



Research Article

Exploring Teacher Variables in Addressing Gaps in Foundational Literacy and Numeracy Skills Among Pupils in Basic Schools in Kano State, Nigeria

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Abstract

Foundational literacy and numeracy (FLN) skills are the cornerstone of educational development, yet in Nigeria, the pathways to achieving them at the basic education level are fraught with challenges. This study explored teacher variables in relation to addressing gaps in foundational literacy and numeracy (FLN) among pupils in basic schools in Kano State, Nigeria. The study adopts exploratory sequential mixed-methods research design which combines qualitative and quantitative investigation. The qualitative phase involved interview of 18 FLN teachers which generated themes around the issues of teachers' qualifications, teachers' perception of their roles, teachers' instructional practices, professional training, continuous professional development, and challenges affecting effective FLN instruction. The quantitative phase was a survey which explored the perspectives of 360 basic school teachers in Kano state on the themes generated during the qualitative phase. Findings revealed that some teachers lacked the required educational background for teaching literacy and numeracy, with only 58% having studied English Language or Mathematics in college. The teachers demonstrated strong commitment to supporting struggling learners and expressed positive perceptions of learner-centred approaches. The findings also indicated a gap between teachers' pedagogical knowledge and their actual classroom practices, particularly in the limited use of interactive instructional methods. The study further revealed that institutional challenges were perceived as major constraints, while opportunities for workshops and seminars that focused on FLN remained inadequate. The study concludes that improving FLN requires more practical initial teacher preparation, sustained professional development, learner-centred pedagogy, and stronger institutional support for teachers.

Keywords

Foundational Literacy and Numeracy, Basic Schools, Teachers, Kano State, Nigeria

1. Introduction

Literacy is the ability to identify, understand, interpret, create, communicate, and compute using printed and written materials associated with varying contexts [1]. It also encom-

passes numeracy, the ability to make simple arithmetic calculations. Literacy plays a critical role in the personal development of an individual as well as in the social development of

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a community. People need literacy in their daily lives to decode and encode texts, thereby enabling them to consume and create ideas and interact with others. Fifty percent of ten-year-olds in low- and middle-income countries cannot read and understand a simple story [2]. It is estimated that 70 percent of children in Nigeria cannot read with meaning or solve simple math problems. Aside from the millions of children out of school, only 49 percent and 55 percent of children in school achieve basic proficiency in literacy and numeracy, respectively [3]. The northern part of the country is most affected, with literacy rates as low as 38 percent in the Northwest and 42 percent in the Northeast [3].

Basic education is the bedrock of the entire education structure. It lays the foundation for essential skills in literacy, numeracy, and communication. Positive learning outcomes in these foundational skills at the basic education level usually facilitate positive learning outcomes at subsequent levels of education. The concept of basic education is derived from the United Nations Declaration on Education for All (EFA) and the Millennium Development Goals (MDGs), which later transformed into the Sustainable Development Goals (SDGs). Nigeria, as a member of the United Nations and a signatory to numerous international treaties and conventions on the right of the child to free and compulsory education, launched the Universal Basic Education (UBE) programme in 1999. The aim of the programme is to provide quality basic education to all school-age children, regardless of their parental, economic, social, religious, or any other background.

Nigeria's National Policy on Education defines basic education as the education given to children aged 0-15 years. It encompasses Early Child Care and Development Education (0-4 years) and ten years of formal schooling. Early Child Care and Development Education is segmented into 0-4 years, typically provided in day-care centres and crèches (mostly managed by the private sector), while ages 5-6 fall within the formal education sector [4]. As is the case in many other countries, a fundamental objective of basic education is to inculcate in learners permanent literacy, numeracy, and the ability to communicate effectively. As such, one viable way to determine the success of any basic education programme is to assess the proficiency level of its graduates in literacy, numeracy, and effective communication. It has been reported that 89 percent of children aged ten who have completed primary school are unable to read and understand texts [1]. This indicates what the report describes as a learning crisis or learning poverty, wherein schooling does not necessarily imply learning.

1.1. Statement of the Problem

It has also been reported that only 9.6 percent of primary school pupils in Kano showed reading proficiency and only 11.2 percent possess basic numeracy skills [2]. Kano state is grappling with a severe education crisis, with nearly one million children out of school, based on the data from the 2021

Multiple Indicator Cluster Survey (MICS). Poor learning outcomes among products of basic education in the state is a cause for concern among education stakeholders. Strengthening FLN can improve pupils' readiness for further education and contribute to better educational outcomes in the state, given Kano's central position in Northern Nigeria, its status as the most populous state in Nigeria, and its role as a major commercial centre. This is against the backdrop of the fact that literacy is a tool for pursuing further education. It is also a tool for accessing information, participation in democratic processes, and improving citizens' socio-economic status. The issues of access and equity are germane to deciding who has the opportunity to become literate and who is excluded. This makes literacy a weapon of liberation and control. With millions of children out-of-school in Kano, many of those currently in school are also not learning as they should. Many who attend primary schools, which is constitutionally compulsory and free, do not achieve basic proficiency in literacy and numeracy. The learning crisis is fueled by many factors. However, teachers' variables are considered as key among them and so will be given a prime attention. In spite of previous efforts such as the FCDO-funded Partnership for Learning for All in Nigerian (PLANE) programme to address the challenge of poor literacy and numeracy among the products of basic schools, the level of literacy and numeracy is still alarmingly low.

Teacher variables in this study refer to descriptive characteristics and professional attributes that may shape teachers' capacity to support foundational literacy and numeracy (FLN). These, in the context of this study, include: qualification and specialization, which indicate teachers' academic and subject-based training received in college; role perception, reflecting their understanding of their responsibilities in addressing FLN gaps; instructional practices, representing how they teach FLN; initial professional training, reflecting preparation received before entering the profession; and continuous professional development, denoting opportunities for ongoing acquisition and enhancement of FLN-related knowledge, skills, and competencies.

1.2. Research Questions

- 1) What are teachers' perceptions of their roles in addressing gaps in foundational literacy and numeracy skills among pupils in basic schools in Kano State?
- 2) What teaching practices do teachers use in teaching foundational literacy and numeracy skills in basic schools in Kano State?
- 3) What are teachers' perceptions of the instructional strategies used in teaching foundational literacy and numeracy skills in basic schools in Kano State?
- 4) What challenges do teachers encounter in addressing gaps in foundational literacy and numeracy skills among pupils in basic schools in Kano State?

- 5) In what ways do teachers perceive their initial professional training as influencing their ability to address gaps in foundational literacy and numeracy skills?
- 6) In what ways do teachers perceive their continuous professional development experiences as influencing their ability to address gaps in foundational literacy and numeracy skills.

2. Literature Review

Research increasingly suggests that teacher-related variables such as educational background, training, pedagogical knowledge, instructional practices, and professional development play a key role in shaping learners' foundational competencies. However, the extent to which these variables contribute to addressing literacy and numeracy gaps in the context of Kano State remains under-explored. This review of literature critically examines existing scholarship on teacher factors that influence foundational learning outcomes, with a view to identifying key determinants, theoretical perspectives, and empirical evidence that can inform what has been done and where there are gaps.

2.1. Theoretical Review

This study is anchored on Watson's theory of Behaviourism and Guskey's theory of teacher development. Watson's theory of Behaviourism posits that learning occurs as a result of children imitation of their parents, teachers and other caregivers around them [5]. The theory holds that the human role models around the child provide the stimuli and the rewards necessary to acquire literacy and numeracy skills. Humans learn a basic skill such as literacy numeracy through repeating the same figures and text until it becomes a habit. This theory underscores the role of the school and its agents such as the teachers in helping children learn to read, write, and do simple arithmetic through imitation, repetition, and positive reinforcement. It also stresses the importance of structured practice, phonics instruction, and rewards for correct responses which are germane in formal learning.

Guskey's theory of teacher development which explains teacher development as a process in which professional development leads to changes in teachers' classroom practices, which subsequently influence student learning outcomes [6]. The theory holds that sustainable change in teacher practices only occurs after teachers' beliefs and attitudes have changed. In other words, improvements in students' learning outcomes result from changes in teaching practices. The theory is particularly relevant to FLN because teacher variables being investigated in this study include: teachers' role perception in FLN, initial professional training, continuous professional development, teachers' beliefs, and their instructional practices and strategies. The model is relevant to the study as it can help explain why weaknesses in teacher preparation and profes-

sional development may translate into ineffective FLN instructional practices and, ultimately, persistent literacy and numeracy gaps among pupils.

2.2. Empirical Reviews

Elementary school teachers' perceptions of innovative pedagogical practices aimed at enhancing foundational literacy and numeracy (FLN) was investigated at Sundargarh district, Odisha. The study indicated a generally favourable perception of innovative pedagogical practices, with institutional type showing a significant influence, while gender had no statistically significant effect [7]. Despite a positive inclination towards innovation, teachers reported challenges such as infrastructural gaps, lack of training and access to resources. The study underscores the need for targeted professional development and institutional support offering insights for policymakers and educators to strengthen teacher capacity to embed innovation into daily pedagogical practices.

In a similar vein, a study on the attitude of elementary school teachers towards foundational literacy and numeracy in relation to their self-esteem, reported that majority of primary school teachers (94 out of 120) exhibited a moderately positive attitude towards Foundational Literacy and Numeracy (FLN) while a smaller proportion (18 teachers) showed a highly positive attitude. Only 8 teachers fell into the low positive attitude category and none displayed "very low" [8]. The study reported no appreciable difference between male and female teachers' opinions about FLN. Similarly, no significant gender-based differences were observed in teachers' self-esteem levels. The study indicated no significant association between teachers' attitudes regarding FLN and their self-esteem, with a small negative correlation ($r = -0.058$) between the two measures.

A study on teachers' perspectives on students' literacy and numeracy needs using qualitative research reported that literacy and numeracy skills are negatively affected by several pressing factors such as poor parental involvement, post-pandemic effects, non-regulation of gadget use and unorganized curriculum [9]. The study recommended collaboration among stakeholders through sensible initiatives in order to improve these fundamental skills.

On the instructional practices that are related to students' achievements in high school classrooms, a study used regression techniques to identify teachers' background characteristics and behaviours that are associated with students' academic achievement. This was done with a sample of 40 teachers and 1,466 students. The study revealed the importance of professional development that specifically aims at preparing teachers for teaching the curriculum [10]. The study indicated that teaching behaviours that reflect high mathematical expectations and that are consistent with standard recommendations were positively related to students' academic achievement.

A study in Nigeria studied how teachers in northern Nigeria face large class sizes that lead to challenges in successfully

teaching children how to read. In the study, the researchers documented primary grades classes with as many as 160 children. The study used in-depth interviews with 20 teachers in Kano State to explore how teachers approached reading instruction. The study revealed that most teachers reported using grouping to teach reading, while some relied on instructional materials or teacher-centered approaches to attract student attention [11]. Assessment was largely at the group level rather than individual; teachers generally lacked a detailed understanding of students' reading development. Classroom management and discipline were also reported as ongoing concerns. The study concluded with recommendations on ways to build on teachers' practices in ways that align their pedagogy with evidence-based approaches, such as more purposefully grouping to allow for differentiated instruction.

Another study in Nigeria investigated the extent to which primary school teachers possessed teacher related variables such as qualification, mastery of subject matter, classroom management skill and use of instructional materials affect learners' achievement in Mathematic [12]. The study used ex-post facto research method in which a total of 93 teachers were

simple randomly selected and pupils of primary 4 were purposively selected. The study reported that teacher qualification, mastery of subject matter, classroom management skill and use of instructional materials significantly contributed to learners' achievement in mathematics. The study further revealed that teachers possessed these variables in moderate extent. It is thus, recommended that stakeholders, should ensure that mechanisms that will elicit and enhance these teachers' related variables are put in place as well as improved upon, in order to boost learners academic learning outcomes in Mathematics.

The uniqueness of this study lies in its holistic examination of teacher variables comprising qualification, specialization, role perception, instructional practices, initial professional training, and continuous professional development as they relate to gaps in both foundational literacy and numeracy. Unlike previous studies that largely focus on specific interventions, teacher training, instructional practices, or literacy alone, this study integrates these dimensions to provide a more comprehensive understanding of teachers' contribution to foundational learning outcomes in Kano State using both qualitative and quantitative approach.

2.3. Tables Showing Demographic Characteristics of Participants and Summary of Quantitative Findings

Table 1. Demographic Characteristics of Respondents (N = 360).

Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	225	62.5
	Female	135	37.5
Age	20-30 years	90	25.0
	31-40 years	153	42.5
	41-50 years	90	25.0
	51 years and above	27	7.5
Educational qualification	NCE/Diploma	216	60.0
	Bachelor's degree	117	32.5
	Master's/PhD	27	7.5
	English Language	116	32.2
Area of specialization	Mathematics	93	25.8
	Hausa	54	15.0
	Arabic Language	73	20.3
	Others	24	6.7
Teaching experience	1-5 years	99	27.5
	6-10 years	81	22.5
	11-15 years	36	10.0

Variable	Category	Frequency (n)	Percentage (%)
Subject taught	16 years and above	144	40.0
	Literacy	240	66.7
	Numeracy	120	33.3

Source: Field Survey, 2026.

Table 2. Demographic Characteristics of Participants in the Qualitative Study.

Variable	Category	Frequency	Percentage%
Education Qualification	N.C.E	14	77.8
	BA.ED	2	11.0
	BSc.Ed	1	5.6
	HND	1	5.6
Subject Taught	Literacy	8	44.4
	Numeracy	5	27.8
	Both	5	27.8
	English	5	27.8
Areas of Specialization in College	Mathematics	3	16.7
	Hausa	1	5.6
	Arabic	2	11.0
	Others	7	38.9
TOTAL		18	

Source: Field Study, 2026

Table 3. Summary of Findings of Quantitative Phase.

Research Question	Summary	Overall Mean	Overall Std. Deviation	Remark
RQ1	Roles Perception	3.52	0.55	Agree
RQ2	Current teaching practices	3.57	0.63	Agree
RQ3	Perception of prevailing instructional strategies	2.30	0.80	Disagree
RQ4	Challenges in addressing gaps in FLN	3.50	0.67	Agree
RQ5	Efficacy of ITP	3.50	0.60	Agree
RQ6	Adequacy of CPD	2.45	0.64	Disagree

Source: Field Study (2026)

3. Materials and Methods

3.1. Research Design

This study employed an Exploratory Sequential Mixed Method. It is a research approach that combines qualitative and quantitative methods in two distinct phases [13]. The method is particularly useful when exploring complex phenomenon like literacy and numeracy acquisition where initial qualitative insights are needed to inform subsequent quantitative research. Using a mixed method design ensures that lived experiences of teacher of literacy and numeracy are sufficiently understood. The researcher sought to identify relevant dimensions to the phenomenon before quantitative measurement. Also, qualitative findings were needed to enrich the development of the questionnaire.

The population of the study comprises of 46,520 basic school teachers in Kano state. Stratified random sampling technique was used to select 360 basic schools teachers who participated in the research across the three senatorial districts of Kano State. One hundred and twenty literacy and numeracy teachers were randomly selected from each of the three Senatorial district of Kano State. The instruments for data collection was validated by two experts; one in Test and Measurement and one in educational psychology. To ensure reliability, Cronbach's alpha was used to ensure internal consistency of the instrument. A reliability coefficient of 0.81 was obtained after the pilot study. Teacher variables in the questionnaire included: qualification, area of specialization during training, years of experience, subject specialization; Pedagogical Practices; Role Perception and initial and Continuous Professional development opportunities. The questionnaire was scored on a Likert scale. The response category of the instruments was weighted by assigned numerical value as follows: Strongly Agree (SA) received a weight of 4 points, Agree (A) - 3 points, Disagree (D) - 2 points and Strongly Disagree (SD) 1 point. The sum of the weight of all the items chosen by the respondents represents the individual's total score. The questionnaires were analysed using descriptive statistics in form of mean and standard deviation to answer the research question. The qualitative phase of the study was an interview with eighteen (18) basic schools teachers purposively selected from the three senatorial districts of Kano for deeper investigation. They were selected using the criteria that they have taught literacy, numeracy or both for at least five years at basic schools.

3.2. Qualitative Phase

The participants were selected considering that they have at least five year experience in teaching either literacy or numeracy. After getting the approval of the state's Universal Basic Education Authority to conduct the research, informed consent of the participants was also sought and gotten. In each school, researchers and the research assistants conducted in-depth interviews with the selected literacy and numeracy

teachers. All qualitative data (transcripts and field notes) were subjected to thematic analysis. A hybrid inductive-deductive coding approach was used, starting with codes derived from the conceptual framework while remaining codes were opened to emergent themes. This phase aimed to explain *how* and *why* certain variables, such as teachers' educational background, their understanding of their roles, attitude to their job, teaching practices, their perception of the prevailing teaching practices and how contextual challenges like socio-cultural factors are affecting pupils' engagements in school.

Table 2 presents the profile of participants involved in this study. The information provides important insights into teachers' qualifications, and areas of specialization, all of which have significant implications for understanding the challenges facing pupils' acquisition of foundational literacy and numeracy skills.

One major implication of the table is the diversity of teachers' academic backgrounds and professional qualifications. The participants were mainly of holders of the Nigeria Certificate in Education (NCE), with a few possessing university degrees such as BA.Ed, BSc.Ed, HND and BA/PGDE qualifications. Since the NCE is the minimum professional qualification required for teaching at the basic education level in Nigeria, the presence of predominantly NCE-qualified teachers suggests that the teachers possess the minimum level of educational qualification. However, a focus on the subject backgrounds of the participants raises concerns about the adequacy of specialized preparation for teaching foundational literacy and numeracy. For example, some of the teachers of literacy and numeracy instruction were trained in areas such as Arabic, Social Studies, History, Creative Arts, Biology, and Business Administration. While these qualifications may provide general teaching competence, they may not sufficiently equip teachers with the specialized knowledge needed for early literacy development, phonological awareness, reading instruction, and mathematical reasoning.

4. Results

4.1. Qualitative Findings

The thematic analysis generated six major themes: teachers' understanding of their roles in addressing FLN gaps, current teaching practices, views of the teachers on prevailing instructional practices among FLN teachers, challenges in addressing gaps in FLN, influence of initial professional training, and influence of continuous professional development.

Theme 1: Teachers' Understanding of Their Roles in Addressing FLN Gaps

The participants demonstrated awareness of their responsibility to identify and address pupils' foundational literacy and numeracy (FLN) difficulties. Identification was mainly through classroom observation, questioning, assessment, and

monitoring pupils' performance in reading, writing, comprehension, and counting. As one teacher explained:

"By using targeted assessments to test learners' knowledge, I do my best to develop foundational skills in reading and writing in my pupils so as to support their overall literacy and numeracy progression." (Teacher P, June 15, 2026)

On the signs of learning gaps in FLN, teachers also identified limited classroom participation and difficulties in performing basic tasks as signs of learning gaps. One participant noted:

"When I ask questions, some pupils will raise up their hands while some will not respond. I detect the problem through the pupil's response to class activities." (Teacher A, May 5, 2026)

Teachers reported use of individualized instructions, grouping, extra lessons, continuous guidance, phonics, letter-sound correspondence, and class work to address identified difficulties. However, their capacity to perform these roles was affected by parental support and availability of learning materials. As Teacher H observed:

"I believe I can only fulfil my role in improving pupils' foundational literacy and numeracy skills if parents provide the necessary learning materials..." (Teacher H, July 18, 2026)

The findings show that teachers perceived themselves as key actors in identifying and addressing FLN gaps, while recognizing the importance of parental and institutional support.

Theme 2: Current Teaching Practices

Teachers reported using several learner-centred approaches, including demonstration, group work, storytelling, games, peer learning, questioning, and repetition. Student-centred learning was particularly favoured because of its perceived ability to promote classroom interaction:

"There are many modern teaching methods and the type of method a teacher adopts is typically based on the teacher's goal. Nevertheless, student-centred learning is the most effective method because it fosters a communicative classroom." (Teacher B, June 2, 2026)

Despite this preference learner-centred approach, most of the participants conceded that their classroom instruction was frequently characterized by explanation, repetition, drilling and whole-class activities. As such, large classes and inadequate instructional materials constrained the use of more participatory approaches. One teacher explained:

"I try to provide targeted guidance, though it is not easy considering the size of the class. Hence, sometimes slow learners suffer greatly because they usually require extra attention and resources which are usually difficult to provide because of the large population and limited time and resources." (Teacher A, May 5, 2026)

Some of the teachers also highlighted parental involvement, particularly where pupils lacked basic learning materials for instance, a teacher said:

"Some pupils lack essential learning materials, such as

pencils and exercise books and cannot participate effectively in lessons. Where difficulties are related to challenges at home, I always engage with parents." (Teacher P, June 15, 2026)

Thus, although teachers reported awareness and use of learner-centred practices, contextual constraints limited their consistent application.

Theme 3: Teachers' Perceptions of Current Instructional Practices

Teachers generally endorsed learner-centred and evidence-informed approaches as effective for developing FLN skills. However, upon further questioning about the views on how teachers generally teach FLN, they tilted more towards teacher-centred approaches. One participant stated:

"Teachers usually use approach such as, storytelling, extra lessons, and group work to develop reading, numeracy and writing skills, especially for challenged pupils." (Teacher K, June 30, 2026)

However, participants acknowledged a gap between knowledge of effective pedagogy and actual classroom implementation. As one teacher remarked:

"The teaching strategy I believe is more effective is the student-centred approach because it fosters an engaging learning environment which improves pupils' understanding. But where is the incentive and time to do that?" (Teacher F, May 9, 2026)

Participants also identified inadequate professional preparation and the deployment of non-specialist teachers as a major concern:

"There is the need to provide specialized teachers for literacy and numeracy because if teachers teaching these basic and fundamental subjects are not academically strong, it will definitely affect the pupils..." (Teacher C May 6, 2026)

These findings suggest that teachers generally understand effective FLN pedagogy, but professional, institutional, and motivational constraints impede its implementation.

Theme 4: Challenges in Addressing FLN Gaps

The participants generally identified inadequate instructional resources, large classes, poor home backgrounds, inadequate teacher training and welfare, and language barriers as major challenges. Shortages of textbooks, charts, flashcards, audio-visual materials, and writing materials were particularly problematic. One teacher stated:

"The major challenge we numeracy and literacy teachers face is the shortage of instructional materials, such as charts, MP3 files for audio, as well as televisions." (Teacher J, May 19, 2026)

Large class sizes further limited individualized instruction and monitoring:

"Large class size is a major challenge, along with inadequate teaching resources, if there are sixty pupils in a classroom and each pupil needs one minute of individual attention, the teacher would require sixty minutes." (Teacher N, July 10, 2026)

Home circumstances were also perceived to affect pupils'

learning opportunities. One participant observed:

“Some students come to school after two lessons have passed, which is caused by a lack of parental guidance...” (Teacher A, May 5, 2026)

Teacher welfare and professional support were additional concerns:

“Teachers require better welfare packages to remain motivated and fully committed to classroom responsibilities. We need regular workshops, seminars, and in-service training to update our knowledge of contemporary instructional strategies.” (Teacher R, June 13, 2026)

Language was another challenge, particularly where pupils experienced difficulty in understanding English:

“We rarely speak English to the pupils because most pupils struggle to understand explanation in English, so, we usually use Hausa to clarify and ensure better understanding...” (Teacher J May 19, 2026)

Overall, the challenges were interconnected and extended beyond the classroom, indicating the need for coordinated support from schools, families, teachers, and government.

Theme 5: Influence of Initial Professional Training

Participants generally acknowledged that initial professional training provided useful foundations in teaching methodology, classroom management, subject knowledge, and professional ethics. One teacher reported:

“My foundational professional training, including my coursework, GSE and supplemental studies, equipped me to effectively address gaps in foundational literacy skills...” (Teacher J May 19, 2026)

However, participants emphasized that teacher education is too theoretical and need include more practical experience. One participant recommended:

“I will say to those involved in teacher education programmes to provide more practical teaching to prospective teachers.” (Teacher K, June 30, 2026)

Participants also highlighted the need for specialized training. The findings therefore suggest that effective teacher preparation should combine theoretical knowledge with practical teaching, specialization, mentorship, and continuing professional development.

Theme 6: Influence of Continuous Professional Development

CPD was viewed as an important means of strengthening teachers' capacity to address FLN gaps. Workshops, seminars, and training materials were reported to enhance teachers' instructional knowledge:

“Workshops and seminars have taught me a great deal. The

manuals provided at these events significantly help us teach literacy and numeracy skills...” (Teacher B, June 2, 2026)

Nevertheless, access to relevant professional development was described to be uneven. Some teachers reported limited opportunities to participate in FLN-related training:

“As I said, I studied IRK and Arabic. I am just teaching English and Maths. Still, I have not gotten the opportunity to attend seminars to gain more knowledge on literacy and numeracy...” (Teacher A, May 5, 2026)

Participants further stressed that training alone was insufficient without institutional and welfare support:

“Apart from training, I think literacy and numeracy teachers [need] special allowances because of the demanding nature of our responsibilities.” (Teacher F, May 9, 2026)

The findings indicate that CPD can enhance teachers' instructional capacity, but its effectiveness depends on regular and relevant training, equitable access, adequate resources, and supportive working conditions.

4.2. Summary of Qualitative Findings

The findings show that teachers possess considerable awareness of FLN gaps and recognize a range of appropriate instructional responses. However, implementation is constrained by inadequate resources, overcrowded classrooms, limited practical and specialized preparation, insufficient CPD opportunities, weak teacher motivation, language difficulties, and inadequate parental and institutional support. The findings therefore, point to the need for a coordinated approach that strengthens teacher preparation and professional development while improving instructional resources, teacher welfare, class sizes, parental engagement, and institutional support.

The joint display of qualitative and quantitative findings presented in Table 4 integrates the qualitative and quantitative findings by comparing evidence from both phases and showing how they relate. The findings demonstrate substantial convergence: both phases confirm teachers' commitment to addressing FLN gaps, preference for learner-centred approaches, multidimensional challenges, and limited participation in professional training. The display also identifies areas of divergence, particularly regarding the adequacy of initial professional training. It, thus, provides a clear, systematic synthesis of the two datasets thereby strengthening the interpretation of the mixed-methods findings and showing how qualitative insights are corroborated, complemented, or contradicted by quantitative evidence.

Table 4. Integration of Qualitative and Quantitative Results.

Qualitative Finding	Quantitative Result	Integrated Interpretation
Some teachers of literacy and numeracy do not possess required educational	Only 58% of the participants studied either English Language or Mathematics in college.	Quantitative finding corroborates the qualitative evidence

Qualitative Finding	Quantitative Result	Integrated Interpretation
background to teach literacy or numeracy		
Participants indicate strong commitment to help struggling learners	A mean score of 3.52 indicate that most of the teachers express understanding of instructional practices needed for teaching foundational literacy and numeracy skills	Both phases indicate readiness of the teachers to address the gaps in FLN among the pupils
Participants consistently emphasized learner-centred practices as an effective way to address gaps in FLN.	Overall mean score of 3.57 indicates the participants have a positive perception of learner-centred approaches to teaching FLN	Findings from the qualitative phase and the quantitative phase converge
Participants believe that interactive and effective evidence-based teaching methods are rarely being practiced.	Overall mean score of 2.30 indicates that the participants perceive that basic school teachers rarely use interactive methods during literacy and numeracy lessons	Findings from both phases converge as they indicate that there are gaps between pedagogical knowledge and the actual instructional practices of teachers
Challenges affecting addressing foundational literacy and numeracy are multidimensional and interconnected.	Overall mean of approximately 3.54 demonstrates a high level of agreement with the listed challenges as exposed at the qualitative phase.	Findings from the qualitative phase and the quantitative phase converge
Initial Professional Training (IPT) alone is insufficient for being too theoretical.	The overall mean of approximately 3.50 indicates a high level of agreement suggesting adequacy of teacher initial professional training.	Findings from the qualitative and the quantitative phase diverge. The qualitative phase revealed some of the weaknesses of the IPT as the participants had better opportunity to express themselves.
Regular training, seminars, and workshops though indispensable for improving instructional effectiveness, are not adequate	Mean scores of 2.45 indicates that most of participants have not attended workshops and seminars on FLN	Findings from the qualitative phase and the quantitative phase converge

5. Discussion

The first finding indicates that some of the teachers of foundational literacy and numeracy (FLN) do not possess the required educational background. The quantitative result shows that only 58% of participants studied either English Language or Mathematics in college. This finding corroborates the qualitative evidence, suggesting a potential mismatch between teachers' academic preparation and their instructional responsibilities. The finding aligns with the research findings that most basic schools teachers possessed basic qualification for teaching but significant gaps exist in their abilities because of lack of specialization in their pre-service training [14]. The finding also corroborates the finding which revealed the importance of professional development that specifically aims at preparing teachers for teaching the curriculum [10]. As such, effective FLN instruction requires adequate subject-matter knowledge, particularly in language development, reading, writing and basic mathematical concepts.

The second finding shows that teachers generally show strong commitment to helping learners who have difficulties in foundational literacy and numeracy. Qualitative participants expressed willingness to support struggling learners, while the quantitative result produced a mean score of 3.52,

indicating that most teachers understand the instructional practices required for teaching FLN. The convergence between the two phases suggests that teachers possess a positive disposition towards addressing learners' difficulties. The finding corroborates the previous findings that majority of teachers exhibited a moderately positive attitude towards Foundational Literacy and Numeracy (FLN) while a smaller proportion (18 teachers) showed a high positive attitude [8]. This commitment represents an important strength within the education system because teachers' willingness to respond to learning needs can facilitate remedial support.

Another finding of this study is that, most of the participants consider learner-centred practices as effective approaches for addressing gaps in foundational literacy and numeracy. Qualitative participants emphasized the importance of involving learners actively in classroom activities, while the quantitative findings produced an overall mean score of 3.57, indicating a positive perception of learner-centred approaches. The convergence of both phases strengthens confidence in this finding. This finding aligns with a previous finding that majority of teachers in Sundargarh district, across both public and private institutions, recognized the value of learner-centric, experiential, and inquiry-based methods in early education [7]. Interactive teaching provides opportunities for pupils to participate, practice skills, receive feedback and learn according to their individual needs. Nevertheless, a positive perception does not

necessarily guarantee effective implementation.

The study also found that there is a gap between teachers' understanding of effective instructional approaches and their actual classroom practices. Qualitative participants reported that institutional challenges constrain the implementation of effective, evidence-based teaching methods. Similarly, the quantitative result recorded an overall mean of 2.30, suggesting that basic school teachers rarely use interactive methods during literacy and numeracy lessons. The convergence of both phases therefore points to a gap in pedagogical knowledge and implementation. This finding corroborates the report of 'knowledge to practice' gap among teachers of FLN [15]. The study reported that few of the teachers who had attended a training programme confidently use learner centred approach in their teaching. The finding also aligns with previous finding that it is important to build teachers' capacity for practices that align their pedagogy with evidence-based practices [10]. This implies that knowing appropriate teaching strategies is not enough when teachers lack the confidence and enabling conditions to apply them. Addressing the problem requires practical professional development, adequate instructional resources, supportive supervision and school environments that encourage interactive classrooms.

The finding shows that the challenges associated with addressing foundational literacy and numeracy are multidimensional and interconnected. Qualitative participants identified several challenges such as lack of home support, insufficient instructional materials and lack of motivation that affect teachers' capacity to respond effectively to pupils' learning gaps. The quantitative phase reinforced this evidence, with an overall mean of approximately 3.54, indicating a high level of agreement with the challenges identified during the qualitative phase. The convergence of the two phases suggests that FLN difficulties cannot be attributed to a single factor. This aligns with the finding which identified challenges facing addressing gaps in FLN to include limited infrastructure, shortages of teachers, and overly large classroom population [11]. The finding also corroborates previous finding which reported that literacy and numeracy skills are negatively affected by several pressing factors such as poor parental involvement, post-pandemic effects, non-regulation of gadget use and unorganized curriculum [9]. This suggests that interventions should adopt a comprehensive approach that simultaneously addresses teacher capacity, instructional resources, professional support and school related constraints.

Another finding is the limitation of teachers' initial professional training. This finding shows an important divergence between the qualitative and quantitative phases concerning initial professional training (IPT). Qualitative evidence suggests that IPT alone is not sufficient because aspects of the training are perceived as overly theoretical and may not adequately prepare teachers for practical FLN instruction. Conversely, the quantitative finding produced an overall mean of 3.50, indicating substantial agreement among participants that their initial professional training was adequate. This divergence

suggests that teachers may perceive their formal preparation positively while still experiencing difficulties in the course of transferring theoretical knowledge into classroom practice. This may suggest that, while the qualitative findings identified weaknesses in the initial professional training (IPT), the quantitative results suggest that teachers generally perceive their initial training as adequate, as reflected by the high overall mean of 3.50. This discrepancy may imply that teachers' perceived adequacy of training does not necessarily correspond with the actual quality or effectiveness of the training received. Thus, the quantitative findings may reflect perceived adequacy, whereas the qualitative findings provide deeper insights into specific gaps and weaknesses within the IPT. This aligns with the previous findings that pre service teacher education programmes are usually disconnected from what is happening in schools, resulting in new teachers entering the workforce without the skills needed to be effective teachers [17]. This highlights the importance of strengthening the practical components of teacher preparation through demonstrations, more extensive teaching practice, classroom-based problem solving and sustained professional support.

On CPD, the finding shows that regular training, seminars and workshops are considered important for improving teachers' instructional effectiveness, but opportunities for such professional development are inadequate. The quantitative result, with a mean score of 2.45, indicates that most participants had not attended workshops or seminars specifically focused on foundational literacy and numeracy. This result converges with the qualitative evidence, which emphasized the importance of continuing professional development while indicating also its inadequacy. The finding also aligns with submission from a previous studies that weak teacher capacity is reinforced by insufficient standardized teachers' continuous professional development opportunities which poses a challenge to better educational outcomes for children [2, 16]. As such, absence of regular FLN-focused training restricts teachers' exposure to current instructional approaches and evidence-based practices.

6. Conclusions

The findings of this study demonstrate that addressing gaps in foundational literacy and numeracy (FLN) in basic schools requires more than teachers' commitment or positive perceptions of effective instructional practices. Although teachers expressed readiness to support struggling learners and showed favourable perception of learner-centred approaches, a significant gap exists between their pedagogical understanding and actual classroom practices. A gap also manifested in inadequate professional backgrounds among some teachers, institutional constraints, limited use of interactive teaching methods, and insufficient opportunities for workshops and seminars that are focused on FLN. The findings also reveal a divergence concerning initial professional training: while the quantitative findings suggest that it is generally adequate, the qualitative

evidence identifies important weaknesses, particularly its overly theoretical orientation. In general, the convergence of findings indicates that improving FLN outcomes requires sustained teacher professional development, practical pedagogical preparation, supportive institutional conditions, and greater emphasis on evidence-based, learner-centred instructional practices. The innovation of this study lies in integrating teachers' qualitative experiences with quantitative evidence with respect to teacher of FLN in Kano State. The study contributes a contextually grounded explanation of FLN instructional gaps by showing that the problem is not simply a deficit in teachers' knowledge, qualification, or commitment, but a complex interaction between subject preparation, pedagogical competence, classroom implementation, professional development, and institutional constraints. It further identifies a critical knowledge–practice gap, showing that teachers may value and understand learner-centred FLN approaches without consistently implementing them. This findings of this study hereby further explains proGuskey theory of Teacher development that professional development of teachers leads to changes in teachers' classroom practices, which subsequently influence student learning outcomes.

Abbreviations

FLN	Foundational Literacy and Numeracy
SDG	Sustainable Development Goals
NCE	Nigeria Certificate in Education
CPD	Continuous Professional Development
IPT	Initial Professional Training
PLANE	Partnership for Learning for All in Nigeria
EFA	Education for All
PGDE	Postgraduate Diploma in Education
HND	Higher National Diploma

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Author Contributions

Saheed Olanrewaju Jabaar: Conceptualization, Formal Analysis, Funding acquisition, Methodology, Project administration, Supervision, Writing – original draft

Hameed Ishola Surakat: Data curation, Investigation, Software, Validation, Visualization, Writing – review & editing

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Data Availability Statement

The data supporting the outcome of this research work has been reported in this manuscript.

Conflicts of Interest

The authors declare no conflicts of interest.

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Biography



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Research Field

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