Teacher Development Needs Analysis

Kano state, Nigeria
June 2011

esspin
Education Sector
Support Programme
in Nigeria

UKaid
from the Department for
International Development

Contents

Acronyms and Abbreviations

DFID	Department for international development
ESSPIN	Education sector support programme in Nigeria
LGA	Local government area
LGEA	Local Government Education Authority
MDG	Millennium Development Goal
MOE	Ministry of Education
NGO	Non Governmental Organisation
PTA	Parents, Teachers Association
SBMC	School Based Management Committee
SESP	State Education Sector Project
STL	State Team Leader
SUBEB	State Universal Basic Education Board
TA	Technical Assistance
UBEC	Universal Basic Education Commission

Abstract

1. This paper reports on a study into the professional working knowledge of teachers in Nigeria. Teachers in five ESSPIN States (Kwara[1], Lagos, Jigagwa, Kano and Kaduna) were subjected to a number of tasks designed to profile their knowledge in the subject areas of primary mathematics and primary literacy, their proficiencies in reading materials that may be used for the preparation of lessons and their abilities to write notes that may be used in the preparation of lesson schemes, or in teaching, such as those that might be used on the chalkboard. Further, the teachers were assessed for their abilities to add up marks on class tests, turn raw scores into averages and percentages, and read and comment on bar charts containing information on children's learning achievements so as to monitor the learning progression of individual or groups of students and to use a mark scheme that they are given to assess students' work so that they can identify the areas in which children need help and identify weaker from stronger learners.

2. The report looks at the characteristics and professional working knowledge of teachers in Kano State[2]. It has three purposes:

3. First, to propose a rationale and framework for the understanding and analysis of professional working knowledge described here as comprising of **basic subject knowledge** (a teacher's ability to teach and assess primary mathematics and primary literacy), **general pedagogical knowledge** (a teacher's ability to read and write for the purposes of preparing to teach), and **pedagogical content knowledge** (a teacher's ability to assess students' learning and monitor their progress).

4. Second, to present a profile of the professional working knowledge of teachers in Kano State.

5. Third, to discuss the policy implications of the teacher knowledge profile and to draw attention to the specific teacher development needs in the State.

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[1] The study on Kwara was completed in November 2008 and is reported separately. However, a separate report gives a comparative analysis of the professional working knowledge of teachers in all five States.
[2] Results for the States of Jigawa, Kaduna, and Lagos are reported separately.

Executive Summary

6. A proportionate random sampling strategy adopted from the ESSPIN Teacher Observation Study was employed. A theoretical sample of 136 schools was drawn from the total number of schools in Kano. The final number of teachers[3] included in the analysis is 1,620.

7. The sample consisted of 327 female teachers and 1,259 male teachers. The majority of teachers in the sample (82% or 1,324 teachers) are between the ages of 20 and 40 years. 196 teachers (12%) are between the ages of 40 and 50 years and 30 teachers (2%) are over 50 years old.

8. The majority of teachers in the sample (72% or 1,169) have attended school to at least the senior secondary level, but one third of teachers in the sample have not.

9. There are no teachers, of a total of 1,620 in the sample, who achieved an overall score of 80%. Thus there are no teachers that can be thought of as having achieved the benchmark.

10. Even when the achievement bands are widened, none of the teachers in the sample achieved scores that fall within the 75% to 100% range. Thus, none of the teachers in the Kano sample can be thought of as having a 'sufficient' level of professional working knowledge. Only 13 teachers, (0.8%) have 'near sufficient' levels of professional working knowledge. 78% of teachers have limited knowledge.

11. In primary mathematics, only 50 teachers in the Kano sample (3%) can be thought of as having 'sufficient' and 228 teachers (14%) 'near sufficient' levels of subject knowledge to teach that subject. It is worrying that 45% achieve scores of between 0% and 25% (limited professional working knowledge).

12. The position is even worse in respect of subject knowledge of primary literacy (English). Only two of the teachers in the sample can be thought of as having 'sufficient' levels of professional knowledge (0.1%) and 35 teachers (2.2%), 'near sufficient' levels of knowledge to teach English to primary school children. 77% of teachers in the sample cannot be regarded as sufficiently competent to teach English at primary level. Worryingly, there are only three teachers in the sample who can be thought of as being able to teach children, with confidence, how to write a friendly letter and to guide their writing for content, grammatical and formal correctness. 93% of teachers show poor facility with this task.

13. It is clear from the results that teachers have serious difficulties reading information-giving texts (non fiction texts) and writing notes in summary of that information. Both such reading and writing are crucial in the preparation of lessons and conveying information to children. This is perhaps the biggest challenge for a professional development strategy.

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[3] Ie, teachers including student teachers who were included in the sample. From hereon, 'teachers' is used to describe all who took the Kano test.

14. Teachers also have serious weaknesses in being able to identify the learning problems of their students. There is a clear knowledge gap in their abilities to read or present information in tables and graphs in order to monitor the progress that students make in class. This is probably more remediable, and it is crucial that the building of this domain of knowledge is given priority in a professional development strategy.

15. The results show that few teachers have sufficient levels of professional working knowledge to teach at the primary level. To remedy the situation, the State could begin by engaging with those teachers showing the weakest levels of knowledge. This could be attempted by putting into place a targeted strategy in each of the domains of knowledge referred to in this paper.

16. Taking sampling error into account, this could mean that 45% of teachers in the State would need a refresher course in primary mathematics, particularly in those aspects that demand problem solving skills.

17. The task is bigger in the subject area of primary literacy. Here, (sampling error taken into account), 77% of teachers are in need of remedial measures.

18. A package of materials and training that shows teachers how to read for information and that provides them with strategies to summarise factual information would be extremely valuable for all teachers. The sample in Kano indicates that 82% of teachers are likely to need such support.

19. A professional development package containing exercises that would give teachers guidance in how to assess student writing, and how to record their progression, is essential too. In Kano, it is likely that 93% of teachers would need support in this domain of professional working knowledge.

20. The consultant suggests that several LGAs are selected and targeted for this work and that a monitoring and impact evaluation strategy runs alongside.

Chapter 1: The Characteristics of Teachers in Kano State

21. A proportionate random sampling strategy was employed, adopted from the ESSPIN Teacher Observation Study. A theoretical sample of 136 schools was drawn from the total number of schools in Kano and it was expected that this would yield 2,000 teachers. However, data on the number of teachers in each school was not accurate and the strategy yielded only 1,396 teachers. Then, following a decision of the State Working Group, Arabic teachers were expunged from the list. This left a sample of less than 1000 teachers. In order to increase the sample size, an additional 82 schools were selected, again randomly. The working group contacted schools to verify numbers and the final number of teachers, when Arabic teachers were excluded, was 1600. A decision was then taken to include student teachers of Saadatu Rimi College of Education, Kumbotso and 400 candidates were selected to sit the test. After the tests were taken, there were a number of spoiled papers. The final number of teachers included in the analysis is 1,620.

22. 1,620 teacher test papers were analysed. Of these, there were some patches in the data recorded and this was taken into account in the analysis. Table 1.1 below shows that there are 1,259 male teachers and 327 female teachers. 34 teachers did not declare their sex.

Table 1.1: Total number of teachers by gender

Gender	No of teachers	No of teachers (%)
Male	1,259	77.7
Female	327	20.2
Missing	34	2.1
Total	1,620	100.0

23. The majority of teachers (1,324 or 82%) in the Kano sample are between the ages of 20 and 40 years. The sample included 387 candidates in the final year in teacher training college. 196 teachers are in the 41 to 50 old age group. 30 teachers in the sample are over the age of 50. If the sample reflects the entire population of teachers, then Kano boasts a younger age profile than Lagos where 80% are over 40 years of age. The age profile of teachers in the Kano sample is shown in table 1.2 below.

Table 1.2: The age profile of sampled teachers in Kano State

Age group	No of teachers	No of teachers in %
20 to 30 years old	803	49.6
31 to 40 years old	521	32.2
41 to 50 years old	196	12.1
over 50 years old	30	1.9
Missing	70	4.3

24. It is consistent therefore that the majority of teachers in the Kano State sample (63%)have only been teaching for 10 years or less. 14% of teachers have taught for between 11 and 20 years and 11.5% for over 20 years (see table 1.3 below). It is interesting to establish whether there is a relationship between teaching experience and teacher professional knowledge. We shall return to this later in the report.

Table 1.3: Teaching experience

Teaching experience	No of teachers	No of teachers
1 to 5 years	699	43.1
6 to 10 years	320	19.8
11 to 20 years	229	14.1
over 20 years	186	11.5
Missing	186	11.5

25. 82% of the teachers in the sample claim that teaching was one of their top three career choices. Among them 74% of the teachers stated that it was their top career choice. Table 1.4 below shows the preferences of teachers towards teaching as a career.

Table 1.4: Teaching as career choice

Teaching as career choice	Number of teachers	Number of teachers (%)
First	1,199	74.0
Second	98	6.0
Third	32	2.0
Fourth	3	.2
Fifth	1	.1
Sixth	0	-
Seventh	4	.2
Eighth	1	.1
Ninth	0	-
None and missing	282	17.4

26. The majority of teachers in Kano State (72%) have attended school to at least the senior secondary level (see table 1.5 below). But it is worth noting that nearly one third of teachers in the sample have not been educated to senior secondary level.

27. 9% of teachers in the sample hold degrees and other post-graduate qualifications and 56% of teachers hold the National Certificate in Education. It is interesting to note that 26% of teachers in the sample hold the GD2 and OND qualifications (see table 1.6 below).

Table 1.5: Teachers' levels of education

Level of education	No of teachers
Has not been educated to senior secondary level and missing data	451 (28%)
Educated to senior secondary level	1,169 (72%)

Table 1.6: Highest qualifications obtained

Highest qualification	No of teachers	No of teachers (%)
GD2	284	17.5
OND	142	8.8
NCE	902	55.7
HND	25	1.5
DEGREE	38	2.3
Others	113	7.0
Missing	116	7.2

28. The stability of teachers is an important consideration in developing strategies for in-service professional development. It seems that a relatively small percentage of teachers (0.3%) have been transferred between schools as many as 9 times. 10.9% of teachers have been transferred at least once and 23.5% of teachers up to 3 times (see table 1.7 below).

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Table 1.7: Number of times teachers are transferred from one school to another

Times transferred	No of teachers	No of teachers (%)
0	98	6.0
1	176	10.9
2	114	7.0
3	90	5.6
4	63	3.9
5	42	2.6
6	27	1.7
7	15	0.9
8	12	0.7
9	5	0.3
Missing	978	60.4

29. Over 45% of teachers in the sample teach in rural schools, and 29% in urban schools. A further 10% of teachers are based in schools that are semi-urban. We found there to be inconsistencies in the ways in which teachers reported the locations of their schools, some teachers in one school claiming it was rural and others in the same school describing it as urban. The data reported later, which describe teacher achievement by types of school must therefore be treated with caution. The profile of school type, as reported by teachers, is given in table 1.8 below.

Table 1.8: Schools by type (teacher reporting inconsistent)

Location of school	No of teachers	No of teachers (%)
Rural	734	45.3
Urban	465	28.7
Semi-urban	169	10.4
Others	22	1.4
Missing	230	14.2

30. Kano state is made up of 44 Local Government Areas and the spread of teachers in the sample assessed is shown in table 1.9 below. The largest numbers of teachers drawn in the sample was in Fagge. A sub-sample of 355 teachers was drawn from Saadatu Rimi College of Education, Kumbotso (see table 1.9 below).

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Table 1.9 The distribution of teachers across Local Government Areas

LGA	Number of teachers
Ajingi	9
Albasu	43
Bagwai	15
Bebeji	38
Bichi	24
Bunkure	43
Dala	30
Dambatta	69
Dawakin Kudu	12
Dawakin Tofa	36
Doguwa	19
Fagge	166
Gabasawa	14
Garko	9
Garun Mallam	28
Gaya	52
Gezawa	0
Gwale	31
Gwarzo	39
Kabo	20
Kano	17
Karaye	10
Kibliya	11
Kiru	21
Kumbotso	57
Kunchi	23
Kura	23
Madibo	1
Makoda	0
Minjibir	42
Nasarawa	50

LGA	Number of teachers
Rano	0
Rimin-Gado	52
Rogo	16
Shanono	2
Sumaila	27
Takai	25
Tarauni	16
Tofa	16
Tsanyawa	1
Tudun Wada	10
Ungogo	53
Waraua	2
Wudil	28
Saadatu Rimi College of Education	387
Candidates missing LGA	33
Kano overall	1,620

 * The sample consists of teachers that can be identified by LGA

Chapter 2: Teachers' Profiles of Achievement

2.1 The profiling framework

31. The primary research questions for the study were:

     'Do primary school teachers in Kano have sufficient professional working knowledge such that they can:

 a. confidently correct children's work in such aspects of primary mathematics as manipulation of numbers, place values, time, measurement, and fractions?
 b. confidently correct children's work in such aspects of literacy as English reading comprehension and identify errors of formal correctness (grammar, organisation and lapses in various forms of punctuation such as full stops, capitals, exclamation marks, and quotation marks) in children's letter writing?
 c. confidently read a variety of simple information-giving texts in English and extract and summarise information in their own words so as to prepare a social studies lesson to teach to primary school children?
 d. write a friendly letter so that it might act as a model from which children can learn?
 e. add up marks on class tests, turn raw scores into averages and percentages, and read and comment on bar charts containing information on children's learning achievements so as to monitor the learning progression of individual or groups of students?
 f. use a mark scheme that they are given to assess students' work so that they can identify the areas in which children need help and identify weaker from stronger learners?

32. Teachers were given three papers, each of which contained two substantive tasks, as a test of their proficiencies. A benchmark (desired level of achievement) was set: Box 2.1 below:

Box 2.1: The benchmark (desirable level of professional working knowledge)

Teachers should be able to mark accurately at least 80% of items on a Mathematics test paper as answered by 10-year old children. They should be able to mark accurately at least 80% of an English Language paper that contains a reading comprehension test and other aspects of language such as word meanings and vocabulary. They should be able to correct for form, content and punctuation a number of sentences and a letter written by a 10-year old child. Teachers themselves should be able to write a friendly letter that takes into account purpose (who the letter is intended for), that is grammatically correct, and that is relatively accurate in spelling and punctuation, such that it might be used as a model for teaching children to write such letters. In addition, teachers achieving the desired professional working knowledge threshold should be able to extract information from a variety of short information-giving texts and use this to write short notes, such as that which might be expected in outlining the content of a lesson that they would teach to primary school children. It is expected that teachers would master at least 80% of such reading material, and demonstrate the ability to summarise it accurately such as they would in writing notes on the chalkboard for children to copy into their exercise books. Finally, teachers should be able to do simple arithmetical operations on classroom test data

such as calculating averages and percentages and interpreting simple graphs, and use the information to comment upon and track the progress of individuals or groups in the class. Further, they should be able to use a marking guide to assess the quality of student's writing and to discriminate between writing produced by different students, in so doing demonstrating their own understanding of children's learning. Again, it is expected that teachers achieve this 80% of the time.

Strictly speaking therefore, the competency threshold is a mark of 80% in each test but to allow for some degree of measurement error, the benchmark agreed was an overall score of 80% or above.

33. More important however, is the fact that the tests were designed to be diagnostic. Therefore, those teachers, apart from those who achieve 80% or higher across all the domains of the test, whose combined scores are on or within the 75th and 100th percentiles are profiled as having '**sufficient professional working knowledge**'. Those teachers, who achieve scores that fall within the 50th and to 75th percentiles, are profiled as having '**near-sufficient professional working knowledge**'. Those teachers who fall some way short of the benchmark, achieving scores of within the 25th and 50th percentiles are profiled as possessing '**emerging professional working knowledge**'. Those teachers whose scores fall in the range from 0% to the 25th percentile, a long way short of achieving the benchmark, are profiled as having '**limited professional working knowledge**'. The level of achievement framework is set out below.

Figure 2.1 Levels of Achievement Framework

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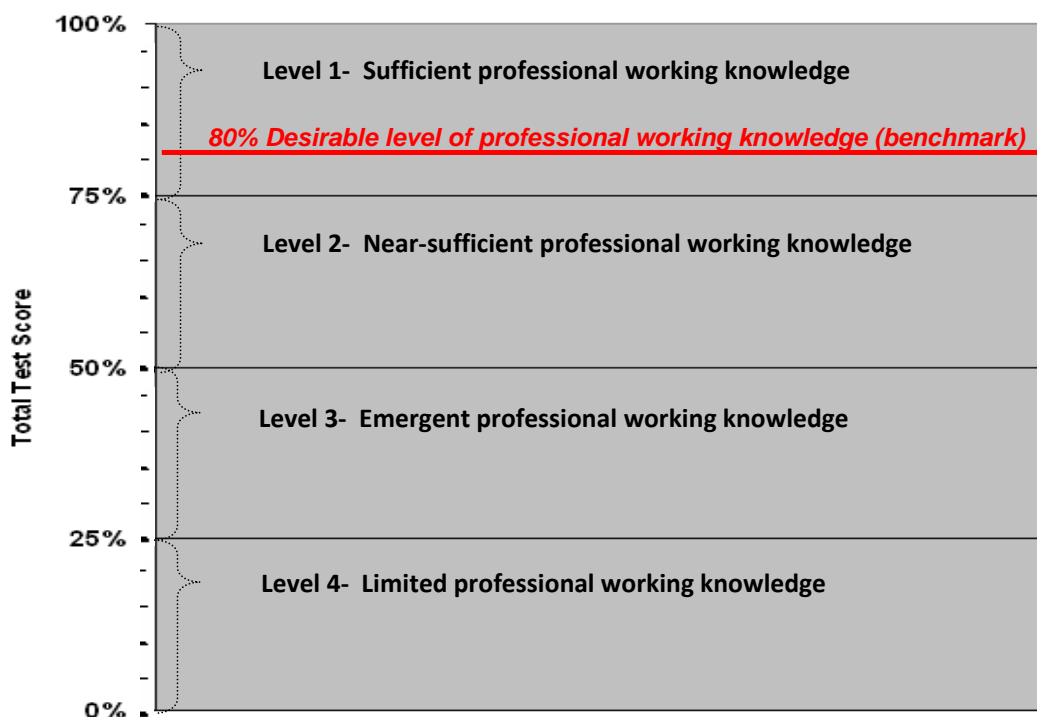
2.2 The test performance of teachers – how many teachers achieve the benchmark (overall score of 80%)

34. Table 2.1 below shows the minimum, maximum, and mean scores achieved by the sample.

Table 2.1: Minimum, maximum, and mean scores for the cohort of teachers in Kano

	Valid N.	Min. score	Max. score	Mean score	Standard deviation	Standard error
Primary mathematics	1,620	.00	90.00	29.75	21.52	0.535
Primary literacy	1,604	.00	83.33	15.29	14.63	0.365
Reading and Writing	1,609	.00	70.00	12.36	13.47	0.336
Pedagogical Literacy	1,618	.00	66.67	6.86	9.94	0.247
Total Test Score	1,593	.00	59.23	15.70	11.75	0.294

35. **The total mean score for all teachers in the Kano sample is 15.7%.** Considering that the desired level of competency was set at 80%, the Kano sample falls significantly short of achieving this level of success.

36. **There are no teachers in the sample that achieve the benchmark (overall scores on the test between 80 – 100%).** When we look at each of the knowledge domains in which teachers were assessed, table 2.2 below shows that 2% teachers achieve scores of 80% or above in subject knowledge of primary mathematics, but only less than 0.1% of the teachers achieve a similar score in the subject matter knowledge of primary literacy. There are no teachers who achieve the desired benchmark in the domain of general pedagogical knowledge (reading and writing), and no teachers who achieves it in the knowledge domain of pedagogical content knowledge.

**Table 2.2 The number of teachers achieving the desired level of competency**

	Total Test		Knowledge of Subject Mathematics		Knowledge of Subject Literacy		General Pedagogical Knowledge		Pedagogical Content Knowledge	
	N	%	N	%	N	%	N	%	N	%
Level A (80-100%)	0	-	32	2.0	1	0.1	0	-	0	-

2.3 The test performance of teachers – (re) modelling the desired level of professional working knowledge to suit (overall score of 70% or lower)

37. The results presented in section 2.1 above show that there are no teachers who achieve the benchmark. It is therefore incumbent upon us to consider whether the results would have been different if the benchmark were set at a lower level of stringency.

38. It is possible to argue that the stringency level of 80% was set too high. The argument here would be that when the context of education and the conditions under which teachers in Nigeria teach are taken into account, it is unrealistic to expect that they should master 80% of tasks, even if those tasks are in the case of subject knowledge items taken from a class 4 syllabus, or that in the case of general pedagogical knowledge, the levels of reading required is no more than would be expected, as determined in the syllabus, of 12 year old children. In anticipation of such an argument (although it would be unfortunate if it were made), we have produced the following models which show how many teachers would achieve a new threshold if say it were set to 70%, 60%, 50%, 40%, or even 30%. Any suggestion that teachers would need only to master 30% of the materials they were given to work with would of course be unthinkable but the theoretical models below show that even if this were the case, the conclusion that **more than three quarters of the teachers in the State are in need of drastic remedial measures is inescapable**. In Kano, were the desired benchmark to be set as 30%, it is predicted that only 13.2% of teachers would achieve it.

Figure 2.2 Percentage of teachers achieving the benchmark if stringency levels were reduced

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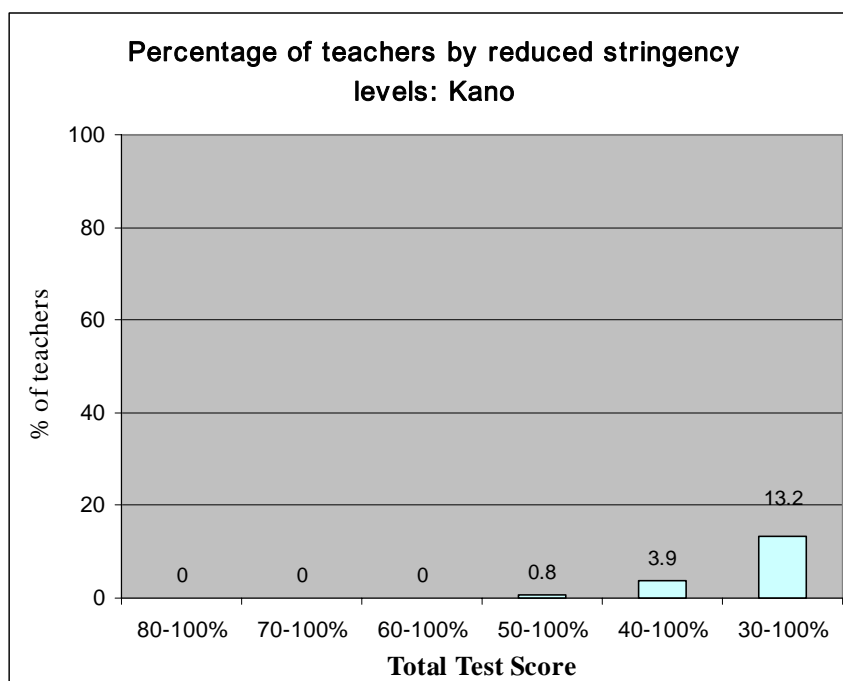
Kano	Total Test Score Threshold					
	80-100%	**70-100%**	**60-100%**	**50-100%**	**40-100%**	**30-100%**
Number of teachers (Total number: 1,620)	0	0	0	13	62	211

2.4 Profiles of achievement

39. As discussed above, the benchmark was defined as an achievement of an aggregate score of 80% or higher in the test. But, we need also to look at the overall spread of scores in order to define the profile of achievement for teachers in Kano. Table 2.3 below shows that no teacher achieves a combined average score of 75% or more on the overall test. 3.1% of the teachers achieve a score of 75% or above in the test of primary mathematics, but only 0.1% teachers obtain this level of achievement in the tests of primary literacy. No teacher achieves 75% or above in general pedagogical knowledge or pedagogical content knowledge.

Table 2.3 Profiles of achievement, Kano teachers

	Total Test		Knowledge of Subject Mathematics		Knowledge of Subject Literacy		General Pedagogical Knowledge		Pedagogical Content Knowledge	
	N	%	N	%	N	%	N	%	N	%
Level 1 (75-100%)	0	-	50	3.1	2	0.1	0	-	0	-
Level 2 (50-75%)	13	0.8	228	14.1	35	2.2	13	0.8	9	0.6
Level 3 (25-50%)	320	19.8	618	38.1	325	20.1	263	16.2	97	6.0
Level 4 (0-25%)	1,260	77.8	724	44.7	1,243	76.7	1,334	82.3	1,512	93.3

Scores between 0-25= 0 -24.9999999. Scores between 25-50 = 25-49.9999999 etc.

40. The profiles of achievement for teachers in Kano are shown in the histograms below.

Figure 2.3 Teacher profiles of achievement by test domain, Kano

Mean =15.70
Std. Dev. =11.745
N =1,593

Level 4 (0-25%)
N=1260 (77.8%)

Level 3 (25-50%)
N=320 (19.8%)

Level 2 (50-75%)
N=13 (0.8%)

Level 1 (75-100%)
N=0

Number of teachers

Total Test Score (%)

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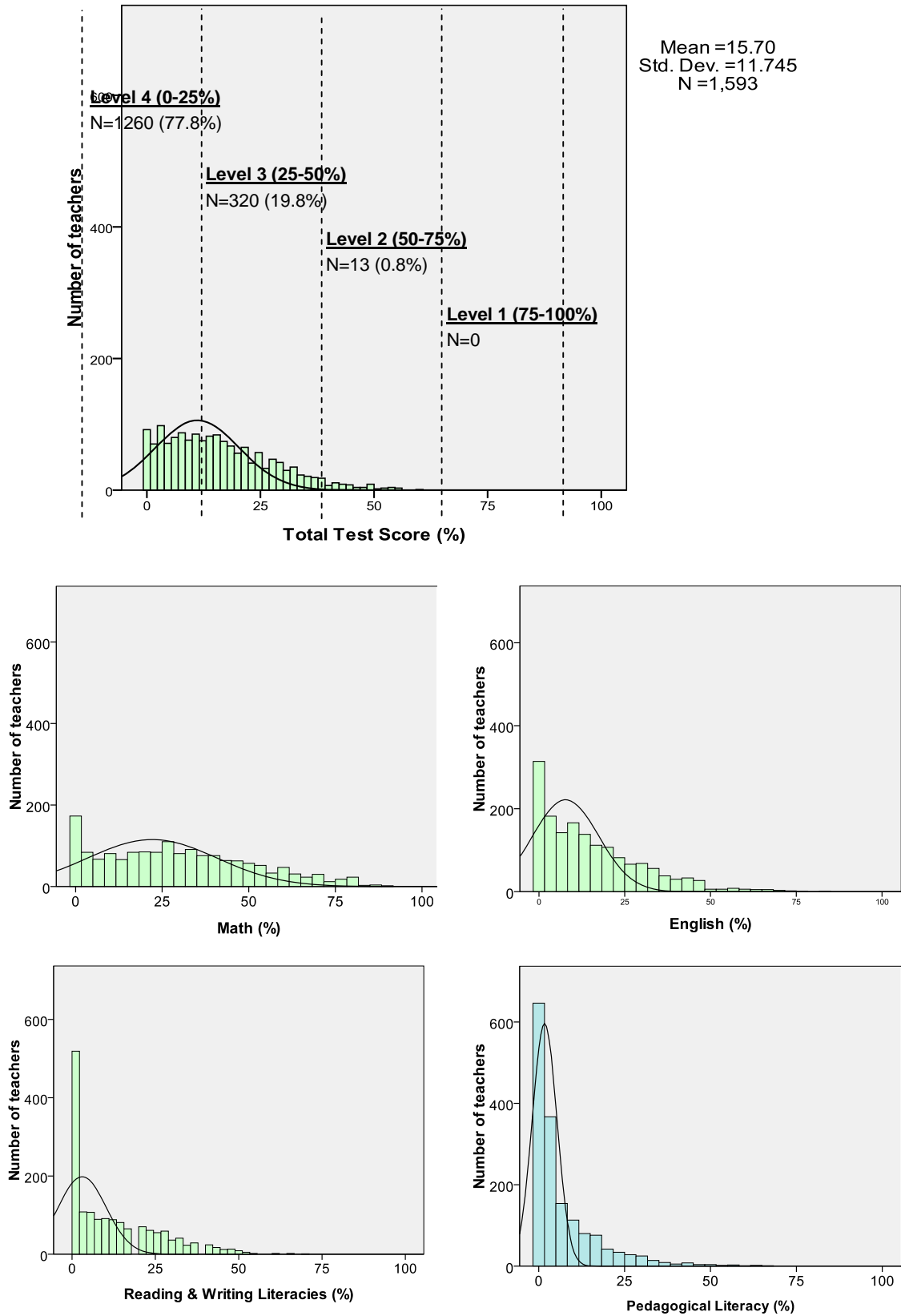
2.5 The profiles of teachers with limited professional working knowledge – the challenge for a professional development strategy

41. We have seen in table 2.3 and the histograms (figure 2.3 above) that when teachers' professional working knowledge is profiled in quartiles, there is a large concentration of teachers in the lowest quartile across all tests. Figure 2.3 below gives a profile of those teachers with the weakest levels of professional working knowledge. This is significant because it is probably the key area to attack in a professional development strategy. 45% of teachers are in need of remedial measures in primary mathematics; 77% in primary literacy, 82% in reading and writing, and 93% in the area of knowledge to allow them to record progression and assess children's work.

Figure 2.4 A profile of teachers with limited professional working knowledge
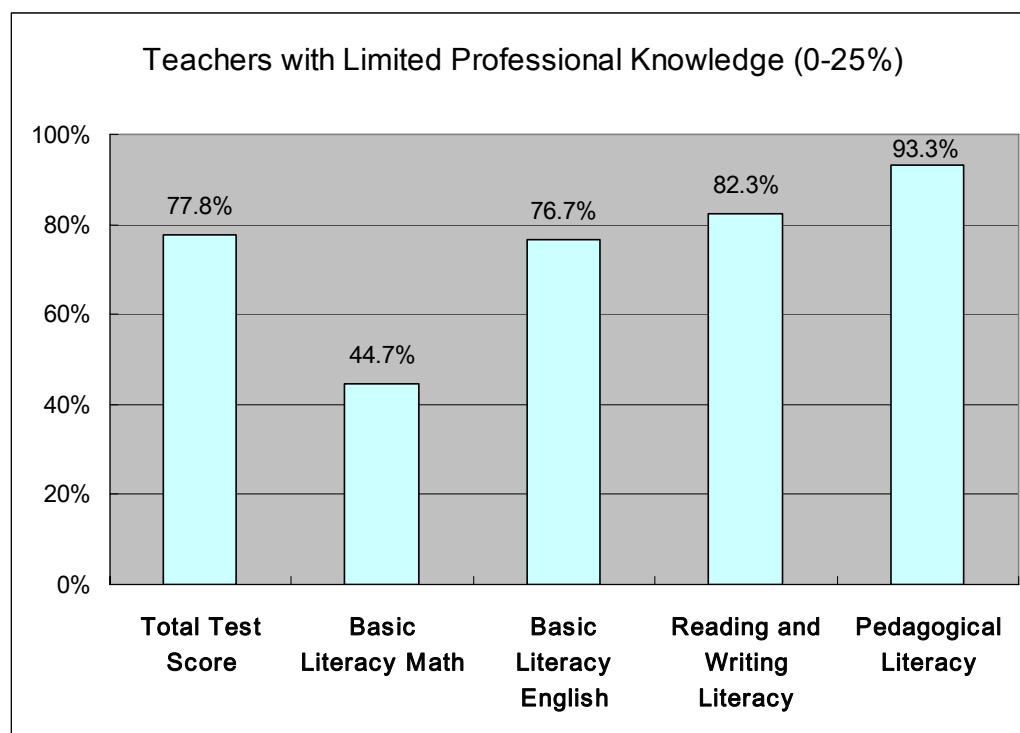
Chapter 3: Teachers' Profiles of Achievement by Local Government Area

3.1 The distribution of test scores within and between Local Government Areas (total test)

42. The findings with respect to teachers' achievement by Local Government Area must be read with cross-reference to Table 1.9 above: Distribution of Teachers Across LGAs. Table 1.9 shows that a number of LGAs had too few sampled teachers to draw reliable conclusions about comparative performance of all teachers in the LGA.

43. Figure 3.1 below shows that when teachers' scores are profiled in Local Government Areas (LGAs), there are several LGAs that fall below the overall mean score achieved by the sample of teachers[4]. Of the 37 LGAs sampled, 16 achieve scores above the mean, notably so in Garko, Kura, Ajingi and Kano. The College of Education sub-sample also scores above the mean. The highest performing LGA is Garko, teachers there achieving an average percentage score of almost 21%. The profile of teachers in Kura is very similar (19%). Teachers in these two LGAs achieve scores that are over 5 percentage points above the mean. Kabo, Dambatta, Rogo and Tofa are the worst performing LGAs. Teachers in Kabo and Dambatta scored almost 5 percentage points below the mean.

44. Figure 3.2 below shows that there is significant variation in the test performance of teachers between LGAs. The highest achieving LGA has an average percentage score of 20.7% and the lowest achieving, an average percentage score of 10%. There is also significant variation *within each LGA*.

45. Figure 3.2 below shows that in some LGAs a small number of teachers achieve scores of 50% or over. But, in every LGA there are significant numbers of teachers who achieve very low overall scores, the lowest scores in almost every case being zero. If we exclude the top candidates from the College of Education, then the highest performing teacher is in Ungogo.

46. In summary, the results are poor. Teachers achieve an overall mean score that falls over 67% points short of the desired achievement benchmark. The question we now turn to is whether teachers have better working knowledge in some areas than others.

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[4] Analysis applied to those LGAs with sufficient teachers sampled.

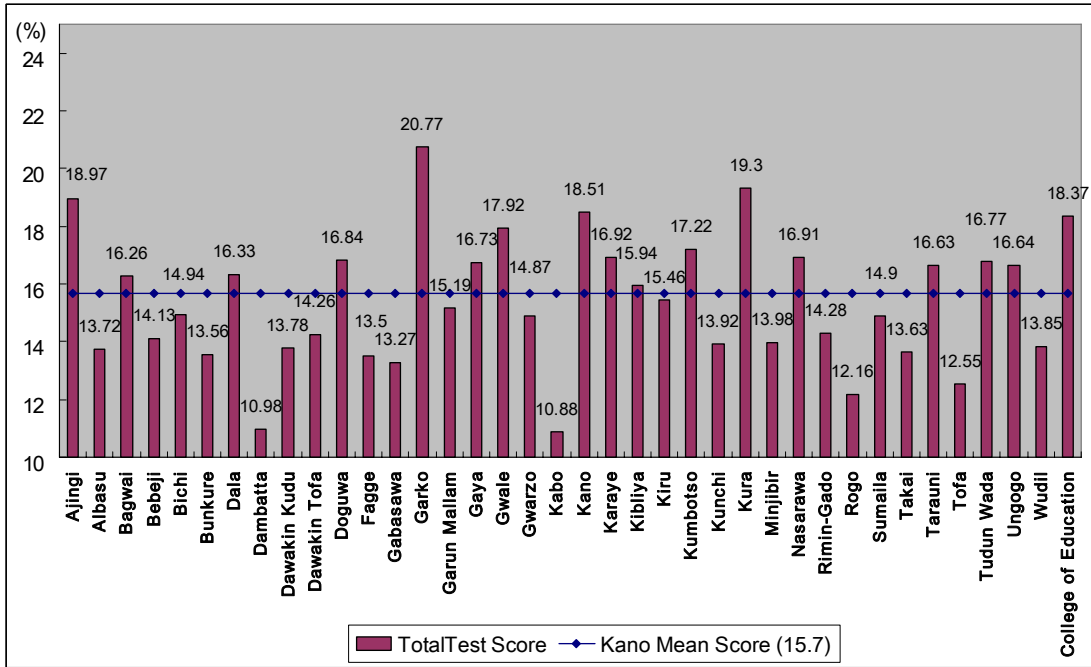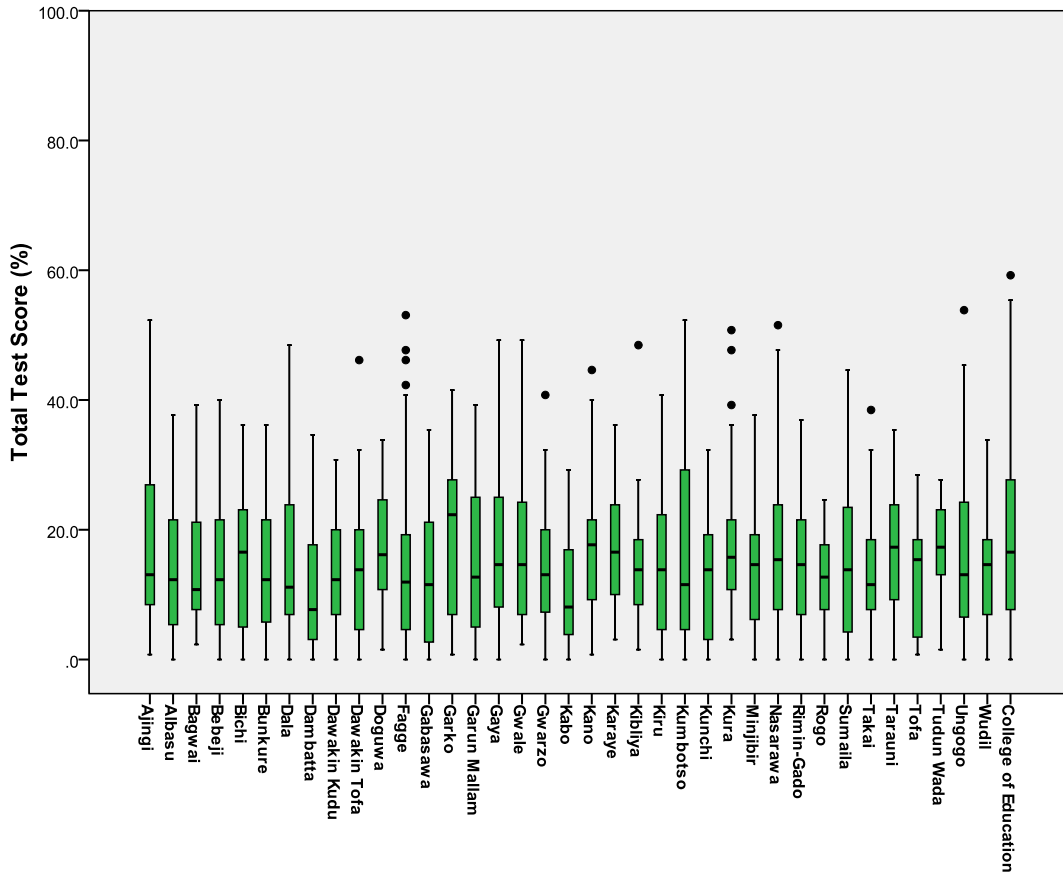**Figure 3.1: Mean percentage scores by LGA: Total**

Figure 3.2: Teacher performance on all tests

3.2 The test performance of teachers on each knowledge domain and the distribution of test scores within and between Local Government Areas

Table 3.1 - Total scores (%) of teachers by LGA

LGA	Number of teachers	Teacher performance on all tests (%)				Total test
		Math	English	Reading & writing literacy	Pedagogical literacy	
Ajingi	9	31.11	23.70	11.94	11.48	18.97
Albasu	43	26.82	13.72	9.65	6.05	13.72
Bagwai	15	30.67	12.00	11.00	13.11	16.26
Bebeji	38	24.21	14.65	12.04	6.32	14.13
Bichi	24	28.75	12.36	12.29	7.22	14.94
Bunkure	43	27.36	10.93	11.40	5.27	13.56
Dala	30	32.11	16.56	11.00	7.44	16.33
Dambatta	69	23.53	10.34	7.17	4.15	10.98
Dawakin Kudu	12	25.83	10.28	11.46	8.33	13.78
Dawakin Tofa	36	29.63	15.81	10.14	4.91	14.26
Doguwa	19	28.77	16.67	17.63	5.79	16.84
Fagge	166	25.88	13.93	10.23	5.44	13.50
Gabasawa	14	32.86	11.67	12.12	3.10	13.27
Garko	9	39.63	18.89	18.89	6.30	20.77
Garun Mallam	28	25.83	16.43	15.36	3.10	15.19
Gaya	52	32.63	15.71	13.27	6.47	16.73
Gezawa	0	-	-	-	-	-
Gwale	31	32.04	17.20	14.60	8.92	17.92
Gwarzo	39	26.84	13.33	14.10	5.47	14.87
Kabo	20	22.00	8.17	7.88	6.50	10.88
Kano	17	33.53	19.02	13.97	9.02	18.51
Karaye	10	31.67	18.67	10.25	9.33	16.92
Kibliya	11	34.55	15.76	10.23	5.15	15.94
Kiru	21	24.44	20.00	12.02	6.51	15.46
Kumbotso	57	32.57	15.61	14.39	7.25	17.22
Kunchi	23	28.12	10.00	11.25	5.36	13.92
Kura	23	39.13	18.99	15.23	5.94	19.30
Madibo	1	30.00	6.67	2.50	3.33	10.00
Makoda	0	-	-	-	-	-
Minjibir	42	26.19	13.17	13.11	3.33	13.98
Nasarawa	50	30.73	19.05	10.82	9.00	16.91
Rano	0	-	-	-	-	-
Rimin-Gado	52	28.14	13.86	11.25	5.32	14.28
Rogo	16	26.04	13.13	7.97	2.92	12.16
Shanono	2	51.67	26.67	23.75	18.33	29.62

LGA	Number of teachers	Teacher performance on all tests (%)				Total test
		Math	**English**	**Reading & writing literacy**	**Pedagogical literacy**	
Sumaila	27	28.15	15.80	11.94	4.69	14.90
Takai	25	29.60	10.67	8.50	7.47	13.63
Tarauni	16	31.04	12.71	15.94	7.08	16.63
Tofa	16	26.25	8.75	9.22	7.08	12.55
Tsanyawa	1	60.00	33.33	27.50	10.00	32.31
Tudun Wada	10	31.00	17.67	11.75	8.33	16.77
Ungogo	53	32.20	16.73	12.59	8.87	16.64
Waraua	2	73.33	31.67	12.50	28.33	34.62
Wudil	28	28.10	13.70	8.84	5.48	13.85
College of Education	387	33.53	17.90	14.98	8.69	18.37
Candidates missing LGA	33	-	-	-	-	-
Kano overall	1620	29.75	15.29	12.36	6.86	15.70

47. When their working knowledge in primary mathematics was assessed, teachers in the Kano sample achieved an overall mean score of 29.7%. 20 LGAs achieved scores above the mean.

48. In the test of their knowledge of Primary English, teachers achieved an overall mean score of 15.3%. Teachers did considerably worse on this test that they did in the test of primary mathematics. There is substantial variation in scores between the LGAs.

49. In the test of reading and writing literacies, teachers achieved an average percentage score of 12.4%. This result is poorer than both their working knowledge in mathematics and primary English (subject knowledge). Again, there was significant variation between the LGAs but all within a low range of average scores overall.

50. In the test of their pedagogical literacies, the average percentage score achieved by teachers was 6.86%. This result was the poorest in the suite of tests. There was some variation between the LGAs, although most markedly amongst those with insignificant numbers of teachers sampled.

51. The results by domains of knowledge show that teachers as a group have limited professional working knowledge across all the domains of the test.

52. The most worrying results are the levels of achievement reached by teachers in the domains of general pedagogical knowledge (their abilities to read and write in order for them to prepare lessons), and the pedagogical content knowledge (their abilities to

understand how children learn so that they can identify those weaker learners that need support, and monitor the progress of the whole class).

53. Average scores decline according to the order in which each domain of the test was presented, which suggests that this may explain part of the performance pattern observed. For example, a decreasing proportion of teachers may have completed each test in turn. Likewise, it is probable that weak functional competence in the English language explains part of the evidence of poor performance amongst Kano State teachers. This would be consistent with their ability to cope better with mathematics test items, which rely partly on numerical symbols that are the same in English and Hausa orthography.

54. The graphs that follow show the average mean scores for each knowledge domain and the performance of teachers in each LGA sampled. The second graph in each case shows how the scores are distributed. It is interesting to look at the outliers in each case. This shows that a number of teachers in each LGA do very well in every test, but it is also clear that a significant number of teachers are bunched at the other extreme.

55. Those outliers marked by a dot denote individual teachers that achieve scores of between 1.5% and 3% above the interquartile range. Those outliers marked by a star, denote teachers who achieve scores more than 3 times the interquartile range.

56. We look next at a teacher profile that shows the numbers of teachers in each LGA and their levels of achievement.

Figure 3.3 Teachers Knowledge of Primary Mathematics means by LGA
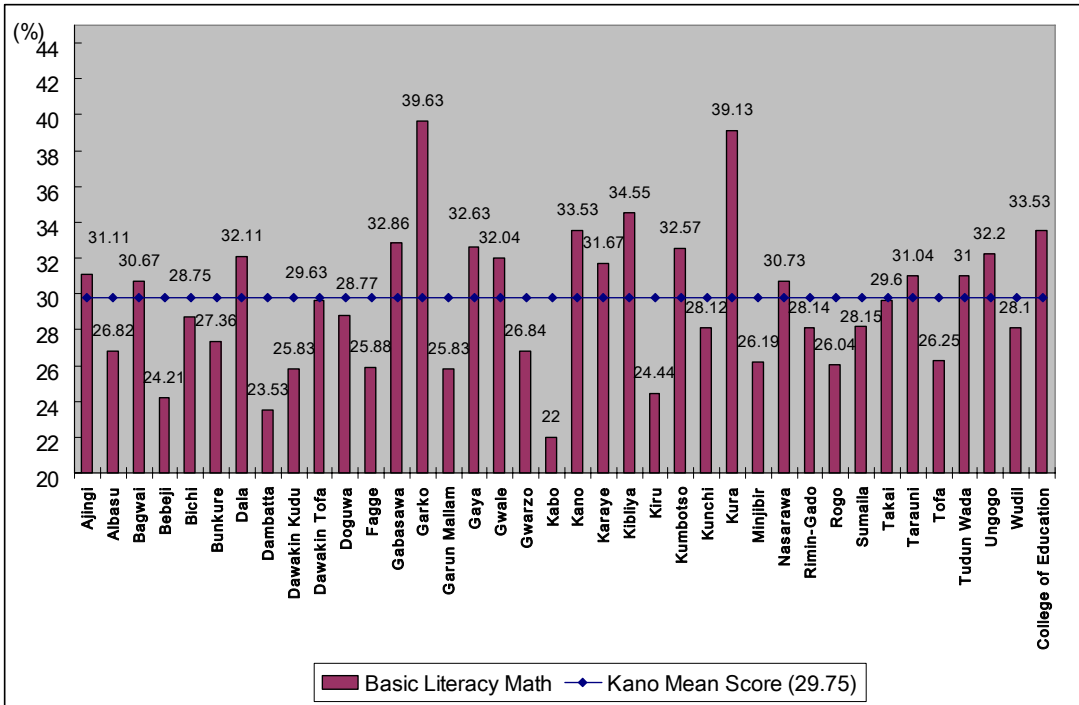
Figure 3.4 Teachers knowledge of Primary Mathematics distribution of scores within LGAs
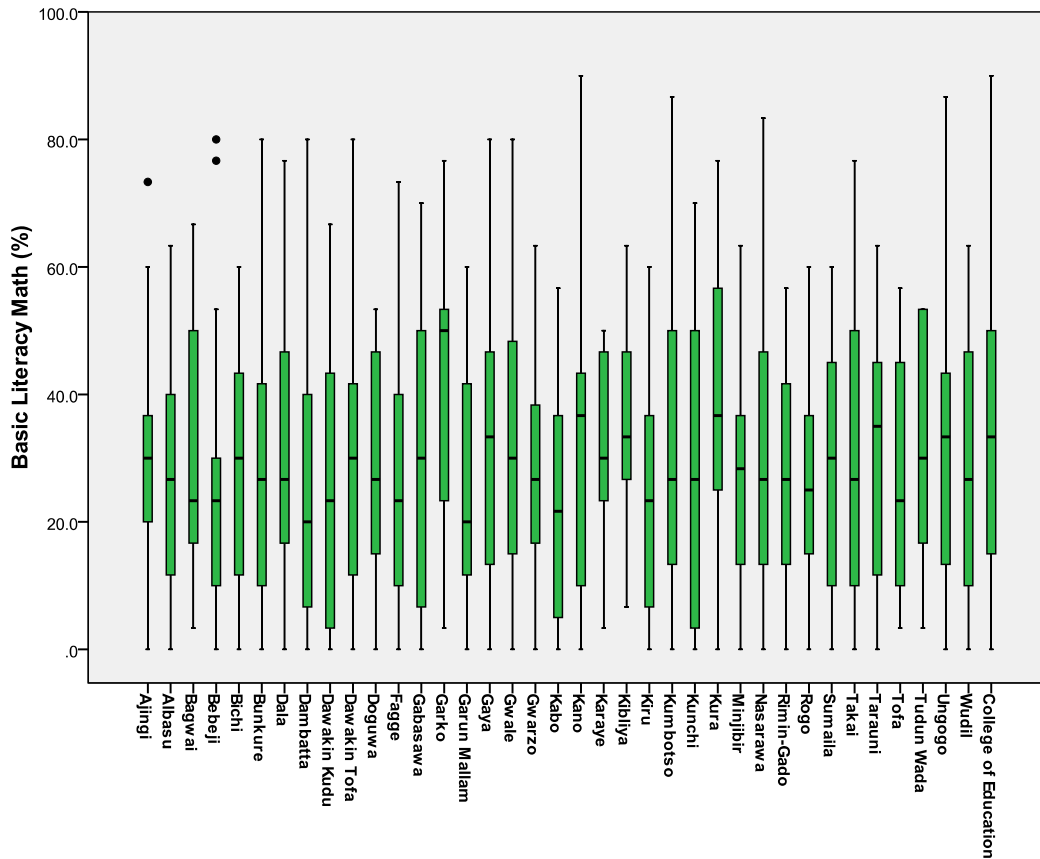
Figure 3.5 Teachers Knowledge of Primary English means by LGA

Figure 3.6 Teachers knowledge of Primary English distribution of scores within LGAs

Figure 3.7 Teachers' Reading and Writing Literacies by LGA

Figure 3.8 Teachers' Reading and Writing Literacies - distribution of scores within LGAs

Figure 3.9 Teachers' Pedagogical Literacies by LGA

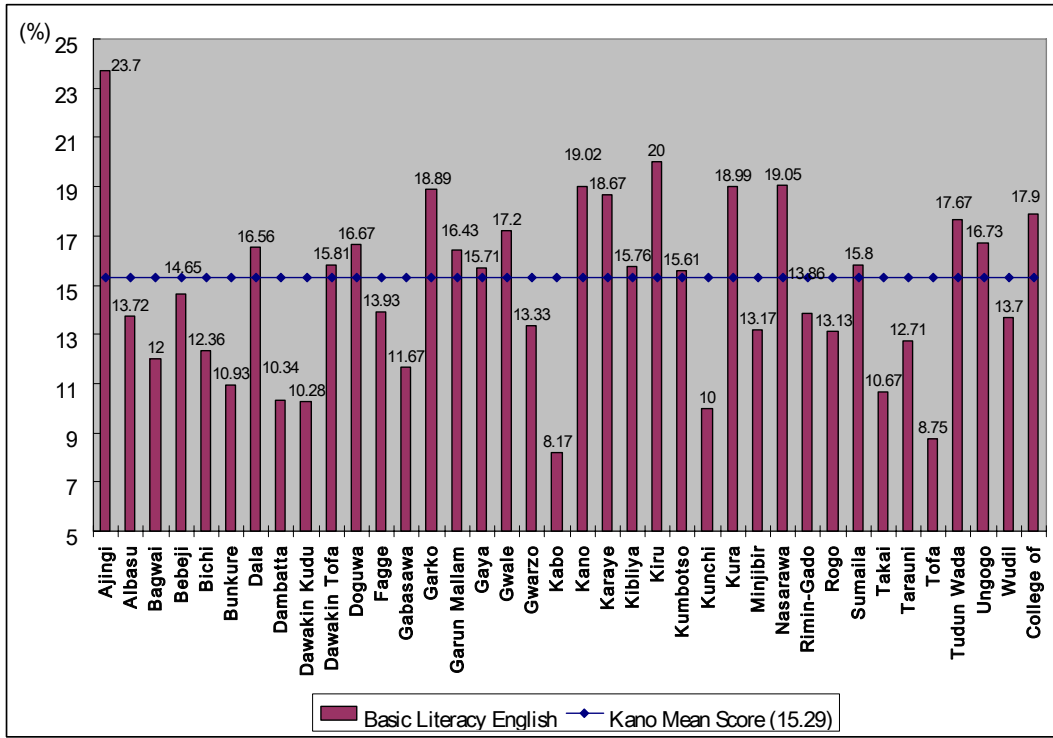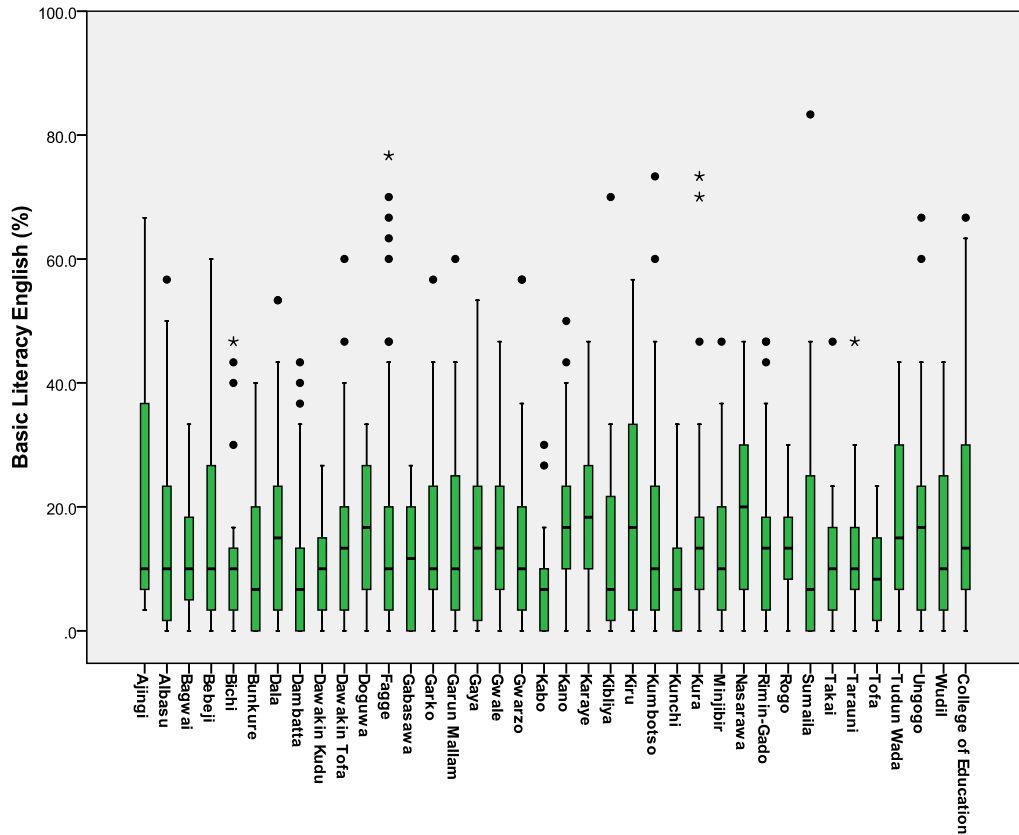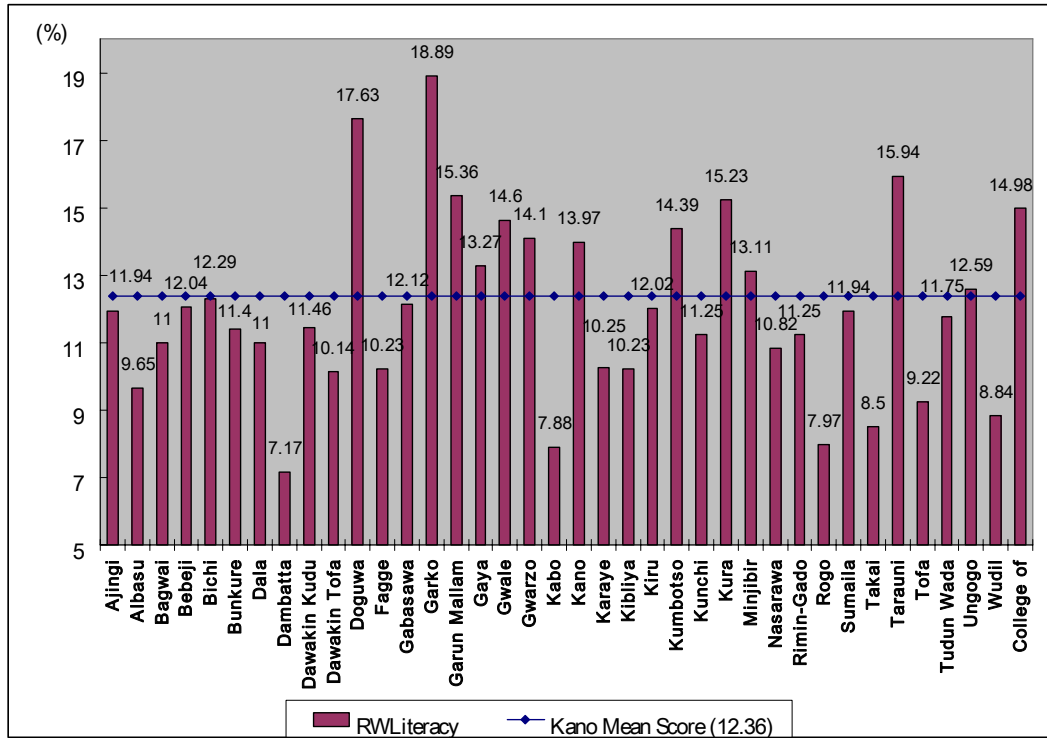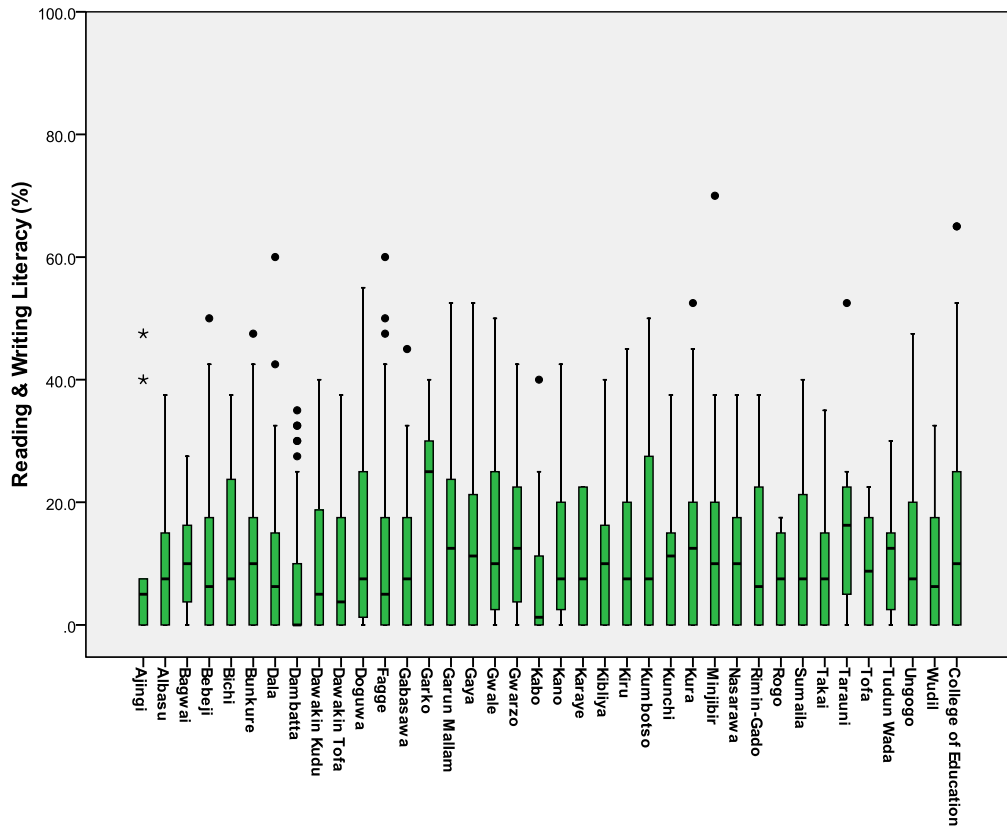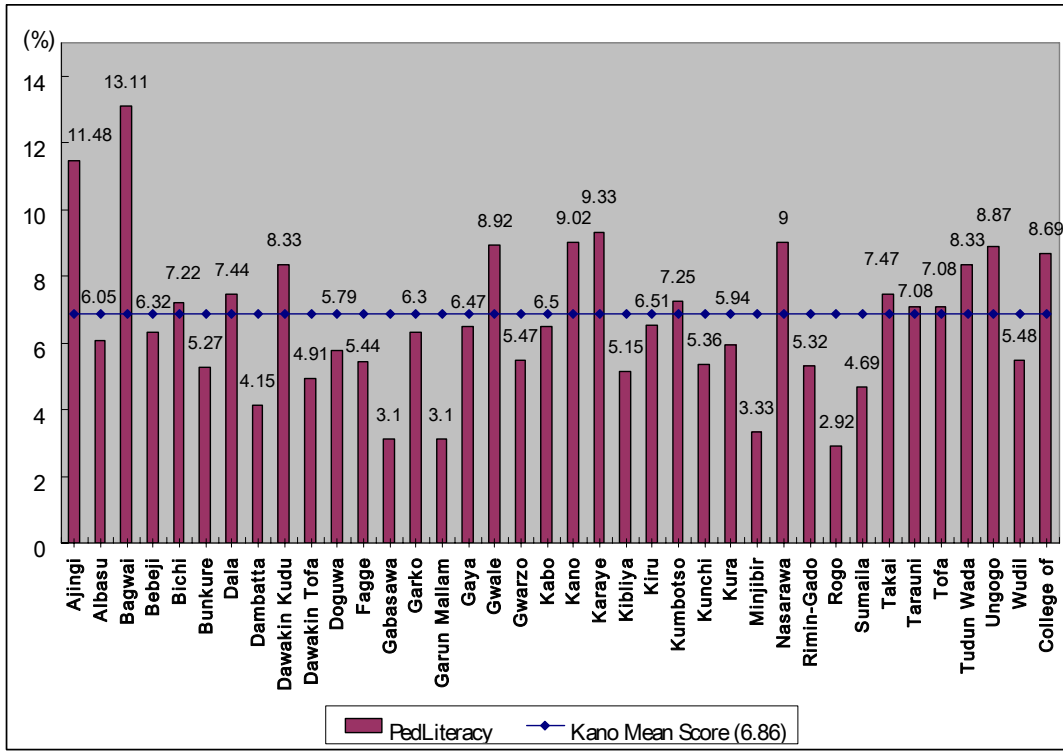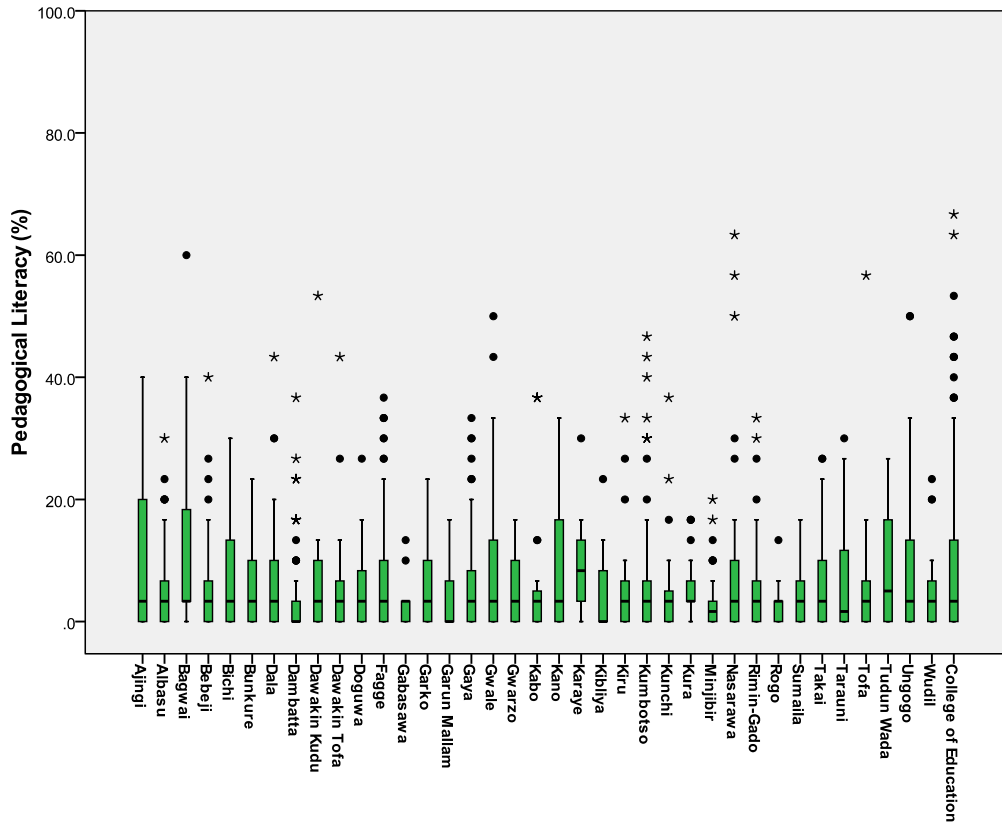**Figure 3.10 Teachers' Pedagogical Literacies - distribution of scores within LGAs**

3.3 The Levels of Achievement Framework and Teacher Performance by Local Government Area

57. The teacher professional working knowledge profile is constructed along four levels of achievement: teachers with limited professional working knowledge; teachers with emerging professional working knowledge, teachers with near sufficient professional working knowledge, and teachers with sufficient professional knowledge.

58. A fifth level of achievement, established professional working knowledge is reserved for those teachers who demonstrate an achievement level of 80% on each of the four tests. These teachers are considered proficient and their professional development needs are minimal.

59. None of the teachers in the sample achieves scores that fall within the 75% to 100% range. Thus none can be thought of as having 'sufficient' or 'established' professional working knowledge. 13 teachers (or 0.8% of the total) achieve scores that fall into the 50% to 74% range. They are thought of as having 'near-sufficient' professional working knowledge. 330 teachers (20%) achieve scores that fall into the 25% to 49% range. They are thought of as having 'emergent' levels of professional working knowledge. 78% of teachers in the sample (1,260) achieve scores that fall into the 0% to 24% range. They are thought of as having a 'limited' level of professional working knowledge. A profile of teachers' levels of achievement is shown in table 3.2 below. Tables 3.3 to 3.6 that follow show a profile of achievement for teachers on each test.

60. Taking the number of teachers achieving scores that fall under 50% (the lowest two bands), Table 3.3 below shows that 83% of teachers in Kano State cannot be regarded as sufficiently competent to teach primary mathematics. In the LGAs of Kabo and Karaye, over 90% of teachers in the sample have insufficient knowledge of the subject to do so.

61. Table 3.4 below shows that 97% of teachers in Kano State cannot be regarded as sufficiently competent to teach English to primary school children. In 25 LGAs almost all of the teachers have limited knowledge of primary English.

62. Table 3.5 below shows that 98.5% of teachers in the Kano State sample cannot read sufficiently well to extract and summarise factual information from simple texts so as to prepare lesson notes for teaching primary school children. In 35 LGAs, none of the teachers assessed are sufficiently competent to do so.

63. Table 3.6 below shows that 99.3% of teachers in Kano do not have sufficient pedagogical knowledge to monitor the progress of their students or to identify problems in the learning achievement of those that they teach.

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Table 3.2 Levels of Achievement by LGA: Total Score

Local Government Area	75-100%		50-75%		25-50%		0-25%	
	%	N	%	N	%	N	%	N
Ajingi	-	0	11.1%	1	22.2%	2	66.7%	6
Albasu	-	0	.0%	0	11.6%	5	88.4%	38
Bagwai	-	0	.0%	0	20.0%	3	80.0%	12
Bebeji	-	0	.0%	0	15.8%	6	84.2%	32
Bichi	-	0	.0%	0	25.0%	6	75.0%	18
Bunkure	-	0	.0%	0	14.0%	6	86.0%	37
Dala	-	0	.0%	0	23.3%	7	76.7%	23
Dambatta	-	0	.0%	0	8.7%	6	91.3%	63
Dawakin Kudu	-	0	.0%	0	16.7%	2	83.3%	10
Dawakin Tofa	-	0	2.8%	1	13.9%	5	83.3%	30
Doguwa	-	0	.0%	0	26.3%	5	73.7%	14
Fagge	-	0	.6%	1	15.1%	25	84.3%	140
Gabasawa	-	0	7.1%	1	21.4%	3	71.4%	10
Garko	-	0	.0%	0	44.4%	4	55.6%	5
Garun Mallam	-	0	.0%	0	25.0%	7	75.0%	21
Gaya	-	0	.0%	0	25.0%	13	75.0%	39
Gwale	-	0	.0%	0	22.6%	7	77.4%	24
Gwarzo	-	0	.0%	0	15.4%	6	84.6%	33
Kabo	-	0	.0%	0	15.0%	3	85.0%	17
Kano	-	0	.0%	0	23.5%	4	76.5%	13
Karaye	-	0	.0%	0	20.0%	2	80.0%	8
Kibliya	-	0	.0%	0	18.2%	2	81.8%	9
Kiru	-	0	.0%	0	23.8%	5	76.2%	16
Kumbotso	-	0	1.8%	1	33.3%	19	64.9%	37
Kunchi	-	0	.0%	0	21.7%	5	78.3%	18
Kura	-	0	4.3%	1	21.7%	5	73.9%	17
Madibo	-	0	.0%	0	.0%	0	100.0%	1
Minjibir	-	0	.0%	0	9.5%	4	90.5%	38
Nasarawa	-	0	2.0%	1	18.0%	9	80.0%	40
Rimin-Gado	-	0	.0%	0	11.5%	6	88.5%	46
Rogo	-	0	.0%	0	.0%	0	100.0%	16
Shanono	-	0	.0%	0	50.0%	1	50.0%	1
Sumaila	-	0	.0%	0	22.2%	6	77.8%	21
Takai	-	0	.0%	0	16.0%	4	84.0%	21
Tarauni	-	0	.0%	0	18.8%	3	81.3%	13
Tofa	-	0	.0%	0	12.5%	2	87.5%	14
Tsanyawa	-	0	.0%	0	100.0%	1	.0%	0

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Local Government Area	75-100%		50-75%		25-50%		0-25%	
Tudun Wada	-	0	.0%	0	10.0%	1	90.0%	9
Ungogo	-	0	1.9%	1	24.5%	13	73.6%	39
Waraua	-	0	.0%	0	100.0%	2	.0%	0
Wudil	-	0	.0%	0	10.7%	3	89.3%	25
College of Education	-	0	2.1%	8	28.9%	112	69.0%	267
Overall* **(N=1587)**	**-**	**0**	**1.0%**	**16**	**20.8%**	**330**	**78.2%**	**1241**
Kano Overall **(N=1620)**	**-**	**0**	**0.8%**	**13**	**19.8%**	**330**	**77.8%**	**1260**

* Among the 1587 teachers whose LGAs can be identified.

Table 3.3 Levels of Achievement by LGA: Primary Mathematics

Local Government Area	75-100%	50-75%	25-50%	0-25%
Ajingi	-	22.2%	33.3%	44.4%
Albasu	-	11.6%	39.5%	48.8%
Bagwai	-	26.7%	20.0%	53.3%
Bebeji	5.3%	2.6%	36.8%	55.3%
Bichi	-	20.8%	41.7%	37.5%
Bunkure	2.3%	11.6%	39.5%	46.5%
Dala	6.7%	13.3%	36.7%	43.3%
Dambatta	2.9%	7.2%	30.4%	59.4%
Dawakin Kudu	-	16.7%	25.0%	58.3%
Dawakin Tofa	2.8%	11.1%	41.7%	44.4%
Doguwa	-	10.5%	47.4%	42.1%
Fagge	-	13.3%	35.5%	51.2%
Gabasawa	-	21.4%	35.7%	42.9%
Garko	11.1%	22.2%	33.3%	33.3%
Garun Mallam		10.7%	32.1%	57.1%
Gaya	7.7%	7.7%	50.0%	34.6%
Gwale	3.2%	9.7%	41.9%	45.2%
Gwarzo	-	7.7%	43.6%	48.7%
Kabo	-	5.0%	30.0%	65.0%
Kano	11.8%	5.9%	47.1%	35.3%
Karaye	-	-	70.0%	30.0%
Kibliya	-	18.2%	54.5%	27.3%
Kiru	-	4.8%	42.9%	52.4%
Kumbotso	10.5%	14.0%	26.3%	49.1%

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Local Government Area	75-100%	50-75%	25-50%	0-25%
Kunchi	-	26.1%	30.4%	43.5%
Kura	4.3%	34.8%	34.8%	26.1%
Madibo	-	-	100.0%	-
Minjibir	-	9.5%	42.9%	47.6%
Nasarawa	4.0%	16.0%	34.0%	46.0%
Rimin-Gado	-	9.6%	48.1%	42.3%
Rogo	-	12.5%	37.5%	50.0%
Shanono	-	50.0%	50.0%	-
Sumaila	-	18.5%	40.7%	40.7%
Takai	4.0%	20.0%	28.0%	48.0%
Tarauni	-	18.8%	37.5%	43.8%
Tofa	-	6.3%	43.8%	50.0%
Tsanyawa	-	100.0%	-	-
Tudun Wada	-	30.0%	30.0%	40.0%
Ungogo	9.4%	11.3%	34.0%	45.3%
Waraua	50.0%	50.0%	-	-
Wudil	-	21.4%	35.7%	42.9%
College of Education	4.1%	17.8%	40.8%	37.2%
Kano overall (No of teachers)	**3.1% (50)**	**14.1% (228)**	**38.1% (618)**	**44.7% (724)**

Table 3.4 Levels of Achievement by LGA: Primary Literacy

Local Government Area	75-100%	50-75%	25-50%	0-25%
Ajingi	-	22.2%	11.1%	66.7%
Albasu	-	2.3%	16.3%	81.4%
Bagwai	-	-	13.3%	86.7%
Bebeji	-	2.6%	23.7%	73.7%
Bichi	-	-	16.7%	83.3%
Bunkure	-	-	11.6%	88.4%
Dala	-	6.7%	16.7%	76.7%
Dambatta	-	-	14.5%	85.5%
Dawakin Kudu	-	-	8.3%	91.7%
Dawakin Tofa	-	2.9%	20.0%	77.1%
Doguwa	-	5.3%	26.3%	68.4%
Fagge	0.6%	2.4%	18.1%	78.9%
Gabasawa	-	-	16.7%	83.3%

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Local Government Area	75-100%	50-75%	25-50%	0-25%
Garko	-	11.1%	11.1%	77.8%
Garun Mallam	-	3.6%	21.4%	75.0%
Gaya	-	1.9%	19.2%	78.8%
Gwale	-	-	25.8%	74.2%
Gwarzo	-	5.1%	10.3%	84.6%
Kabo	-	-	10.0%	90.0%
Kano	-	-	23.5%	76.5%
Karaye	-	-	30.0%	70.0%
Kibliya	-	9.1%	9.1%	81.8%
Kiru	-	9.5%	23.8%	66.7%
Kumbotso	-	3.5%	19.3%	77.2%
Kunchi	-	-	8.7%	91.3%
Kura	-	8.7%	13.0%	78.3%
Madibo	-	-	-	100.0%
Minjibir	-	-	14.3%	85.7%
Nasarawa	-	-	32.0%	68.0%
Rimin-Gado	-	-	19.2%	80.8%
Rogo	-	-	12.5%	87.5%
Shanono	-	-	50.0%	50.0%
Sumaila	3.7%	-	22.2%	74.1%
Takai	-	-	4.0%	96.0%
Tarauni	-	-	18.8%	81.3%
Tofa	-	-	-	100.0%
Tsanyawa	-	-	100.0%	-
Tudun Wada	-	-	30.0%	70.0%
Ungogo	-	5.7%	18.9%	75.5%
Waraua	-	-	100.0%	-
Wudil	-	-	28.6%	71.4%
College of Education	-	2.3%	28.2%	69.5%
Kano overall **(No of teachers)**	**0.1%** **(2)**	**2.2%** **(35)**	**20.1%** **(325)**	**76.7%** **(1243)**

Table 3.5 Levels of Achievement by LGA: Reading and Writing Literacies

Local Government Area	75-100%	50-75%	25-50%	0-25%
Ajingi	-	-	22.2%	77.8%
Albasu	-	-	7.0%	93.0%
Bagwai	-	-	6.7%	93.3%
Bebeji	-	-	18.4%	81.6%
Bichi	-	-	25.0%	75.0%
Bunkure	-	-	11.6%	88.4%
Dala	-	3.3%	13.3%	83.3%
Dambatta	-	-	8.7%	91.3%
Dawakin Kudu	-	-	16.7%	83.3%
Dawakin Tofa	-	-	13.9%	86.1%
Doguwa	-	5.3%	21.1%	73.7%
Fagge	-	.6%	12.0%	87.3%
Gabasawa	-	7.1%	21.4%	71.4%
Garko	-	-	44.4%	55.6%
Garun Mallam	-	3.6%	17.9%	78.6%
Gaya	-	1.9%	13.5%	84.6%
Gwale	-	-	25.8%	74.2%
Gwarzo	-	-	17.9%	82.1%
Kabo	-	-	5.0%	95.0%
Kano	-	-	17.6%	82.4%
Karaye	-	-	-	100.0%
Kibliya	-	-	9.1%	90.9%
Kiru	-	-	14.3%	85.7%
Kumbotso	-	-	28.1%	71.9%
Kunchi	-	-	17.4%	82.6%
Kura	-	8.7%	17.4%	73.9%
Madibo	-	-	-	100.0%
Minjibir	-	2.4%	11.9%	85.7%
Nasarawa	-	-	14.0%	86.0%
Rimin-Gado	-	-	17.3%	82.7%
Rogo	-	-	-	100.0%
Shanono	-	-	50.0%	50.0%
Sumaila	-	-	22.2%	77.8%
Takai	-	-	4.0%	96.0%
Tarauni	-	6.3%	-	93.8%
Tofa	-	-	-	100.0%
Tsanyawa	-	-	100.0%	-

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Local Government Area	75-100%	50-75%	25-50%	0-25%
Tudun Wada	-	-	10.0%	90.0%
Ungogo	-	-	17.0%	83.0%
Waraua	-	-	-	100.0%
Wudil	-	-	3.6%	96.4%
College of Education	-	1.3%	24.0%	74.7%
Kano overall	**-**	**0.8%**	**16.2%**	**82.3%**
(No of teachers)	**(0)**	**(13)**	**(263)**	**(1334)**

Table 3.6 Levels of Achievement by LGA: Pedagogical Literacies

Local Government Area	75-100%	50-75%	25-50%	0-25%
Ajingi	-	-	11.1%	88.9%
Albasu	-	-	2.3%	97.7%
Bagwai	-	6.7%	6.7%	86.7%
Bebeji	-	-	5.3%	94.7%
Bichi	-	-	4.2%	95.8%
Bunkure	-	-	-	100.0%
Dala	-	-	10.0%	90.0%
Dambatta	-	-	2.9%	97.1%
Dawakin Kudu	-	8.3%	-	91.7%
Dawakin Tofa	-	-	5.6%	94.4%
Doguwa	-	-	5.3%	94.7%
Fagge	-	-	4.8%	95.2%
Gabasawa	-	-	-	100.0%
Garko	-	-	-	100.0%
Garun Mallam	-	-	-	100.0%
Gaya	-	-	7.7%	92.3%
Gwale	-	-	12.9%	87.1%
Gwarzo	-	-	-	100.0%
Kabo	-	-	10.0%	90.0%
Kano	-	-	11.8%	88.2%
Karaye	-	-	10.0%	90.0%
Kibliya	-	-	-	100.0%
Kiru	-	-	9.5%	90.5%
Kumbotso	-	-	12.3%	87.7%
Kunchi	-	-	4.3%	95.7%
Kura	-	-	-	100.0%

Local Government Area	75-100%	50-75%	25-50%	0-25%
Madibo	-	-	-	100.0%
Minjibir	-	-	-	100.0%
Nasarawa	-	4.0%	6.0%	90.0%
Rimin-Gado	-	-	5.8%	94.2%
Rogo	-	-	-	100.0%
Shanono	-	-	50.0%	50.0%
Sumaila	-	-	-	100.0%
Takai	-	-	8.0%	92.0%
Tarauni	-	-	12.5%	87.5%
Tofa	-	6.3%	-	93.8%
Tsanyawa	-	-	-	100.0%
Tudun Wada	-	-	10.0%	90.0%
Ungogo	-	-	9.4%	90.6%
Waraua	-	-	50.0%	50.0%
Wudil	-	-	-	100.0%
College of Education	-	0.8%	9.3%	89.9%
Kano overall	**-**	**0.6%**	**6.0%**	**93.3%**
(No of teachers)	**(0)**	**(9)**	**(97)**	**(1512)**

Chapter 4: The Performance of Teachers on Selected Test Items in each Knowledge Domain

64. Here we discuss teacher performance on selected test items in each test. This serves to give an indication of some elements that need to be included in a professional development strategy for teachers.

4.1 Selected items in primary mathematics (Subject knowledge)

65. In the subject area of primary mathematics we looked at whether teachers were able to complete a table of measurement, calculate time, read a Venn diagram, read data from a tables and graphs, and do simple arithmetic. The tests was based on a test paper in primary mathematics that was designed for primary school children aged 10 years. One test paper completed by a child was given to teachers in this study to mark. Table 4.1 below gives a summary of the mean scores achieved by the total number of teachers assessed.

Table 4.1 Summary of achievement by selected test item (mean scores)

Number of teachers assessed	1620
Mean score in %	
Read survey table	52.91 (SD=35.27)
Read time graph	32.64 (SD=36.38)
Mental Maths	80.38 (SD=26.25)

a) Measurement

66. The box below shows an extract of one of the tasks from the mathematics test paper that teachers were asked to mark. In the test paper, children were asked to complete a table in which they converted centimetres into metres and metres into centimetres. There were four sub questions, of which the answer to one was provided (135 cm = 1.35 metres). The box shows the child's attempt at completing the task. The child's attempt at converting 150 cm to metres was incorrect, as were the attempts to convert 139 cm to metres and 1.15 metres into centimetres.

67. Table 4.2 below shows that 89.4% of teachers were unable to successfully convert centimetres into metres and vice versa (mark the child's answers right or wrong, and if wrong, provide the correct answer. Only 10.6% of teachers completed the task successfully.

Box 4.1

		Mark the child's answers correct or incorrect here	Write the correct answers here
6	This table shows the height of four children. Complete the table.		

	cm	m
Sam	150	15
Ann	139	13.9
Alice	151	1.15
Felicia	135	1.35

	cm	m
Sam	150	
Ann	139	
Alice		1.15
Felicia	135	1.35

Table 4.2

	Number of teachers	Number of teachers in %
Cannot do	1,449	89.4
Can do	171	10.6
Total	1,620	100.0

b) Time

68. The box below shows an extract of another of the tasks from the mathematics test paper that teachers were asked to mark. Here, children were asked to calculate time. The task demanded that they worked out how long it took a boy to walk to his sister's house. The clock shows the time the boy set out and the length of time the walk took is given. The box shows the child's attempt at completing the task. The child's answer is shown.

69. Table 4.3 below shows that only 10.6% of teachers were able to work out the answer correctly (mark the child's answers right or wrong, and if wrong, provide the correct answer). Worryingly, 89.4% of teachers were not able to complete the task successfully.

Table 4.3 Calculate Time

	Number of teachers	Number of teachers in %
Cannot do	1449	89.4
Can do	171	10.6
Total	1620	100.0

8 This is the time Musa starts to walk to his sister's house.

The walk takes 45 minutes.
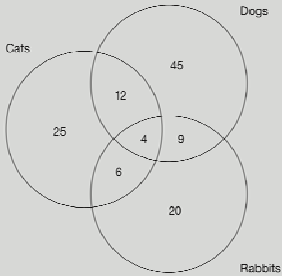
What time did Musa arrive?

7.20

c) Reading a Venn diagram

70. The box below shows an extract of another of the tasks from the mathematics test paper that teachers were asked to mark. In the test paper, children were asked to read the results of a survey shown in the form of a Venn diagram. There were two sub questions. The child's answers are shown below. Teachers were asked to mark the answers. Table 4.4 below shows that 82.1% of teachers were not able to complete the task successfully. Only 17.9% of teachers could.

	Mark the child's answers correct or incorrect here	Write the correct answers here

9 Children in Primary 5 did a survey of how many animals people kept. They drew this Venn diagram.

a) How many cats did people have?

41

b) Which animal was the least popular?

Cats
(Dogs)
Rabbits

Table 4.4 Complete Van diagram

	Number of teachers	Number of teachers in %
Cannot do	1330	82.1
Can do	290	17.9
Total	1620	100.0

36

d) Reading information from a bar graph

71. The box below shows an extract of another of the tasks from the mathematics test paper that teachers were asked to mark. In the test paper, children were asked to read the results of a survey shown in the form of a bar graph. There were two sub questions. The child's answers are shown below. Teachers were asked to mark the answers. Table 4.5 below shows that 69% of teachers are not able to mark the answers to the test questions as either 'correct' or 'incorrect', and to give the right answer. Less than a third of the teachers were able to answer one of the two questions but only 3.3% of teachers were able to answer both questions.

Table 4.5 Read data from a bar graph

|	Number of teachers	Number of teachers in %
No question correct	1118	69.0
One question correct	449	27.7
Both questions correct	53	3.3
Total	1620	100.0

e) Reading data from a line graph

72. The box below shows an extract of another of the tasks from the mathematics test paper that teachers were asked to mark. In the test paper, children were asked to solve a problem based on information presented in a line graph. There were two sub questions. The child's answers are shown below. Teachers were asked to mark the answers. Table 4.6 below shows that 69% of teachers are not able to mark the answers to the test questions as either 'correct' or 'incorrect', and to give the right answer. 9.6% of the teachers were able to answer one of the two questions but only 2% of teachers were able to answer both questions.

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Table 4.6 Read data from line graph

	Number of teachers	Number of teachers in %
Cannot answer any question	1432	88.4
One question correct:	155	9.6
Question 11a correct	92	5.7
Question 11b correct	129	8.0
Both questions correct	33	2.0
Total	1620	100.0

11 Joe took part in a sponsored cycle ride.
This graph shows how far he rode
and how long it took him.
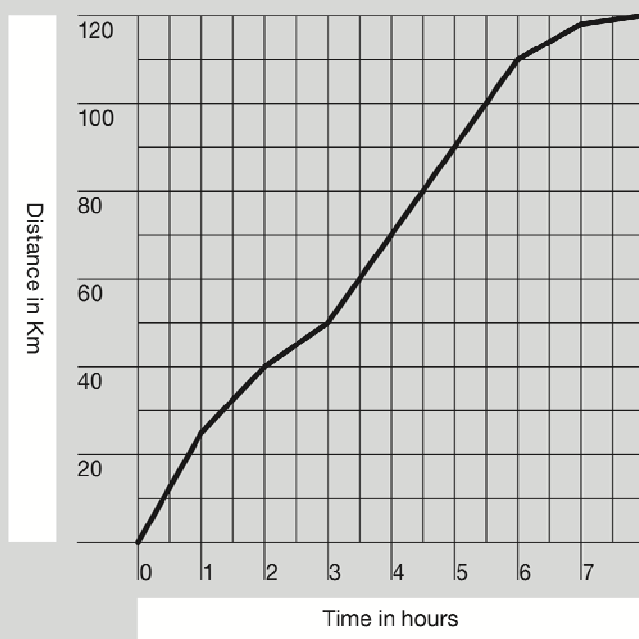
a) Look at the graph.
How far has Joe ridden after 7 hours?

80 km

a) Joe started at riding at 8.30 in the morning.
How far had he gone at 12.00pm?

70 km

f)   Basic arithmetic (subtraction)

73. The box below shows an extract of a task from the mathematics test paper that teachers
     were asked to mark. In the test paper, children were asked to solve five subtraction sums.
     The sums and a child's answers are shown below. Teachers were asked to mark the
     answers. Table 4.7 below shows that 13.4% of teachers were able to mark all five the
     answers to the test questions as either 'correct' or 'incorrect', and to give the right answer
     where the chid has got the sum wrong. 11.4% of the teachers were able to answer four of
     the five questions and 12.3% of teachers were able to answer three of the five questions.

	Section M-6	Mark the child's answers correct or incorrect here	Write the correct answers here
22	What is 532 – 167? 365		
23	What is 5.7 – 2.15? 2.42		
24	What is 1245 – 351? 994		
25	What is 9.23 – 8.94? 1.29		
26	What is 12.15 – 11.84? 0.31		

Table 4.7 Arithmetic (subtraction of whole and decimal numbers)

Score (%)	Number of teachers	Number of teachers in %
0	478	29.5
1-20%	245	15.1
21-40%	295	18.2
41-60%	200	12.3
61-80%	185	11.4
81-100%	217	13.4
Total	1,620	100.0

4.2 Selected test items in primary English (Subject knowledge)

74. In the subject area of primary English we looked at whether teachers were able to read a simple piece of fiction and answer basic questions about the text. Teachers had to mark for grammatical correctness a number of sentences that children were asked to write about the text; correct children's attempts to identify words with the same meaning; and correct a letter written by children for word accuracy, syntax, within- and between-sentence punctuation, spelling, audience, purpose and organization.

75. The teacher assessment in this domain of knowledge was based on a test paper in primary English that was designed for primary school children aged 10 years. One test paper completed by a child was given to teachers in this study to mark.

Table 4.8 Summary of achievement by selected test item in English (mean scores)

Number of teachers assessed	1620
Mean score in %	
Reading Comprehension	24.44 (SD=21.32)
Vocabulary	7.11 (SD=18.12)
Grammar	14.24 (SD=25.22)
Writing	11.13 (SD=17.78)

a) Reading Comprehension

76. How many teachers can we say with confidence, are able to teach children to read a simple piece of fiction such as the extract below and answer questions about it?

Table 4.9 Reading Comprehension

Score (%)	Number of teachers	Number of teachers in %
0	404	24.9
1-20%	478	29.5
21-40%	437	27.0
41-60%	230	14.2
61-80%	62	3.8
81-100%	9	.6
Total	1620	100.0

77. Table 4.8 above shows that of the 1,620 teachers assessed, the mean score for reading the fiction text above and answering nine questions about the piece was 24.4%.

78. Table 4.9 above shows that only 0.6% of teachers can be thought of as being able to teach with confidence reading comprehension (or mark a reading comprehension test paper designed for 10 year old children).

b) *Grammar*

79. In the test paper given to children, they were asked to write five sentences based on the reading text. The sentences below were written by one of the children and were, as part of this exercise, given to teachers to mark for grammatical correctness.

Write 5 sentences using the words below:

a) Cloud
b) Sun
c) Mountain
d) Sea
e) Forest

a) Obi look in the cloud be up the sky

b) Obi think that the sun was fall in the see

c) Obi stand on the mountain peek to sea the of the world was end

d) The sea looked calm

e) Obi lead the lion down back the mountain

Table 4.10 Grammar

Score (%)	Number of teachers	Number of teachers in %
0	1116	68.9
1-20%	163	10.1
21-40%	143	8.8
41-60%	101	6.2
61-80%	62	3.8
81-100%	30	1.9
Total	1615	99.7

80. The mean score achieved by teachers in Kano State was 14.2% (on average, teachers were only able to mark just one of the sentences correctly (to indicate whether the child was right or wrong and to give the right answer).

81. Table 4.10 above shows that only 1.9% of teachers could be thought of as being able to correct with confidence, children's grammatical errors.

c) *Vocabulary*

82. Children taking the test from which source material for this Assessment of Teacher Professional Knowledge was taken, were asked to identify two synonyms in each line. The following example shows how one child responded to the task. The child's test paper was used in this exercise for teachers to mark.

Find two synonyms in each line

a) accurate (mark) accept exact (start)

b) (control) (commence) continue cheap begin

c) (older) order previous starter (former)

d) fight (dare) wine (challenge) cheat

e) scatter gather (collect) bargain (collection)

Table 4.11 Vocabulary

Score (%)	Number of teachers	Number of teachers in %
0	1293	79.8
1-20%	195	12.0
21-40%	54	3.3
41-60%	26	1.6
61-80%	19	1.2
81-100%	23	1.4
Total	1610	99.4

83. The mean score achieved by teachers in Kano was 5.97% (on average, teachers were only able to mark one answer correctly (to indicate whether the child was right or wrong and to give the right answer). Table 4.11 above shows that only 1.4% of teachers could be thought of as being able to teach with confidence, vocabulary.

d) Teaching and assessing pupils' writing

84. Teachers were given the following letter, taken from a 10 year old child's exercise book in Lagos in July 2009. Teachers were asked to correct the writing for form, content, grammar, syntax, spelling and punctuation.

Table 4.12 Writing

Score (%)	Number of teachers	Number of teachers in %
0	978	60.4
1-20%	330	20.4
21-40%	204	12.6
41-60%	72	4.4
61-80%	32	2.0
81-100%	3	.2
Total	1619	99.9

85. Table 4.12 above shows that only 3 teachers (0.4%) could be thought of as being able to confidently teach children how to write a friendly letter and to guide their writing for content, and grammatical and formal correctness. 93.4% of teachers showed poor facility with this task. 60.4% (978 teachers) either did not attempt it or were unable to correctly identify any errors in the child's letter.

4.3 Selected test items from the reading and writing literacies test

86. To test their proficiencies in *general pedagogical knowledge: reading and writing literacies,* teachers were given two tasks. In the first, they were asked to read six short information-giving texts, all of which were about the Niger River and Niger Delta. Two texts were simple maps showing the countries through which the Niger River flows. One text was a newspaper article on the problems of oil spillage in the Niger Delta. Teachers were asked to extract information from the texts in order to complete a lesson plan that they were given. This involved in some parts identifying one-word answers given in the texts, and in other parts, a summary of information in their own words—such as they might need in writing information on the blackboard while teaching. The second task required teachers to write a friendly letter about the problems in the Niger Delta, which would serve as a model letter that children could copy into their exercise books in order to write a similar letter.

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Table 4.13 Summary of achievement by selected test items Reading and Writing Literacies (mean scores)

Number of teachers	1620
Mean score in %	
Reading information from maps	21.82
	(SD=23.15)
Extract information from text	27.27
	(SD=34.42)
Infer information from the text	
-Description	10.84
	(SD=23.25)
-Inference	8.37
	(SD=19.01)
-Argument	9.02
	(SD=21.67)
Summarize information	5.34
	(SD=14.16)
Write a letter	2.61
	(SD= 8.45)

87. The box below shows extracts from the reading task that teachers were given. They were asked to read information from maps. Table 4.14 below shows that in the task requiring teachers to identify five countries through which the Niger River flows, 38.7% of teachers scored 0. Only 0.1% of teachers answered all five questions correctly. 7.5% of teachers were able to identify four out of five answers.

88. In the same task, teachers were asked to read a number of texts for information. Two examples are shown in the box below. Table 4.15 below shows that only 7.7% of teachers were able to answer the five questions pertaining to the texts. 9.1% of teachers were able to answer 4 questions. Worryingly, 51.9% of teacher answered no questions and 12 % were only able to answer 1 question.

89. A longer text was provided in the form of a newspaper article taken from a daily newspaper in Nigeria (see below). Teachers were asked to read this and to write short summaries: the first of which asked them to summarise the effects of oil spillage on the environment, the second to identify who benefits from oil production in the Niger Delta. Table 4.16 below shows that 84% of teachers were unable to complete these tasks satisfactorily. Only 0.4% of teachers showed that they had sufficient levels of reading and writing literacies to carry out this task.

90. Teachers were also asked to write a model letter (such that they could copy onto a blackboard) that could be used to teach children how to write a letter in which they give information. An example of a letter written by a teacher is provided below. Table 4.17 shows that 89.1% of teachers either did not attempt to, or were not able to, write such a letter at all. Of those who did, the quality of the writing was poor: 5.6% of teachers achieved only up to 20% of the marks available, and the 'top' 5.2% up to 40% of the marks. None of the Kano State teachers in the sample scored above 40% on this item.

A map of the countries through which the Niger River flows

The Niger River is 2,600 miles long and is the third longest river on the continent of Africa, after the Nile and the Congo. It is considered to be the principal river of West Africa.

	Lesson Introduction	
	Ask children to look at a map of the Niger River and answer the following questions:	
1	What are the names of the countries through which the Niger River flows?	Write the answers to these questions here: a) b) c) d) e)

Reading information from maps

2	Where is the source of the Niger River?	
3	Where is the mouth of the Niger River?	
4	In what country is the Niger Delta?	
5	What are the major rivers in Nigeria?	a) b)

Map of main rivers in Nigeria

The names of the major rivers that flow through Nigeria are the river Niger (which is where Nigeria gets it's name), and the river Benue. The 'end' region where the Niger river meets the ocean is commonly referred to as 'Delta'. This map shows a very simple illustration of their route.

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Table 4.14 Extract information from text

Score (%)	Number of teachers	Number of teachers in %
0	627	38.7
1-20%	310	19.1
21-40%	397	24.5
41-60%	156	9.6
61-80%	121	7.5
81-100%	2	.1
Total	1613	99.6

Table 4.15 Extract information from text

Score (%)	Number of teachers	Number of teachers in %
0	841	51.9
1-20%	195	12.0
21-40%	136	8.4
41-60%	175	10.8
61-80%	148	9.1
81-100%	125	7.7
Total	1620	100.0

II	Lesson Development	
A	**The Niger Delta, People and Wildlife** The aim of this part of the lesson is to introduce students to the people who live in the Niger Delta	
6	How many states make up the Niger Delta?	
7	How many ethnic groups live in the Niger Delta?	
8	Which group is in the majority?	
9	What kinds of animals might we find in the Niger Delta?	a) b)
10	What kinds of fish might we find in the Niger Delta?	a) b)

Notes

The **Niger Delta**, the delta of the Niger River in Nigeria, is a densely populated region sometimes called the **Oil Rivers** because it was once a major producer of palm oil.

The Niger Delta, as now defined officially by the Nigerian Government, extends over about 70,000 km² and makes up 7.5% of Nigeria's land mass. Historically and cartographically, it consists of present day Bayelsa, Delta and Rivers States. Some 31 million people[1] of more than 40 ethnic groups, speaking some 250 dialects live in the Delta; the Ijaw being in the majority. Their livelihoods are primarily based on fishing and farming.

4
An advert from a travel agency

The Niger River Delta is one of the largest deltas in the world. Explore lakes, mangroves, and swamps of the Niger River Delta and you may find yourself face to face with West African manatees, hippopotamuses, and rare pygmy hippos, all munching on the lush vegetation. Spot-necked and swamp otters may splash nearby, and at least 150 fish species swim in this rich eco-region. Some fish, such as the denticle herring and the hingemouth, are found only in Africa.

Table 4.16 Summarize information

Score (%)	Number of teachers	Number of teachers in %
0	1361	84.0
1-20%	104	6.4
21-40%	83	5.1
41-60%	47	2.9
61-80%	19	1.2
81-100%	6	.4
Total	1620	100.0

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5
A newspaper article:
Green Awareness Grows in Oily Niger Delta

By Nico Colombant
Niger Delta, Nigeria
24 May 2007

Environmental awareness is growing in Nigeria's oil-rich Niger Delta, as well as anger over spills and drastic changes to the region's ecosystem. VOA's Nico Colombant reports from the towns of Ikarama and Odi in the Niger Delta.

Abila Idoukumo walks in tall grass just a few meters away from the Ikarama community in Bayelsa State, onto a knee-deep oily swamp the size of several football fields.

'Since January, the crude was spilled here and it has not been cleaned until this present date. It has not been awarded to any contractor,' he said. 'All the grasses, everything here has been damaged, fish that were still living within the water cycle are all dead and there is no way to utilize this place for our own farming system again.'

Villagers say the oil seeped from underground pipelines operated by Dutch-based oil conglomerate Shell.

Shell officials in Nigeria refused to comment, saying they were too busy dealing with threats by militants who blow up oil installations and kidnap foreign workers.

Idoukumo, a plumber and father of seven, says children initially got skin infections, measles, and coughs, while adults got headaches.

'In the evening, you cannot get a very good breath of air,' he said. 'Children because of this have been getting sick from time to time and these are things we have been crying to find an avenue to be rescued from this problem. And so presently, you see with your eyes, that the community is always in hazard.'

Lambert Miebi is trained as a chemical safety engineer, but he says the oil companies will not hire him, even though he believes he would be a better choice than outsiders who care little about local concerns.

'When I see this every day, I cry,' he said.

He adds that Shell often blames oil spills on sabotage to steal oil, but he denies that took place here.

Idoukumo stands in front of spill

Nearby Shell pipelines blamed for spill

Table 4.17 Write a letter

Score (%)	Number of teachers	Number of teachers in %
0	1,443	89.1
1-20%	90	5.6
21-40%	85	5.2
41-60%	0	0.0
61-80%	0	0.0
81-100%	0	0.0
Total	1,618	99.9

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4.4 Selected test items from the pedagogical literacies test

91. To test the proficiencies of teachers in pedagogical literacy skills, they were given two tasks: the first task required them to study a table containing information of the test scores of children and a number of graphs showing children's progress over time. They were asked to use the information in the table to calculate total scores for groups or individuals, average scores and percentages, and to read and comment upon the trends of children's achievement displayed in the graphs. In the second task, teachers were provided with an assessment guide containing a number of diagnostic indicators of writing. They were provided with two authentic pieces of writing obtained from primary school children in one of the five States, and were asked to use the guide to evaluate the writing and to decide which children needed support.

Table 4.18 Summary of achievement by selected test items Pedagogical Literacies (mean scores)

Number of teachers	1,620
Mean score in %	
Calculating test scores	13.17
	(SD= 18.46)
Explain information (2 points)	4.17
	(SD= 17.65)
Assessing progression reading a graph	3.61
	(SD= 12.30)
Assessing differences in writing	5.05
	(SD= 12.58)
Assessing homework	5.12
	(SD= 14.29)

92. The extract below shows the table of information given to teachers. Table 4.19 below shows that only 1.2% of teachers were able to use the information in the table to calculate total scores for groups or individuals, average scores and percentages. A further 3.2% were able to calculate between 60% and 80% of the problems. 46% of teachers were not able to do the task at all.

Question 1

Table 1 below shows the test results in English, Mathematics and social studies for children in a Primary 4 class.

Each test is out of 20 marks.

Name	Sex	Tests		
		English	Maths	Social Studies
Bolaji	m	10	20	20
Yusuf	m	8	17	19
Fagbemi	m	12	11	14
Ahmed	m	11	14	10
Afolabi	m	5	6	8
Olu	m	8	20	20
Mustafa	m	8	17	19
Raufu	m	12	11	14
James	m	11	13	18
Omar	m	12	19	20
Mary	f	19	16	20
Janet	f	7	13	18
Aisha	f	13	19	20
Lami	f	19	16	20
Amina	f	14	11	13
Linda	f	19	12	10
Agnes	f	14	11	13
Laraba	f	19	12	10
Saratu	f	20	14	10
Maria	f	11	6	8

Calculate the following:

1	What is Aisha's total mark out of 60?
2	What is her percentage mark for English?
3	What is her percentage mark for Maths?
4	What is her percentage mark for Social Studies?
5	What is the average score for boys in Social Studies?
6	What is the average score for girls in English?
7	Calculate the class average for English.
8	Rank the boys according to their total marks

Table 4.19 Calculating test scores

Score (%)	Number of teachers	Number of teachers in %
0	745	46.0
1-20%	527	32.5
21-40%	215	13.3
41-60%	61	3.8
61-80%	52	3.2
81-100%	20	1.2
Total	1620	100.0

93. The extract below shows a graph that was given to teachers who were asked to comment upon the trends of children's achievement displayed. Table 4.20 shows that only seven teachers (0.4%) were able to comment upon the trends displayed to a satisfactory degree. 89.4% of teachers were not able to comment upon the graph.

51

Look at the graph below which shows the percentage scores in mathematics for your class from 2005 to 2008.

Maths Tests 2005 – 2008

Comment on the trend of the scores for boys (write a short note)
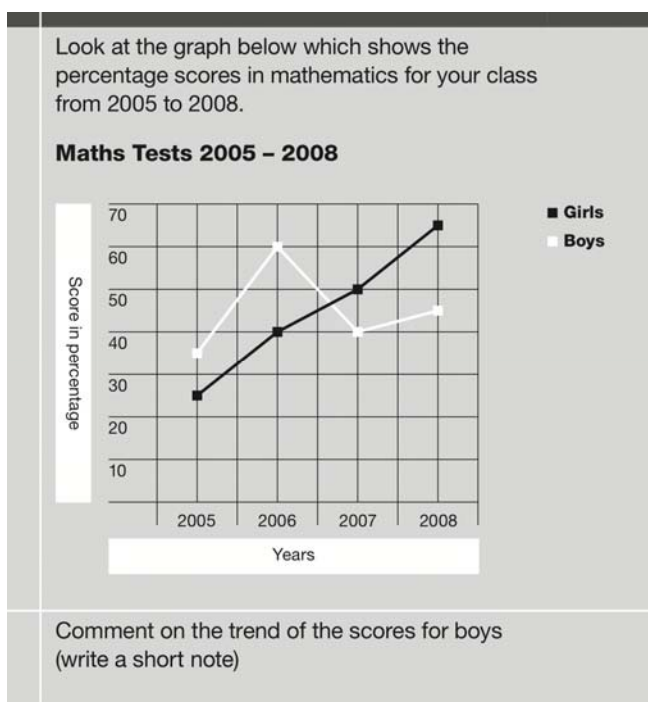
Table 4.20 Assessing progress reading a graph

Score (%)	Number of teachers	Number of teachers in %
0	1449	89.4
1-20%	59	3.6
21-40%	74	4.6
41-60%	17	1.0
61-80%	13	0.8
81-100%	7	0.4
Total	1619	99.9

94. The extract below shows an assessment guide containing a number of diagnostic indicators of writing. Those were given to teachers as well as two authentic pieces of writing obtained from primary school children in one of the five participating States. An example of one piece of writing is shown below. Teachers were asked to use the guide to evaluate the writing. Table 4.21 below shows that 80.9% of teachers were not able to use the assessment guide to effect. 8% were able to use the guide in a limited way (up to 20% of the marks awarded), and a further 8%, to some extent (up to 40% of the marks awarded). Two teachers in the Kano State sample exceeded the 80% threshold on this item.

Look at the following pieces of student work:

Using the statements below as a guideline **and giving specific examples from the student's work**, write a comment on each piece of work.

The student writing is clear and organised

The student uses a wide selection of words

The student expresses ideas in a logical sequence of sentences

The student uses a wider range of connecting words, for example, when, because, if, after, also, as well

The student makes use of a wider range of punctuation, such as commas, exclamation marks, and apostrophes

The student use words to describe things (adjectives and adverbs), for example, 'green' grass or an 'enormous' crocodile

The student spells common words correctly

---

13   **Student written sample 1:**

My Town

The name of my Town is Ebnyi State
we have many tree
My Town produs garss and Palm oil
we have many palm tree. In my
Town. There many rive in my Town
we have very big maket. in my
Town. we have many farmers
in my town. we have sheep, Goat, hen
In my town. I like my Town
becaue There is many buses and
motor cike in my T town. That isall I
ha about my town

Comments

Table 4.21 Assessing difference in writing

Score (%)	Number of teachers	Number of teachers in %
0	1311	80.9
1-20%	130	8.0
21-40%	129	8.0
41-60%	34	2.1
61-80%	13	.8
81-100%	2	.1
Total	1619	99.9

Chapter 5: Factors Explaining the Test Performance of Teachers

5.1: Factors explaining the test performance of teachers

95. Having discussed the characteristics and competency assessment scores of teachers in Kano State above, we turn now to the question whether being male or female, being of a particular age, years of experiences, or teaching in a rural school or urban school, make a difference to the overall test performance of teachers.

96. Three tests comprising four domains of professional working knowledge were set. The total test counted for 130 marks.

97. When we consider the characteristics of teachers by gender, table 5.1 below shows that there are no significant differences in the test scores of male and female Kano State teachers on the overall test.

98. There are significantly more males among the teachers tested in Kano, and male teachers achieved a higher score than female teachers; but, a t-test shows that the difference is not statistically significant.

Table 5.1: Total test scores by gender

Gender	No of teachers	No of teachers in %	Total test score (%)	
			Mean	*SD*
Male	1,259	77.7	15.93	11.59
Female	327	20.2	14.78	12.24
Missing	34	2.1	n/a	n/a

99. We have seen in Chapter 1 above that the sample of teachers in Kano indicated a relatively young teacher population. Nearly half of the teachers are under 30 years old and more than 80% of the teachers are younger than 40 years of age. Less than 2% of the teachers tested in Kano are over 50 years old. Analysis of variance shows that there is no difference in any of the test scores between teachers of different age groups.

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Table 5.2 Teacher performance by age group

Age group	No of teachers	No of teachers (%)	Total test score (%)
			Mean
20 to 30 years old	803	49.6	16.32
31 to 40 years old	521	32.2	15.00
41 to 50 years old	196	12.1	15.48
over 50 years old	30	1.9	14.54
Missing	70	4.3	n/a

100. It is also interesting to see whether the length of teachers' own education had an affect on their performance in the tests. 72.2% of the teachers tested in Kano State have been schooled at least to senior secondary level. Interestingly, Table 5.3 below shows that the differences in achievement for teachers educated to different levels of schooling are not statistically significant. Teachers educated to senior secondary level achieved a mean score of 15.6%, compared with those who had not who achieved a statistically similar mean score of 15.8%.

Table 5.3 Teacher performance by length of time spent in school

Level of education	No of teachers	Valid no of teachers*	Total test score (%)		
			Mean	*SD*	*SE*
Has not been educated to senior secondary level & missing	451(27.8%)	448	15.84	11.74	.555
Educated to senior secondary level	1169 (72.2%)	1,145	15.65	11.75	.347

*After removing those with missing numbers in total scores.

101. The question whether years of teaching ie, teaching experience, has an effect on teacher performance has also been asked. When the data were subjected to an ANOVA (analysis of variance) we found there to be no significant differences in the performance of teachers by years of teaching experience. The mean scores by years of teaching experience are shown in table 5.4 below.

Table 5.4 Test performance by years of teaching experience

Teaching experience	No of teachers	% of teachers	Valid no of teachers*	Total test score (%)		
				Mean	SD	SE
1 to 5 years	699	43.1	690	15.88	12.013	.457
6 to 10 years	320	19.8	313	15.48	11.766	.665
11 to 20 years	229	14.1	221	15.29	11.120	.748
over 20 years	186	11.5	185	15.83	10.573	.777
Missing	186	11.5	211	n/a	n/a	n/a

102. A similar question can be asked about the relationship between academic or professional qualifications and performance on the test of professional working knowledge. Teachers with Ordinary National Diploma (OND) and Higher National Diploma (HND) qualifications achieved the lowest scores in nearly all of the tests. The other categories of teacher qualification show minor increases in competency assessment scores with increased level of qualification. Teachers with degrees achieved the highest test scores in all tests except for primary mathematics, in which their mean score is 27.19, lower than the average total 29.71. An ANOVA shows that there was no statistically significant effect of teachers' qualification on any of test results. We can conclude that those holding higher levels of qualification do not necessarily do better on these tests of professional working knowledge, than those teachers with lower academic qualifications. Table 5.5 below shows the mean scores by teacher qualification.

Table 5.5 Test performance by the highest qualification obtained

Highest qualification	No of teachers	% of teachers	Valid no of teachers*	Total test score (%)		
				Mean	SD	SE
GD2	284	17.5	279	15.43	11.791	.706
OND	142	8.8	140	13.94	10.733	.907
NCE	902	55.7	887	15.88	11.703	.393
HND	25	1.5	24	13.69	11.156	2.277
DEGREE	38	2.3	37	16.26	11.553	1.899
Others	113	7.0	111	16.67	12.218	1.160
Missing	116	7.2	142	n/a	n/a	n/a

103. When we look at the mean scores by location of schools in table 5.6 below, schools in semi-urban areas achieved the highest mean in all tests and schools in rural areas achieved the lowest (except for English tests, in which urban school teachers performed the worst). However, these differences are not statistically significant.

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Table 5.6 Test performance by location of school

Location of school	No of teachers	% of teachers	Valid no of teachers*	Total test score (%)		
				Mean	*SD*	*SE*
Rural	734	45.3	724	15.39	11.517	.428
Urban	465	28.7	453	15.57	11.834	.556
Semi-urban	169	10.4	167	16.51	11.938	.923
Others	22	1.4	22	15.52	11.933	2.544
Missing	230	14.2	254	n/a	n/a	n/a

104. When we consider the question of stability (whether teachers remain in one school or whether they are frequently transferred to another), the results are interesting. The number of times teachers have transferred does not have a linear effect on their test scores, i.e. the frequency of transfer does not increase or decrease the test scores. Table 5.7 below shows the mean scores achieved by the number of times a teacher had been transferred.

Table 5.7 Test performance by the number of times transferred from one school to another

Times transferred	No of teachers	% of teachers	Valid no of teachers*	Total test score (%)		
				Mean	*SD*	*SE*
0	98	6.0	95	16.39	12.062	1.238
1	176	10.9	172	15.04	11.057	.843
2	114	7.0	114	13.91	10.761	1.008
3	90	5.6	86	14.10	10.451	1.127
4	63	3.9	61	14.67	10.986	1.407
5	42	2.6	40	18.37	11.267	1.781
6	27	1.7	27	15.76	10.214	1.966
7	15	.9	15	14.51	8.899	2.298
8	12	.7	12	14.55	12.642	3.649
9	5	.3	5	13.38	4.729	2.115
Missing	978	60.4	993	n/a	n/a	n/a

105. Consideration was also given to a potential relationship between the desire to teach and test performance. 82% of the teachers claimed that teaching was one of their top three career choices; among them 74% of the teachers stated that it was their first career choice.

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Those that indicated teaching was their first career choice career did not perform better than those who had prioritised other careers. The results are shown in table 5.8 below.

Table 5.8 Test performance by career choice

Teaching as ___ career choice	Number of teachers	Number of teachers in%	Valid no of teachers*	Total test score (%)	
				Mean	*SD*
First	1,199	74.0	1,176	15.50	11.527
Second	98	6.0	97	17.96	12.421
Third	32	2.0	32	10.00	8.213
Fourth	3	.2	3	12.05	16.251
Fifth	1	.1	1	0	-
Sixth	0	-	0	-	-
Seventh	4	.2	4	6.73	11.973
Eighth	1	.1	1	40.00	-
Ninth	0	-	0	-	-
None of & missing	282	17.4	279	16.56	12.383

*After removing those with missing numbers in total scores.

106. When divided into two groups, across all four tests, teachers who did not consider teaching as one of their top three career choices actually obtained a higher mean score than those who stated teaching was one of their top three career choices, although the differences are not statistically significant. The results are shown in table 5.9 below.

Table 5.9 Comparison by groups- Test performance by career choice

	No of teachers	Valid no of teachers*	Total test score (%)		
			Mean	*SD*	*SE*
Teaching as top 3 career choice	1,329	1,305	15.55	11.57	.320
Teaching not as top 3 career choice	291	288	16.40	12.50	.737

5.2 Factors explaining the achievement profiles of the best and the worst teachers

107. We looked at dividing the teacher cohort in two sub-samples in an attempt to tease out the differences between the best performing teachers (sufficient professional working knowledge) and the worst performing group (limited professional working knowledge). In Kano, there are no teachers who are profiled as having sufficient professional knowledge. We look at those who have achieved the worst test scores.

a)   *The worst performing teachers*

108. Out of the sample of 1,620 teachers, there are 1,260 teachers who achieve scores of between 0 and 25% on the total test. Amongst this group, 704 teachers do achieve sufficient levels of professional knowledge in the test domain of primary mathematics. 483 teachers achieve scores of between 25 to 50%.

109. 256 of these teachers are women (20.3%), which is not higher than the proportion of women in the total sample of teachers in Kano. 977 of the worst performing teachers are male; again this number is not proportionately higher than the total number of male teachers sampled in the primary sector in Kano.

110. 81% of the worst performing teachers are under the age of 40 years. This reflects the figure in the total sample. Further, 46.2% of the worst performing teachers are concentrated in rural schools.

Table 5.10 Factors explaining the performance of the best and worst performing teachers

	All Kano sample Total number = 1,620		Worst performing teachers (0-25%) Total number = 1,260	
	N	**%**	**N**	**%**
Math				
75-100%	50	3.1	2	0.2
50-75%	228	14.1	71	5.6
25-50%	618	38.1	483	38.3
0-25%	724	44.7	704	55.9
English				
75-100%	2	.1	0	0.0
50-75%	35	2.2	1	0.1
25-50%	325	20.1	125	9.9
0-25%	1243	76.7	1134	90.0
Reading and Writing Literacy				
75-100%	0	-	0	0.0
50-75%	13	.8	1	0.1
25-50%	263	16.2	64	5.1
0-25%	1334	82.3	1195	94.8
Pedagogical Literacy				

	All Kano sample Total number = 1,620		Worst performing teachers (0-25%) Total number = 1,260	
	N	**%**	**N**	**%**
75-100%	0	0.0	0	0.0
50-75%	9	0.6	0	0.0
25-50%	97	6.0	10	0.8
0-25%	1512	93.3	1250	99.2
Gender				
Female	327	20.2	256	20.3
Male	1259	77.7	977	77.5
Age				
20 to 30 years	803	49.6	615	48.8
31 to 40 years	521	32.2	406	32.2
41 to 50 years	196	12.1	157	12.5
over 50 years	30	1.9	25	2.0
Location of School				
Rural	734	45.3	582	46.2
Urban	465	28.7	359	28.5
Semi-urban	169	10.4	127	10.1
Highest qualification				
GD2	284	17.5	225	17.9
OND	142	8.8	121	9.6
NCE	902	55.7	696	55.2
HND	25	1.5	21	1.7
DEGREE	38	2.3	28	2.2
Others	113	7.0	83	6.6
Years teaching in school				
1 to 5 years	699	43.1	541	42.9
6 to 10 years	320	19.8	245	19.3
11 to 20 years	229	14.1	181	14.4
over 20 years	186	11.5	150	11.9
Level currently teaching				
Pre Basic	39	2.4	33	2.6
Primary 1 to 6	1115	68.8	895	71.0
Junior Secondary I	107	6.6	80	6.3
Junior Secondary II	112	6.9	78	6.2
Others	54	3.3	38	3.0
Time transferred				
0	98	6.0	72	5.7
1	176	10.9	140	11.1
2	114	7.0	99	7.9
3	90	5.6	73	5.8
4	63	3.9	49	3.9
5	42	2.6	26	2.1
6	27	1.7	21	1.7
7	15	.9	13	1.0
8	12	.7	10	0.8
9	5	.3	5	0.4

(Some results may not add up to 100% / 1620 teachers due to missing numbers)

Chapter 6: Conclusions

111. The results from the assessment of professional working knowledge of teachers discussed above are a cause for serious concern. On the basis of these results, three-quarters of primary teachers in Kano State apparently lack the basic language and mathematical competence to teach these subjects to grade 4 children and mark their work accurately; to use materials written in English to prepare grade 4 lesson plans; and to use basic arithmetic to monitor how their pupils are doing. These findings indicate a number of dilemmas for policy makers, international development agencies and those programmes dedicated to the support of the primary education sector in Nigeria and in Kano State specifically.

112. First we must ask, in the light of the findings, are the academic abilities of aspirant teachers adequate when they enrol for initial teacher training? There are not definite answers to this, but it is highly likely that they are not. It would be a sensible policy option to use the tests developed here to screen applicants as they enter initial teacher training. Using a similar method of profiling achievement, the authorities could put in place in a series of academic support programmes. If the profile suggested by the tests discussed here is similar when applied to those enrolling for initial teacher training, it is likely that a significant proportion of applicants would be rejected on the grounds that they have insufficient basic literacy. At least half of all remaining applicants would have to dedicate a good proportion of an academic year (or more) on specifically designed courses to improve their basic literacy and numeracy. There is a strong case for the emphasis to be placed on reading, and if there is an associated emphasis on pedagogy, then it would be on learning to teach reading.

113. The findings also suggest that pre-service teacher training is ineffective in increasing teachers' subject and professional knowledge. Until now, the extent of the problem had not been fully investigated. Given limited data prior to the present study, researchers have not been able to tease out differences between teachers' knowledge necessary for teaching a subject such as mathematics, and that necessary for carrying out professional classroom administrative tasks which rely on a basic knowledge of mathematical operations—such as tracking pupils' progress over time or against the rest of the class. Similarly, there was until now no distinction between the knowledge needed to teach English (or in the language of English), and that necessary to read basic texts and extract the information necessary to prepare teaching notes or lesson plans. The potential implications of the study reported here to revising the initial teacher training curriculum are significant.

114. Where there are indications that the quality of teaching is weak, the typical response of governments and international development partners has been to place their faith in policies for in-service teacher development, often focused on pedagogical technique. But the question is rarely asked, whether in-service teacher development programmes alone

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can remedy the effects of low entry standards? Can they increase the academic and professional competencies of teachers—both those who hold teacher qualifications and those who do not? There is very little research on the effectiveness of in-service professional development on basic teacher knowledge and capabilities. If selection for teacher training, initial teacher education and in-service teacher education are all matters for concern, how should those teachers with unacceptably low professional capabilities— and this study shows that there are very many in Kano State—be supported?

115. There is no doubt that the majority of teachers need some form of continuous professional development. But it is clear from this study that one size will not fit all. The way forward would be to target, with programmes more specifically tuned in to the needs identified in this study, specific groups of teachers. It is clear that a sizable proportion of teachers could improve with specifically developed materials to scaffold their reading and writing literacies. Such a set of materials is nearing completion with ESSPIN technical assistance in Kwara State, and will shortly be available to other states in Nigeria. These materials integrate an approach that places more emphasis on literacy in the classroom. But, teachers must also be shown how to—and we must stop assuming that they can—read for information, and how to use information effectively. Forms of support that make available a variety of short information-giving texts from which teachers are expected to draw lesson content could have huge benefits in terms of teaching quality (ie, teachers should be encouraged to look for information in more than one place and one form).

116. The study shows that a large proportion of the teacher population appears to need some form of professional development support that gives them exposure to a variety of media. Bearing in mind is that a high proportion of teachers cannot read adequately, they might respond better if information was presented in the form of oral discussion, such as debates on particular topics that one might hear on the radio or see on the television. Examples of mobile phone, i-pod and screen-based technology packages of training for teachers in developing classrooms already exist in countries such as Bangladesh and Zambia. This is not to say that all materials should be delivered in this way, but it would be useful if more were.

117. The most challenging policy decision for the government is what to do with the large numbers of teachers who fall a long way short of achieving acceptable norms in their knowledge of subject or pedagogy. It seems that the government of Nigeria may have to experiment with more innovative ways in which to actively employ these teachers in professional task that do not require, or at least immediately, those levels of competence described here.

118. Increasingly, there are examples in the developing world of the successful adoption of 'interactive radio instruction' (IRI) in the teaching of mathematics (Bolivia, Guatemala, Guyana, El Salvador, Thailand and Nicaragua) and languages (Zambia, Kenya, Lesotho,

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South Africa). Children are taught in the main through the medium of radio (increasingly the use of pre-recorded discs) and the role of the teacher is to ensure the participation of children, and to direct games and exercises as directed by the media-delivered content. Despite the very low levels of teacher knowledge in classrooms in which IRI is practised (mainly hard-to-reach schools), there are numerous studies that demonstrate the significant learning gains made by children when compared to non-treatment groups. It may prove useful for Nigeria to think along these lines.

119. The importance of good quality information on teacher capabilities for teacher governance and the reduction of educational inequality is becoming clearer in international circles. Politicians, trade unions, community leaders, the media, education personnel and parents can all benefit from knowing what resources are available in the education system. They can use this information to enforce a compact between politicians (or service providers) and citizens. In much the same way, Uganda, Zambia and Tanzania have used the knowledge gained from public expenditure tracking surveys, to hold service providers to account.

120. Good information systems are also crucial to monitoring and evaluation. A big concern at the moment is that there have until now been no reliable baselines against which to measure the efficacy of teacher professionalism, nor of teacher professional development programmes. In Nigeria, it would not be possible to track, over time, what progression if any individual teachers are making against their own professional development profiles. On this hinges important questions about teacher pay and reward policies, teacher deployment and career progression. The SBMC model being introduced in Kano and beyond depends on head teachers and SBMCs being responsible for the behaviour and performance of their teachers. Directly linked to this, is the ability of communities to hold school managers (ie, the head teacher and SBMC) to account for the quality of service provided in their children's schools. Ultimately, good information is vital for policies on teacher dismissal, if after time those teachers have not responded well to professional development activities. With responsibility for resources at the school level, and accountability for performance to communities, pedagogical advisory support for teachers in the classroom has a chance of success.

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