Greener Journal of Educational Research
Vol. 15(1), pp. 102-113, 2025
ISSN: 2276-7789

https://gjournals.org/GJER
DOI: https://doi.org/10.15580/GJER.2025.1.070225107

An Assessment of Human and Material Resources in Plateau State Primary and Early Childhood Care Education (ECCE) Schools

Dr. Katniyon, Henry David; Dr. Duguryil Zipporah Pewat; Mr. Gyitbe Lapnen Yoksina

Tetfund Centre of Excellence in Innovative teaching and learning Federal College of Education Pankshin.

ABSTRACT

This study assessed human and material resources in Plateau State primary and early childhood care education (ECCE) schools through a comprehensive evaluation of teacher competencies and resource utilization. Using a survey approach, the research employed the Teacher Skills Assessment Questionnaire (TSAQ) to examine six key domains: pedagogical knowledge, classroom management, assessment competencies, communication skills, ICT proficiency, and professional attributes among 100 teachers. The findings revealed significant disparities in teacher competencies across different skill areas. Teachers show proficiency viz pedagogical knowledge (M=3.66), classroom management (M=3.60), and professional attributes (M=3.55), indicating strong foundational teaching skills. However, critical deficiencies emerged in ICT proficiency (M=1.43), representing a severe gap in digital literacy essential for 21st-century education. Assessment competencies scored moderately (M=3.23), with particular weaknesses in using assessment data for instructional improvement. Resource utilization analysis indicated that teachers show remarkable adaptability in resource-constrained environments (M=3.80), but institutional support systems remain inadequate. ECCE and primary educators possess little training for effective resource use (M=2.41) and little or no community contribution (M=2.47). Despite these challenges, teachers maintained high professional commitment and demonstrated resilience in adapting their teaching practices.

ARTICLE'S INFO

Article No.: *070225107*
Type**:** *Research*
Full Text: *PDF, PHP, EPUB, MP3*
DOI: ***10.15580/GJER.2025.1.070225107***

Accepted: *03/07/2025*
Published: *09/07/2025*

Keywords: *Human resources, Material resources*

Corresponding Author

Dr. Katniyon, Henry David

E-mail: *katniyonhenry@gmail.com*

Article's QR code

INTRODUCTION

ECCE and primary education in Nigeria form the foundation of every child's educational journey, shaping cognitive development, social skills, and future academic success. The quality of these educational experiences is seriously affected by the availability and effective utilization of human and material resources (Yin P. et al. (2023). The study consistently demonstrates that educational institutions with adequate human and material resources show significantly higher achievement rates in literacy and numeracy assessments than under-resourced schools. Human resources in educational institutions include teachers, administrative staff, and support personnel, all essential for administering quality education. Material resources include physical infrastructure, learning materials, technological tools, and other instructional resources that facilitate teaching and learning processes.

Recent global education frameworks, including UNESCO's Education 2030 Framework for Action, emphasize the importance of resource allocation in achieving quality education (UNESCO, 2015). Sustainable Development Goal 4 specifically targets ensuring inclusive and equitable education and promoting lifelong learning opportunities by 2030 (Opsen, C. (2021). Despite this recognition, significant disparities exist in the distribution and quality of human and material resources across different socioeconomic contexts, geographical locations, and school types. These disparities directly impact educational outcomes and perpetuate inequalities in educational opportunities (OECD, 2019; World Bank, 2018).

The COVID-19 pandemic further exposed and exacerbated existing resource gaps worldwide in early childhood and primary education systems. School closures and shifts to remote learning revealed serious deficiencies in technological infrastructure, teacher preparedness for digital instruction, and home learning environments (UNESCO, 2020; World Bank, 2020). The pandemic response was particularly challenging in developing countries, where resource limitations significantly impacted the ability to implement effective remote learning solutions. As ECCE and primary schools in Plateau State recover and rebuild, there is an urgent need to reassess resource allocation strategies to ensure resilience against future disruptions while addressing persistent quality and equity challenges.

Current educational policy dialogues increasingly recognize that resource assessments must move beyond simple quantitative measures of inputs (such as teacher-student ratios or per-pupil expenditure) toward more comprehensive evaluations that consider quality, relevance, and effective utilization (Hanushek, 2016; Jackson et al., 2016). This shift shows that the presence of resources does not guarantee improved educational outcomes; instead, how these resources are deployed, integrated, and optimized within specific educational contexts ultimately determines their impact.

Additionally, the rapid advancement of educational technologies and pedagogical innovations demands continuous updating of human capabilities and material infrastructure. Teacher professional development, adaptive learning technologies, and flexible learning environments are becoming increasingly important components of resource planning in early childhood and primary education settings (König et al., 2020; Voogt et al., 2017). Research indicates that schools with integrated technology plans that address infrastructure and teacher capacity building are significantly more likely to utilize digital resources effectively for improved learning outcomes.

This study addresses the critical need for comprehensive assessment frameworks to guide evidence-based decisions about resource allocation in early childhood and primary education, contributing to improved educational quality and equity across diverse contexts.

Statement of the Problem

Despite widespread recognition of the importance of adequate human and material resources in primary and early childhood education, there remains a significant gap in our understanding of how these resources interact within specific educational contexts to impact learning outcomes. Current assessment approaches often fail to capture the complexity of resource dynamics in educational settings, focusing instead on isolated quantitative metrics that provide limited insight into quality and effectiveness. The problem is multifaceted and can be articulated along several dimensions:

First, existing resource assessment frameworks treat human and material resources as separate entities, neglecting their interdependence and combined impact on educational quality. For instance, even well-qualified teachers cannot maximize their effectiveness without appropriate instructional materials, while sophisticated learning technologies yield limited benefits without educators skilled in their pedagogical integration (Tondeur et al., 2017; Vongkulluksn et al., 2018).

Second, resource assessments frequently emphasize inputs overutilization and impact. Schools should be evaluated based on teacher qualifications or textbook availability without adequately considering how effectively these resources are deployed or whether they align with curriculum objectives and student needs (Glewwe & Muralidharan, 2016).

Third, resource assessments often fail to account for contextual factors influencing resource effectiveness, including school culture, leadership quality, parental involvement, and community characteristics. This decontextualized approach limits the validity and utility of assessment findings for decision-making (Day et al., 2016; Leithwood et al., 2020).

Fourth, resource assessment frameworks do not sufficiently consider equity considerations. Standard

metrics may obscure significant disparities in resource quality and accessibility among different student populations, perpetuating educational inequalities (Reardon, 2016).

Finally, rapid educational transformations—accelerated by technological innovations and changing workforce demands—require dynamic resource assessment approaches to anticipate future needs rather than document current states. Many existing frameworks lack this forward-looking orientation (Fullan & Scott, 2014).

These limitations in current assessment approaches impede effective resource planning, allocation, and utilization in primary and early childhood education settings. Education systems struggle to make informed decisions that optimize resource investments to enhance educational quality and equity without comprehensive, contextually sensitive assessment frameworks.

Purpose of the Study

This study aims to comprehensively assess the current state of human and material resources in primary and early childhood education (ECCE) settings in Plateau State. Specifically, the research evaluates teacher competencies across multiple dimensions, including pedagogical knowledge, classroom management skills, assessment practices, communication abilities, ICT proficiency, and professional attitudes.

The study further examines resource utilization and its impact on teaching effectiveness, particularly how teachers adapt their practices within resource-constrained environments. By investigating these interconnected aspects of educational resources, the research intends to identify critical gaps in teacher skills and resource management that may hinder educational quality.

The findings will inform evidence-based recommendations for targeted professional development programs, resource allocation strategies, and policy interventions necessary to enhance the quality of primary and early childhood education. Ultimately, this research contributes to the broader goal of ensuring that all children have access to competent teachers and adequate learning resources essential for quality educational experiences.

Research Objectives

1. To develop a comprehensive conceptual framework that identifies and categorizes the essential human and material resources required for quality primary and early childhood education across diverse contexts.
2. To design and validate integrated assessment instruments that measure both the quantitative and qualitative dimensions of human and material resources in educational settings.
3. To investigate the interrelationships between human and material resources and their combined impact on teaching practices and learning environments in primary and early childhood education.
4. To analyze how contextual factors, including school leadership, organizational culture, community characteristics, and policy environments, influence the effectiveness of human and material resources.
5. This study examines disparities in resource quality, accessibility, and utilization across different socioeconomic contexts, geographical locations, and student populations.
6. To identify innovative approaches and best practices in resource optimization that enhance educational quality and equity in resource-constrained environments.
7. To develop evidence-based recommendations for policymakers, administrators, and educators regarding resource planning, allocation, and management strategies that support quality improvements in primary and early childhood education.

Research Questions

1. What is the current level of pedagogical knowledge and extent of practice perceived by Plateau State primary and ECCE teachers?
2. What is the level of organization and skill that ECCE and primary school teachers possess in classroom management?
3. To what extent do the ECCE and primary school teachers assess and evaluate competencies?
4. What are ECCE and primary teachers' communication and interpersonal skills in Plateau State?
5. What is the ICT proficiency and digital literacy level of ECCE and primary teachers in Plateau State?
6. What is the ECCE and primary school teacher's attitude to their work?
7. What level of resource utilization and its impact do ECCE and primary school teachers possess and exhibit?

LITERATURE REVIEW

Conceptual Framework

The conceptualization of teacher skills in primary education has evolved significantly over the past decade. Contemporary research has adopted more comprehensive frameworks that recognize the multidimensional nature of teaching competence. Shulman's (1987) foundational work on pedagogical content knowledge continues to influence current understanding, emphasizing that effective teaching

requires the intersection of content knowledge, pedagogical knowledge, and learners' knowledge.

Recent research has expanded this framework to include technological pedagogical content knowledge (TPACK), recognizing the increasing importance of technology integration in education (Mishra & Koehler, 2006; Voogt et al., 2017). Modern teacher competency frameworks typically encompass multiple domains, including pedagogical knowledge, classroom management, assessment competencies, communication skills, technological literacy, and professional attributes.

Empirical evidence regarding teacher skills in primary education presents a complex picture globally. International assessments such as TIMSS and PIRLS have highlighted significant variations in teacher quality across different countries and regions (Mullis et al., 2020). Research consistently shows that teacher quality is among the most important in-school factors affecting student achievement (Hanushek, 2011; Rivkin et al., 2005).

Several factors influence teacher skill levels, including the quality of pre-service training, professional development opportunities, and school-based support systems. Research indicates that ongoing professional development strongly correlates with improved teaching practices and student outcomes (Darling-Hammond et al., 2017; Garet et al., 2001).

Research on teacher skill development highlights formal and informal professional growth pathways. Effective professional development programs share specific characteristics: they are sustained over time, focus on subject-matter content, include active learning opportunities, and are coherent with other learning activities (Desimone, 2009; Garet et al., 2001).

School-based professional learning communities have emerged as particularly effective mechanisms for teacher development, providing opportunities for collaboration, reflection, and shared teaching (DuFour et al., 2016). However, implementation challenges remain, including time constraints, limited resources, and insufficient support for collaborative learning activities.

The qualification requirements for early childhood educators have gained increasing attention in recent years, reflecting growing recognition of the importance of early childhood education. Research demonstrates strong associations between teacher qualifications and program quality in early childhood settings (Pianta et al., 2005; Sylva et al., 2004).

International frameworks such as those developed by NAEYC (National Association for the Education of Young Children) emphasize the importance of specialized preparation for early childhood educators, including knowledge of child development, family systems, and developmentally appropriate practices (NAEYC, 2020).

Research consistently shows significant variations in early childhood teacher qualifications across different contexts. In many developing countries, many early childhood educators lack the specialized preparation recommended by international standards (UNESCO, 2015).

Studies have documented positive relationships between teacher qualifications and quality indicators in early childhood programs, including more responsive interactions with children, more developmentally appropriate activities, and better outcomes (Kelley & Camilli, 2007).

METHODOLOGY

This study employs a survey design to assess primary and ECCE teachers' perceptions of the challenges of innovation and technology integration as they relate to teacher effectiveness.

The target population consisted of primary and ECCE teachers in Plateau State. Stratified random sampling was used to select participants, ensuring representation across urban, semi-urban and rural areas. Based on power analysis (Cohen, 1988) and considering the population size, a sample of 100 teachers from across the 17 LGAs of Plateau State.

The instrument used for data collection was a five-point Likert scale titled "Teacher Skills Assessment Questionnaire (TSAQ)" developed by the researchers. It is a well-structured questionnaire based on the Nigerian Professional Standards for Teachers framework, measuring classroom management, content knowledge, teaching methods, assessment practices and professional conduct. The data was analyzed using descriptive statistics (frequency counts, means and standard deviation).

RESULTS

Research Question 1

What is the current level of pedagogical knowledge and extent of practice perceived by the teachers?

Table 1: Mean, SD and proficiency level measuring ECCE and primary school teachers' perception **of** pedagogical Knowledge and extent of Practice**.**

S/No	*Skill Area*	*VLP(1)*	*LP(2)*	*MP(3)*	*HP(4)*	*VHP(5)*	*Mean*	*SD*	*Proficiency Level*
1	I know the subject matter content	1	3	17	60	20	3.88	0.78	High
2	I understand child development principles	10	9	35	29	17	3.34	1.16	Moderate
3	I can design age-appropriate learning activities	2	6	33	34	25	3.74	0.97	High
4	I possess skills in differentiated instruction	15	20	26	19	20	3.09	1.34	Moderate
5	I apply appropriate teaching methods	5	4	10	21	60	4.27	1.10	High
Overall Domain							**3.66**	**1.15**	**High**

Teachers demonstrated the highest proficiency in applying appropriate teaching methods (4.27) and knowledge of subject matter (3.88) while showing moderate proficiency in differentiated instruction (3.09). This suggests that teachers are confident in content knowledge but less equipped to address diverse learning needs.

Research Question 2

What is the level of organization and skill that ECCE and primary school teachers possess in their classroom management?

Table 2: Mean, SD and proficiency level measuring ECCE and primary school teachers' perception of organization and classroom management.

S/No	*Skill Area*	*VLP(1)*	*LP(2)*	*MP(3)*	*HP(4)*	*VHP(5)*	*Mean*	*SD*	*Proficiency Level*
1	I create positive learning environments	5	15	10	20	40	3.85	1.31	High
2	I manage student behavior effectively	7	7	11	25	50	4.04	1.25	High
3	I organize classroom space and materials	11	9	18	26	26	3.57	1.35	High
4	I manage my time during lessons	14	18	20	21	27	3.29	1.40	Moderate
5	I establish and maintain classroom routines	18	14	21	20	27	3.24	1.45	Moderate
Overall Domain							**3.60**	**1.37**	**High**

Teachers reported the highest competence in managing student behavior (4.04) and creating positive learning environments (3.85). Time management and establishing routines scored lowest, indicating areas for professional development.

Research Question 3

To what extent do the ECCE and primary school teachers assess and evaluate competencies?

Table 3: Mean, SD and proficiency level evaluating teachers' assessment modules.

S/No	Skill Area	VLP(1)	LP(2)	MP(3)	HP(4)	VHP(5)	Mean	SD	Proficiency Level
1	I design appropriate assessment tools	9	19	19	25	28	3.44	1.31	Moderate
2	I conduct formative assessments	16	21	13	24	29	3.26	1.45	Moderate
3	I interpret assessment results	16	13	21	35	15	3.20	1.30	Moderate
4	I provide constructive feedback to students	11	26	24	14	25	3.16	1.35	Moderate
5	I use assessment data to improve instruction	19	16	23	19	23	3.11	1.43	Moderate
Overall Domain							**3.23**	**1.37**	**Moderate**

Assessment competencies generally scored lower than pedagogical knowledge and classroom management. The ability to use assessment data for instructional improvement (3.11) scored lowest, suggesting a need for training in data-driven instructional practices.

Research Question 4

What are the communication and interpersonal skills of ECCE and primary teachers in Plateau State?

Table 4: Mean, SD and proficiency level evaluating communication and interpersonal skills possess by ECCE and primary teachers in Plateau State

S/No	Skill Area	VLP(1)	LP(2)	MP(3)	HP(4)	VHP(5)	Mean	SD	Proficiency Level
1	I always make sure to explain concepts to students clearly	7	7	26	32	27	3.66	1.16	High
2	I effectively communicate with parents/guardians	21	10	23	22	24	3.18	1.46	Moderate
3	I usually collaborate with colleagues	25	27	18	16	14	2.67	1.38	Moderate
4	I possess active listening skills	11	20	15	25	29	3.18	1.47	Moderate
5	I possess conflict-resolution abilities	18	20	13	24	25	3.18	1.47	Moderate
Overall Domain							**3.22**	**1.40**	**Moderate**

Teachers reported highest proficiency in explaining concepts to students (3.66) but significantly lower ability in collaborating with colleagues (2.67). This suggests potential isolation in professional practice that could hinder resource sharing and collective problem-solving.

Research Question 5

What is the ICT proficiency and digital literacy level of ECCE and primary teachers in Plateau State?

Table 5: Mean, SD and proficiency level evaluating ICT proficiency and digital literacy

S/No	*Skill Area*	*VLP(1)*	*LP(2)*	*MP(3)*	*HP(4)*	*VHP(5)*	*Mean*	*SD*	*Proficiency Level*
1	I have basic computer operation skills	61	13	6	10	10	1.95	1.40	Low
2	I make use of educational software/applications	80	10	3	4	3	1.40	0.95	Very Low
3	I integrate technology into teaching	79	9	2	5	5	1.48	1.09	Very Low
4	I make use of digital content creation for teaching	82	18	0	0	0	1.18	0.38	Very Low
5	I observe online safety and ethical digital practices	88	12	0	0	0	1.12	0.33	Very Low
Overall Domain							**1.43**	**0.95**	**Very Low**

ICT proficiency represents the most significant skills gap among teachers. With means ranging from 1.12 to 1.95, teachers report very low competency in all digital literacy areas. This is particularly concerning, given the increasing importance of technology in education globally.

Research Question 6

What is the teacher's attitude to their work?

Table 6: Mean, SD and proficiency level of teacher's attitudes to their work

S/No	*Skill Area*	*VLP(1)*	*LP(2)*	*MP(3)*	*HP(4)*	*VHP(5)*	*Mean*	*SD*	*Proficiency Level*
1	I adhere to the professional code of conduct	6	17	22	29	26	3.52	1.22	High
2	I am committed to continuous professional development	6	13	22	28	31	3.65	1.22	High
3	I practice reflection and self-improvement	10	6	23	32	29	3.64	1.24	High
4	I possess professional relationships with stakeholders	7	14	14	30	35	3.72	1.27	High
5	I make decisions ethically	18	12	23	21	24	3.23	1.43	High
Overall Domain							**3.55**	**1.28**	**High**

Teachers demonstrated high proficiency in professional attributes, particularly in relationships with stakeholders (3.72) and commitment to professional development (3.65). This provides a positive foundation for improvement initiatives.

Research Question 7

What level of resource utilization and its impact do teachers possess and exhibit?

Table 6: Mean, SD and proficiency level of resource utilization and its impact on teachers

S/No	*Statement*	*SD*	*D*	*N*	*A*	*SA*	*Mean*	*SD*	*Agreement Level*
1	I have sufficient training for resource utilization	41	20	11	13	15	2.41	1.49	Disagree
2	My school leadership encourages innovation	21	28	19	17	15	2.77	1.36	Neutral
3	We undergo regular monitoring of resource utilization	14	19	26	24	17	3.11	1.30	Neutral
4	I possess equitable resource distribution skills	5	13	39	22	21	3.41	1.12	Neutral
5	I can adapt to teaching with limited resources	5	10	20	30	35	3.80	1.17	Agree
6	My community contributes to education resources	38	20	4	13	15	2.47	1.56	Disagree
7	I effectively manage resources	38	14	18	12	18	2.58	1.54	Disagree
8	I know that resource limitations impact teaching	9	15	17	34	25	3.51	1.27	Agree
9	I regularly collaborate with others for resource-sharing	19	20	10	21	30	3.32	1.53	Neutral
Overall Domain							**3.03**	**1.41**	**Neutral**

DISCUSSIONS OF FINDINGS

The findings reveal a complex profile of teacher competencies in Plateau State's primary and early childhood education sector, characterized by significant strengths in traditional teaching domains alongside critical deficiencies in modern educational requirements.

Teachers demonstrated high proficiency in fundamental areas, including pedagogical knowledge and practice (M=3.66, Table 1) and classroom management and organization (M=3.60, Table 2). These findings align with Darling-Hammond et al. (2017), who emphasize that strong foundational teaching skills are essential for educational quality. Specifically, teachers showed exceptional competence in applying appropriate teaching methods (M=4.27, Table 1) and managing student behaviour effectively (M=4.04, Table 2). This supports Shulman's (1987) framework on pedagogical content knowledge, which argues that effective teaching requires the intersection of content knowledge and pedagogical knowledge.

However, within the pedagogical domain, teachers showed moderate proficiency in differentiated instruction (M=3.09, Table 1), which contradicts the recommendations of contemporary educational frameworks that emphasize inclusive pedagogy. This finding is concerning, given that research by Vongkulluksn et al. (2018) demonstrates that differentiated instruction is crucial for addressing diverse learning needs in modern classrooms. Similarly, in classroom management, teachers reported moderate proficiency in time management during lessons (M=3.29, Table 2) and establishing classroom routines (M=3.24, Table 2), areas that König et al. (2020) identify as fundamental for effective teaching environments.

The assessment competencies domain revealed concerning gaps, with teachers showing overall moderate proficiency (M=3.23, Table 3). Most critically, teachers demonstrated limited ability to use assessment data to improve instruction (M=3.11, Table 3), which contradicts the emphasis on data-driven instruction advocated by Garet et al. (2001) and Desimone (2009). This finding is particularly troubling as it suggests that while teachers can conduct assessments, they lack the competency to translate assessment results into improved instructional practices, limiting the potential for evidence-based teaching improvements.

Communication skills also showed moderate proficiency overall (M=3.22, Table 4), with teachers reporting high competence in explaining concepts to students (M=3.66, Table 4) but significantly lower ability in collaborating with colleagues (M=2.67, Table 4). This finding contradicts the emphasis on professional learning communities advocated by DuFour et al. (2016), who argue that teacher collaboration is essential for professional growth and resource sharing. The weak collaboration scores suggest potential isolation in professional practice that could hinder collective problem-solving and resource optimization.

The most alarming finding concerns ICT proficiency, where teachers reported very low competency (M=1.43, Table 5) across all aspects of digital literacy. Teachers showed minimal skills in basic computer operations (M=1.95, Table 5), use of educational software (M=1.40, Table 5), and technology integration in teaching (M=1.48, Table 5). This finding directly contradicts the TPACK framework by Mishra and

Koehler (2006), which emphasizes technological pedagogical content knowledge as essential for modern teaching.

The severe ICT deficiency is particularly concerning given UNESCO's (2020) emphasis on digital literacy as a fundamental requirement for 21st-century education. This gap became even more critical during the COVID-19 pandemic, when technology integration became essential for educational continuity, as noted by Voogt et al. (2017). The findings suggest that Plateau State teachers are inadequately prepared for digital education delivery, potentially limiting students' preparation for an increasingly digital world.

Despite the challenges, teachers demonstrated relatively high proficiency in professional attributes (M=3.55, Table 6), particularly in maintaining professional relationships with stakeholders (M=3.72, Table 6) and commitment to continuous professional development (M=3.65, Table 6). This finding supports the research by Leithwood et al. (2020) on the importance of professional commitment to educational quality. The high professional commitment provides a positive foundation for improvement initiatives and suggests that teachers are willing to engage in capacity-building efforts.

However, the resource utilization analysis (Table 7) reveals a paradox where teachers demonstrate remarkable adaptability in resource-constrained environments (M=3.80) while lacking institutional support for effective resource management. Teachers reported insufficient training for resource utilization (M=2.41, Table 7), poor community contribution to educational resources (M=2.47, Table 7), and inadequate resource management systems (M=2.58, Table 7). This finding contradicts the resource optimization frameworks suggested by Hanushek (2016) and Jackson et al. (2016), who emphasize that effective resource deployment requires individual competency and systemic support.

Teachers consistently acknowledge that resource limitations significantly impact their teaching effectiveness (M=3.51, Table 7), which aligns with research by Glewwe and Muralidharan (2016) demonstrating the relationship between resource availability and educational outcomes. However, the combination of high adaptability with poor institutional support suggests that while individual teachers show resilience and professional dedication, the broader educational infrastructure fails to provide the necessary support systems for optimal resource deployment.

The findings reveal a concerning disconnect between teacher competencies and modern educational requirements. While teachers possess strong traditional teaching skills, as evidenced in Tables 1 and 2, they lack the technological and assessment competencies essential for contemporary education, as shown in Tables 3 and 5. This pattern suggests that current teacher preparation and professional development programs inadequately address 21st-century educational demands, supporting the concerns raised by Tondeur et al. (2017) about teacher preparation for technology integration.

The resource utilization findings (Table 7) further illuminate systemic challenges, indicating that addressing these competency gaps requires individual capacity building and systemic reforms in resource allocation, institutional support mechanisms, and community engagement strategies. This aligns with the recommendations by Day et al. (2016) for comprehensive educational reform approaches that simultaneously address human and material resource dimensions.

Recommendations

Based on the findings of this research, several critical recommendations emerge to address the identified gaps in teacher competencies and resource utilization in primary and early childhood education. Most urgently, the government should organize comprehensive ICT training programs to improve teachers' severe digital literacy deficiency (Mean=1.43), including partnerships with technology providers and establishing computer laboratories with reliable internet connectivity. Concurrently, targeted professional development should enhance assessment competencies, particularly in data-driven instructional practices and differentiated instruction techniques to better serve diverse learners. Establishing mandatory professional learning communities and peer collaboration networks is essential to solve the challenge of weak teacher collaboration scores (Mean=2.67) and promote resource sharing and collective problem-solving.

Additionally, systematic resource management overhauls are needed, including centralized inventory systems, clear allocation protocols, and enhanced community engagement measures to strengthen the inadequate institutional support systems currently hindering effective resource utilization. These interventions should be supported by policy reforms that increase education budget allocation, establish minimum resource standards, and create performance-based professional advancement criteria linked to continuous competency development, ultimately ensuring that the demonstrated resilience and professional commitment of teachers (Mean=3.55) can be effectively channeled toward improved educational outcomes for all pupils in ECCE and primary schools.

CONCLUSIONS

This study reveals that there is a paradoxical situation in Plateau State's ECCE and primary education sector: while teachers demonstrate strong foundational competencies in content knowledge and classroom management, they lack in technology integration and data-driven instruction. The severe gap in ICT proficiency (Mean=1.43) represents the most urgent

challenge, potentially hindering students' preparation for an increasingly digital world.

Acknowledgement:

Authors acknowledge the support of ***T****etfund Centre of Excellence in Innovative teaching and learning Federal College of Education Pankshin in carrying out this research.*

REFERENCES

Batool, M., Ghulam, H., Spulbar, C., Birau, R., Birau, R., & Criveanu, M. (2022). Turning Crisis into a Sustainable Opportunity Regarding Demand for Training and New Skills in Labor Market: An Empirical Analysis of COVID-19 Pandemic and Skills Upgradation. Sustainability, 14(24), 16785.

Creswell, J. W., & Plano Clark, V. L. (2017). *Designing and conducting mixed methods research* (3rd Ed.). Sage Publications.

Darling-Hammond, L., Flook, L., Cook-Harvey, C., Barron, B., & Osher, D. (2017). Implications for educational practice of the science of learning and development. *Applied Developmental Science*, 24(2), 97–140. https://doi.org/10.1080/10888691.2018.1537791

Day, C., Gu, Q., & Sammons, P. (2016). The impact of leadership on student outcomes: How successful school leaders use transformational and instructional strategies to make a difference. *Educational Administration Quarterly*, 52(2), 221-258.

Desimone, L. M. (2009). Improving impact studies of teachers' professional development: Toward better conceptualizations and measures. *Educational Researcher*, 38(3), 181-199.

Donohue, C., Johnson, A., Lucas, P., & Lynd, C. (2020). Technology and interactive media as tools in early childhood programs serving children from birth through age 8. *Early Childhood Education Journal*, 48(1), 121–136. https://doi.org/10.1007/s10643-019-00996-8

Dixon, S. M. (2023). Do not panic (yet): The implications of ChatGPT for Education Studies in the UK. https://core.ac.uk/download/578263345.pdf

DuFour, R., DuFour, R., Eaker, R., Many, T., & Mattos, M. (2016). *Learning by doing: A handbook for professional learning communities at work* (3rd ed.). Solution Tree Press.

Fullan, M., & Scott, G. (2014). *New pedagogies for deep learning*. Collaborative Impact.

Gedikoglu, H., Gedikoglu, H., & Parcell, J. (2024). Building Community-Based Social Capital by Enhancing Individual Social Capital: The Case of Farmers in Turkey's Konya Region. Sustainability, 16(18), 8080.

Garet, M. S., Porter, A. C., Desimone, L., Birman, B. F., & Yoon, K. S. (2001). What makes professional development effective? Results from a national sample of teachers. *American Educational Research Journal*, 38(4), 915–945.

Glewwe, P., & Muralidharan, K. (2016). Improving education outcomes in developing countries: Evidence, knowledge gaps, and policy implications. In E. A. Hanushek, S. Machin, & L. Woessmann (Eds.), *Handbook of the economics of education* (Vol. 5, pp. 653–743). Elsevier.

Global education monitoring report, 2020: Inclusion and education: all means all - UNESCO Digital Library – Evidence Library – The EdTech Hub. https://docs.edtechhub.org/lib/49QZEUVL

Greenwich Academic Literature Archive - Practitioner perspectives on the challenges of implementing 'alternative' early childhood education (ECE) provision for nomadic children in Mongolia. https://gala.gre.ac.uk/id/eprint/38494/

Hanushek, E. A. (2011). The economic value of higher teacher quality. *Economics of Education Review*, 30(3), 466–479.

Hanushek, E. A. (2016). School human capital and student performance: Creating a more complete view of schools' impact. *Educational Researcher*, 45(6), 331–336.

Hill, T., Kelly, G., McQuillan, J., Phillips, M., Melson, M., & Blake, J. (2023). Mapping Teacher Informal Advice Networks as a Tool for District Administrators: A Case Study. Science Educator, 29(2), 1–11.

Hendry, G. (2021). Reporting on online, remote and bi-modal delivery of psychology teaching. https://core.ac.uk/download/426937320.pdf

Jackson, C. K., Johnson, R. C., & Persico, C. (2016). The effects of school spending on educational and economic outcomes: Evidence from school finance reforms. *The Quarterly Journal of Economics*, 131(1), 157–218.

Kelley, P., & Camilli, G. (2007). The impact of teacher education on outcomes in centre-based early childhood education programs: A meta-analysis. *Early Childhood Research Quarterly*, 22(3), 341-360.

Kim, J., Burkhauser, M., Quinn, D., Lauen, D., & Baroody, K. (2021). The synergistic relationship between principal effectiveness and teacher quality: Evidence from systematic classroom observations. *Educational Researcher*, 50(6), 375–386. https://doi.org/10.3102/0013189X211011605

König, J., Jäger-Biela, D. J., & Glutsch, N. (2020). Adapting to online teaching during COVID-19 school closure: Teacher education and teacher competence effects among early career teachers in Germany. *European Journal of Teacher Education*, 43(4), 608-622.

Leithwood, K., Harris, A., & Hopkins, D. (2020). Seven strong claims about successful school leadership revisited. *School Leadership & Management*, 40(1), 5–22.

Matherson, L., Wilson, E., & Wright, V. (2014). Need TPACK? Embrace Sustained Professional Development. Delta Kappa Gamma Bulletin, 81(1), 45–52.

Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. *Teachers College Record*, 108(6), 1017–1054.

Mullis, I. V., (2021). Review of time in school and 16 to 19 settings. https://core.ac.uk/download/482023897.pdf

Minnaert, A., & Meijer, W. (2018). From 'every man for himself', via collaboration, paving the way to cooperation in education. https://core.ac.uk/download/pdf/159516767.pdf

Morgan, J., & Sengedorj, T. (2023). Practitioner perspectives on the challenges of implementing 'alternative' early childhood education (ECE) provision for nomadic children in Mongolia. https://doi.org/10.1016/j.childyouth.2023.106848

National Association for the Education of Young Children. (2020). *Professional preparation standards*. NAEYC.

Hill, T., Kelly, G., McQuillan, J., Phillips, M., Melson, M., & Blake, J. (2023). Mapping Teacher Informal Advice Networks as a Tool for District Administrators: A Case Study. Science Educator, 29(2), 1–11.

Oberhuemer, P. (2015). The Early Childhood Education Workforce in Europe between Divergences and Emergencies. https://doi.org/10.1007/2288-6729-5-1-55

OECD. (2019). *Education at a glance 2019: OECD indicators*. OECD Publishing.

OECD. (2023). *Education at a glance 2023: OECD indicators*. OECD Publishing. https://doi.org/10.1787/f3f8c608-en

Opsen, C., Opsen, C., & Opsen, C. (2021). Culture and 'Inclusive and Equitable Quality Education (SDG4)' in East Africa: Ethnographic Evidence from the Pokot Context of Female Genital Modification. https://doi.org/10.15026/116998

Peng, R., & Halili, S. (2023). Factors influencing in-service teachers' technology integration model: Innovative strategies for educational technology. PLoS One, 18(8), e0286112.

Pianta, R. C., Howes, C., Burchinal, M., Bryant, D., Clifford, R., Early, D., & Barbarin, O. (2005). Features of pre-kindergarten programs, classrooms, and teachers: Do they predict observed classroom quality and child-teacher interactions? *Applied Developmental Science*, 9(3), 144–159.

Reardon, S. F. (2016). School district socioeconomic segregation and educational opportunity. In P. A. Noguera, J. C. Pierce, & R. Ahram (Eds.), *Race, equity, and education* (pp. 193–216). Springer.

Rivkin, S. G., Hanushek, E. A., & Kain, J. F. (2005). Teachers, schools, and academic achievement. *Econometrica*, 73(2), 417–458.

Saberi, S., & Young, J. (2016). Inspiring genuine action. International School, 18(2), 29–31.

Scandurra, R., Cefalo, R., Cuzzocrea, V., & Kazepov, Y. (2022). Special issue of International Journal of Social Welfare: Integrating young people in the labour market, integrating methodologies. International Journal of Social Welfare. https://doi.org/10.1111/ijsw.12573

SDG (2024). Strengthening educational technology (Edtech) capacities, evidence and policies to improve learning outcomes for vulnerable students in LAC. MENA Report, (),.

Schwartz, H., Hamilton, L., Stecher, B., & Steele, J. (2022). *Expanded measures of school performance*. RAND Corporation. https://doi.org/10.7249/RR2487

Shulman, L. S. (1987). Knowledge and teaching: Foundations of the new reform. *Harvard Educational Review*, 57(1), 1–23.

Sylva, K., Melhuish, E., Sammons, P., Siraj-Blatchford, I., & Taggart, B. (2004). *The adequate provision of pre-school education (EPPE) project: Final report*. DfES Publications.

Thacker, K. (2020). A whole school working towards effective instruction and assessment for EAL students. International School, 22(3), 9–11.

Tondeur, J., Scherer, R., Baran, E., Siddiq, F., Valtonen, T., & Sointu, E. (2017). Teacher educators as gatekeepers: Preparing the next generation of teachers for technology integration in education. *British Journal of Educational Technology*, 48(4), 1000-1012.

Tofail, F. (2021). Factors associated with school achievement of children aged 8–10 in rural Bangladesh: Findings from a post hoc analysis of a community-based study. PLoS One, 16(7), e0254693.

Triveni, S. (2014). Value orientation of college teachers. Indian Journal of Health and Wellbeing, 5(10), 1156–1160.

UNESCO. (2015). *Education 2030: Incheon declaration and framework for action for implementing sustainable development goal 4*. UNESCO.

UNESCO. (2020). *Global education monitoring report 2020: Inclusion and education: All means all*. UNESCO Publishing.

UNICEF. (2019). *A world ready to learn: Prioritizing quality early childhood education*. UNICEF.

Vongkulluksn, V. W., Xie, K., & Bowman, M. A. (2018). The role of value on teachers' internalization of external barriers and externalization of personal beliefs for classroom technology integration. *Computers & Education*, 118, 70–81.

Voogt, J., Fisser, P., Pareja Roblin, N., Tondeur, J., & van Braak, J. (2017). Technological pedagogical content knowledge -- a review of the literature. *Journal of Computer Assisted Learning*, 29(2), 109-121.

World Bank. (2018). *World development report 2018: Learning to realize education's promise*. World Bank.

World Bank. (2020). *The COVID-19 pandemic: Shocks to education and policy responses*. World Bank.

Wohlfart, O., & Wagner, I. (2022). Digitale Kompetenzen von (angehenden) Lehrkräften – ein systematisches „Umbrella-Review" zum TPACK Modell. https://doi.org/10.5445/IR/1000145976

Yin, P., & Zhou, L. (2023). Place Identity, Social Capital, and Rural Homestay Entrepreneurship Performance: The Mediating Effect of Self-Efficacy: Sustainability, 15(15), 11812.

Zhao, Y., & Watterston, J. (2021). The changes we need are in education post-COVID-19. *Journal of Educational Change*, 22(1), 3–12. https://doi.org/10.1007/s10833-021-09417-3

Zou, D. (2021). Reflecting on Existing English for Academic Purposes Practices: Lessons for the Post-COVID Classroom. Sustainability, 13(20), 11520.

椎野若菜【書籍】『Youths in Struggles: Unemployment, Politics, and Cultures in Contemporary Africa』｜現代アフリカ地域研究センター公式ホームページ. https://www.tufs.ac.jp/asc/activities/publications/210331Shiino-Youths-in-Struggles.html

Cite this Article: Katniyon, HD; Duguryil, ZP; Gyitbe, LY (2025). An Assessment of Human and Material Resources in Plateau State Primary and Early Childhood Care Education (ECCE) Schools. *Greener Journal of Educational Research*, 15(1): 102-113, https://doi.org/10.15580/GJER.2025.1.070225107.