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ESSPIN Composite Survey 2

Kano State report

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Executive summary

This report presents the findings for Kano State from the first and second rounds of the Education Sector Support Programme in Nigeria (ESSPIN) Composite Survey (CS1 and CS2), conducted in 2012 and 2014, respectively. The survey covered a wide range of indicators at the teacher, headteacher, school-based management committee (SBMC), and pupil levels, in an attempt to understand how schools in Kano are changing over time.

This report also examines the differences between groups of schools that have received different levels of ESSPIN intervention. In Kano the ESSPIN programme began with a pilot in 2009/10, which lasted two years, and in 2013/14 the programme was rolled out to all government primary schools in the state. The intervention provided in the recent roll-out schools is considered too recent to be likely to have had an effect. We compare how well the pilot schools are operating compared to the recent roll-out schools, in an attempt to understand whether the pilot intervention has had a sustained positive impact on the schools it has supported.

There have been large increases in enrolment in Kano since 2009, and there has also been a rise in violent conflict since 2011, including an incident of an attack on a school. Both of these factors may have affected the ability of schools to deliver good learning outcomes for enrolled children. Rapid increases in enrolment tend to increase class sizes and make it harder for teachers to ensure all children are learning, while violent conflict can obviously have severe impacts on school functioning, including deterring children or teachers from attending and making it harder for the community to engage with the school.

The main findings of this report are as follows:

Teacher competence: There was little change in the average level of teacher competence between CS1 and CS2 in Kano. While some of the indicators appeared to have improved and others worsened, the overall change was a fall, though not a significant one. There is evidence that teachers in the pilot schools were more competent than teachers in other schools, although the benefit appears to have accrued to all teachers in the schools receiving ESSPIN intervention rather than to those teachers who individually received training. In 2014, teachers correctly answered fewer than one in five English questions from grade 5, and less than 30% of mathematics questions. Looking at the change in competence between 2012 and 2014, there is evidence that when adjusting for how long a teacher had been in the school, teachers improved faster the more direct training they had received from ESSPIN.

Headteacher effectiveness: Overall in Kano State, around 19% of headteachers meet our standard for headteacher effectiveness. This is not significantly different from the proportion found in 2012. The schools which received ESSPIN support in the pilot generally had much more effective headteachers in 2014 than schools in the later roll-out: 47% of heads met the overall effectiveness standard in Kano's pilot phase schools, compared with only 18% in the later-entry schools.

School development planning: The level of school development planning is very low in Kano, with less than 1% of schools meeting the standard in 2014. There was no statistically significant change in the effectiveness of school development planning between 2012 and 2014. Again, this may reflect the fact that Kano has not yet implemented the ESSPIN school development planning package in most of its schools. Schools which were included in the ESSPIN pilot had much better school development planning processes in place than other schools in the state: 37% of the pilot schools had a school development plan (SDP) in place, compared to only 6% of the other schools.

However, even in ESSPIN schools, only 3% could provide evidence of having carried out any of the activities in its plan (if one was in place).

School inclusiveness: In Kano, the proportion of schools meeting our set of indicators for inclusiveness dropped between 2012 and 2014. Two indicators fell particularly steeply: the proportion of heads taking action to improve pupil attendance, and the proportion of teachers observed who were inclusive of both boys and girls and of children sitting in different parts of the classroom. Only 36% of schools partially met the overall inclusiveness standard, a significant fall from 2012, when the figure was 63%. The schools in the pilot were no more inclusive, by any of our measures, than other schools when surveyed in 2014. We therefore find little sign that ESSPIN has had an effect on inclusiveness in Kano.

SBMC functionality: In 2012, only 75% of schools sampled even had SBMCs. By 2014, this had increased to 96%. However, there was no change in the proportion of schools meeting the overall standard for SBMC functionality, which is now at 10%. SBMCs improved substantially in terms of awareness-raising, networking, women's committees, and contribution of resources to the school. At the same time, however, meetings seem to have been held less frequently and chairs were less likely to have visited the school than in 2012. Women's participation in SBMCs also worsened, and there was little change in the extent to which children participated in SBMCs. In 2014, fewer than 2% of SBMCs met our standard for inclusion of women and almost none met the standard for inclusion of children.

Across most of these indicators, SBMCs in pilot schools were operating at a much better standard than those in the other schools in 2014: 37% of the pilot schools met the standard, compared with only 9% of the other schools. Some 16% of SBMCs were inclusive of women and 4% were inclusive of children. While low, these proportions are still much higher than those in the state as a whole.

School quality: Our overall measure of the quality of schools in Kano has not changed significantly between 2012 and 2014, but ESSPIN pilot schools are operating at a significantly higher standard than other schools in the state. In 2014, around 15% of the pilot schools but under 2% of other schools met the overall standard for school quality. For this report, we also introduced a new, stricter quality standard, taking into account teachers' test scores in English literacy and numeracy. Only 4% of pilot schools and none of the other schools met this stricter standard in 2014.

Pupil learning: Between 2012 and 2014 there was little change in the average test scores in Kano's schools, except for a significant drop in results in grade 2 numeracy. Test results in ESSPIN pilot schools were higher, but the difference was not statistically significant. Children's test scores were around 25% in literacy tests and 30–35% in numeracy. We also examined whether progress – as measured by change over time in test scores – was more positive in pilot schools than in other schools in the state, but find no evidence to support this.

Overall, schools which benefited from most ESSPIN intervention (the pilot schools) are working better than other schools (which received ESSPIN only more recently), in terms of headteacher effectiveness, teacher competence, school development planning, SBMC functionality and inclusiveness, and overall school quality. These aspects of school functioning have not so far translated into better learning outcomes. Nor did they translate into a pattern of positive change in Kano's schools as a whole between 2012 and 2014. This may reflect the absence of school support for two school years following the pilot in 2009/10 and 2010/11. The larger scale intervention rolled out in 2013/14 is unlikely to have had time to take effect by the time of our survey towards the end of the same school year. It is probable that the ongoing conflict and

increasing pupil enrolment has also hindered schools' and communities' ability to deliver education with good learning outcomes.

Box 1. The good and bad news from the Composite Surveys in Kano

Positive results in this report include:

- Schools which were in the ESSPIN pilot had better headteachers, school development planning, and overall school quality, compared to schools which received roll-out only more recently.
- In 2014, headteachers who benefited from training in the ESSPIN pilot were significantly more likely to meet the effectiveness standard than headteachers not in the pilot.
- Teachers who received more ESSPIN training appear to be more competent than those who received less.
- The SBMCs in pilot schools were significantly more functional than those which were not part of the pilot phase. They were also more inclusive of women and children than SBMCs in the non-pilot schools.

Some challenges identified in the report include:

- Pupil test results are low and have not improved in Kano, and are not significantly better in ESSPIN pilot schools than in schools that received roll-out only more recently.
- For the schools in Kano as a whole, there has been little or no progress over the last two years in teacher competence, headteacher effectiveness, school development planning, SBMC functionality, or overall school quality.
- The level of inclusiveness of schools fell significantly between 2012 and 2014.
- Women's and children's participation in SBMCs is very low and has declined since 2012.

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List of abbreviations

ACLED	Armed Conflict Location & Event Data Project
CBO	Community Based Organisation
CS1	Composite Survey 1
CS2	Composite Survey 2
ESSPIN	Education Sector Support Programme in Nigeria
LGA	Local Government Area
LGEA	Local Government Education Authority
L2	grade 2 literacy test
L4	grade 4 literacy test
N2	grade 2 numeracy test
N4	grade 4 numeracy test
SBMC	School-based management committee
SDP	School development plan
SIP	School Improvement Programme

1 Introduction

The aims of the ESSPIN Composite Surveys are to assess the effects of ESSPIN's integrated School Improvement Programme (SIP) and report on quality of education in the six ESSPIN-supported states. This report focuses on the key findings for Kano State. The surveys address five output indicators: teacher competence, headteacher effectiveness, school development planning, SBMC functionality, and inclusive practices in schools. They also address one outcome indicator – school quality – and one impact indicator – pupil learning achievement.

The second round of the Composite Survey (CS2), conducted in 2014, aimed to provide post-intervention data which could be compared to data from the first round of the survey (CS1) collected in 2012, in order to evaluate the extent of improvements in key indicators and gauge programme success. A further survey will be conducted in 2016 to again assess the impact of the interventions.

This report, focusing on Kano State, presents findings from CS2 and comparisons between CS1 and CS2, covering all of ESSPIN's output, outcome and impact indicators.

1.1 ESSPIN's SIP

The ESSPIN programme aims to bring about better learning outcomes for children of basic education school age in six states, with a range of activities at the national, state, local and school levels. It has four output streams, focusing on: (i) strengthening federal government systems; (ii) increasing the capability of state and local governments for the governance and management of schools; (iii) strengthening the capability of primary schools to provide improved learning outcomes; and (iv) improving inclusion policies and practices in basic education (ESSPIN, 2013c).

Under the third of these output streams, ESSPIN's SIP aims to provide and support the use of structured materials that ensure teachers can deliver high-quality instruction, to strengthen teachers' own understanding of literacy and numeracy concepts, and to improve academic leadership and school improvement planning by headteachers (USAID, 2014). It typically works through a two-year modular programme of workshops and school visits, after which schools continue to receive school visits from government officers to maintain and continue quality gains.

Under the fourth output stream, ESSPIN aims to improve inclusion practices and to strengthen community engagement in school improvement and wider access. In particular, Output stream 4 seeks to ensure that community members, including women and girls, influence the way schools are run; that community and government organisations are better able to press for school improvement; and that schools and communities ensure that the needs of all children are met. These interventions to improve community participation through functioning SBMCs come within a challenging sociocultural context. Qualitative research by ESSPIN (2009) found that community members were often not aware of SBMCs. SBMCs also lacked clarity on their roles and responsibilities, and lacked the resources to contribute effectively to school management. It was particularly difficult for women and students to participate, as this was a cultural taboo in many areas.

The programme's theory of change assumes that the interventions will improve five pillars (or outputs) of school quality: headteacher effectiveness, teacher competence, adoption of inclusive practices to meet the needs of pupils, introduction of SDPs, and establishment of functional school-based management. These pillars collectively contribute to an improvement in overall school quality (outcome), and this in turn increases pupil learning outcomes (impact).

1.2 ESSPIN in Kano State

ESSPIN is working in partnership with the government of Kano State towards improving children's educational achievement (ESSPIN 2013b). In Kano the ESSPIN intervention pilot focused on building the skills of teachers, headteachers and SBMCs drawn from members of the local communities.

The key school-level interventions in Kano's schools partnering with ESSPIN were (ESSPIN 2013b):

- Training for headteachers on:
  - academic leadership;
  - school planning;
  - management of teachers; and
  - working with the community.
- Training for teachers on:
  - generic basic teaching skills; and
  - use of teaching aids, classroom organisation, and praise.
- 280 of the pilot schools received the first of two school grant cycles to help implement SDPs based on school self-evaluation.
- State School Improvement Team members (government officers, including lecturers and teachers) received ongoing training and support over a three-year period to develop the capacity of the Advisory Service Unit and School Support Officers to enable them to lead the school improvement process at school level.
- Civil society organisation members and government officers from the Department of Social Mobilisation received training on how to activate, train and mentor SBMCs.
- Community members (17 people from each school) received training on establishing an SBMC, which covered:
  - school planning and management;
  - SBMC roles and responsibilities;
  - communication and leadership;
  - women and children's participation in SBMCs;
  - resource mobilisation and financial processes;
  - inclusive education and gender;
  - child protection and participation; and
  - change and relationship management.

ESSPIN (2014b) noted that the 2013/14 full-coverage programme in Kano has been limited and has not covered some areas of headteacher development or any areas of school development planning. The schools selected for the pilot differ in some key ways from those selected for the later roll-out (see following section and Annex A). Both in the pilot phase and in the full roll-out phase, schools received leadership training, teacher training, and school visits, although the way they were supported and the number of days of each kind of support differs somewhat (see Annex B). Training and mentoring visits under ESSPIN's Output stream 4 also varies between different groups of schools, with the pilot schools receiving the most support (Annex C).

1.3 Selection of ESSPIN beneficiary schools and expansion

ESSPIN began working in schools in Kano in 2009/10. After starting with a pilot (Phase 1), it has since rolled out the SIPs to all government primary schools across the state (Table 1).

The Phase 1 (pilot) began with 317 government primary schools in 2009/10. Out of the 44 local government areas (LGAs) in Kano State, one urban, one peri-urban and one rural LGA were selected; within those, 69% of government primary schools were included in the pilot stage of the programme (ESSPIN, 2013a). These schools received the full package of ESSPIN interventions for two years, and then after a hiatus of two years the programme was resumed in these schools (in 2013/14).

In 2013/14 Kano rolled out the ESSPIN programme to the remaining 5,238 government primary schools in the state, and so these schools had received less than one year of intervention at the time of the CS2 survey (see Annex B).

Table 1. Proportion of schools receiving full package of ESSPIN Output stream 3 interventions

%	2009/10	2010/11	2011/12	2012/13	2013/14	Any year
Kano	6	6	0	0	100	100

Source: authors' calculations based on 2012/13 annual school census and intervention information provided by ESSPIN.
Note: Proportions are calculated relative to the total number of schools in the 2012/13 annual school census, and so these are not perfectly accurate for other years because the total number of schools changes slightly from year to year. Where census numbers are lower than ESSPIN's intervention tables, the information from ESSPIN is used on the assumption that there is some missing data in the school census

The expansion of the programme to more schools in Phase 2 required a changed model for delivering training, with the training located closer to schools. Programme staff argue that locating training closer to the schools has longer-term benefits, but that in the shorter term quality standards from the pilot programme might not be fully upheld as the new, much larger numbers of trainers, who typically have lower qualifications than those in the first wave, develop competencies. As mentioned above, in Kano the 2013/14 roll-out has been more limited in its activities and has not covered some areas of headteacher development or any areas of school development planning.

The schools selected for the ESSPIN pilot differ greatly from those which were included only in the later roll-out (see Annex A). Around half of the pilot schools were urban, while only one in four of the schools in the later group are. The pilot schools are much larger and have been established for longer, and have better infrastructure in their classrooms. This has to be kept in mind when comparing the pilot to the later roll-out schools.

There was a large increase in the number of primary schools included in the annual school census in Kano between 2009 and 2013 (Table 2). Even considering only those schools which were enumerated in both censuses, total enrolment has increased massively, by 18%. The 2013 census suggests that there are around 70 pupils for each teacher in Kano's government schools, and 83 pupils per classroom. In both cases the ratio had increased slightly since the 2009 census.

Table 2. Number of schools and enrolment in the 2009 and 2013 school censuses

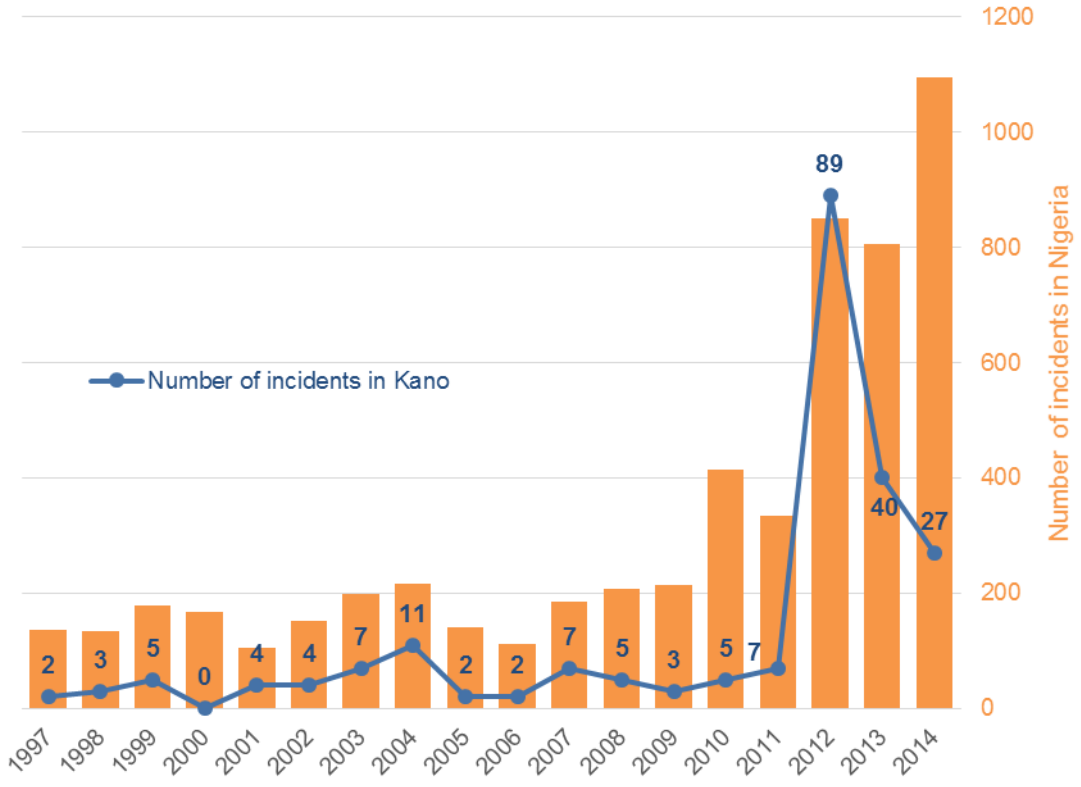
	2009		2013		Enrolment change (%)	Enrolment change (schools found in both censuses only, %)
State	Schools	Enrolment	Schools	Enrolment		
Kano	4768	1,883,472	6467	2,591,175	37.6	18.1

Note: Enrolment is for primary grades 1–6.

1.4 Conflict in Kano State

This report is written in the context of growing insecurity in Nigeria, particularly in but not limited to three states of the north-east in which a state of emergency has been declared (Borno, Yobe and Adamawa). Across Nigeria the number of recorded incidents of political violence and conflict has increased eightfold since 1997, but in Kano it has increased to over 10 times its 1997 level (Figure 1). This increase has been particularly acute since 2011, and in absolute terms relates to 27 recorded violent events in 2014, causing 359 fatalities (Table 3).

Figure 1. Incidents of political violence in Nigeria and Kano



Source: Armed Conflict Location & Event Data Project (ACLED), Version 5 (1997–2014). Note all events from ACLED are included except for those categorised as protests which did not involve a fatality.

Table 3. Kano: Political violence: Incidents and fatalities, 2010–2014

Variable	2010	2011	2012	2013	2014
Events	5	7	89	40	27
Fatalities	6	19	339	186	359

Source: ACLED, Version 5 (1997–2014). Note all events from ACLED are included except for those categorised as protests which did not involve a fatality.

ESSPIN worked with Kaduna, Kano and Jigawa in September 2014 to conduct small-scale, in-depth research into the impact that conflict and insecurity may be having on education (six schools per state), and the way in which education may impact on or fuel conflict in Nigeria (ESSPIN 2014a). Although no state of emergency has been declared in these states, they have all been affected in different ways by conflict and violence, including both communal violence and insurgency.

The research report has yet to be finalised and disseminated to states, but evidence from the 18 school communities suggests that there is a growing impact on schools and communities in ESSPIN-supported local government education areas (LGEAs) in Kano, which should be considered in the reading of this report.

In Kano one school in an ESSPIN-supported LGEA experienced a direct attack from gunmen, who shot indiscriminately and seriously wounded three teachers and the headteacher. With insecurity increasing and news of attacks against schools, education activities have been affected. For example, SBMCs have altered the timings of their meetings and reduced the numbers of members invited at one time to avoid bringing too many people together in one place. There are also school closures, and teachers and pupils may be more frequently absent due to the threat of attacks on schools.

2 Methodology and analysis

2.1 Evaluation strategy

The original evaluation design for ESSPIN relied on maintaining a control group of schools with no intervention, which could be compared to those with a longer history of intervention (Phase 1: roll-out prior to the 2012/13 school year) and those where intervention started more recently (Phase 2: roll-out in 2012/13 or 2013/14). In Kano, the pilot schools received support in 2009/10 and 2010/11, and then they – along with all remaining schools – received support in 2013/14. There is therefore no control group of schools (i.e. a group receiving no support).

For this report, in the absence of a strict control group, we compare the pilot schools to the later roll-out schools. Our assumption is that the schools receiving ESSPIN only since 2013/14 are unlikely to have seen any effects by the end of the same school year, when our survey was conducted. Higher scores in the pilot schools than in the later roll-out schools in our various indicators is consistent with the ESSPIN pilot having a sustained effect. When we examine teacher competence, there is an additional group that can be compared: teachers who are in pilot schools but did not themselves receive training. A difference between these teachers and those who did receive training would provide evidence that the training itself – as opposed to wider school-level effects of the package of ESSPIN interventions – improves teaching.

There are two key limitations of this evaluation strategy that should be kept in mind when interpreting the results:

1. Our assumption that intervention within the same school year is too recent to have had an effect may not hold. It is possible that some interventions have a rapid effect on some measures of how the school is functioning. However, many of the indicators we use either refer to events over the past school year (e.g. whether the headteacher held four or more professional development meetings during the past school year) or are linked to children's or teachers' abilities (e.g. literacy), which take time to build up. This expected delay helps to justify the assumption that any effects of intervention during 2013/14 are unlikely to have been measured on our indicators.
2. As noted in the previous section, the schools that were included in the ESSPIN pilot had very different characteristics to other schools. As they were more urban, better-established, larger, and had better infrastructure, they are likely to have had better teachers and learners even before the pilot. For the six states where ESSPIN works as a whole, better learning outcomes in ESSPIN schools do appear to be robust to controlling for school characteristics (see Cameron, 2015), but it is beyond the scope of the current report to examine whether this finding also applies in the specific case of Kano.

2.2 Fieldwork and modes of analysis

The purpose of CS2 is both to provide insight into the changes over time in the six states where ESSPIN works, and to evaluate whether ESSPIN is having an effect in the specific schools where its school improvement and community inclusion interventions have operated. We are interested in a wide range of output indicators: teacher competence, headteacher effectiveness, school development planning, school inclusiveness, and the functionality and inclusiveness of SBMCs. Some of these same indicators are also combined to give an overall indicator of school quality. Finally, ESSPIN's impact is measured in terms of improved pupil learning outcomes, which we ascertain through test scores in numeracy and English literacy in grades 2 and 4.

These indicators were derived from questionnaire, pupil tests, and other instruments in a survey conducted during May–July 2014. The following data collection was carried out:

1. Structured interviews were conducted with teachers, headteachers and SBMC chairpersons;
2. A lesson observation was conducted for each teacher sampled;
3. Teacher tests were conducted at the end of the survey, in a number of testing centres in each state; and
4. Pupils in primary grades 2 and 4 were given tests in either literacy or numeracy.

For each indicator, we present descriptive statistics showing the proportion of schools, teachers or pupils that have reached an overall standard of quality, competence, effectiveness or basic learning outcomes. We break these down between CS1 (2012) and CS2 (2014), and between ESSPIN pilot schools and the rest. As well as these binary (i.e. yes-or-no) variables, we also calculate a continuous measure, or score, for each indicator, which allows for more precision in examining differences between categories.

In each case we use statistical significance tests (t-tests or z-tests) to give an indication of whether a difference in results (over time or between intervention groups) is significant. This should not be taken as rigorous hypothesis testing (given the very large number of indicators tested) but provides a guide to whether a difference between the weighted average results in two groups is large enough, relative to the variance of the results, to be able to provide us with a useful indication of likely differences in the population of schools in the six states.

For pupil test results we also examine the 'difference in differences': the amount of improvement (or deterioration) seen in the test scores of pilot schools between 2012 and 2014, compared to the equivalent amount for non-pilot schools. The hypothesis is that pilot schools have processes in place – such as better headteachers, better school development planning, and more community involvement through SBMCs – which would help to improve test scores even after the period of direct ESSPIN intervention in the school. A larger (i.e. more positive) change in test scores in pilot schools than in the other schools would support this hypothesis.

Two indicators of aggregate learning outcomes are used in this report. The first is the total mark achieved by the pupil in each test paper, expressed as a percentage score. The second is the proportion of tested pupils who successfully answer a subset of questions which aim to measure a specific field of learning, as described in ESSPIN's logframe. Although the latter may be important for assessing ESSPIN's success in improving specific types of learning (e.g. the ability to read with comprehension), their reliance on data from a small number of questions (2–3) is statistically problematic. They are less reliable and sensitive indicators than the total mark, which uses all of the data available. For completeness, both types of indicator are used in this report.

2.3 Sampling, coverage and weights

In Kano the sample allocation for CS1 was 105 schools, 35 in the pilot category, and 70 schools which at that point had not received any ESSPIN interventions. As described in the CS1 report, there was a large amount of variance between schools in the sample, which reduced the precision of the pupil and teacher indicators. In order to reduce this problem, in CS2 the sample was increased to 175 in Kano (Megill, 2014). Out of these, 35 had been in the pilot phase and 140 were in the group which began being supported by ESSPIN in 2013/14. There are no schools with no ESSPIN intervention in Kano State, but we refer to the schools where roll-out happened recently as 'control schools' for the purpose of this evaluation.

The number of schools sampled in each of the categories (as defined in CS2, so taking account of the full period of intervention) is shown in Table 4.

Table 4. Sample in CS1 and CS2 and population of schools, by intervention group

	Category for sampling purposes	CS1 sample	CS2 sample	Population
Kano	none/minimum (recent roll-out)	67	135	5238
	medium (pilot)	35	35	317
	Total	102	170	5555

Note: The sample size shown is the actual sample for which data was collected.

In each school the headteacher was interviewed, as was the SBMC chairperson.

Teachers who were present in their schools on the day of the survey visit (determined using the school's teacher attendance register) and who taught grades 1–6 in the present term were sampled from the population. The sample was reduced from 10 teachers in CS1 to six teachers in CS2 in order to improve the accuracy of the indicators.

Pupils were sampled from the pupil registers for grade 2 and 4 classes – four each for numeracy and literacy by grade.

Within the schools, it was not always possible to administer all of the intended instruments. This could happen because the school was very small and lacked a sufficient number of pupils and eligible teachers. It also sometimes happened that teachers and pupils were not present at 8am, when sampling was conducted; and occasionally pupils and teachers would leave the school after being sampled (for example, due to illness). In total, 90% of the intended sample of pupils was included, and 61% of teachers. The actual numbers of schools, teachers and students sampled is given in Table 5.

Table 5. Kano: Sample coverage in CS2

	Schools		Teachers			Pupil tests			
	Intended sample	Actual	Interview	Less. Obs.	Tests	L2	L4	N2	N4
Kano	175	170	773	764	645	667	635	669	632

Note: Throughout this report, *L2* refers to the grade 2 literacy test, *L4* to the grade 4 literacy test, *N2* to the grade 2 numeracy test, and *N4* to the grade 4 numeracy test.

Simple averages of the results from the Composite Survey data would not be representative of what is happening across the state, because (as Table 4 above shows) the profile of schools in the survey is not identical to the profile of schools in the state as a whole, in terms of the proportion of schools in each of the roll-out phases. We overcome this problem by applying sample weights which give greater weight to the results in schools that are relatively under-represented in the survey. Sample weights were calculated for the CS1 and CS2 schools, teachers and pupils.

3 Findings

Box 2. How to interpret the analysis and expected results

For each indicator, two types of analysis are presented:

- Comparison of averages between CS1 and CS2. Here the results are representative of all schools (or teachers, or pupils) in the state, as found in CS1 and then in CS2. This depends on both general trends at the state level and any improvements in ESSPIN schools, and on the scale of ESSPIN roll-out. The hope is that ESSPIN state-level interventions combined with the SIP will lead to an improvement in state-wide averages.
- Comparison of pilot schools to those that entered the programme only in 2013/14 (i.e. the 'control' schools). We count the recent roll-out schools as a control group because it is unlikely that the ESSPIN intervention could have had a significant effect on these schools by the time of the survey, which was conducted in the same school year. If the ESSPIN pilot has had sustained effects, the pilot schools should be doing better than the control schools in 2014.

3.1 Teacher competence

3.1.1 Main analysis

The ESSPIN logframe sets four criteria for judging competence of teachers (Box 3). A teacher who teaches English or maths is defined as competent if he or she meets at least three of these, while teachers of other subjects are exempted from one of the four criteria (knowledge of the English or maths curriculum) and defined as competent if they meet two of the remaining three criteria.

For CS2, a fifth criterion was added, based on teacher test results. Teachers are defined as competent if they are competent according to the original criteria, and can also score at least 50% in primary school-level literacy and numeracy tests.

Box 3. Logframe standard for teacher competence

A teacher must meet three out of four of the following criteria to meet the competence standard if he/she teaches English and/or maths. Teachers of other subjects must meet two out of three criteria (excluding 1 below).

1) Knowledge of English or mathematics curriculum (based on interview);
2) Use of at least one teaching aid during lesson observation;
3) Greater use of praise than reprimands during lesson observation; and
4) In terms of class organisation: assigning individual or group tasks at least twice during lesson observation (or for two contiguous five-minute blocks).

For CS2, a new stricter indicator of teacher competence has been introduced. This excludes reading from or writing on, or having pupils copy from, the blackboard as a use of a teaching aid, and adds a fifth criterion:

5) Literacy and numeracy: scores at least 50% in both an English literacy and a numeracy test.

Table 6 compares the results for Kano's teachers in CS1 and CS2. (The fifth criterion is not available here as teacher tests were not conducted as part of CS1.) While some of the indicators appeared to have improved (use of teaching aids, use of praise) and others worsened (curriculum knowledge, assigning varied tasks), the change between CS1 and CS2 is not statistically

significant for any of the teacher competence criteria or for the overall standard. In total, 62% of teachers met the competence standard in 2014, compared with 67% in 2012.

Table 6. Kano: Teacher competence in CS1 and CS2

	CS1	CS2	
(1) Knowledge of English/maths curriculum	41.9	23.1	
(2) Use of 1+ teaching aid	85.5	94	
(3) Praise more than reprimand	63.5	71.4	
(4) Assigns 2+ ind./group task	59.5	44.6	
Competence score (CS1 version)	66.6	63.8	
Teacher competence standard (CS1)	67.4	61.6	

Note: + = significant improvement between 2012 and 2014; - = significant worsening between 2012 and 2014 (using a t-test; $p < .05$).

Focusing on the findings in CS2, we distinguish three groups of teachers: (1) those who are in schools that received no ESSPIN intervention until 2013/14; (2) those who are in schools that received ESSPIN intervention in the pilot but who did not individually receive ESSPIN teacher training; and (3) those who are in ESSPIN pilot schools and individually received ESSPIN teacher training (Table 7). The teachers who received training during the pilot were significantly better at using teaching aids, and had greater knowledge of the curriculum, assigned varied tasks, and scored higher in the literacy and numeracy tests (although these differences were not significant). Despite this, the proportion of trained teachers who met the standard was lower than in the control schools when using the less strict CS1 standard (though it was not statistically significant).

Teachers who were in an ESSPIN pilot school but did not receive the training themselves performed significantly better on many of the criteria than teachers in control schools. Their literacy and numeracy scores were higher, and more teachers used teaching aids, gave praise more than reprimands, and assigned different tasks to the class. Teachers in pilot schools who had not themselves been trained were more likely to meet the competence standards than teachers in control schools. This result suggests there could be some spillover from the teacher training and other ESSPIN support to other teachers in the school, although this effect could also be caused by the pilot schools being more urban and having better infrastructure than the control schools (see section 1.3 above).

Table 7. Kano: Teacher competence in CS2, by intervention group

	(1) Control (recent roll-out)	(2) ESSPIN pilot school		(3) ESSPIN-trained	
Knowledge of English/maths curriculum	23.3	20.5		26.3	
Use of 1+ teaching aid	93	99.8	+	100	+
Use of 1+ teaching aid excl read/write/copy from blackboard	59.4	66.9		79.5	
Praise more than reprimand	69.6	84	+	67.3	
Assigns 2+ ind./group task	41.2	68.1	+	46.2	
Literacy score (%)	36.1	45.8	+	45.1	
Numeracy score (%)	51.7	58.8	+	58.8	
Passes literacy and numeracy test	22.2	37.4	+	30.5	
Competence score (CS1 version)	61.9	78.1	+	59.9	
Teacher competence standard (CS1)	58.7	83	+	49	
Competence score (CS2 version)	51	63.6	+	53	
Teacher competence standard (CS2)	10.7	28.5	+	12	

Note: The CS2 version of the competence score adds the teacher's performance in the literacy and numeracy tests to the number of other criteria met by the teacher; for example, a teacher who met all four original criteria and also scored 100% in the literacy and numeracy tests would receive a competency score of 100%; + indicates a significant difference from the results in control schools ($p < .05$).

Did teachers benefiting from ESSPIN training improve faster than those who did not between 2012 and 2014? Our analysis suggests that there was no significant difference in the improvement in teacher competence for teachers who received ESSPIN training compared with those who did not (see Annex D). However, when we adjust the results to account for how long a teacher was at the school, we find that those who had received the training under ESSPIN improved more than those who had not.

Overall in Kano the findings suggest that there was no significant change in teacher competency between CS1 and CS2. The teachers in ESSPIN pilot schools but who did not personally receive ESSPIN training were generally more competent than control school teachers. There is evidence that the more training a teacher received the faster they improved between 2012 and 2014, when adjusting for how long ago they joined the school.

3.1.2 Findings from the teacher content knowledge tests

The teacher tests included items pitched at primary school grades 1 through to 5 and focusing on different areas: foundational skills for teaching literacy; writing; reading; grammar; number concepts; calculation; and other numeracy skills. In Kano, teachers were twice as strong in reading as they were in writing; grammar was also a stronger area (Figure 2). In mathematics, teachers performed better in number concepts than calculation and other numeracy items. As would be expected, teachers' ability to answer the questions falls as the grade level of the questions increases (Figure 3). On the whole, teachers in Kano seem to have found the mathematics questions easier than the English questions.

Figure 2. Kano: Teacher test scores across domains of learning

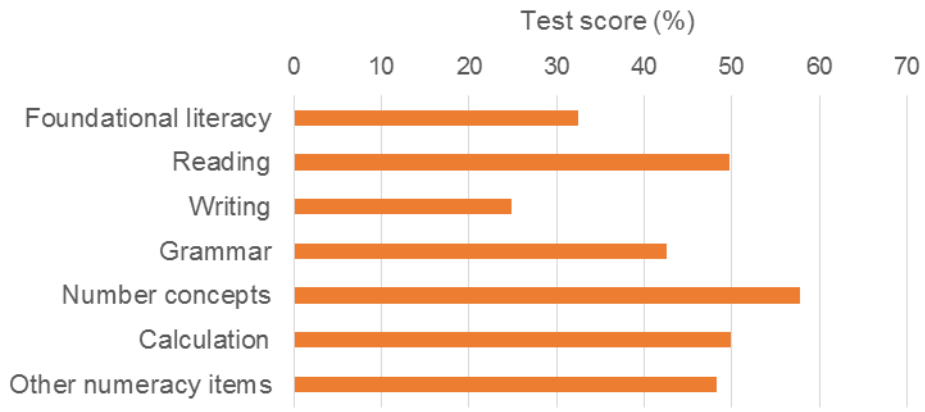
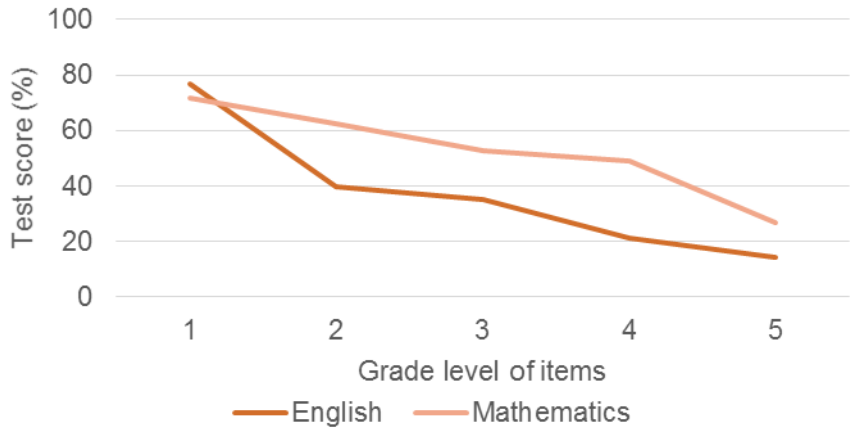


Figure 3. Kano: Teacher test scores by grade



3.2 Headteacher effectiveness

The ESSPIN logframe defines headteacher effectiveness in terms of seven criteria (Box 4). These reflect both activities by the headteacher and behaviour across the teachers and pupils, such as agreement on what time the school should open (criterion 4), presence in class at the beginning of the school day (criterion 5), and appropriate break and lesson durations (criteria 6 and 7).

Box 4. Logframe standard for headteacher effectiveness

A headteacher must ensure that five out of seven of the following criteria are met in order to meet the headteacher effectiveness standard:

1) Carry out two or more lesson observations in the past two weeks;
2) Hold four or more professional development meetings since the start of the 2011/12 or 2013/14 school year (NB: the survey took place more than nine months into the school year);
3) School has a teacher attendance book and the headteacher recalls at least two actions taken to promote teacher attendance;
4) Clear school opening time: more than 50% of pupils sampled agree on the school opening time and more than 50% of teachers sampled agree on the school opening time;
5) More than 50% of classes are in their classroom with their teacher within 30 minutes of school opening time;
6) Length of morning break is 35 minutes or less, except in Enugu when it must be 15 minutes or less; and
7) More than 50% of lessons observed finished within five minutes of a standard 35-minute lesson duration (i.e. between 30 and 40 minutes long).

The proportion of all headteachers in Kano meeting the effectiveness standard is low (19%), and this was little different from the CS1 result (17%) (Table 8). Looking at the individual criteria, there was an improvement in the number of heads conducting regular lesson observations and in the proportion of lessons of the standard length, but the number of heads who took action on teacher attendance worsened. The proportion of classes starting on time also fell from 66% to 51%, but this drop was not found to be significant. The lack of a clear pattern of improvement may reflect the fact that Kano rolled out some areas of the headteacher development package to its schools only in the 2013/14 expansion (ESSPIN 2014b). Having not fully rolled out this package, headteachers across the state as a whole would not be expected to have improved in the way targeted in the pilot.

Table 8. Kano: Headteacher effectiveness in CS1 and CS2

	CS1	CS2	
(1) Lesson observations	7.2	25.1	+
(2) Professional development meetings	14.9	12.2	
(3) Action on teacher attendance	76.5	46.8	-
(4) Clear opening time	55.9	49.9	
(5) In class on time	65.9	50.5	
(6) Appropriate morning break	83.5	85.7	
(7) Appropriate lesson length	31.1	69.5	+
Number of criteria fulfilled (/7)	3.6	3.2	
Effective headteacher (5/7 criteria met)	17.2	19	

Note: + = significant improvement between 2012 and 2014; - = significant worsening between 2012 and 2014 (using a t-test; $p < .05$).

Focusing on the CS2 data, we compare the results for headteachers who received leadership training during the ESSPIN pilot and those who did not receive any support until 2013/14 (Table 9). The schools which received ESSPIN support in the pilot generally had more effective headteachers than schools in the later roll-out. The ESSPIN schools were significantly more likely to have heads who conducted lesson observations and to have teachers starting their classes on

time in the morning. Pilot schools were also more likely to have held professional development meetings, to have a clear opening time, appropriate lesson lengths, and for the head to have taken action on teacher attendance – although these differences were not found to be statistically significant due to the variation in the data. The higher performance in pilot schools contributed to the average number of criteria fulfilled being higher for pilot schools at 4.5, compared with 3.1 in the control schools. Also, 47% of heads met the overall effectiveness standard in Kano's pilot phase schools, compared with only 18% in the later-entry schools.

Table 9. Kano: Headteacher effectiveness in CS2, by intervention group

	(i) control (recent roll-out)	(ii) ESSPIN pilot school	
(1) Lesson observations	24.1	45.5	+
(2) Professional development meetings	11.4	28.5	
(3) Action on teacher attendance	46.2	58.6	
(4) Clear opening time	49.1	66.3	
(5) In class on time	49.2	76.6	+
(6) Appropriate morning break	85.7	85.4	
(7) Appropriate lesson length	69	80	
Number of criteria fulfilled (/7)	3.1	4.5	+
Effective headteacher (5/7 criteria met)	17.6	46.7	+

Note: + indicates a significant difference from the results in control schools ($p < .05$).

3.3 School development planning

The definition of effective school development planning depends on five criteria (Box 5). In Kano performance fell across all of the criteria between CS1 and CS2, although the reductions were not found to be statistically significant (Table 10). While all the indicators appear to have worsened, the large variation within the sampled schools makes it hard to determine confidently that there was a change. The lack of clear improvement may be unsurprising given that in Kano the roll-out focused on all schools but not full coverage of the intervention package, with school development planning omitted (ESSPIN 2014b). Nevertheless, the level of school development planning is very low in Kano, with less than 1% of schools meeting the standard.

Box 5. Logframe standard for effective school development planning

The school must meet criterion 1 and criterion 2 listed below and at least two out of three of the remaining criteria in order to meet the effective school development planning standard:

1) Written evidence of school self-evaluation process for current school year;
2) SDP for current school year available;
3) SDP contains three or more activities which aim to strengthen teaching and learning;
4) Physical evidence of four or more activities from SDP having been carried out; and
5) Cashbook is up-to-date (balanced in the last 60 days).

Table 10. Kano: SDP effectiveness in CS1 and CS2

	CS1	CS2	
(1) Written evidence of school self-evaluation process	13.8	9	
(2) SDP available	18.5	7.5	
(3) SDP contains 3+ activities to strengthen teaching and learning	8	1.4	
(4) Evidence that 4+ activities from SDP carried out	6.2	0.9	
(5) Cashbook up-to-date	15.2	11.7	
Number of SDP criteria fulfilled (/5)	0.6	0.3	
School meets effective school development planning standard	3.2	0.3	

Note: + = significant improvement between 2012 and 2014; - = significant worsening between 2012 and 2014 (using a t-test; $p < .05$).

In 2014, pilot schools were more effective at school development planning than the other schools which received ESSPIN intervention only in 2013/14 (Table 11). There was significantly greater performance in terms of showing evidence of a school self-evaluation process, having a SDP available, and planning activities to strengthen teaching and learning. Overall, control schools met one out of five criteria; other schools met only 0.3 of the criteria.

Table 11. Kano: SDP effectiveness in CS2, by intervention group

	(i) Control (recent roll-out)	(ii) ESSPIN pilot school	
(1) Written evidence of school self-evaluation process	8.2	25	+
(2) SDP available	6.1	36.6	+
(3) SDP contains 3+ activities to strengthen teaching and learning	0.5	19.7	+
(4) Evidence that 4+ activities from SDP carried out	0.8	2.8	
(5) Cashbook up-to-date	11.3	18.5	
Number of SDP criteria fulfilled (/5)	0.3	1	+
School meets effective school development planning standard	0.1	5.6	

Note: + indicates a significant difference from the results in control schools ($p < .05$).

3.4 School inclusiveness: meeting the needs of all pupils

The school inclusiveness standard depends on meeting three out of four criteria (Box 6), and schools are defined as partially meeting the standard if two criteria are met. In Kano generally the number of schools meeting each of the criteria dropped between CS1 and CS2, and significantly so in terms of heads taking action to improve pupil attendance (Table 12); 36% of schools partially met the inclusiveness standard, and this was a significant fall from the 2012 figure (63%).

Box 6. Standard for school inclusiveness (meeting the needs of all pupils)

The school must meet at least three of the four criteria listed below in order to meet the school inclusiveness standard. The standard is partially met if two criteria are met:

1) Headteacher states three or more actions that he/she has taken to improve pupil attendance;
2) SDP contains two or more activities which aim to improve access;
3) More than 50% of teachers observed provided evidence of using two or more assessment methods (marked class test, marked pupil workbook, or graded examination paper); and
4) More than 50% of teachers observed met the spatial inclusion criterion (defined as engaging with at least one pupil from four different areas of the classroom during a lesson) and more than 50% of teachers observed met the gender inclusion criterion (defined as engaging with boys and girls proportionally to their presence in the classroom within a 10% margin; for example, if the class contains 50% girls then teachers who engage with girls between 60% and 40% of total engagements meet the criterion).

Table 12. Kano: School inclusiveness in CS1 and CS2

	CS1	CS2	
(1) 3+ actions to improve attendance	62.8	29.7	-
(2) 2+ activities in SDP to improve access for disadvantaged children	4.4	1.9	
(3) >50% of teachers use 2+ assessment methods	63.7	59.1	
(4) >50% of teachers spatially inclusive and >50% are gender inclusive	26.3	15.0	
Number of inclusiveness criteria fulfilled (/4)	1.6	1.0	-
Inclusiveness score	69.6	59.1	-
School partially met inclusiveness standard (2–4 criteria out of 4)	63.4	36.1	-
School fully met inclusiveness standard (3–4 criteria out of 4)	9.3	3.3	

Note: + = significant improvement between 2012 and 2014; - = significant worsening between 2012 and 2014 (using a t-test; $p < .05$)

Focusing on CS2, the differences in inclusiveness between ESSPIN pilot and control schools were positive for some indicators and negative for others, although none were found to be statistically significant (Table 13). ESSPIN schools were more likely to have activities in their SDPs to improve access for disadvantaged children, and their teachers were more spatially and gender inclusive in the classroom. However, pilot schools' teachers were less varied in their assessment methods. In both categories of schools very few met the overall standard of inclusiveness, with 9% of pilot schools and only 3% of other schools meeting the standard.

Table 13. Kano: School inclusiveness in CS2, by intervention group

	(1) Control (recent roll-out)	(2) ESSPIN pilot school	
Inclusiveness criteria			
(1) 3+ actions to improve attendance	29.6	32.0	
(2) 2+ activities in SDP to improve access for disadvantaged children	1.6	7.6	
(3) >50% of teachers use 2+ assessment methods	59.9	42.9	
(4) >50% of teachers spatially inclusive and >50% are gender inclusive	14.4	27.0	
Overall inclusiveness standard			
Number of inclusiveness criteria fulfilled (/4)	1.0	1.1	
Inclusiveness score	59.1	59.1	
School partially met inclusiveness standard (2–4 criteria out of 4)	35.9	40.3	
School fully met inclusiveness standard (3–4 criteria out of 4)	3.0	9.0	
Detailed			
Number of actions to improve attendance	2.0	2.2	
Number of activities on access for disadvantaged children	0.0	0.3	
Average number of assessment methods used	1.0	0.9	
Average number of zones participating in lessons	3.4	3.5	
Average gender equity score (0=completely unequal, 100=perfectly equal)	75.9	75.2	

Note: The gender equity score for a teacher is $100 - 100 \times abs(\frac{g}{g+b} - \frac{G}{G+B})$ where *g* is the number of girls who participate, *b* is the number of boys who participate, *G* is the number of girls present in the class, and *B* is the number of boys present in the class. It is expressed as a percentage score. For a lesson where the proportion of girls and boys participating is exactly equal to the proportion of girls and boys sitting in the lesson, the gender equity score will be 100; for a lesson where no boys participate, or no girls participate, the score will be zero; + indicates a significant difference from the results in control schools (p < .05).

3.5 SBMC functionality and inclusiveness

ESSPIN conducted qualitative research into SBMCs and community engagement in education in five states (Jigawa, Kaduna, Kano, Kwara and Lagos) in 2009 (ESSPIN 2009). This research suggested that SBMCs were not functioning well: there was a lack of clarity and understanding over the SBMC's role and responsibilities; they lacked the financial resources to support schools in the ways that LGEAs often expected them to; community members were sometimes excluded by local elites; and there was little participation by women and children, despite guidelines requiring their inclusion.

In this context, SBMCs were starting from a low base and with substantial sociocultural barriers to be overcome to reach functionality and inclusive participation. ESSPIN has aimed to improve community involvement in schools through functioning SBMCs and increased women's and children's participation, with a number of interventions under its Output stream 4 (see Annex C).

By the time of the first round of the Composite Survey, in Kano only 75% of schools in the sample had SBMCs (Table 14). By CS2 this had improved to 96% of the schools sampled. This does not

mean that all the SBMCs are functional or inclusive, however. The following sections use criteria and standards defined by the ESSPIN logframe to examine SBMC functionality and the extent to which SBMCs are inclusive of women and children. Schools without SBMCs are recorded as not meeting the SBMC functionality standard (so giving a low result on this standard). But they are excluded from the analysis for women's and children's inclusiveness so that the results represent the situation in the existing SBMCs.

Table 14. Kano: Sample size of schools with SBMCs

	CS1	CS2
Schools sampled in Kano	102	170
Schools with SBMCs sampled in Kano	77	163

3.5.1 SBMC functionality

There are nine criteria used to assess SBMC functionality, of which five must be fulfilled to meet the logframe standard (see Box 7). In the schools in Kano there was a significant improvement on four of the nine criteria for SBMC functionality between 2012 and 2014, but a worsening on two criteria (Table 15). The improvement in the number of SBMCs which had networked with other community groups was notable, from 9% in CS1 up to 57% in CS2. The number of schools meeting the overall standard for SBMC functionality fell from 20% to 10%, although this drop was not statistically significant.

Two additional inclusiveness-related criteria are also examined in this section: whether the SBMC did anything to support commonly excluded groups; and whether it raised issues of children's exclusion from school with the community, LGEA or state government. There was a significant and sizeable increase in the number of SBMCs taking action to support commonly excluded groups between 2012 and 2014 in Kano.

Box 7. Logframe standard for SBMC functionality

The school must meet at least five of the nine criteria listed below in order to meet the SBMC functionality standard for the current school year:[1]

1) Two or more SBMC meetings have taken place since the start of the current school year (written evidence);
2) SBMC conducted awareness-raising activities (written or oral evidence);
3) SBMC took steps to address exclusion (written or oral evidence);
4) SBMC networked with Community Based Organisations (CBOs), traditional or religious institutions, or other SBMCs (written or physical evidence);
5) SBMC interacted with local government education authorities on education service delivery issues (written or physical evidence);
6) An SBMC women's committee exists (written or physical evidence);
7) An SBMC children's committee exists (written or physical evidence);
8) SBMC contributed resources for the school (written or physical evidence); and
9) The SBMC chair visited the school at least three times from the start of the current school year (written evidence).

Table 15. Kano: SBMC functionality in CS1 and CS2

	CS1	CS2	
(1) 2+ meetings this school year	37.2	16.3	-
(2) Conducted awareness-raising	32.9	53.2	+
(3) Addressed exclusion	24.3	16.6	
(4) Networked with CBOs/institutions/other SBMCs	8.8	56.9	+
(5) Interacted with LGEA	16.3	11.6	
(6) Has women's committee	2.8	11	+
(7) Has children's committee	17	10.6	
(8) Contributed resources for school	38.2	55.1	+
(9) Chair visited school 3+ times	21.3	6.4	-
Schools meeting functioning SBMC standard	19.8	10.3	
Number of SBMC functionality criteria met (/9)	2	2.6	
Additional criteria			
Action for commonly excluded groups	15.7	37.5	+
Raised issue of children's exclusion	7.4	18.3	

Note: + = significant improvement between 2012 and 2014; - = significant worsening between 2012 and 2014 (using a t-test; $p < .05$).

Looking at the results for schools in CS2, the pilot schools performed better on all the criteria for SBMC functionality, and significantly so on six of the nine criteria (Table 16). This difference is reflected in the proportion of schools meeting the overall standard, which was 37% for the ESSPIN schools but only 9% for the control (later roll-out) schools.

[1] A slightly different standard with 10 criteria was used in CS1. The new standard with nine criteria was applied to both the CS1 and CS2 data.

Table 16. Kano: SBMC functionality in CS2, by intervention group

	(1) Control (recent roll-out)	(2) ESSPIN pilot school	
(1) 2+ meetings this school year	14.9	44.2	+
(2) Conducted awareness-raising	52.4	68.5	
(3) Addressed exclusion	16.4	19.5	
(4) Networked	56.2	70.9	
(5) Interacted with LGEA	10.6	31.6	+
(6) Has women's committee	9.4	42.7	+
(7) Has children's committee	8.8	47.5	+
(8) Contributed resources for school	53.7	83.1	+
(9) Chair visited school 3+ times	5.6	22.3	+
Standard G: functioning SBMC	8.9	37.2	+
Number of SBMC functionality criteria met (/9)	2.5	4.4	+
Additional criteria			
Action for commonly excluded groups	37	46.8	
Raised issue of children's exclusion	18.2	20.1	

Note: + indicates a significant difference from the results in control schools ($p < .05$).

3.5.2 Women's inclusiveness

The 2009 study of SBMCs found that community members were excluded from the process by local elites, and as such SBMCs were little known about and lacked a link to the community. In addition, the requirement (as stated in the guidelines) for participation by women and students was often ignored where this was felt inappropriate in the local culture. In this section and the following section, we examine the extent to which SBMCs were inclusive of women's and children's concerns in 2014. We measure SBMC women's inclusiveness using four criteria (Box 6). In Kano there was a significant fall between CS1 and CS2 on three of the four criteria, and the total number of schools meeting the standard decreased from 21% to 1% (Table 17).

Box 8. Logframe standard for SBMC women's inclusiveness

The school must meet at least three of the four criteria listed below in order to meet the SBMC women's inclusiveness standard for the last school year:

1) At least one woman attended two or more SBMC meetings (written evidence);

2) Female member of SBMC raised at least one issue at SBMC meetings (written evidence or oral evidence from a female member of the SBMC);

3) At least one issue raised by a female member at an SBMC meeting led to action (written, physical or oral evidence from female member of SBMC); and

4) At least one SBMC women's committee meeting took place.[2]

[2] This criterion has been slightly altered since CS1, where it also required the women's committee to have a female leader.

Table 17. Kano: SBMC's women's inclusiveness in CS1 and CS2

	CS1	CS2	
(1) At least one woman attended 2+ meetings (%)	18.3	3.2	-
(2) Female member raised an issue (%)	28.4	6.7	-
(3) Issue raised by female member led to action (%)	22.1	0.4	-
(4) Women's committee met (%)	14.4	8	
Number of criteria met	0.5	0.2	-
Meets standard (3/4 criteria)	20.9	1.4	-

Note: Schools that did not have SBMCs at all in CS1 are excluded from the analysis; + = significant improvement between 2012 and 2014; - = significant worsening between 2012 and 2014 (using a t-test; $p < .05$)

In the CS2 results, SBMCs in ESSPIN pilot schools were significantly more inclusive of women than those in control schools (Table 18). The results for pilot schools were up to 10 times better than in control schools, for example with 50% of SBMCs having had their women's committee meet in the pilot schools compared with 6% in the control schools.

Table 18. Kano: SBMC women's inclusiveness in CS2, by intervention group

	(1) control (recent roll-out)	(2) ESSPIN pilot school	
(1) At least one woman attended 2+ meetings (%)	2.3	22.3	+
(2) Female member raised an issue (%)	5.5	29.4	+
(3) Issue raised by female member led to action (%)	0.1	4.6	
(4) Women's committee met (%)	5.8	50.1	+
Number of criteria met	0.1	1.1	+
Meets standard (3/4 criteria)	0.6	16	+

Note: + indicates a significant difference from the results in control schools ($p < .05$).

3.5.3 Children's inclusiveness

Earlier qualitative research (ESSPIN, 2009) found that many SBMCs did not allow the participation of children, and that where they had student members, they were not always able to be invited or may not have been comfortable voicing opinions in meetings. In this section, we examine whether SBMCs have improved in the extent to which they are inclusive of children, in accordance with guidelines on how they are supposed to operate. There are four criteria in the standard on SBMC children's inclusiveness.

Across Kano State the proportion of schools meeting the overall standard of children's inclusiveness fell from 8% in CS1 to 0.2% in CS2, although this was not a statistically significant change (Table 19). The proportion of SBMCs where a child attended the meeting, or raised an issue, both fell between 2012 and 2014, and the number of SBMCs which took action as a result of an issue raised by a child dropped significantly – from 16% to less than 1%.

Box 9. Logframe standard for SBMC children's inclusiveness

The school must meet at least three of the four criteria listed below in order to meet the SBMC's children's inclusiveness standard for the current school year:

1) At least one child attended two or more SBMC meetings (written evidence);
2) A child member of SBMC raised at least one issue at SBMC meetings (written evidence or oral evidence from child member of SBMC);
3) At least one issue raised by a child member at an SBMC meeting led to action (written, physical or oral evidence from child member of SBMC); and
4) At least one SBMC children's committee meeting took place and the committee has a trained facilitator.[3]

Table 19. Kano: SBMC children's inclusiveness in CS1 and CS2

	CS1	CS2	
(1) Child attended 2+ meetings (%)	13	1.5	
(2) Child raised an issue (%)	12.9	4.5	
(3) Issue raised by child led to action (%)	15.8	0.1	-
(4) Children's committee met and has a trained facilitator (%)	1.4	2.9	
Number of criteria met	0.3	0.1	
Meets standard (3/4 criteria) (%)	7.7	0.2	

Note: Schools that did not have SBMCs at all in CS1 are excluded from the analysis; + = significant improvement between 2012 and 2014; - = significant worsening between 2012 and 2014 (using a t-test; $p < .05$).

Looking at children's inclusiveness in CS2, generally ESSPIN pilot schools were more inclusive than control schools (Table 20): there were significantly more SBMCs where children attended the meetings and more children's committees met in pilot schools. The average number of criteria met was 0.5 in control schools, and only 0.1 in other schools.

Table 20. Kano: SBMC children's inclusiveness in CS2, by intervention group

	(i) Control (recent roll-out)	(ii) ESSPIN pilot school	
(1) Child attended 2+ meetings (%)	0.9	13	+
(2) Child raised an issue (%)	4.4	7.7	
(3) Issue raised by child led to action (%)	0	1	
(4) Children's committee met and has a trained facilitator (%)	1.5	28.9	+
Number of criteria met	0.1	0.5	+
Meets standard (3/4 criteria) (%)	0	4	

Note: + indicates a significant difference from the results in control schools ($p < .05$).

Overall, Kano State saw a worsening in the inclusiveness of its SBMCs between 2012 and 2014, although ESSPIN pilot schools appear to be more inclusive than schools which have not benefited from the pilot.

[3] In CS1 this criterion required written evidence in the form of minutes of at least one children's committee meeting held in the past school year. This requirement was dropped for CS2 as it was considered unlikely that children's committees would keep good minutes, and that a failure to keep minutes does not mean the committee is not functioning.

3.6 School quality

Overall school quality is measured as a combination of the standards on teacher competence, headteacher effectiveness, school development planning, and SBMC functionality. A high-quality school is defined as one that meets the teacher competence standard and at least two of the other standards (Box 10). Comparison of average school quality between CS1 and CS2 suggests that there was no statistically significant change in Kano, with the proportion of schools meeting the standard at 3% in 2012 and 2% in 2014.

We also use a 'quality score' indicator. This is an average of the continuous indicators developed in the previous sections for teacher competence, headteacher effectiveness, school development planning, and SBMC functionality. The average quality score was 35% in 2014, and did not change significantly between 2012 and 2014 (Table 21).

Box 10. Logframe standard for school quality

The school must meet at least three of the four output standards listed below in order to meet the school quality outcome standard, with teacher competence having to be one of those three:

1) Teacher competence standard (more than 50% of sampled teachers are competent);
2) Headteacher effectiveness standard;
3) School development planning effectiveness standard; and
4) SBMC functionality standard.

As the teacher competence standard has changed between CS1 and CS2 – with teachers required to score a minimum of 50% in both English and mathematics tests to pass the competence standards – we report both 'CS1' and stricter 'CS2' versions of the overall quality standard.

Table 21. Kano: School quality in CS1 and CS2

	CS1	CS2	
Meets three or four standards (CS1 version)	3.1	2.1	
Quality score (CS1 version)	38.9	35.4	

Note: + = significant improvement between 2012 and 2014; - = significant worsening between 2012 and 2014 (using a t-test; $p < .05$).

Table 22. Kano: School quality in CS2, by intervention group

	(1) Control (recent roll-out)	(2) ESSPIN pilot school	
Meets three or four standards (CS1 version)	1.5	15.2	+
Meets three or four standards (CS2 version)	0	4.3	
Quality score (CS1 version)	34.5	51.5	+
Quality score (CS2 version)	32.1	48.7	+

Note: The CS2 version of the quality score and school quality standard reflect the 'strict' version of the teacher competence standard, where teachers are required to pass literacy and numeracy tests as well as fulfilling other criteria; + indicates a significant difference from the results in control schools ($p < .05$).

Within CS2, the results show that ESSPIN pilot schools were of higher quality than control schools (Table 22). The average quality score (using the stricter CS2 version) in 2014 was 49% for ESSPIN pilot schools but only 32% for schools which did not benefit under ESSPIN until 2013/14, a statistically significant difference. Again, however, this could be due to pre-existing differences

between pilot schools and other schools in the state, such as the pilot schools being more urban and having better infrastructure (see section 1.3 above).

3.7 Pupil learning achievement in English literacy and numeracy

The learning achievement indicators are included as indicators of the impact of the ESSPIN programme. Pupils were tested in grades 2 and 4, in literacy and numeracy. This section begins by following the same analysis conducted for other indicators: looking at the change in the state average between CS1 and CS2 and the difference between ESSPIN pilot and non-pilot schools in 2014. We also look at the change in results between 2012 and 2014 for pupils in pilot and control schools. It then moves on to a more detailed look at the breakdown of pupil results. Here we look at how pupil scores were distributed in the 2014 tests, split between ESSPIN pilot and control schools. We also look at the average test scores on sub-scales of the tests, such as grasp-of-number concepts or addition and subtraction, and how this varies over time for the state average and for pupils from different types of schools.

3.7.1 Main analysis

Between 2012 and 2014, the test scores did not change significantly in Kano's schools, except for a significant drop in results in grade 2 numeracy – from 45% to 35% (Table 23). Grade 4 literacy and numeracy also fell marginally, and grade 2 literacy improved, but these changes were not found to be statistically significant. The average test scores range from 25% in grades 2 and 4 literacy to 35% in grade 2 numeracy.

The logframe indicators, based on a specific subset of test questions, give an indication of the proportion of students with the ability to read or to answer numeracy questions at the appropriate level for their grade. The results for Kano in these indicators are low, with under 5% of children able to meet the expected level in all four tests.

Table 23. Kano: Test scores and proportion of children reaching logframe indicator in CS1 and CS2

	Test	CS1	CS2	
Test score (%)	L2	24.3	25.3	
	L4	30.3	25.3	
	N2	45.2	34.8	-
	N4	33.1	31.4	
Logframe indicator (%)	L2	4.2	1.5	
	L4	1.8	0.4	
	N2	11.3	4.8	
	N4	5.8	1.4	

Note: + = significant improvement between 2012 and 2014; - = significant worsening between 2012 and 2014 (using a t-test; $p < .05$).

Focusing on the CS2 data, the average test scores were slightly higher in pilot schools than non-pilot schools, as can be seen in Figure 4, but the difference was not statistically significant (see also Table 24). There was also little difference found between the schools in terms of meeting the logframe indicators, with generally fewer pupils in ESSPIN pilot schools reaching the standards than in control schools. School quality and teaching standards are higher in pilot schools than control schools, yet children's test scores are not significantly different between the two groups. What could explain this? It may be that a longer time lag is needed for schools to function better or

for particular teaching methods to translate into higher test scores. Alternatively, there may be aspects of the context in Kano, such as rapidly increasing enrolment and violent conflict, that hold back learning outcomes even when schools are performing better in other respects.

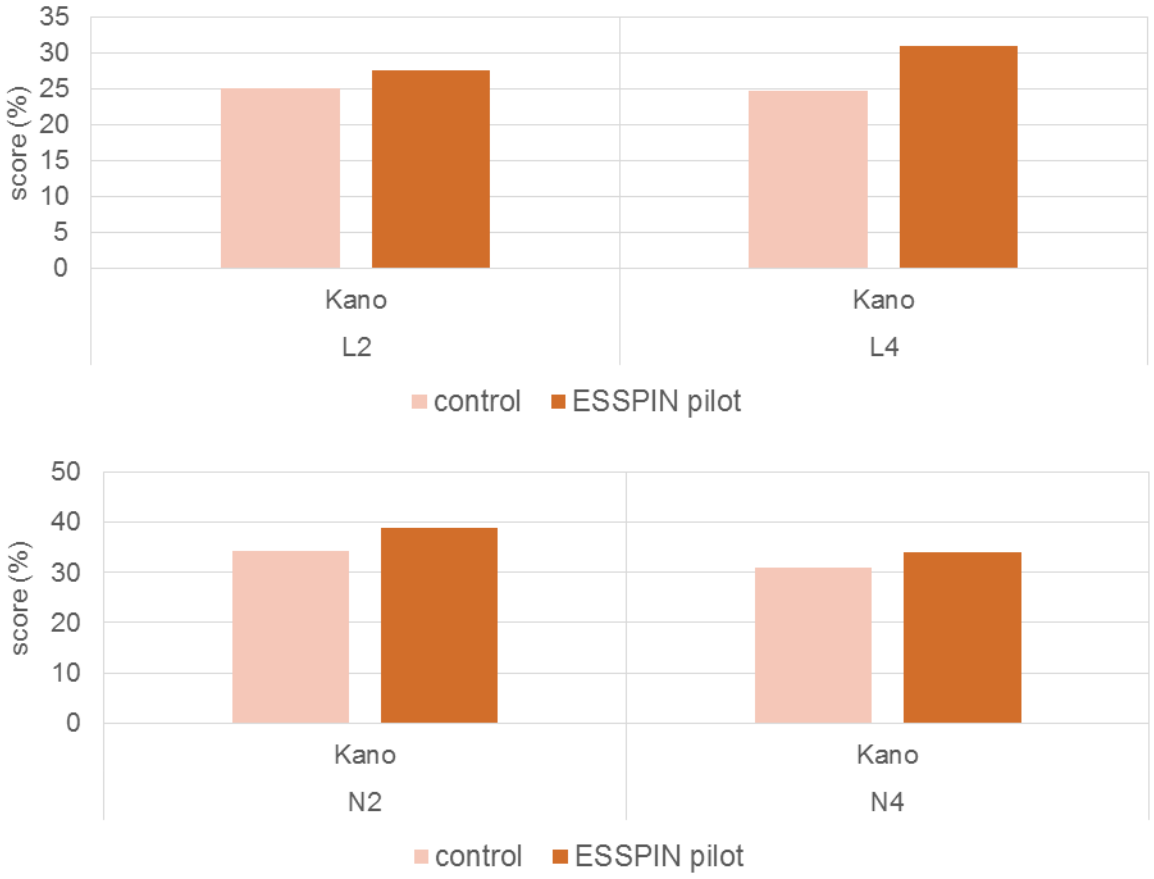
Table 24. Kano: Test scores and proportion of children reaching logframe indicator in CS2, by intervention group

	Test	(i) Control (recent roll-out)	(ii) ESSPIN pilot school	
Test score (%)	L2	25	27.6	
	L4	24.7	30.9	
	N2	34.3	38.8	
	N4	31.1	34.1	
Logframe indicator (%)	L2	1.6	0.1	-
	L4	0.4	0.1	
	N2	5.2	1.2	
	N4	1.4	1	

Note: + indicates a significant difference from the results in control schools (p < .05).

As discussed in section 1.1, the improvement in school quality from the pilot phase onwards is expected to have had a continued improvement effect on teacher competence and then on pupil learning. We are therefore interested to know whether pupil test scores improved more (or worsened less) between 2012 and 2014 in schools which were a part of the pilot programme than in schools which joined the roll-out later on.

Figure 4. Kano: Test scores by ESSPIN intervention group



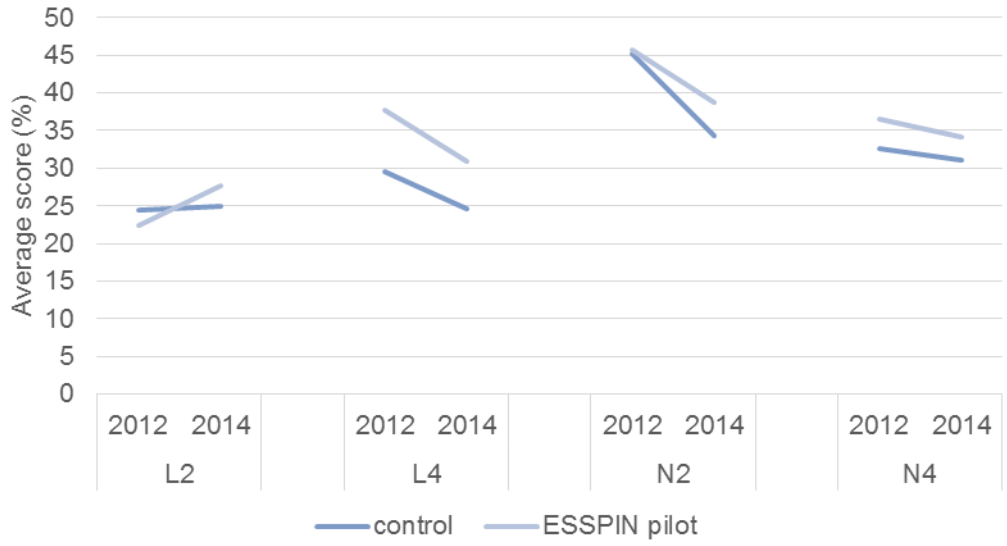
We estimate this effect by using a comparison in the change of means (Table 25). The analysis shows that generally pupils' test scores worsened between CS1 and CS2 across all types of schools, as seen by the negative differences in all tests, except grade 2 literacy, which was positive. If the change between 2012 and 2014 was found to be significantly different between pilot and control schools, there is an asterisk (*) in the right hand column. It can be seen that none of the differences show a significant difference, meaning that pupil learning changed at the same rate in both types of school. The same conclusion can be reached using regression analysis (see Annex D). The similarity in the change for pilot and non-pilot schools can be seen visually in Figure 5.

Table 25. Kano: Pupil test score difference in differences (comparison of means)

Pupil test score		(i) Control (recent roll-out)	(ii) ESSPIN pilot school
L2	CS1	24.4	22.4
	CS2	25	27.6
	Difference	0.6	5.1
L4	CS1	29.5	37.7
	CS2	24.7	30.9
	Difference	-4.8	-6.8
N2	CS1	45.2	45.8
	CS2	34.3	38.8
	Difference	-10.9	-6.9
N4	CS1	32.7	36.6
	CS2	31.1	34.1
	Difference	-1.6	-2.5

Note: * indicates a significantly different difference than that in control schools ($p < .05$).

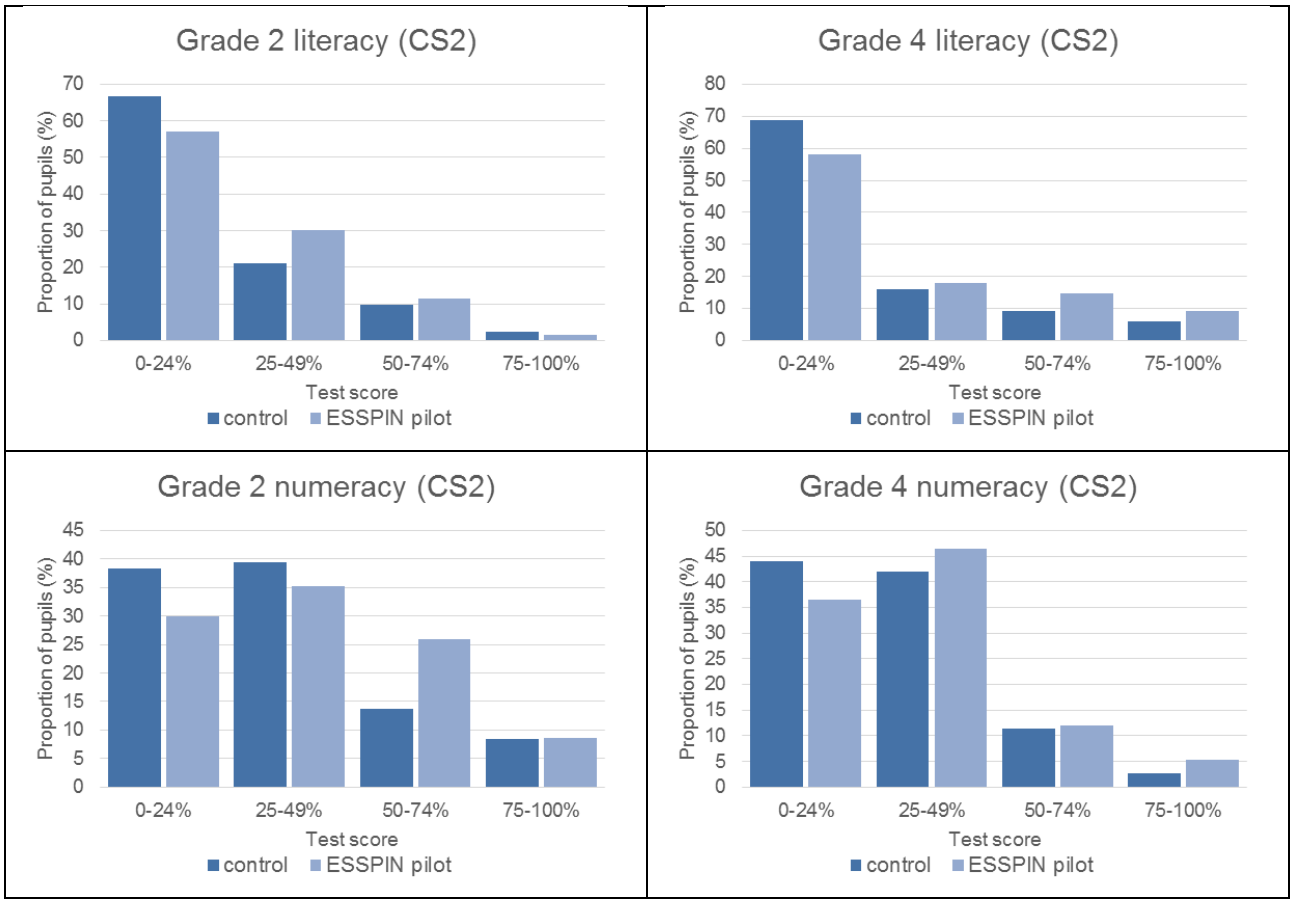
Figure 5. Kano: Pupil test scores in ESSPIN and control schools, in 2012 and 2014



3.7.2 Distribution of test scores and sub-scale scores

In Kano, pupils from control schools were more likely to score low marks (below 25%) than those from pilot schools, in all four tests (Figure 6). However, the lowest band of scores has the highest number of pupils from both types of schools. While generally pupils in the ESSPIN pilot schools were more likely than those from control schools to score in the upper bands (50–74%, 75–100%), the levels are still very low, with less than 10% of pupils scoring over 75%.

Figure 6. Kano: Distribution of pupil test scores in 2014



Looking at the sub-scale areas of the tests, the average pupil test scores in Kano have fallen between CS1 and CS2 in some areas but improved in others (Figure 7). For example, in the grade 2 literacy test there was an improvement in reading and grade 1 level questions, but a fall in scores in writing. There was a significant fall in scores in grade 2 numeracy in number concepts, in addition and subtraction tasks, and in the grades 1 and 2 level items.

Across almost all of the sub-scales of the pupil tests, pupils in the ESSPIN pilot schools scored higher on average than pupils in the non-pilot schools (Figure 8). Generally, this difference was marginal but some of the more notable differences were in the grade 2 scores on number concepts and the grade 4 scores in writing and reading with comprehension.

Figure 7. Kano: Average scores in test sub-scales, CS1 and CS2

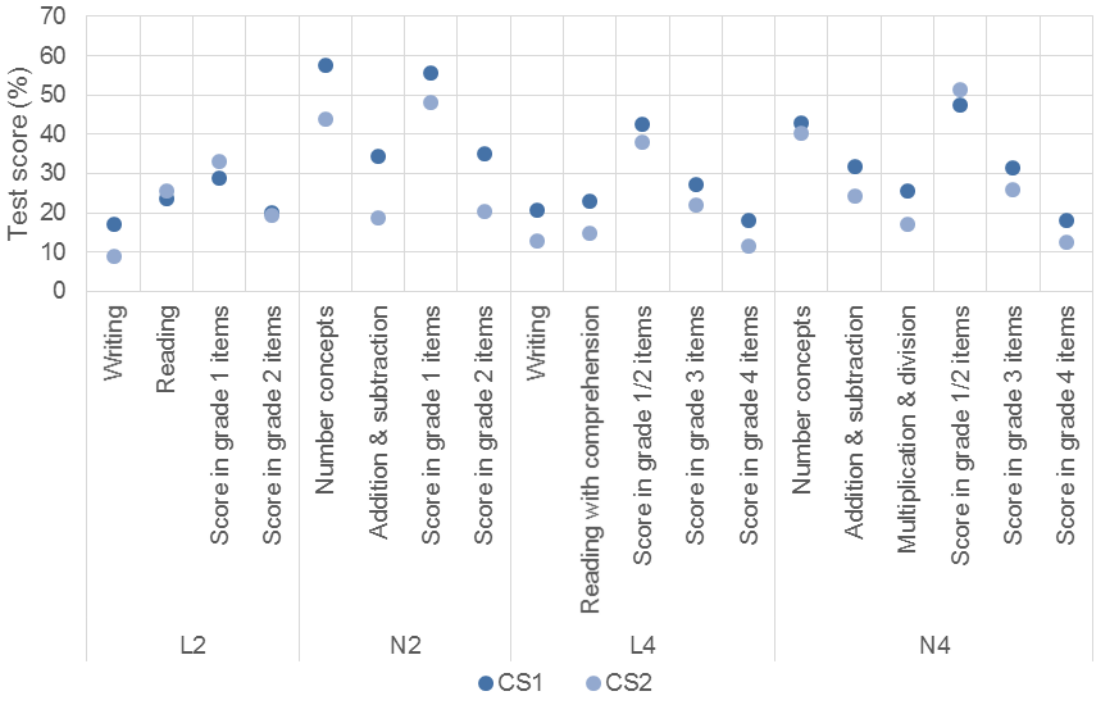
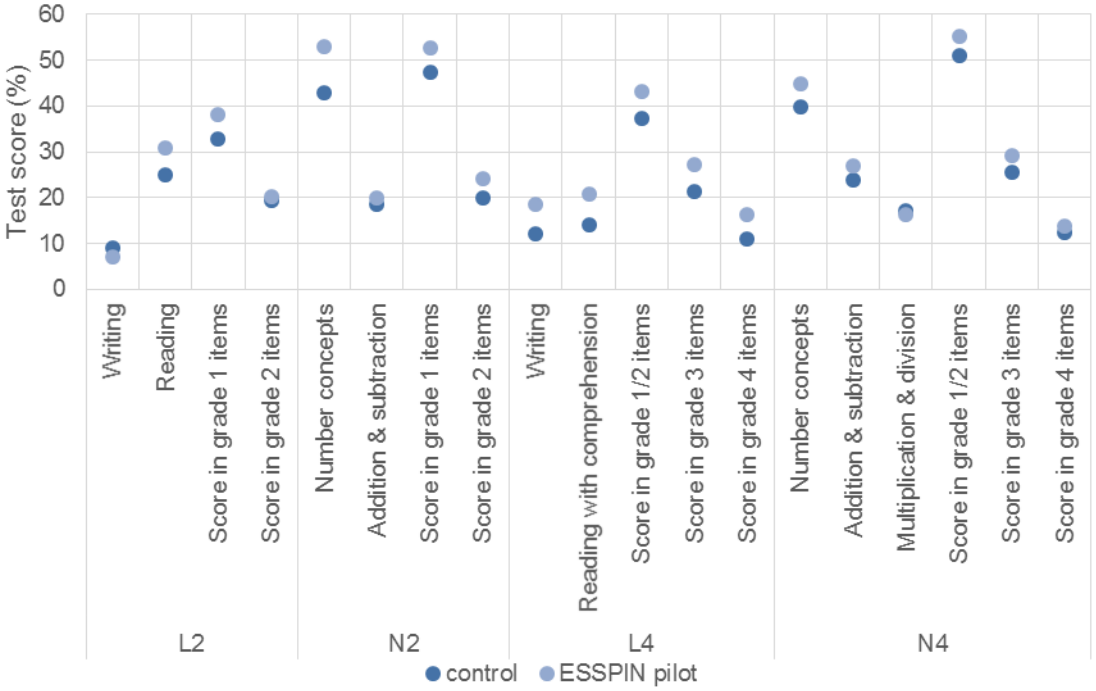


Figure 8. Kano: Average scores in test sub-scales in CS2, ESSPIN and control



4 Conclusion and implications of survey findings for Kano's ESSPIN programme

This report has presented the results from the second Composite Survey in Kano State in 2014, looking at indicators of teachers, headteachers, school development planning, inclusiveness, SBMCs, overall school quality and pupils' learning outcomes. The results have generally followed a similar pattern:

- There was little change in the performance of Kano's schools between 2012 and 2014. In terms of teachers, headteachers and SBMC functionality, some indicators have improved and others have worsened, leading to little change on our overall measures. There appears to have been a worsening of performance in terms of inclusiveness, women and children's inclusion in SBMCs, and in the numeracy of grade 2 children.
- Generally, schools which received support from the pilot phase of ESSPIN perform more successfully than schools that have joined the programme only recently. This relationship was found to be significant for headteachers, school development planning, SBMC functionality, women and children's inclusion in SBMCs, and school quality.
- Teachers who received more direct ESSPIN training improved faster between 2012 and 2014 than teachers who were not in ESSPIN pilot schools.
- HAlthough pilot schools appear to function better and to have better teachers than schools that joined the programme recently, , there was no knock-on effect on pupil learning: learning outcomes were approximately the same between pilot and other schools (except for grade 2 numeracy, which worsened).

Kano State has a particular context to its roll-out of the ESSPIN Output stream 3 activities, which will have inevitably affected the results for schools in 2014. A small group of schools benefited from the pilot programme, but this support lasted for only two years and finished in 2010/11. Later, all schools, including the pilot schools, were brought in to a full-coverage (but slightly reduced) form of ESSPIN in 2013/14. In this report, we assume that this 2013/14 intervention happened too recently to have had an impact by the time of the second round of the Composite Survey. Most of our analysis compares the schools that received the initial pilot to those that did not.

Schools which were in the pilot had higher performance than the later-entry schools in several respects. This is consistent with the ESSPIN pilot having been effective in these schools and schools having sustained that effect over time. However, the present study does not attempt to control for differences in school characteristics between pilot and other schools which might underlie these results (but see Cameron, 2015, which does control for such differences for the six states where ESSPIN works as a whole).

There was little change in learning outcomes in Kano schools as a whole between 2012 and 2014. There was no ESSPIN intervention in any schools during 2011/12 and 2012/13, so the lack of progress during this period does not suggest anything about ESSPIN's effectiveness, but does suggest that the state may not have been doing enough to maintain learning outcomes.

As discussed in section 1.2, Kano has also experienced an ongoing level of conflict and violence which would very likely have hindered educational improvement in the state. These threats against and pressures on the communities in Kano are likely to have a negative impact on education, reflected in many of the indicators measured here: SBMCs might be less likely to meet and function properly, and the stress on teachers and heads might mean they are less effective. These conditions, along with high absenteeism among teachers and pupils, will have had a notable effect on learning outcomes. Such pressures will have flattened any improvements which might have

come about due to ESSPIN or other efforts in the state; or, alternatively, ESSPIN might have mitigated the negative impact of local conflict on school quality.

Another factor which may have impacted the quality of teaching and learning in schools in Kano was the change in enrolment. Between 2009/10 and 2013/14 the level of enrolment increased across all schools, but significantly more in the pilot schools (Annex A). This is also reflected in a much larger increase in pupil–teacher ratios in pilot schools than in other schools over the period. All schools will have felt increasing pressure on their resources and teachers from more pupils, and this will have been more intense in the pilot schools. Teaching ability, and the resulting learning outcomes as measured by pupil tests, may have been adversely affected by this pressure across the state, preventing the pilot schools from improving more compared with non-pilot schools.

Since the interventions have not taken place in Kano in the review period when an impact would be expected, it is hard to say conclusively what effect ESSPIN itself has had. Now that the SIP has been rolled out, we will be able to see whether schools have improved when the 2016 Composite Survey takes place. As all schools will be within the ESSPIN programme, it will not be possible to determine from the quantitative results whether any improvement is due to ESSPIN Output stream 3 interventions or other factors. But it will at least be possible to see whether any such improvement has occurred.

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Annex A School characteristics

The table below sets out summary statistics for Kano's schools, split by category according to the level of Output stream 3 intervention (pilot vs. the rest). The data comes from the annual school census from 2009/10 and 2013/14.

	Pilot	Others	
Distance from LGA HQ	9.9	10.7	
Age of the school in 2014	28.1	22.1	+
Urban (%)	53.6	27.1	+
Nomadic (%)	1.6	3.9	
Islamic (%)	42.9	52.1	-
Double shift (%)	21.8	6.0	+
Had parent–teacher association in 2009/10 (%)	92.1	97.7	-
Had SBMC in 2009/10 (%)	81.1	78.8	
Pupil–teacher ratio in 2009/10	45.5	63.9	-
Pupil–teacher ratio in 2013/14	57	75.5	-
Change in pupil–teacher ratio (%)	65.8	61.9	
Number of classrooms in 2009/10	7.2	5.2	+
Number of teachers in 2009/10	15.1	8.6	+
Primary enrolment in 2009/10	564.6	389.8	+
Change in enrolment 2009/10–2013/14 (%)	61.0	40.7	+
% of teachers with academic diploma/degree	50.9	47.6	
% of teachers with PGDE, BEd or MEd	6.0	5.6	
% of teachers with NCE, Grade II or equivalent	64.6	63	
School has a power source (grid/other)	39.6	28.2	+
% of classrooms with enough seating	51.7	32.1	+
% of classrooms with a good blackboard	74.6	57.8	+
% of classrooms in good condition/minor repairs	66.5	74.6	-
School has at least one toilet (%)	45.5	37.2	+
N	255	5238	

Source: Annual School Census, 2009/10 and 2013/14; +/- indicates a significant positive/negative coefficient in a linear or logit regression of years of full ESSPIN intervention on the variable of interest.

Annex B ESSPIN Output stream 3 interventions

The table below shows the ESSPIN Output stream 3 interventions delivered to date in Kano State. In order to make the variation in interventions across and within states manageable for analysis, each combination of interventions was categorised as none, minimum, medium, or maximum, according to the number of years of continuous intervention.

	Number of schools	2009/10			2010/11			2011/12				2012/13			2013/14			
		L	T	SV	L	T	SV	L	T	SV		L	T	SV	L	T	SV	CS2
Kano	5,238										CS1				9	9	9	
	317	5*	5*	9*	10*	5*	9*								9	9	9	

Note: L = days of leadership training; T = days of teaching training; SV = school visits; * = pilot.

Annex C ESSPIN Output stream 4 interventions

The table below shows the days of Output stream 4 intervention in Kano under different headings: SBMC training; women and children participation training; and mentoring visits.

Intervention group for Output 3	2010/11			2011/12			CS1	2012/13			2013/14			CS2	De facto phase
	S	P	M	S	P	M		S	P	M	S	P	M		
Non-pilot															control
Non-pilot											r	6			(unknown)
Non-pilot											7		4		post-CS1
Pilot				7		4		r	6	4			4*		pre-CS1

Note: S = SBMC training; P = women and children participation training; M = mentoring visits; r = one-day refresher; mentoring visits were by civil society-government partnership teams, except those marked with an asterisk, which were by social mobilisation officers.; there is missing intervention data for the minimum group marked [+].

Annex D Difference in differences analysis using regression

This annex presents the results of regression analysis of difference in differences, to compare change over time between subgroups.

For the results of pupil learning outcomes, Chapter 3 above presents the difference in differences of means for sub-categories of groups.

Sometimes we want to use all of the available information and compare schools which have had more or less ESSPIN intervention – a continuous scale – rather than dividing them into some or none. In this case we can use regression analysis – a statistical process for estimating relationships among variables. We model the outcome indicator as depending on time (the round of the survey, CS2 versus CS1), the intensity of intervention, and a treatment effect, which is the interaction between time and intensity of intervention. The treatment effect tells us if an increase in the level of intervention increased the speed at which the outcome improved. Regression results are reported as a series of 'coefficients' – numbers representing the strength of the relationship with the outcome of interest.

Coefficient	Meaning of coefficient if positive and significant
Time (CS2 v. CS1)	the outcome improved over time
Intervention	the higher the level of intervention, the more effective (regardless of change over time)
Treatment	the higher the level of intervention, the more or faster the outcome improved over time – this is our key indicator of success

Teacher competence

Did teachers benefiting from ESSPIN training improve faster than those who did not between 2012 and 2014? We address this question by using regression analysis to test whether teachers in pilot ESSPIN schools improved faster than those in control schools over the two years (Table 26). We model the outcome indicator (competence score) as depending upon time (the round of the survey) and the intensity of intervention. Intensity of intervention is measured in terms of the amount of teacher training delivered to the school. We also use an alternative intervention measure that adjusts for the length of time a teacher has been in his or her present school. A teacher who joined the school only in 2012, for example, cannot have benefited from ESSPIN training delivered in 2010 or 2011, so using this information allows us to estimate more accurately how much training the teacher has received.

The interaction effect between intervention and time, labelled 'treatment', if positive and significant, would provide evidence that schools with more ESSPIN intervention improved more rapidly between 2012 and 2014.

Looking first at the results for teachers who were not themselves trained but were in ESSPIN pilot schools (titled 'school improvement'), both in the non-adjusted and adjusted regressions none of the results are significant. For the time effect this suggests no general change between CS1 and CS2. The lack of intervention effect suggests that the competence of non-trained teachers was no different to teachers from control schools. The treatment coefficient suggests teachers with no training but in ESSPIN schools changed at the same pace as teachers in control schools.

The only significant result in the regression analysis is for teachers who received the training themselves and when adjusted for how long they had been in the schools. In this group there is a

positive significant treatment effect, suggesting that the more ESSPIN training teachers received the faster they improved between 2012 and 2014. From this we can infer that the ESSPIN training did have the intended effect on teachers' competence.

Table 26. Kano: Teacher competence difference in differences (regression)

Regression on competence scores (CS1 version)		Non-adjusted				Adjusted			
Intervention variable		school improvement		training		school improvement		training	
Time (CS2 v. CS1)	coefficient	-2.6		-2.1		-2		-7.1	
	SE	3.8		4.3		3.7		3.9	
Intervention	coefficient	1.2		0.9		1.5		-1.5	
	SE	1.1		0.6		1.7		0	
Treatment	coefficient	0.9		-0.8		2.5		2.4	*
	SE	1.3		1		1.9		0.9	
	N	261		261		190		190	

Note: * indicates a significant coefficient ($p < .05$); adjusted results are adjusted for the length of time a teacher has been in the current school – and therefore whether they would have benefited from the full ESSPIN training package.

Pupil learning

Difference in differences analysis has also been conducted using the regression method to look at the change in pupil learning outcomes, depending on the level of teacher training at the school. The treatment effect is not statistically significant, meaning that the pace of change in pupil test results was no different in the pilot schools than in other schools between 2012 and 2014 (Table 27).

Table 27. Kano: Pupil test score difference in differences (regression)

Regression on pupil test score		L2		L4		N2		N4	
Time (CS2 v. CS1)	coefficient	0.72		-5.75		-9.87	*	-2.82	
	SE	4		4.05		3.92		2.67	
Intervention	coefficient	1.59		1.29		0.55		1.24	
	SE	5.73		1.63		5.38		1.04	
Treatment	coefficient	-1.56		0.54		1.13		-0.81	
	SE	5.14		1.35		5.26		0.87	
	N	269		263		269		263	

Note: * indicates a significant coefficient ($p < .05$).