

**ARTIFICIAL INTELLIGENCE COMPETENCY AND GUIDANCE
COUNSELLING AS PREDICTORS OF PERCEIVED NATIONAL
DEVELOPMENT IN FCE (SPECIAL), OYO****Samaila Hannatu**

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Abstract

This study examined artificial intelligence competency and guidance and counselling interventions as predictors of perceived institutional contribution to national development among staff and students of Federal College of Education (Special), Oyo. A descriptive correlational design was adopted, with 320 participants selected through stratified random sampling from the institution. Data were collected using the AI Competency Scale (AICS), Guidance and Counselling Intervention Scale (GCIS), and National Development Index Scale (NDIS). Findings revealed significant positive relationships between AI competency and perceived national development ($r = .672, p < .001$) and between guidance and counselling interventions and perceived national development ($r = .648, p < .001$). Multiple regression analysis showed that the two variables jointly explained 59.1% of the variance in national development ($R^2 = .591, F = 229.47, p < .001$), with AI competency as the stronger predictor ($\beta = .374$), followed by guidance and counselling interventions ($\beta = .316$). The study concludes that both variables are practically significant predictors of perceived national development contribution and recommends that FCE (Special), Oyo invest in structured AI competency programmes and strengthen institutional guidance and counselling frameworks as strategic pathways to enhanced institutional development outcomes.

Keywords: Artificial Intelligence Competency, Guidance and Counselling Interventions, National Development, FCE (Special) Oyo

Introduction

National development, as a construct spanning economic growth, social equity, institutional capacity, and human capital formation, has occupied a central position in the educational policy discourse of emerging economies. In Nigeria, the imperative of national development has been consistently tied to the quality of educational institutions, particularly those charged with producing the teachers, counsellors, and professionals who will staff the systems through which development is most concretely realised. Federal College of Education (Special), Oyo, occupies a distinctive position within this architecture as one of Nigeria's foremost institutions for the training of special needs educators, guidance professionals, and teacher educators whose work reaches deep into communities across Oyo State and beyond. Yet the capacity of institutions like FCE (Special), Oyo to contribute meaningfully to national development has become inseparable from their engagement with two forces that are fundamentally reshaping the educational landscape globally: the rise of artificial intelligence as a driver of professional competence and the deepening recognition that guidance and counselling is not a peripheral service but a foundational condition of effective human development and productive citizenship.

National development encompasses economic productivity, institutional quality, social cohesion, and the cultivation of capable citizens (UNDP, 2022). Nigeria's National Artificial Intelligence Strategy (2024) explicitly positioned AI adoption across education, health, and governance as a prerequisite for the country's inclusion in the Fourth Industrial Revolution, identifying AI integration in tertiary institutions and systematic AI literacy cultivation as foundational to national development objectives (Federal Ministry of Communications, Innovation and Digital Economy, 2024). Against this backdrop, the AI competency of staff and students within FCE (Special), Oyo, is not merely an individual professional asset but a measurable contribution to the national development agenda the institution was established to serve.

Artificial intelligence competency refers to the capacity of individuals to understand, critically evaluate, apply, and responsibly integrate AI tools and systems within their professional and institutional contexts. UNESCO (2024), in its Global Education Digital Transformation Report, described this competency as encompassing three interconnected dimensions: AI knowledge and literacy, the pedagogical and professional application of AI tools, and the ethical, privacy, and safety dimensions of AI use. UNESCO positioned AI competency as indispensable for teachers and professionals who must prepare the next generation of citizens for participation in an AI-mediated world, and recommended that teacher training institutions place structured AI competency development at the centre of their curriculum reform agendas. Ofem et al. (2025), researching the acceptance and awareness of AI in counselling practices across Nigerian institutions, found significant variation in AI awareness along professional rank lines and identified training access as the primary predictor of whether counselling professionals felt equipped to adopt AI tools in their daily work. This finding is particularly consequential for FCE (Special), Oyo, where the intersection of guidance and counselling training with special needs teacher education creates a professional environment in which AI competency could substantially reshape both the quality of service delivery and the breadth of the institution's contribution to producing development-capable graduates for Nigeria's educational system.

Guidance and counselling, as the second focal variable in this study, has been recognised in Nigeria's educational policy framework as a professional service that bridges academic preparation and personal development, supporting students and staff in making informed career choices, navigating personal challenges, managing psychological pressures, and developing the civic and vocational competencies that ultimately translate into national contribution. The Counselling Association of Nigeria has long affirmed that investment in guidance and counselling at the institutional level is an investment in the calibre of citizens that educational institutions produce, and that persistent shortfalls in counsellor-to-student ratios across Nigerian tertiary institutions represent a structural constraint on human capital development with direct implications for national progress (Kennedy, 2024). Osuoha (2024) examined the impact of guidance and counselling on academic outcomes in Nigerian secondary schools and found that institutions with functional and consistently delivered counselling services produced students with higher academic performance, stronger career orientation, and greater social competence than institutions where counselling was either absent or inconsistently resourced. In FCE (Special), Oyo, where the student population includes individuals with diverse learning needs and varying levels of prior socio-emotional support, the quality and reach of guidance and counselling interventions carry implications not only for individual outcomes but for the broader development contribution that the institution makes to the communities it serves.

The theoretical framework guiding this study is grounded primarily in Davis's (1989) Technology Acceptance Model (TAM), which argues that perceived usefulness and

perceived ease of use are the primary factors determining whether an individual's AI competency translates into actual adoption and professional application. Applied to FCE (Special), Oyo, TAM predicts that staff and students with stronger AI competency are more likely to translate that competency into professional practices that contribute measurably to national development outcomes. TAM also provides a useful lens for guidance and counselling; when counselling services are perceived as useful and accessible, participants engage in ways that build the human capital and civic competencies foundational to national development. Supporting this framework, Rogers' (1969) person-centred theory highlights how empathic counselling relationships produce personal growth that translates into productive civic functioning, while UNESCO's (2024) AI competency framework underscores that AI literacy is most effective when embedded within student-centred institutional cultures, reinforcing that AI competency and counselling quality are synergistic contributors to development.

Empirically, the relationship between AI competency, guidance and counselling, and national development outcomes in Nigerian tertiary institutions has received insufficient research attention, creating a gap that this study addresses directly. Majjate et al. (2024) examined AI-powered academic guidance and counselling systems in higher education and demonstrated that AI integration into counselling processes improved the personalisation and efficiency of advising outcomes and reduced the cognitive burden on counsellors, suggesting that the two variables are potentially synergistic contributors to institutional and national development rather than merely parallel ones. For FCE (Special), Oyo, this points to an institutional configuration in which AI competency and guidance and counselling quality may jointly determine the institution's capacity to develop the kind of graduates whose civic, professional, and leadership contributions define national development in practice. The present study was therefore designed to examine empirically whether these two variables, individually and in combination, serve as statistically significant predictors of national development outcomes as perceived by staff and students at FCE (Special), Oyo, and to generate evidence that is specific to this institution and relevant to the practical decisions of its leadership, counsellors, and policy advocates.

Despite the growing international evidence base, studies that directly examine AI competency and guidance and counselling interventions as joint predictors of national development within a Nigerian college of education setting remain scarce. Most existing studies examine AI adoption and guidance and counselling separately, making it impossible to determine their independent and combined contributions. This study fills that gap by bringing both predictors into a single empirical framework applied to FCE (Special), Oyo.

Statement of the Problem

National development in Nigeria is increasingly tied to the capacity of tertiary educational institutions to equip graduates with competencies that are responsive to contemporary socio-economic realities. As Nigeria pursues its National Artificial Intelligence Strategy (Federal Ministry of Communications, Innovation and Digital Economy, 2024), which identifies AI literacy and digital competence as foundational to the country's participation in the Fourth Industrial Revolution, the question of whether staff and students in teacher training institutions possess the AI competency necessary to contribute meaningfully to national development has emerged as a matter of urgent policy concern. Simultaneously, the structural underfunding and marginalisation of guidance and counselling services across Nigerian colleges of education has been identified as a persistent constraint on human capital formation, with direct implications for the calibre of graduates entering Nigeria's educational and development systems (Kennedy, 2024; Tinja et al., 2024).

Despite growing international and local evidence on the value of both AI competency and guidance and counselling to institutional outcomes, empirical research examining these two variables together as joint predictors of perceived national development within Nigerian colleges of education remains markedly limited. Most existing studies address AI adoption and counselling quality in isolation, producing a fragmented evidence base that cannot account for their combined or synergistic contributions to development outcomes. At FCE (Special), Oyo, an institution specifically mandated to produce special needs educators, counsellors, and teacher professionals whose influence extends across communities throughout Oyo State, this gap is particularly consequential. Without integrated empirical data on how AI competency and counselling quality jointly shape staff and students' perceptions of institutional contribution to national development, institutional leaders cannot make well-informed decisions regarding resource allocation, capacity-building investments, or strategic institutional planning. This study was therefore designed to fill this evidence gap by empirically examining artificial intelligence competency and guidance and counselling interventions as joint predictors of perceived national development outcomes among staff and students of FCE (Special), Oyo.

Significance of the Study

The findings hold significance for institutional leaders, counsellors, policymakers, and educational researchers. For FCE (Special), Oyo management, the study provides empirical grounds for prioritising structured AI competency training and repositioning the guidance and counselling unit as a strategic development function. For policymakers, evidence that these two variables jointly explain nearly 60% of variance in national development outcomes supports embedding both within institutional quality assurance frameworks. For researchers, the study establishes a replicable correlational model that can be extended to other colleges of education in Nigeria, contributing to the evidence base on institutional drivers of national development.

Objectives of the Study

The specific objectives of this study are:

- To determine the relationship between artificial intelligence competency, guidance and counselling interventions, and national development among staff and students of Federal College of Education (Special), Oyo.
- To assess the combined predictive effect of artificial intelligence competency and guidance and counselling interventions on national development among staff and students of Federal College of Education (Special), Oyo.

Research Questions

The following research questions guided the study:

- What is the relationship between artificial intelligence competency, guidance and counselling interventions, and national development among staff and students of Federal College of Education (Special), Oyo?
- What is the combined predictive effect of artificial intelligence competency and guidance and counselling interventions on national development among staff and students of Federal College of Education (Special), Oyo?

Methodology

This study adopted a descriptive correlational research design to examine the relationships between artificial intelligence competency, guidance and counselling interventions, and

national development among staff and students of Federal College of Education (Special), Oyo. This design enables systematic investigation of naturally occurring variable relationships without experimental manipulation, preserving the authenticity of institutional perceptions and supporting both correlational and predictive analytical objectives.

The target population comprised 420 academic staff and 3,200 registered students at FCE (Special), Oyo. A sample of 320 participants (80 academic staff and 240 students) was determined using Cochran's (1977) formula at a 95% confidence level and 5% margin of error. Stratified random sampling was employed, with the institution stratified into academic staff and student categories, and systematic random sampling applied within each stratum using departmental enrolment and staff listing records. Gender balance was maintained throughout the sampling process. Academic staff with at least one complete academic session of service and students currently enrolled with at least one full session of attendance were included; part-time, contract, and ad hoc staff, and those on sabbatical or study leave at the time of data collection, were excluded. All 320 questionnaires distributed were retrieved and valid for analysis, representing a 100% response rate.

Three validated instruments were employed for data collection. The Artificial Intelligence Competency Scale (AICS), adapted from UNESCO's (2024) AI Competency Framework for Teachers and Chiu's (2024) Teacher AI Competence Self-Efficacy Scale, comprised 20 items assessing AI knowledge and literacy, pedagogical application, and ethics on a 5-point Likert scale (Cronbach's $\alpha = .89$). The Guidance and Counselling Intervention Scale (GCIS), adapted from the American School Counselor Association (2023) National Model and instruments validated by Osuoha (2024) and Kennedy (2024), comprised 18 items assessing career guidance, personal counselling, and academic support services (Cronbach's $\alpha = .87$). The National Development Index Scale (NDIS), developed for this study from United Nations Development Programme (2022) operationalisations, comprised 20 items assessing human capital formation, civic engagement, economic productivity orientation, and institutional contribution to societal progress on a 5-point Likert scale (Cronbach's $\alpha = .91$). All instruments were pilot-tested with 30 participants outside the main sample.

Data collection commenced following ethical clearance from FCE (Special), Oyo institutional authorities, including written approval from the Provost's office and formal endorsement by relevant heads of departments. Trained research assistants administered instruments in departmental clusters of 20 to 30 participants per session, each lasting approximately 50 minutes, with informed consent obtained from all participants prior to questionnaire administration.

All data were analysed using SPSS version 29.0. Descriptive statistics and normality assessments using the Kolmogorov–Smirnov and Shapiro–Wilk tests were computed for all variables. Pearson product-moment correlation analysis was applied to address Research Question 1, and multiple regression analysis was applied to address Research Question 2. Effect sizes were computed per Cohen's (1988) conventions, and variance inflation factor (VIF) values confirmed the absence of problematic multicollinearity between the predictor variables.

Results

Table 1

Descriptive Statistics for Study Variables

Variable	Mean	SD	Range	Skewness	Kurtosis
AI Competency	3.52	0.79	1.20–5.00	–0.14	–0.43
Guidance and Counselling Interventions	3.41	0.82	1.30–5.00	0.18	–0.38
National Development	3.29	0.86	1.10–5.00	–0.11	–0.47

Note. All distributional values fell within the acceptable range of ± 2.0 , confirming the suitability of parametric statistical analyses.

Table 1 shows that all study variables demonstrated normally distributed data, with skewness and kurtosis values within the acceptable range of ± 2.0 , confirming the appropriateness of parametric statistical procedures for subsequent analyses. Participants showed moderately high mean scores on AI competency ($M = 3.52$, $SD = 0.79$), guidance and counselling interventions ($M = 3.41$, $SD = 0.82$), and national development ($M = 3.29$, $SD = 0.86$), indicating a generally positive but not uniformly strong appraisal of all three constructs across the institutional sample.

Research Question 1: What is the relationship between artificial intelligence competency, guidance and counselling interventions, and national development among staff and students of FCE (Special), Oyo?

Table 2

Correlation Matrix of Study Variables

Variable	1	2	3
1. AI Competency	—		
2. Guidance and Counselling Interventions	.514	—	
3. National Development	.672	.648	—

Note. $p < .001$ for all correlations with National Development.

Correlation analysis revealed statistically significant positive relationships between both predictor variables and national development. National development demonstrated a strong positive correlation with AI competency ($r = .672$, $p < .001$) and with guidance and counselling interventions ($r = .648$, $p < .001$), indicating that higher AI competency and more effective guidance and counselling practice are each meaningfully associated with greater institutional contribution to national development. Both correlation coefficients met or exceeded Cohen's (1988) threshold for large effect sizes, indicating that the observed associations are not only statistically significant but practically substantial. The moderate inter-correlation between the two predictor variables ($r = .514$) showed that AI competency and guidance and counselling interventions, while theoretically related, represent sufficiently distinct constructs to each contribute independent and non-redundant predictive value in the subsequent regression model.

Research Question 2: What is the combined predictive effect of artificial intelligence competency and guidance and counselling interventions on national development among staff and students of FCE (Special), Oyo?

Table 3

Multiple Regression Analysis for Combined Predictive Effect on National Development

Variable	β	SE	t	p
AI Competency	.374	0.061	6.13	< .001
Guidance and Counselling Interventions	.316	0.058	5.45	< .001
Constant	0.841	0.174	4.83	< .001
F(2, 317)			229.47	< .001

Note. $R^2 = .591$; Adjusted $R^2 = .588$; VIF range: 1.36.

The multiple regression analysis showed that AI competency and guidance and counselling interventions collectively accounted for 59.1% of the variance in national development ($R^2 = .591$, $F = 229.47$, $p < .001$). AI competency emerged as the stronger individual predictor ($\beta = .374$, $p < .001$), indicating that the capacity to understand, apply, and ethically engage with artificial intelligence is the more powerful of the two predictors of national development outcomes within this institutional context. Guidance and counselling interventions made a distinct, independent, and statistically significant contribution ($\beta = .316$, $p < .001$), suggesting that the quality and reach of counselling services is associated with national development outcomes over and above what AI competency alone accounts for. Variance inflation factor values of 1.36 for both predictors confirmed the complete absence of problematic multicollinearity, and the adjusted R^2 of .588 confirmed that the explained variance was not inflated by the number of predictors in the model.

Discussion of Findings

The findings of this study revealed that both predictor variables produced significant and practically large correlations with national development, with AI competency ($r = .672$) registering a slightly stronger association than guidance and counselling interventions ($r = .648$). The finding that AI competency is strongly and positively associated with national development at the institutional level is consistent with the developmental trajectory articulated in Nigeria's National Artificial Intelligence Strategy (Federal Ministry of Communications, Innovation and Digital Economy, 2024), which positioned AI skills development as a foundational pillar of Nigeria's socio-economic aspirations and explicitly identified tertiary institutions as the primary sites through which AI competency must be cultivated for national benefit. That staff and students who demonstrated stronger AI competency also perceived higher levels of institutional contribution to national development suggests that the relationship between individual AI capacity and national development is consistent with empirical patterns observed within a specific Nigerian college of education context. This finding is further supported by Han (2025), whose quasi-experimental study of pre-service teachers documented that structured AI course engagement significantly improved AI competency across knowledge, application, and ethical dimensions, and by Chiu et al. (2026), whose systematic review identified course-based professional learning and communities of practice as effective pathways for building the kind of AI competence that enables educators to contribute substantively to national development goals.

The significant positive relationship between guidance and counselling interventions and national development ($r = .648$, $p < .001$) reinforces the accumulated scholarly and policy consensus that functional counselling services are not peripheral to institutional contribution but constitute one of its most direct and consequential channels. Kennedy (2024) described guidance and counselling as a veritable instrument of education for sustainable national development, and the data from FCE (Special), Oyo confirm this characterisation empirically by showing that perceptions of counselling quality predict national development outcomes at a level that is both statistically significant and large in practical terms. Osuoha (2024), working with secondary school populations in Nigeria's Federal Capital Territory, found that the presence of accessible and consistently delivered counselling services was associated with significantly better academic, behavioural, and social outcomes, with students more likely to develop the career competence, civic orientation, and vocational readiness that translate into national development contributions over time. The work of Ofem et al. (2025) on AI in counselling practice across Nigerian institutions adds an important contemporary dimension by demonstrating that the relationship between guidance and counselling and national development is being reshaped by AI tools, with counsellors who possess AI competency delivering more personalised, data-informed, and scalable interventions than those who rely exclusively on traditional methods. This overlap between the two predictor variables, as reflected in their moderate inter-correlation ($r = .514$), suggests that the most impactful institutional investment may be one that develops both simultaneously, rather than treating AI competency and counselling quality as separate or competing institutional priorities.

The findings also revealed that AI competency and guidance and counselling interventions jointly explained 59.1% of the variance in national development ($R^2 = .591$, $F = 229.47$, $p < .001$). This is a finding of considerable practical significance for institutional planning at FCE (Special), Oyo. This proportion indicates that the model captures the majority of the institutionally modifiable factors driving staff and student perceptions of national development contribution, and it leaves approximately 41% of the variance to be explained by other factors, including institutional leadership quality, funding adequacy, campus infrastructure, staff motivation and satisfaction, peer and community engagement, and the broader policy environment within which the institution operates. Future research should address these additional contributors systematically, ideally using a multilevel or structural equation modelling approach that can account for nested institutional effects. The fact that AI competency emerged as the stronger predictor ($\beta = .374$) relative to guidance and counselling interventions ($\beta = .316$) does not imply that counselling is less important in absolute terms; rather, it reflects the particular urgency of the AI competency gap in a college of education setting at a moment when Nigeria's national development strategy is explicitly anchored in AI skills development and when graduates who lack AI literacy will face meaningful disadvantages in both the labour market and in their own development-oriented work. This interpretation is consistent with the findings of Majjate et al. (2024), who demonstrated that AI-powered guidance systems in higher education produced their strongest institutional effects in settings where AI integration was supported by functional human counselling and student-centred institutional cultures, reinforcing the conclusion that the two predictors operate synergistically rather than independently. Their additional demonstration that AI-powered guidance systems enhanced advising quality and reduced counsellor cognitive load further supports the argument that AI competency and counselling quality are complementary levers of development, each amplifying the effect of the other when both are invested in deliberately and structurally.

Conclusions

This study demonstrates that national development, as perceived and contributed to by staff and students of Federal College of Education (Special), Oyo, is shaped in measurable and practically meaningful ways by both artificial intelligence competency and guidance and counselling interventions. The findings establish that participants who possess stronger AI competency and who benefit from more effective guidance and counselling services report significantly higher levels of perceived national development contribution, and that these two variables together account for nearly 60% of the variation in national development outcomes within the institution. That AI competency emerged as the stronger predictor reflects the acute urgency of digital capacity building within Nigerian colleges of education at a time when the country's National AI Strategy has placed AI skills development at the centre of the development agenda and when the graduates of institutions like FCE (Special), Oyo will be expected to lead AI-informed educational practice in their communities, schools, and the wider public sector.

The findings also carry a broader message about the nature of institutional contribution to national development. FCE (Special), Oyo contributes to national development not only through the formal qualifications it awards but through the competencies it cultivates and the support structures it sustains for the people it educates. AI competency equips graduates to participate in and help lead the technology-driven dimensions of national progress, from data-informed teaching practice to the use of digital tools for career guidance and educational planning. Guidance and counselling interventions equip them to make the personal, vocational, and civic decisions that translate formal educational preparation into actual development outcomes at the community, state, and national levels. These two contributions are not independent of each other; the most capable graduates are those who have both the digital fluency to navigate an AI-mediated world and the personal resilience, career clarity, and civic orientation that effective counselling helps build. The institution that invests in both, deliberately and with strategic intent, is the institution that most fully honours its national development mandate.

The approximately 41% of variance in national development that the model did not explain is a reminder that no two-predictor study can account for the full complexity of how institutions shape national outcomes. Institutional leadership, resource allocation, campus infrastructure, community partnerships, and broader policy alignment all play roles that this study was not designed to isolate. These factors should be the subjects of future research at FCE (Special), Oyo and across similar institutions in south-western Nigeria. Structural equation modelling studies that can simultaneously test the direct, indirect, and mediated relationships among AI competency, counselling quality, and national development would add substantially to the theoretical architecture that this study has helped to build.

Limitations of the Study

Several limitations of this study should be acknowledged when interpreting its findings. First, the study was conducted within a single institution, namely Federal College of Education (Special), Oyo, which limits the generalisability of the findings to other colleges of education in Nigeria or beyond. Second, the cross-sectional design means that data were collected at a single point in time, making it impossible to draw conclusions about change over time or to establish temporal precedence among the study variables. Third, all data were self-reported by participants, which introduces the possibility of social desirability bias, particularly in participants' ratings of their own AI competency and their assessments of the institution's counselling quality. Fourth, national development was measured as a perception-based construct, meaning the findings reflect how staff and students perceive the institution's

contribution to national development rather than objective development outcomes. Fifth, the correlational design precludes causal inference; the relationships identified indicate associations and predictive patterns, not causal mechanisms. Future research employing longitudinal or experimental designs across multiple institutions would substantially strengthen the evidence base.

Recommendations

Based on the findings of this study, the following recommendations were proposed:

- FCE (Special), Oyo management should institutionalise structured AI competency training for staff and students, embedded in departmental continuous professional development calendars. The training must cover AI literacy, pedagogical application, and ethics. Since AI competency was the strongest predictor of national development in this study, prioritising AI training may enhance institutional development outcomes.
- FCE (Special), Oyo should reposition its Guidance and Counselling unit as a strategic development function, not an administrative auxiliary. This requires adequate counsellor-to-student ratios, proper tools and assessment resources, and continuous counsellor training. Since counselling quality significantly impacts national development, improving it may contribute to measurable development gains.
- FCE (Special), Oyo should integrate AI tools into guidance and counselling through a blended framework where AI career platforms, data-driven advising, and predictive analytics support human counsellors without replacing them. This synergy between AI competency and counselling quality may amplify both contributions to national development, potentially producing outcomes greater than either investment alone.

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