlinson and Imbeau (2010) further asserts that differentiated instruction is not a set of prescribed strategies but a philosophy rooted in equity, access, and responsiveness to student diversity. It supports the development of higher-order thinking skills and fosters intrinsic motivation by allowing learners to take ownership of their learning experiences (Santangelo and Tomlinson, 2009). In higher education contexts, DI has been associated with enhanced critical thinking, greater participation, and improved retention rates among diverse student populations (Gregory and Chapman, 2013). Moreover, as universities face increasing enrollment and more heterogeneous student demographics—including non-traditional learners, international students, and those with special learning needs—the imperative for differentiated pedagogy becomes even more urgent (Goodwin and Hubbell, 2013). Empirical evidence from recent studies in sub-Saharan Africa also indicates that applying DI principles in large undergraduate classes leads to measurable gains in student satisfaction and academic performance (Yusuf et al., 2020; Oloyede and Adebowale, 2019).

However, despite its promise, the adoption of DI in Nigerian higher education remains inconsistent, often hindered by lack of training, rigid curricula, and insufficient institutional support mechanisms (Okoye and Yusuf, 2021). Lecturers often rely on monolithic teaching strategies due to large class sizes, limited training, resource constraints, and systemic gaps in educational planning and administration. Despite policy rhetoric on improving student-centered learning, little empirical work has been done to assess the extent to which differentiated instruction is implemented and its actual impact on learning engagement in the Nigerian context.

Student engagement—a key predictor of academic success and retention—is reported to be low in many Nigerian higher education institutions. Boekaerts (2003) and Fredricks et al. (2004) have shown that DI

increases engagement by aligning instruction with students' intrinsic motivations and learning modalities. However, in Nigeria, rigid curricula, traditional lecture methods, and insufficient learner support systems contribute to disengagement, absenteeism, and underperformance. Although differentiated instruction offers a viable solution, there is a significant gap between policy and practice. Many institutions lack the administrative capacity, professional development infrastructure, and planning mechanisms to institutionalize DI practices. Consequently, there is a pressing need to examine the implementation status, effectiveness, and enabling factors of DI in Nigerian HEIs. It is against this backdrop that **e**nhancing student engagement and learning through differentiated instruction: a study on educational planning and administration in Nigerian higher education is examined.

Theoretical Framework

This study is anchored on two complementary theories**:** Constructivist Learning Theory and Vygotsky's Sociocultural Theory, both of which provide a robust conceptual lens for understanding how differentiated instruction can improve student engagement and learning in higher education settings.

Constructivist theory, primarily advanced by Jean Piaget (1952), posits that learners construct knowledge through active engagement and interaction with their environment. Learning, according to constructivism, is not a passive process of absorbing facts but an active process where learners build new understanding upon prior knowledge. This theory provides strong justification for differentiated instruction, as it promotes the notion that learners have unique cognitive structures, experiences, and developmental pathways. In the context of differentiated instruction, constructivism supports the idea that teaching should be student-centered, inquiry-driven, and responsive to individual learning profiles. Educators who adopt DI strategies aim to facilitate meaning-making by aligning instructional content, processes, and assessments with students' diverse readiness levels, interests, and learning modalities (Tomlinson, 2014). By doing so, students are more likely to be engaged, motivated, and able to construct knowledge that is both relevant and enduring.

Vygotsky's Sociocultural Theory (1978) emphasizes the fundamental role of social interaction and cultural context in cognitive development. Central to this theory is the concept of the Zone of Proximal Development (ZPD), defined as the range between what a learner can do independently and what they can do with guidance or collaboration. Effective teaching, according to Vygotsky, occurs within the ZPD, where learners are challenged just beyond their current level but supported through scaffolding and differentiated tasks. Differentiated instruction aligns with this principle by offering tasks at varying complexity levels, thus ensuring that each student works within their own ZPD. Through flexible grouping, tiered assignments, and targeted support, DI enables learners to stretch their capabilities with adequate scaffolding from educators or peers. This theoretical grounding affirms that student engagement and learning are maximized when instruction is neither too easy nor too difficult, but tailored to each learner's developmental potential.

From an educational planning and administrative perspective, these theories advocate for instructional models and institutional policies that are flexible, inclusive, and learner-centered. Educational

administrators are encouraged to develop teacher training programs, design adaptive curricula, and implement supportive assessment practices that accommodate the differentiated needs of students. Constructivist and sociocultural principles further demand that administrators view diversity not as a challenge to be managed, but as an asset to be leveraged for deeper learning and innovation. Thus, both theories collectively underscore the rationale for differentiated instruction as a transformative strategy that supports cognitive, emotional, and social dimensions of learning. They also highlight the systemic adjustments required at the planning and administrative levels to institutionalize DI in Nigerian higher education.

Research Questions

The following research questions guide the study:

1. To what extent is differentiated instruction practiced in Nigerian higher education institutions?
2. How does differentiated instruction affect student engagement compared to traditional methods?
3. What institutional factors significantly influence the implementation of differentiated instruction?

Research Hypotheses

The study is guided by the following formulated hypotheses:

1. **H_1**: Differentiated instruction is significantly practiced among lecturers in Nigerian HEIs.
2. **H_2**: There is a significant difference in student engagement between DI-based and traditional instructional methods.
3. **H_3**: Institutional factors significantly predict the implementation of differentiated instruction.

Methodology

The study adopted a **c**oncurrent mixed-method design, combining quantitative and qualitative data to investigate the implementation and impact of differentiated instruction in Nigerian higher education institutions. Participants included 150 lecturers**,** 50 university administrators**,** and 200 undergraduate students drawn from five federal universities in Nigeria. A purposive sampling technique was used to select institutions and respondents based on relevance to the study objectives. A 5-point Likert scale questionnaire was used as instrument of data collection from among lecturers and universities administrators. The student engagement scale measured behavioral, emotional, and cognitive engagement while interview guide captured in-depth views from lecturers and administrators. The instruments for data collections were validated by three educational planning experts. A pilot test yielded Cronbach's alpha coefficient of 0.82 (lecturer questionnaire) and 0.88 (student scale), indicating strong internal consistency. Quantitative data were analyzed using SPSS 27, including descriptive statistics**,** independent t-tests**,** and

multiple regression**.** Qualitative data were thematically coded and triangulated with quantitative findings to enhance interpretive depth**.**

Results and Discussion

Research Question 1:

To what extent is differentiated instruction practiced in Nigerian higher education institutions?

Table 1. *Frequency of Differentiated Instruction Strategy Use Among Nigerian Higher Education Lecturers.*

DI Strategy	Regular Use (%)
Flexible Grouping	29
Tiered Assignments	22
Multiple Learning Modalities	34
Modified Assessments	19
Use of Learning Profiles	17

The data in Table 1 indicates a low overall adoption rate of differentiated instruction (DI) strategies in Nigerian higher education institutions, with an average regular usage rate of 26% across listed practices. The most commonly used DI method is the integration of multiple learning modalities (34%), followed by flexible grouping (29%). Tiered assignments and modified assessments are less frequently implemented, while the use of learning profiles—a more personalized approach—is the least practiced (17%). This suggests that although there is some awareness and partial application of DI, systematic and consistent use is lacking. The limited use may stem from inadequate training, rigid curriculum structures, large class sizes, and minimal institutional support. Lecturers are more likely to use general forms of DI (like multimedia and grouping) than more advanced or individualized strategies.

Research Question 2

How does differentiated instruction affect student engagement compared to traditional methods?

Table 2. Comparison of Student Engagement Scores Under Differentiated and Traditional Instruction.

Group	N	Mean ($\bar{X}$)	SD
DI-based instruction	100	4.18	0.41

Group	N	Mean ($\bar{X}$)	SD
Traditional instruction	100	3.02	0.57

t(198) = 15.12, p < 0.001, Cohen's d = 2.16 (large effect)

As shown in Table 2, students exposed to differentiated instruction reported significantly higher engagement levels (Mean = 4.18, SD = 0.41) than those taught using traditional methods (Mean = 3.02, SD = 0.57). The independent samples t-test confirmed this difference as statistically significant ($p < 0.001$), with a Cohen's d effect size of 2.16, which denotes a very large practical effect**.** These results strongly support the conclusion that DI enhances student engagement**,** likely due to its alignment with learners' individual needs, preferences, and readiness levels. Qualitative feedback also reinforced these findings, with students citing increased motivation, clearer understanding of course content, and greater classroom involvement.

Research Question 3

What institutional factors significantly influence the implementation of differentiated instruction?

Table 3. Institutional Predictors of Differentiated Instruction Implementation.

Predictor	Beta (β)	p-value
Administrative Policy	0.47	0.000
Lecturer Training	0.42	0.001
Teaching Resources	0.36	0.003

$R^2 = 0.61, F(3,146) = 76.23, p < 0.001$

Table 3 presents results from a multiple regression analysis**,** indicating that three institutional factors significantly predict the extent of DI implementation. Firstly, **a**dministrative policy ($\beta = 0.47$, $p < 0.001$) emerged as the strongest predictor, suggesting that institutional directives and policies strongly influence lecturers' willingness and ability to adopt DI strategies. Secondly, **l**ecturer training ($\beta = 0.42$, $p = 0.001$) is also a critical factor, implying that professional development and exposure to DI methodologies significantly enhance implementation, and finally, **t**eaching resources ($\beta = 0.36$, $p = 0.003$) also have a meaningful impact, highlighting the role of infrastructure, materials, and digital tools in enabling or constraining differentiated teaching. Overall, with an R^2 value of 0.61, the model explains 61% of the variance in DI implementation levels, indicating a strong predictive relationship. These findings underscore the importance

of systemic institutional support in facilitating the widespread use of differentiated instruction in Nigerian higher education.

Hypotheses Testing

Hypothesis 1

H_1: Differentiated instruction is significantly practiced among lecturers in Nigerian higher education institutions.

Table 5. Frequency and Interpretation of Differentiated Instruction Practice Among Lecturers (H_1)**.**

DI Strategy	**Regular Use (%)**	**Interpretation**
Flexible Grouping	29%	Moderately used
Tiered Assignments	22%	Low use
Multiple Learning Modalities	34%	Most frequently used
Modified Assessments	19%	Rarely used
Use of Learning Profiles	17%	Rarely used
Average Use	**24.2%**	**Low practice overall**

Table 5 reveals that the average percentage of regular DI strategy usage among lecturers was 24.2%**.** The most commonly used strategy was *multiple learning modalities (34%),* while strategies like *modified assessments (19%) and use of learning profiles (17%)* were rarely used. The findings reveal that the use of differentiated instruction strategies among lecturers is generally low**.** While some elements of DI, such as teaching through varied modalities, are moderately used, the overall picture indicates that lecturers have limited engagement with comprehensive DI approaches. This suggests possible gaps in training, institutional support, or awareness of DI principles. As such, H_1 is rejected — differentiated instruction is not significantly practiced across the sampled institutions.

Hypothesis 2

H_2: There is a significant difference in student engagement between DI-based and traditional instruction methods.

Table 5. Independent Samples t-Test Comparing Student Engagement Under DI-Based and Traditional Instruction (H_2)**.**

Group	N	Mean ($\bar{X}$)	SD	t-value	df	p-value	Cohen's d
DI-Based Instruction	100	4.18	0.41				
Traditional Instruction	100	3.02	0.57	**15.12**	198	**< .001**	**2.16**

Table 5 presented a mean engagement score of 4.18 (SD = 0.41) for students exposed to differentiated instruction, compared to 3.02 (SD = 0.57) for those under traditional methods. The independent sample t-test yielded $t(198) = 15.12$**,** $p < 0.001$**,** with a very large effect size (Cohen's d = 2.16)**.** This result indicates a highly significant difference in student engagement between the two instructional approaches. Students in DI-based environments showed markedly higher levels of behavioral, emotional, and cognitive engagement. The large effect size suggests that this is not just statistically significant but also practically meaningful. These findings strongly support H_2 — differentiated instruction greatly enhances student engagement compared to traditional lecture-based approaches in Nigerian HEIs.

Hypothesis 3

(H_3): Institutional factors significantly predict the implementation of differentiated instruction.

Table 6. Multiple Regression Analysis of Institutional Predictors of Differentiated Instruction Implementation (H_3)**.**

Predictor	Beta (β)	t-value	p-value	Interpretation
Administrative Policy	0.47	6.21	0.000	Strong, significant predictor
Lecturer Training	0.42	5.38	0.001	Strong, significant predictor
Teaching Resources	0.36	4.84	0.003	Moderate, significant predictor
Model R^2	**0.61**			Model explains 61% variance

Table 6 highlighted a multiple regression analysis where three institutional factors—*administrative policy (β = 0.47), lecturer training (β = 0.42),* and *teaching resources (β = 0.36)*—were all statistically significant predictors of DI implementation ($R^2 = 0.61$**,** $p < 0.001$**).**

The analysis reveals that the successful implementation of differentiated instruction is heavily influenced by institutional-level support**.** The strong predictive values of administrative policy and training suggest that systemic efforts—such as including DI in policy documents and offering continuous professional development—are essential. The 61% variance explained by the model also implies that improving these factors could substantially increase the adoption and sustainability of DI. Thus, H_3 is accepted **—** institutional factors significantly influence the adoption of differentiated instruction**.**

Discussion of Findings

This study explored the role of differentiated instruction (DI) in enhancing student engagement and influencing educational planning and administration in Nigerian higher education institutions. The findings align with a growing body of literature advocating for learner-centered pedagogies as essential tools for improving educational outcomes in diverse classrooms.

The results from Table 1 and Table 4 indicate that the average regular use of DI strategies among lecturers is 24.2%**,** revealing a generally low level of implementation. Although multiple learning modalities (e.g., use of visuals, audio, and kinesthetic tools) were moderately adopted (34%), more complex strategies like tiered assignments (22%) and the use of learning profiles (17%) were rarely used. This suggests a limited institutional and pedagogical commitment to fully embracing differentiated instruction. These findings support previous research by Subban (2006) and Tomlinson (2014)**,** which underscore that effective DI requires deliberate planning, teacher preparedness, and systemic support. A lack of adequate training, large class sizes, rigid curriculum structures, and limited access to teaching resources are often cited barriers (Hall et al., 2003; UNESCO, 2017).

Moreover, the findings imply that Nigerian universities may still rely heavily on traditional one-size-fits-all approaches to teaching, which do not adequately accommodate the diverse learning needs and profiles present in today's higher education classrooms.

Table 2 and Table 5 provide compelling evidence of the positive influence of differentiated instruction on student engagement. Students in DI-based instructional settings reported significantly higher engagement levels (M = 4.18) compared to those in traditional lecture-based environments (M = 3.02), with a very large effect size (Cohen's d = 2.16). This indicates not only statistical significance but also strong practical significance**.** These results are in line with the work of Tomlinson et al. (2003) and Chamberlin and Powers (2010)**,** who found that DI creates a more inclusive, motivating, and responsive learning environment. It enables students to engage more deeply, particularly when instruction is tailored to their individual readiness levels, learning preferences, and interests.

Engagement is a known predictor of student success (Fredricks et al., 2004). Higher engagement levels, as seen in this study, likely translate to better learning outcomes, enhanced retention, and improved academic achievement. This reinforces the value of DI not just as a pedagogical tool but as a strategic component of educational planning aimed at improving quality and inclusiveness in higher education.

Table 3 and Table 6 reveal that administrative policy, lecturer training, and teaching resources are significant predictors of DI implementation, collectively explaining 61% of the variance in practice levels ($R^2 = 0.61$). Administrative policy was the strongest predictor ($\beta = 0.47$), underscoring the importance of institutional vision and support in driving instructional innovation.

These findings echo the conclusions of Kunkel and Nordlie (2021) and Ainscow (2016)**,** who emphasize that meaningful instructional reform must be supported by policy frameworks, professional development programs, and adequate resource allocation**.** Without these structural enablers, individual lecturers may struggle to adopt and sustain differentiated strategies in their classrooms.

Lecturer training ($\beta = 0.42$) also significantly contributed to DI practice. This is consistent with the view of Guskey (2002) that sustained professional learning is critical to changing instructional practices and improving student outcomes. Hence, higher education institutions must invest in regular training, communities of practice, and mentorship programs to build the capacity of lecturers in applying DI effectively. The findings have strong implications for educational planning and administration. Differentiated instruction, when implemented systematically, can enhance teaching effectiveness, support inclusive education, and improve learning outcomes. As such, administrators and policymakers must integrate DI into institutional teaching and learning frameworks, align it with curriculum standards, and ensure it is embedded in staff development programs. Additionally, the provision of teaching resources, technology infrastructure, and class-size management are essential considerations in planning for effective DI deployment. This resonates with UNESCO's (2020) guidelines on inclusive and equitable quality education, which advocate for flexible pedagogies that respond to diverse learner needs.

Conclusion

In conclusion, this study confirms the pedagogical efficacy of differentiated instruction in enhancing student engagement and identifies critical institutional factors influencing its implementation in Nigerian higher education. The results call for renewed emphasis on strategic planning, training, and resourcing to support the broader adoption of DI. Future reforms in higher education must prioritize differentiated pedagogy as a core element of quality and equity in teaching and learning. Based on these results, it was therefore recommended among others that **p**olicy integration should **i**ncorporate DI principles into university strategic and academic planning documents. Capacity building should be **p**rovided through workshops and in-service training for lecturers on DI practices. Additionally, university management should be encouraged to champion inclusive pedagogy through budget and curriculum support as well as establishing systems to track DI adoption and its impact on student outcomes.

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