ESSPIN Composite Survey 3

Lagos State Report

Jana Bischler

September 2016

Acknowledgements

Executive summary

The Education Sector Support Programme in Nigeria (ESSPIN) (2008–17) seeks to improve learning outcomes for children of basic education age in six Nigerian states: Enugu, Jigawa, Kaduna, Kano, Kwara and Lagos. The aims of the ESSPIN Composite Surveys are to assess the effects of ESSPIN's integrated School Improvement Programme (SIP), and to report on the quality of education in the six ESSPIN-supported states. ESSPIN is funded by the UK Department for International Development (DFID) and managed by a consortium led by Cambridge Education. The Composite Survey has been carried out for ESSPIN by Oxford Policy Management (OPM).

This report presents findings for Lagos State from the first, second and third rounds of the ESSPIN Composite Survey (CS1, CS2 and CS3). These took place in 2012, 2014 and 2016, respectively. The survey covered a wide range of indicators at the teacher, head teacher, School-Based Management Committee (SBMC), and pupil levels. The aim is to understand how schools in ESSPIN states are changing over time and whether schools which receive ESSPIN interventions are working better than those which do not. The main findings are as follows:

Head teacher effectiveness in Lagos is better than in 2012 but worse than in 2014. In 2016, 36% of all head teachers at Lagos primary schools were deemed to be effective. Head teachers from schools with five years of ESSPIN intervention are not more effective than those from schools with three years of intervention. However, it is important to note that since 2014 about 70% of head teachers who had received the full dose of leadership training retired statutorily, which might explain the lack of progress over the last two years.

School development planning has improved over time. 22% of all schools met the standard for effective school development planning. Schools with more years of ESSPIN intervention are more effective at planning than those with fewer years, although this difference is not statistically significant.

Trends in **inclusiveness** – measured by aspects such as whether the head teacher has taken action on learners' attendance, and whether teachers engage boys and girls equally – depend on the exact measure used. In 2016 a significantly larger proportion of schools partially met the school inclusiveness standard than in 2012, while there is no change in the proportion of schools that fully met the school inclusiveness standard. On the other hand, a more nuanced continuous measure of how close schools are to meeting this standard has shown decreases. Schools that have received more years of ESSPIN intervention are more likely to meet both of the above standards and have a slightly higher inclusiveness score than those that have received fewer years of intervention.

SBMCs in Lagos primary schools have greatly improved, in terms of functionality and inclusiveness of women and children. In 2016 over 82% of all SBMCs were deemed to be functional. SBMCs in schools with five years of ESSPIN intervention work slightly better than those in schools with only three years of intervention, although that difference is not statistically significant.

Teachers in Lagos have become significantly more competent over the last two years. However, their test scores in mathematics have decreased, while their test scores in English have not changed significantly. Teachers trained through ESSPIN have similar levels of competence to non-ESSPIN-trained teachers and have slightly higher test scores.

Almost 37% of all schools in Lagos reached the **school quality** standard, a composite measure based on head teacher effectiveness, school development planning, SBMC functionality, and teacher competence. That translates into about 120,000 more pupils going to high quality schools

in 2016 than in 2012.[1] Schools with more years of ESSPIN intervention have a higher school quality. The estimated effect of a full year of intervention is positive but does not reach the level of being statistically significant.

Children's **learning outcomes** in Lagos have improved significantly since 2012 and 2014. This is a remarkable development, especially compared to the other states in which ESSPIN operates.

Table 1, Table 2, and Table 3 below summarise the key findings.

Table 1:   Lagos: Change over time – Key indicators in 2012, 2014, 2016

	2012 (CS1)	2014 (CS2)	2016 (CS3)	Change 2012–16	Change 2014–16
Effective head teacher (%)	8.2	54.6	36.4	+28.6*	-18.2*
School development planning (%)	8.7	19.7	21.7	+13.0*	+1.9
Inclusive (%)	23.8	32	30.4	+6.6	-1.6
Functioning SBMC (%)	14.4	81.1	84.1	+69.6*	+3.0
Competent teachers (%)	71.2	67.0	79.1	+7.9	+12.1*
Competent teachers (new measure, %)		55.8	66.8	n/a	+10.9*
Good quality school (%)	7.4	34.7	36.9	+29.5*	+2.2
Good quality school (new measure, %)		28.2	34.8	n/a	+6.6
Grade 2 literacy score	570.5	594	625.1	+54.7*	+31.2*
Grade 4 literacy score	557.1	562.7	597.7	+40.5*	+35.0*
Grade 2 numeracy score	543.5	564.7	611.4	+67.9*	+46.7*
Grade 4 numeracy score	521.6	541.9	605.2	+83.5*	+63.3*

Note. * indicates statistical significance (p < .05)

Table 2:   Lagos: Key indicators in 2016, by years of ESSPIN intervention

	Med (three years)	Max (five years)	Estimated effect of one year of full intervention
Effective head teacher (%)	36.5	36.1	-0.2
School development planning (%)	19.9	37.9	+7.5
Inclusive (%)	27.9	53.4	+11.1*
Functioning SBMC (%)	81.5	88.4	+4.0
Good quality school (%)	35.3	52.1	+7.9
Good quality school (new measure, %)	33.2	49.8	+7.8
Grade 2 literacy score	625.2	624.9	-0.3
Grade 4 literacy score	597.7	597.7	+0.0
Grade 2 numeracy score	613.1	600.7	-6.2
Grade 4 numeracy score	608.4	586.6	-10.9

Note. * indicates statistical significance (p < .05)

---

[1] Calculations based on data from the annual school census (ASC).

Table 3: **Lagos: Teacher competence, non-ESSPIN-trained versus ESSPIN-trained**

	Non-ESSPIN-trained	ESSPIN-trained	Difference
Competent teachers (%)	80.1	78.3	-1.8
Competent teachers (new measure, %)	68.3	65.6	-2.7
Teachers' English scale	583	585	+1.3
Teachers' mathematics scale	577	585	+7.9
Note. * indicates statistical significance (p < .05)			

Table of contents

List of figures, tables and boxes

List of abbreviations

ACLED	Armed Conflict Location & Event Data Project
CAPI	Computer-assisted personal interviewing
CBO	Community-based organisation
CS1	Composite Survey 1
CS2	Composite Survey 2
CS3	Composite Survey 3
DFID	UK Department for International Development
ESSPIN	Education Sector Support Programme in Nigeria
IRT	Item response theory
L2	Grade 2 literacy test
L4	Grade 4 literacy test
LGA	Local Government Area
LGEA	Local Government Education Authority
N2	Grade 2 numeracy test
N4	Grade 4 numeracy test
OPM	Oxford Policy Management
P2	Primary Grade 2
P4	Primary Grade 4
PTR	Pupil to teacher ratio
SBMC	School-Based Management Committee
SDP	School Development Plan
SIO	School Improvement Officer
SIP	School Improvement Programme
SMO	Social Mobilisation Officer
SSIT	State School Improvement Team
SSO	School Support Officer
SUBEB	State Universal Basic Education Board

1 Introduction

ESSPIN (2008–17) seeks to improve learning outcomes for children of basic education age in six Nigerian states: Enugu, Jigawa, Kaduna, Kano, Kwara and Lagos. The ESSPIN Composite Surveys seek to assess the effects of ESSPIN's integrated SIP, and to report on the quality of education in the six ESSPIN-supported states. ESSPIN is funded by the DFID and managed by a consortium led by Cambridge Education. The Composite Survey has been carried out for ESSPIN by OPM.

The first two rounds of the Composite Survey were carried out in 2012 and 2014. The surveys address five output indicators: teacher competence, head teacher 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 third round of the Composite Survey (CS3) collects comparable data on these indicators in order to provide information on the extent to which key school-level indicators in the six states have improved during the course of the programme.

This report focuses on the Composite Surveys findings in Lagos State. It presents the key findings from CS3, compares these to the findings of the previous rounds of the survey, and draws out the implications of these findings for ESSPIN's contribution to school-level outputs and outcomes in the state.

1.1 ESSPIN's SIP

ESSPIN aims to bring about better learning outcomes for children of basic education school age in six states, with a range of activities at the state, national, local and school levels. It has four output streams, that focus on:

- strengthening federal government systems;
- increasing the capability of state and local governments as regards the governance and management of schools;
- strengthening the capability of primary schools to provide improved learning outcomes; and
- improving inclusion policies and practices in basic education (ESSPIN, 2013b).

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 quality instruction, to strengthen teachers' own understanding of literacy and numeracy concepts, and to improve academic leadership and school improvement planning by head teachers (Sanni, 2015). The SIP 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 help maintain and continue improving quality gains. At the same time, many of the same schools have been receiving interventions under the fourth output stream, facilitating community involvement and inclusion through SBMCs.

1.2 ESSPIN in Lagos State

The ESSPIN programme has been gradually rolled out to more government primary schools in Lagos, such that by 2012/13 all schools had been benefiting from the full package for at least one year (Table 4 and Annex B). The roll-out of Output Stream 3 consisted of the following stages:

a) The pilot began in 2009/10, with 100 government primary schools (10% of the state's total). Each state senatorial district was represented and all 20 Local Government Areas (LGAs) were

eligible (ESSPIN, 2013a). Schools had to have an adequate level of infrastructure supplied by government to be included, and then five schools were selected from each LGA. These schools continued to receive the full package of Output Stream 3 activities (leadership training, teacher training and school visits) in all years up to CS3, except for 2013/14, when they only received leadership training and school visits – they did not receive teacher training.

b) A Phase 2 roll-out began in 2011/12 with a further 500 schools (25 from each LGA). These also did not receive any teacher training in 2013/14.

- The programme was further rolled out to cover the remaining 404 schools in Lagos State from 2012/13 onwards. These schools continued to receive the full package of the intervention up to the point of CS3 in 2016.

Table 4: **Proportion of schools receiving full package of ESSPIN Output Stream 3 interventions and Output Stream 4 interventions**

%	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16
Full package of Output Stream 3 interventions, including leadership training	10	10	60	100	40	100	100
Any Output Stream 3 intervention	10	10	60	100	100	100	100
Full package of Output Stream 4 interventions	0	0	0	0	55	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 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 are some missing data in the Annual School Censuses.

The expansion of the programme led to change in the mode of implementation. Initially, the training was delivered by ESSPIN with the help of the 24 State School Improvement Teams (SSITs). In order to make the delivery cheaper and more sustainable, the management of the programme delivery was shifted to the state government in Phase 2. The SSITs then trained School Improvement Officers (SIOs), who in turn trained the head teachers, teachers and SBMCs. This allows for training to be located closer to schools and for the state to take control, which is necessary for the scale-up. However, the change in the model is likely to have affected the quality of implementation to some extent. Programme staff argue that locating training closer to the schools has longer-term benefits, but that in the shorter term the quality standards of 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.

Due to the staggered roll-out, different schools in Lagos have experienced different levels of exposure to ESSPIN. For the CS3 analysis, schools were categorised into different intervention groups depending on the number of years they had received the full package of ESSPIN activities (discussed further in Section 2.1.1). The more years a school has been part of the programme, the higher its expected improvement in output, outcome and impact indicators.

In addition to the SIP activities under Output Stream 3, schools in Lagos have received support under ESSPIN's Output Stream 4: improving inclusion policies and practices in basic education. ESSPIN has trained civil society members and government officers from the Department of Social Mobilisation, Social Mobilisation Officers (SMOs), to enable them to train and mentor SBMCs. SBMC members, in turn, have been trained on the roles and responsibilities of SBMCs, school planning and management, communication and leadership, change and relationships management, the participation of women and children in school improvement and education

decision-making, resource mobilisation and financial processes, and child protection and participation. This has been complemented by follow-up mentoring visits by SMOs.

The Output Stream 4 intervention (Annex C) began in Lagos after CS1 in 2012/2013. Although this was fairly late compared to some of the other states, since then the scale-up has been rapid and extensive. In 2013/14, 55% of all schools received the full package of Output Stream 4 interventions, and in the two years since CS2 all schools in Lagos have received the full package. Table 4 shows what proportion of schools in Lagos received Output Stream 3 and Output Stream 4 interventions in any given year.

1.3   Contextual factors and their implications for the SIP in Lagos

This section describes some of the key aspects of the backdrop against which ESSPIN's implementation in Lagos has taken place over the last couple of years. This is helpful in terms of interpreting the changes in school-level outputs and outcomes between CS1, CS2 and CS3. Changes over time in outputs and outcomes could have resulted from ESSPIN support but equally they could also have been driven by other changes in the state over that period. This section considers the main developments in Lagos that may have positively or adversely affected school-level outcomes in the state, or that may have interfered with SIP implementation.

While the funds from federal allocations have been declining in recent years due to the national economic downturn, most sources stated that compared to other states this did not negatively affect the funding for basic education and school improvement in Lagos. Funding in this area has been fairly stable, which had a positive effect on SIP roll-out. In addition, there are many other donor- and privately-funded educational programmes in the state. These focus mainly on infrastructure and equipment, so they are complementary to ESSPIN and are seen as having a positive effect on ESSPIN's effectiveness.

Furthermore, the political situation in Lagos can be described as mostly stable and favourable to ESSPIN's activities. The most recent elections did not result in a change in parties but the administration changed. As a result of this the State Universal Basic Education Board (SUBEB) was dissolved and many key Ministry of Education officers retired. The new administration also redeployed about a third of all SIOs to different secondary schools, which is reported to have had a negative effect on SIP in the state.

Many stakeholders stated that increased enrolment in recent years has put pressure on infrastructure facilities and teachers. They voiced the concern that overcrowding is a problem and therefore teachers can sometimes not put into practise what they have learnt. However, official statistics paint a different picture (Table 5). Enrolment in public primary schools in Lagos has risen by 0.7%, from about 389,000 pupils in 2009/10 to around 400,000 pupils in 2014/15, the time of the last available census. This is a very small – almost negligible – increase. At the same time pupil to teacher ratios (PTRs) have actually been decreasing, from 38 pupils per teacher to 27 pupils per teachers between 2013/14 and 2014/15 (Annex A).

It is possible that the low average conceals certain individual cases of schools where overcrowding is indeed a problem. In 2014/15, there were still 17% of all schools in Lagos with a PTR of over 40. Despite the falling average PTRs, this is around the same proportion as in 2009.

Table 5: **Number of schools and enrolment in the 2009, 2013 and 2014 Annual School Censuses**

	Enrolment	Number of schools	Enrolment change (%)
2009/10	387,581	986	
2013/14	400,277	1,007	3.3
2014/15	406,678	1,010	1.6
Overall			4.9

Note: Enrolment is for Primary Grades 1–6.

Source: Annual School Censuses from 2009/10, 2013/14 and 2014/15

In addition to the above factors, this report is also written in the context of growing insecurity in Nigeria, particularly in, but not limited to, three states in 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 dramatically since 1997. In 2015 there were over 1,200 recorded incidents, compared to less than 200 in 1997 (Figure 1).

In Lagos, the incidents of violence were on a downwards trend until 2011, when they reached their lowest level. Since 2011, the number of incidents has been increasing again. In 2015, there were 44 recorded violent events in Lagos, causing 25 fatalities (Table 6). However, compared to other states with a similar number of violent incidents, the proportion of fatalities per incident is very low in Lagos. This may explain why most respondents highlighted during the context interviews that violence in Lagos is not perceived as interrupting or affecting the education sector in any way.

Figure 1: **Incidents of political violence in Nigeria and Lagos State**
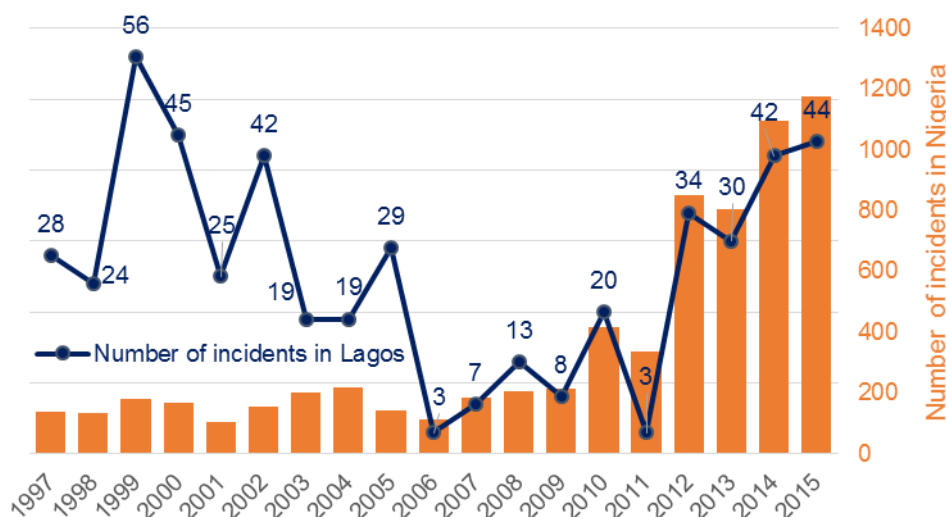
Source: Armed Conflict Location & Event Data Project (ACLED), Version 6 (1997–2015). Note that all events from ACLED are included except for those categorised as protests which did not involve a fatality.

Table 6: **Lagos: Political violence – Incidents and fatalities, 2010–2015**

Variable	2010	2011	2012	2013	2014	2015
Events	20	3	34	20	42	44
Fatalities	15	4	17	35	62	25

These contextual factors should be kept in mind in the interpretation of the results presented in this report.

2 Methodology and analysis

2.1 Evaluation strategy

2.1.1 ESSPIN intervention groups

ESSPIN was originally intended to be rolled out in a simple phased pattern across the six states, with schools falling into one of three groups: no intervention (control), Phase 1 (roll-out prior to the 2012/13 school year), and Phase 2 (roll-out in 2012/13 or 2013/14). In practice, Lagos State decided to extend the programme based on its capacity and willingness, in order to ensure that more schools benefit from the programme. The roll-out was made over three phases, starting in 2009/10, followed by more schools in 2011/12, and finally covering all the remaining primary schools in 2012/13.

For the purpose of this analysis, we categorise schools according to the number of years that they have received the full package of ESSPIN interventions under Output Stream 3 (see Annex B for details).[2] Schools that have received one year of intervention are in the 'minimum' category, schools with two to three years are in the 'medium' category and schools with four to five years are in the 'maximum' category. When counting the years of intervention, we disregarded the current intervention year (2015/16). At the time of the fieldwork, the school year had not ended yet and therefore we do not expect the effects of the intervention in that year to have materialised.

In Lagos, where the roll-out to all government primary schools happened fairly quickly, there are no schools in the 'minimum' intervention group. Around 90% of all schools received three years of the full package of ESSPIN Output Stream 3 interventions and are part of the 'medium' intervention group. The 97 pilot schools which received five years of interventions are part of the 'maximum' intervention group (Table 7).

The different intervention groups are important because there are no longer any 'pure' control groups that did not receive any of the ESSPIN intervention. Therefore, the analysis will not compare 'ESSPIN schools' to 'non-ESSPIN schools' as it did in CS2, but rather will compare schools with different degrees of exposure to the ESSPIN interventions. When we are looking at one point in time (cross-sectional analysis) the schools that have received more years of ESSPIN activities are expected to perform better. When we are looking at change over time, the schools that received more years of ESSPIN activities are expected to have improved faster because of ESSPIN.

While it makes sense to compare the outcomes of schools with different levels of exposure to the intervention, potential spill-over effects between schools must be kept in mind when interpreting the results. This means that staff or SBMCs in minimum or medium intervention group schools might have already been exposed to ESSPIN ideas through informal communication, or deliberately by Local Government Education Authority (LGEA) personnel.

For certain indicators, we alter the classification scheme slightly according to the purpose of our analysis. For example, when examining teacher competence within the CS3 survey we consider two different groups: teachers who are in schools that have received ESSPIN intervention but who have not themselves been trained by ESSPIN[3] and teachers who have been trained by ESSPIN.

---

[2] A companion report, *Composite Survey 3: Gender and Inclusion Report* (De and Cameron, 2016), focuses on ESSPIN's Output Stream 4 interventions, which run in parallel with Output Stream 3 and aim to improve inclusion and community participation in schools.
[3] Three to six selected teachers within each school attended workshops delivered by SSOs. In some states the same group of teachers continued to receive training year after year, while in other cases attempts were made to spread the

When examining SBMC functionality and the inclusive practices of SBMCs, normally schools are classified according to the amount of Output Stream 4 intervention received. Schools are classified as 'no intervention' (less than five days of Output Stream 4 intervention received), 'post-CS1' (started receiving intervention after CS1), and pre-CS1 (started receiving intervention prior to CS1). However, in Lagos all schools received the intervention after CS1 and are therefore in the post-CS1 intervention group. Therefore, SBMC results in 2016 are compared based on the Output Stream 3 intervention groups (medium and maximum), like all the other output variables.

2.1.2   Types of analysis

The purpose of CS3 is both to provide insights into the changes over time in the six states in which ESSPIN works, and to evaluate whether the ESSPIN model is having an effect in the specific schools in which its school improvement and community inclusion interventions have operated. We are interested in a wide range of output indicators: teacher competence, head teacher effectiveness, school development planning, school inclusiveness, and the functionality and inclusiveness of SBMCs. Some of these 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. For each of these indicators, we present in the following chapter two main types of analysis:

1. Change over time between CS1 and CS3, and between CS2 and CS3, for Lagos as a whole. The expansion of ESSPIN interventions since 2012 means that the programme has had direct links with the majority of schools in Lagos for a number of years. By 2016, there had been three years during which all schools in Lagos had received the full intervention package. Therefore, we would expect that schools in CS3 have higher output, outcome and impact measures than schools in CS1 and CS2. However, any differences between indicator performance in CS1, CS2 and CS3 will be difficult to attribute to the ESSPIN intervention, since there are other reasons why schools may be improving (or deteriorating) over time.

We use statistical significance tests (t-tests) to give an indication of whether a difference in results over time is significant (i.e. unlikely to have arisen by chance). This should not be taken as constituting rigorous hypothesis testing (given the large number of indicators tested) but it does provide a guide as 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 Lagos.

2. Differences between the different levels of intervention categories (minimum, medium and maximum) within the CS3 results. We hypothesise that schools that have received more years of full ESSPIN intervention will have higher output, outcome and impact measures than schools which have received fewer years of intervention.

To test this, we use a continuous measure of the years of full intervention that each school has received (one to six), and calculate the estimated effect of having received one additional year of intervention using a simple regression model. This approach allows us to come one step closer to estimating the effect of ESSPIN's intervention. However, this will not be a conclusive indicator of ESSPIN's effect because there are also differences in school and pupil background characteristics within Lagos. The previous section has shown that pilot schools (the maximum intervention group) are significantly closer, in terms of physical location, to local government headquarters but have

---

training to teachers who had not yet received any. However, teachers in ESSPIN schools are also expected to receive more support through other channels, and particularly through professional development meetings organised by the head teacher (RTI International, 2014; and personal communications from ESSPIN). We distinguish the teachers who received direct training ('ESSPIN-trained') from those who were not themselves directly trained, but are in ESSPIN schools and so are expected to have received support from their head teachers and colleagues ('not ESSPIN-trained').

had higher enrolment and higher PTRs than schools that received the intervention at a later stage (the medium intervention group). Controlling for this fully is a difficult statistical exercise, so we will only attempt this for our impact measure: pupil learning outcomes.

For the impact indicators – children's results in literacy and numeracy tests – we conduct additional analysis in order to understand what basis there might be for making causal attribution of ESSPIN's impact. This analysis is described in Section 6.2.

2.2　Sampling, coverage and weights

For the first Composite Survey (CS1) 105 schools were sampled in Lagos: 35 pilot schools, 35 schools from Phase 2 roll-out and 35 schools which at that point had not received any ESSPIN intervention. In CS2 and CS3, 105 schools were sampled again – 36 from the Phase 1 category and 69 from the later roll-out of ESSPIN (Megill, 2014). All schools that had been visited as part of CS2 were sampled again for CS3. There were no replacements in Lagos. After CS1 there were no control schools (schools with no intervention) in Lagos State.

The number of schools sampled in each category is shown in Table 7. The table reflects the intervention groups according to the number of years that the schools received the full package of ESSPIN activities. The hypothesis is that the more years a school receives SIP activities through ESSPIN, the greater its improvement upon all output, outcome and impact indicators.

Table 7:　Sample in CS1, CS2, CS3 and population of schools, by intervention group

Intervention category	Years of intervention	CS1 sample	CS2 sample	CS3 sample	Population of schools
Medium	3	69	69	69	903
Maximum	5	34	36	36	97
Total		103	105	105	1,000

In each of the sampled 105 schools in Lagos the head teacher and the SBMC chairperson were interviewed. As in CS2, we also intended to sample six teachers per school, or all of the eligible teachers in schools with fewer than six teachers. The sample coverage among head teachers and SBMC chairs observations is 100%, and among teachers it is 99% (Table 8).

Within the classes taught by the sampled teachers, eight pupils from Primary Grade 2 (P2) and Primary Grade 4 (P4) each were randomly sampled, four for the literacy test and four for the numeracy test. The sample coverage across all pupils is around 97%, which is only slightly short of the targeted sample size. Again, the deficit in sample coverage is mainly explained by the fact that some schools had fewer than eight pupils in P2 or P4.

Table 8: **Lagos: Survey instruments, respondents, sample size and coverage in CS3**

	Respondents	Targeted sample size	Number of respondents covered	Sample coverage (% of targeted sample size)
Head teacher interview	Head teachers	105	105	100%
SBMC interview	SBMC chair person	105	105	100%
Teacher interview	Sampled teachers	594	592	99%
Teacher test	Sampled teachers	594	592	99%
Lesson observations	Sampled teachers	594	591	99%
L2	Sampled P2 pupils	420	415	99%
N2	Sampled P2 pupils	420	413	98%
L4	Sampled P4 pupils	840	807	96%
N4	Sampled P4 pupils	840	805	96%

Note. (1) In this table and 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.

(2) The 'targeted sample size' for teachers is six teachers per school, or the number of eligible teachers in schools where this is less than six.

Comparing the number of schools sampled to the number of observations it becomes clear that simple averages of the results from the Composite Survey data would not be representative of what is happening across the state (as Table 7 above shows). To solve this problem, sampling weights are applied, giving a greater weight to the results in schools that are relatively under-represented in the survey. Sample weights were calculated for the CS1, CS2 and CS3 schools, teachers and pupils.

2.3 Fieldwork and instruments

Fieldwork for CS3 in Lagos State was conducted using computer-assisted personal interviewing (CAPI) between April and June 2016. We made a number of changes to instruments to take on board some additional concerns and to make use of innovations introduced in other recent Nigerian school surveys (described in detail in the CS3 Overall Technical Report). At the same time, we retained the questionnaire items required for comparability with previous rounds of the Composite Survey.

Data were collected on teacher competence, head teacher effectiveness, school development planning, inclusive practices in schools, SBMC functionality, teacher competence, teacher subject knowledge, and learning outcomes of children in Grades 2 and 4 in English and mathematics. The following activities were carried out as part of the data collection:

- structured interviews with head teachers, SBMC chairpersons and teachers;
- teacher tests in English literacy and numeracy;
- lesson observations; and
- literacy and numeracy tests for pupils in Primary Grades 2 and 4.

The instruments were pre-tested over two days in Abuja during April 2016. State coordinators and monitoring officers collected the data on CAPI after they had been trained on the instruments. Minor revisions were made to the instruments in consultation with state coordinators.

As in CS2, pupil assessments in CS3 were administered using CAPI. Children were given a printed pupil book to read and write in. The interviewers made use of a tablet computer, which prompted them on the questions to be asked of the children orally, gave instructions on the administration of the different test items, including timing, and allowed them to input whether each part of each question was answered correctly or incorrectly (or not attempted at all) by the pupil. A number of changes were made to the CAPI systems and manuals for the administration of the pupil tests, to make them easier to train on and administer. This included a clear manual with consistent instructions across questions of a particular type, automated timers for timed questions, and translations into Hausa, Igbo and Yoruba of text that did not need to be read in English.

3 School management and head teacher effectiveness

ESSPIN's interventions include leadership training for head teachers on managing the school and its teachers, planning for the school's development, advocating for more resources, and ensuring that the school is inclusive. ESSPIN also supports the development of SBMCs. This includes training and mentoring on how SBMCs can encourage the participation of women and children. This chapter examines how well schools in Lagos are doing on each of these fronts.

ESSPIN's logframe identifies and defines a number of indicators related to school management, inclusiveness and SBMCs. The logframe groups these indicators into a set of 'standards' or composite indicators. These are:

- Head teacher effectiveness: A head teacher is deemed to be effective if they engage in a set of practices including observing teachers' lessons, holding professional development meetings with teachers, monitoring teacher attendance, keeping records, and ensuring that the school adheres to a regular schedule.

- School development planning: As part of the SIP, schools are encouraged to carry out a self-review process involving the head teacher, teachers, SBMCs, parents and other community members. The aim of this process is to identify the school's strengths and weaknesses, and then list the steps that need to be taken to improve it in a school development plan (SDP). The SDP can also be used to request resources from the local government or the community. The associated logframe standard assesses whether a self-evaluation has been carried out, whether the school has an SDP, and whether it has implemented the activities in its SDP.

- School inclusiveness: This refers to the extent to which the school makes an effort to include all learners, regardless of gender or socio-economic background. Inclusiveness is assessed on the basis of the steps listed in the SDP and actions taken to boost access, as well as the extent to which teachers encourage the participation of all children in the classroom.

- SBMCs' functionality and performance: The associated standards assess the extent to which SBMCs are functioning and active, and the degree to which they ensure that women and children are actively participating in their activities.

The rest of this section describes each of these standards and then presents associated findings from the Composite Surveys.

3.1 Head teacher effectiveness

Box 1: Head teacher effectiveness: Key findings
- Compared to 2012, there have been clear improvements in head teacher effectiveness.
- However, compared to 2014, the proportion of schools reaching the overall standard has decreased.
- In 2016, 36% of all head teachers in Lagos primary schools met the head teacher effectiveness standard.
- There is no evidence of head teachers in maximum intervention group schools being more effective than teachers in medium intervention group schools.

3.1.1 Criteria for assessing head teacher effectiveness

Head teacher effectiveness is based on seven criteria set out in the ESSPIN logframe (Box 2). These include actions taken by the head teacher as well as behaviour by teachers and pupils. Head teachers must meet five of the seven criteria in order to be classified as effective.

Box 2: Logframe criteria for head teacher effectiveness

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

1) carried out two or more lesson observations in the past two weeks;

2) held four or more professional development meetings since the start of the 2014/15 or 2015/16 school year (NB: the survey took place more than nine months into the school year);

3) school has a teacher attendance book and the head teacher 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; and

7) more than 50% of lessons observed finished within five minutes of a standard 35-minute lesson duration (i.e. the lesson was between 30 and 40 minutes long).

Table 9 compares the results for Lagos's teachers across CS1, CS2 and CS3. It shows the average for all teachers in Lagos across different intervention groups, making it representative of the state as a whole.

Compared to CS1, substantial improvements have been made in head teacher effectiveness in Lagos. For example, the percentages of head teachers carrying out lesson observations and holding professional development meetings increased significantly, by around 58 and 84 percentage points, respectively. However, some other indicators, such as actions taken on teacher attendance, have decreased since 2012. It is to be noted that at the same time teacher attendance increased to 100% in 2016. Therefore, it is possible that head teachers simply felt there was less need for action on attendance, as attendance does not appear to be a problem. However, it is worth exploring further why head teachers have become less likely to take action on teacher attendance. One possibility is that they have limited efficacy to influence teacher attendance (partly because they lack the authority to take disciplinary action against teachers).

While between 2012 and 2016 improvements outweighed any decline, several indicators decreased between 2014 and 2016. Therefore, the overall percentage meeting the head teacher effectiveness standard did not maintain the relatively high level reached in 2014, and dropped by 18 percentage points to 36%. This decline in head teacher effectiveness might be partly explained by the fact that since 2014 about 70% of head teachers who had received the full dose of leadership training retired statutorily. They were temporarily replaced by the acting head teachers. However, it has been reported that the acting head teachers were reluctant to take on the full responsibilities of leadership roles until they were confirmed as the official new head teacher by the SUBEB.

It must also be noted that appropriate lesson length and the proportion of learners who agreed on the opening time are the indicators that appear to have fallen the most. Both of these are not necessarily good indicators of head teacher effectiveness.

Only around 11% of schools conformed to a 35-minute lesson length in 2016 (measured as a lesson length of between 30 and 40 minutes), which is the same as in 2012 but represents a strong decline since 2014. A length of 35 minutes was formerly considered to be the standard lesson length across the six states. However, schools have been encouraged to adopt 60-minute lessons, in line with ESSPIN lesson plans, which are intended to be taught over one hour. Longer

lessons should therefore arguably be discounted as an indicator of school quality, as they may reflect a shift towards one-hour lessons in literacy and numeracy. We have therefore calculated a new indicator, defined as the proportion of schools in which at least half of the observed lessons are at least 30 minutes in length. On this indicator, schools increased from 90% in 2014 to 97% in 2016, suggesting that short lessons are not an issue in Lagos schools and that an inappropriate lesson length most likely stems from lessons that are too long.

In conclusion, the developments in head teacher effectiveness in Lagos can still be seen as positive overall, and are in line with the roll-out of ESSPIN in Lagos. By 2012 only 60% of all schools had had at least one year of the intervention, while by 2016 this was 100%. During the same period, the percentage of head teachers being labelled as effective in Lagos rose from 8% in 2012 to 36% in 2016. Furthermore, the average number of criteria fulfilled have not fallen significantly between 2014 and 2016.

Table 9:   Lagos: Head teacher effectiveness in CS1, CS2 and CS3

	2012 (CS1)	2014 (CS2)	2016 (CS3)	Change: 2012 vs. 2016	Change: 2014 vs. 2016
(1) Lesson observations (%)	18.8	75.4	76.4	**+57.6***	+1.0
No. lesson observations in past two weeks	3.6	5.3	4	+0.4	**-1.3***
(2) Professional development meetings (%)	2.9	80.4	86.4	**+83.5***	+6.0
No. of professional development meetings last term	0.4	3.8	2.7	**+2.3***	**-1.1***
(3) Action on teacher attendance (%)	96.1	64.2	57.4	**-38.7***	-6.8
(4) Clear opening time (%)	25	23	13.5	-11.5	-9.5
Learners who agree on opening time (%)		49.6	43.2	n/a	**-6.4***
Teachers who agree on opening time (%)		70.9	68.8	n/a	-2.1
(5) In class on time in morning (%)	71.4	91.8	100	**+28.6***	**+8.2***
(6) Appropriate morning break (%)	90.7	77.2	81	-9.6	+3.8
(7) Appropriate lesson length (%)	11.7	41.1	11.5	-0.3	**-29.6***
Lesson not too short (%)		89.7	96.9	n/a	**+7.2***
Number of criteria fulfilled (out of seven)	3.2	4.5	4.3	**+1.0***	-0.3
Effective head teacher (five out of seven criteria met) (%)	8.2	54.6	36.4	**+28.3***	**-18.2***
* indicates change over time is statistically significant (p < .05)					

Focusing on the findings from CS3 only, the results do not show much variation between the two intervention groups. While the results for some indicators are higher for the group of schools that received the maximum level of ESSPIN intervention, other indicators are higher for the group of schools that only received a medium level. Most notably, the proportion of teachers that is present

on time appears to be significantly higher for schools from the maximum intervention group. Overall, the percentage of head teachers meeting the effectiveness standard in Lagos does not seem to depend on whether schools received three or five years of ESSPIN SIP activities.

Table 10: **Lagos: Head teacher effectiveness in CS3, by intervention group**

Intervention group	Med.	Max.	Estimated effect of one year of full intervention by 2016
(1) Lesson observations (%)	75.8	82.3	+3.5
No. lesson observations in past two weeks	3.9	4.6	+0.3
(2) Professional development meetings (%)	87.5	76.9	-4.3
No. of professional development meetings last term	2.8	2.3	-0.2
(3) Action on teacher attendance (%)	56.6	64.2	+3.9
School has a teacher attendance book (%)	100	100	n/a
(4) Clear opening time (%)	13.7	11.6	-1.1
Learners who agree on opening time (%)	43.3	42.3	-0.5
Teachers who agree on opening time (%)	69	67.4	-0.8
(5) In class on time in morning (%)	100	100	n/a
Classes where learners present on time (%)	100	100	+0.0
Classes where teachers present on time (%)	96.2	99.3	**+1.6***
(6) Appropriate morning break (%)	81.1	80.1	-0.5
(7) Appropriate lesson length (%)	12.5	2.2	-9.3
Lesson not too short (%)	97	96.4	-0.3
Number of criteria fulfilled (out of seven)	4.3	4.2	-0.0
Effective head teacher (five out of seven criteria met) (%)	36.5	36.1	-0.2
Additional indicators			
In class on time after break (%)	100	100	n/a
Classes where learners present on time (%)	99.6	100	+0.2
Classes where teachers present on time (%)	97.5	99.7	+1.1*
Teacher absenteeism (%)	6.2	6.3	+0.1
* indicates estimated effect of one year of full intervention is statistically significant ($p < .05$)			

3.2   School development planning

Box 3: School development planning: Key findings

- From 2012 to 2016 there has been continuous and significant improvement in the effectiveness of school development planning.
- In 2016, 22% of all Lagos primary schools met the effective school development planning standard.
- More maximum intervention group schools meet the school development planning standard than medium intervention group schools. However, the difference between the two is not statistically significant.

The effectiveness of school development planning depends on five criteria set out by the ESSPIN logframe (Box 4).

Box 4: Logframe criteria for the effectiveness of 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).

In Lagos, the effectiveness of school development planning has seen statistically significant and continuously increases across almost all indicators between 2012 and 2016 (Table 11). Most notably, the percentage of schools that had a SDP available rose from 32% in 2012 to 98% in 2016. The percentage of schools which included activities to strengthen teaching and learning in their SDP doubled from 25% to over 50%, and there is increased evidence that more schools carried out the activities in their SDPs. Furthermore, by 2016 almost all schools in Lagos had a cashbook, although only 18% made sure it was up-to-date.

Overall, the proportion of schools meeting the effective school development standard increased from 9% in 2012 to 22% in 2016, a statistically significant change.

Table 11:   Lagos: SDP effectiveness in CS1, CS2 and CS3

	2012 (CS1)	2014 (CS2)	2016 (CS3)	Change: 2012 vs. 2016	Change: 2014 vs. 2016
(1) Written evidence of school self-evaluation process (%)	48	88.7	97.3	**+49.3***	**+8.6***
(2) SDP available (%)	32	79.4	98.2	**+66.2***	**+18.8***
(3) SDP contains three or more activities to strengthen teaching and learning (%)	25.5	41.2	53.7	**+28.2***	+12.5

No. of activities in SDP to strengthen teaching and learning	1	2.3	2.6	**+1.7***	+0.3
(4) Evidence that four or more activities stated in SDP carried out (%)	3.2	16.7	22.7	**+19.6***	+6.0
No. activities in SDP carried out	0.2	1.8	2.5	**+2.3***	**+0.7***
(5) Cashbook up-to-date (%)	12.9	21.7	17.9	+5.0	-3.8
School has a cashbook (%)	30.3	44.8	95.2	**+64.9***	**+50.4***
Number of SDP criteria fulfilled (out of five)	1.2	2.5	2.9	**+1.7***	**+0.4***
School meets effective school development planning standard (%)	8.7	19.7	21.7	**+13.0***	+1.9
* indicates change over time is statistically significant (p < .05)					

Looking at the findings from 2016 only, and comparing schools from different intervention groups, the data show that more years of ESSPIN intervention increase the effectiveness of school development planning (Table 12). It was estimated that with every year of full intervention the percentage of schools which carry out more than four activities set out in their SDP increases by 11 percentage points. This is a statistically significant increase.

Overall, 20% of schools from the medium intervention group (those that received three years of ESSPIN) met the effective school development standard, compared to 38% of schools from the maximum intervention group (those that received five years of ESSPIN). However, it must be noted that this difference is not statistically significant. Nevertheless, there seems to be some benefit to SDP effectiveness in receiving SIP activities under ESSPIN for five years compared to only three years.

Table 12:   Lagos: SDP effectiveness in CS3, by intervention group

Intervention group	Med.	Max.	Estimated effect of one year of full intervention by 2016
(1) Written evidence of school self-evaluation process (%)	97.6	94.6	-1.1
(2) SDP available (%)	98.6	94.6	-1.2
(3) SDP contains three or more activities to strengthen teaching and learning (%)	52.5	64.1	+5.9
-- No. activities in SDP to strengthen teaching and learning	2.6	2.9	+0.1
(4) Evidence that four or more activities stated in SDP carried out (%)	19.9	49.1	**+11.4***
-- No. activities in SDP carried out	2.4	3.2	+0.4
(5) Cashbook up-to-date (%)	17.2	24.5	+3.3
-- School has a cashbook (%)	95.5	92.4	-1.3

Number of SDP criteria fulfilled (out of five)	2.9	3.3	+0.2
School meets effective school development planning standard (%)	19.9	37.9	+7.5

* indicates estimated effect of one year of full intervention is statistically significant (p < .05)

3.3   School inclusiveness

Box 5. School inclusiveness: Key findings

- From 2012 to 2016, there has been significant improvement across many school inclusiveness criteria. However, some schools have slightly declined since 2014.
- In 2016, 30% of all Lagos primary schools were classified as fully inclusive and 81% were classified as partially inclusive.
- Maximum intervention group schools are significantly more likely to achieve the inclusiveness standard and have higher scores across several inclusiveness criteria.

The overall standard for school inclusiveness in ESSPIN depends on four criteria (Box 6).

In order to meet the school inclusiveness standard, schools must fulfil three out of four criteria. A school that fulfils two out of the four criteria is classified as partially inclusive. School inclusiveness is defined as meeting the needs of all pupils.

Box 6: Standard for school inclusiveness

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) head teacher 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 in between 60% and 40% of total engagements meet the criterion).

In Lagos, there were improvements in the proportion of schools whose SDP contains two or more activities on access and in the proportion of schools where over 50% of teachers use two or more assessment methods (Table 13). On the other hand, there was a statistically significant decrease in the actions taken on learners' attendance.

The proportion of schools meeting the full inclusiveness standard increased from 24% in 2012 to 30% in 2016, although this change is not statistically significant. The proportion of schools classified as partially inclusive has been rising continuously since 2012, from 63% to 81%. This is a statistically significant change.

An alternative measure of inclusiveness, however, yields quite different results. We calculate a percentage score based on the number of actions to improve attendance, the number of activities

in the SDP on access, the average number of assessment methods used, the average number of zones participating in each lesson observed (observers imagined the classroom as being divided into six zones), and a measure of the extent to which girls and boys participated equally in the class. This measure shows significant *decreases* since 2012 and 2014. This suggests that more schools passed the thresholds required to meet each criterion while the average level of the underlying indicator decreased. In turn, this suggests a mixed picture, with some schools that were just below the threshold in previous rounds now above it, while other schools may have worsened.

Table 13:   Lagos: School inclusiveness in CS 1, CS2 and CS3

	2012 (CS1)	2014 (CS2)	2016 (CS3)	Change: 2012 vs. 2016	Change: 2014 vs. 2016
(1) Three or more actions on learner attendance (%)	40.5	34.5	10.3	**-30.2***	**-24.2***
Number of actions on learner attendance	2.5	2.2	1.7	**-0.9***	**-0.5***
(2) Two or more activities in SDP on access (%)	11.9	24.6	54.6	**+42.7***	**+30.0***
Number of activities on access	0.4	0.9	2	**+1.6***	**+1.1***
(3) >50% of teachers use two or more assessment methods (%)	92.3	97.5	100	**+7.7***	+2.5
(4) >50% of teachers spatially inclusive and >50% are gender inclusive (%)	45	53.2	53.5	+8.5	+0.3
Number of inclusiveness criteria fulfilled (/4)	1.9	2.1	2.2	+0.3	+0.1
Weighted sum inclusiveness score	59.6	61.3	47.9	**-11.7***	**-13.4***
School fully met standard (three out of four criteria) (%)	23.8	32	30.4	+6.6	-1.6
School partially met standard (two out of four criteria) (%)	63.4	77.6	80.9	**+17.5***	+3.3
* indicates change over time is statistically significant (p < .05)					

In 2016, maximum intervention group schools performed better across most inclusiveness criteria than medium intervention group schools, although those differences are not always statistically significant (Table 14). An additional year of the full ESSPIN intervention was estimated to have led to an increase of 11 percentage points in the proportion of schools meeting the full school inclusiveness standard. Thus, there seems to be a benefit of additional years of intervention in regard to school inclusiveness.

Table 14:   Lagos: School inclusiveness in CS3, by intervention group

Intervention group	Med.	Max.	Estimated effect of one year of full intervention by 2016

(1) Three or more actions on learner attendance (%)	10.4	9.5	-0.5
Number of actions on learner attendance	1.7	1.7	+0.0
(2) Two or more activities in SDP on access (%)	52.7	72.2	+10.4
Number of activities on access	1.9	2.1	+0.1
(3) >50% of teachers use two or more assessment methods (%)	100	100	n/a
(4) >50% of teachers spatially inclusive and >50% are gender inclusive (%)	51.1	76.3	+13.7*
Number of inclusiveness criteria fulfilled (out of four)	2.1	2.6	+0.2*
Weighted sum inclusiveness score	47.7	49.6	+1.0
School fully met standard (three to four criteria) (%)	27.9	53.4	+11.1*
School partially met standard (two to four criteria) (%)	79	97.7	+18.5
Additional indicators			
Enrolment increased since last year (%)	58.8	47.1	-5.7
Change in enrolment since last year	0	0	-0.0
* indicates estimated effect of one year of full intervention is statistically significant (p < .05)			

3.4   SBMC

Box 7: SBMC functionality: Key findings

- In 2016, 84% of all schools had well-functioning SBMC. This is a huge increase from 2012 when only 14% of all SBMCs in the state were deemed to be functional.
- Across most criteria, SBMCs in maximum intervention group schools did not function significantly better than SBMCs in medium intervention group schools.

ESSPIN conducted qualitative research into SBMCs and community engagement in education in five ESSPIN states – including Lagos – in 2009 (ESSPIN 2009). This research suggested that SBMCs were not functioning well: there was a lack of clarity and understanding in regard to the SBMCs' 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).

According to the data all schools in the Lagos sample have had SBMCs since 2014 (see Table 15). However, this does not mean that all the SBMCs are functional or inclusive – they may not have received ESSPIN Output Stream 4 support.

To be counted as functioning well, SBMCs are expected to meet regularly, and work with the community, community-based organisations (CBOs), traditional or religious institutions, to raise awareness about the school and its needs, raise resources, and address exclusion. They are expected to have a women's committee and a children's committee, to keep financial records, and the chairperson is expected to visit the school regularly. There are nine criteria in the standard for SBMC functionality (Box 8). In most cases, these require evidence to be presented, rather than just accepting the word of the respondent (usually the SBMC chairperson). Thus, they reflect the ability of the SBMC to keep good records of their activities, as well as the activities themselves. In addition to these, we present statistics on a number of other measures from the Composite Survey SBMC interview (Table 15 and Table 16).

Box 8: Logframe criteria 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:[4] 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 CBOs, traditional or religious institutions, or other SBMCs (written or physical evidence); 5) SBMC interacted with LGEAs 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) SBMC chair visited the school at least three times from the start of the current school year (written evidence).

SBMC functionality in primary schools in Lagos has been improving significantly over the past four years (Table 15). On the whole, 84% of Lagos primary schools met the SBMC functionality standard in 2016, compared to only 14% in 2012 and 81% in 2014.

In all criteria, there have been large and statistically significant increases between 2012 and 2016. Between 2014 and 2016, the results also show increases in most criteria, although these are mostly smaller and are often not statistically significant. However, some key indicators of SBMC action to make the school inclusive – whether the SBMC took action for commonly excluded groups, and whether it raised issues of children's exclusion – have been decreasing since 2014. On the other hand, 68% of SBMCs in Lagos monitored drop-out and non-attendance of pupils, and close to 100% of all schools communicated with the school or the community about pupil drop-outs.

---

[4] 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.

Box 9: Asking SBMCs about inclusion and exclusion

below explains the indicators used to measure inclusion and exclusion.

Box 9: Asking SBMCs about inclusion and exclusion

A number of different criteria aim to measure the SBMCs' inclusiveness and the actions they have taken on excluded children. These were based on the following questions addressed to the SBMC chairperson. As elsewhere, questions were asked in the local language, with instructions to use a language that the respondent could understand, but not to provide additional explanation or prompts.

Criterion	Question asked (with data collector instructions in blue)	Criterion met if…
(2) Conducted awareness-raising	Did the SBMC do anything **to raise awareness about the value of education for all boys and girls** in the community in the **current school year**?	Respondent answers yes and can present oral or written evidence
(3) Addressed exclusion	Did the SBMC do anything **to address issues which prevent children from attending school or which cause drop-outs** in the **current school year**?	Respondent answers yes and can present oral or written evidence
(A1) Took action for commonly excluded groups	Did the SBMC do anything to **support commonly excluded groups** in the **current school year**? You can explain that commonly excluded groups could be orphans, nomadic children, girls, children with disability, ethnic or religious minorities, etc.	Respondent answers yes and can present oral or written evidence
(A2) Raised issues of children's exclusion	Did the SBMC **raise issues of children's exclusion** from school in the community, with the LGEA, or with the state government, in the **current school year**?	Respondent answers yes and can present oral or written evidence
(A3) Raised cash to support vulnerable children	Did the **SBMC mobilise any cash to support vulnerable children** in the **current school year**?	Respondent answers yes (no evidence required)
(A4) Monitored drop-out or non-attendance (A5) Communicated with school or community about drop-outs (A6) Number of actions taken to address non-attendance	**What actions were taken** to address issues which prevent children from attending school or which cause drop-out in the **current school year**? Do not prompt. This is a multiple response question **– SELECT ALL THAT APPLY** • Monitoring drop-out • Monitoring non-attendance • Communicating with school about drop-out • Communicating with community about drop-out • Other (specify) • Don't know / refused	Respondent answers yes to a previous question (asking whether any action was taken to address these issues) and then provides this information in the follow-up question on what type of action and how many actions were taken. No specific evidence is required

The overall large improvements in SBMC functionality are likely explained by the timing of the roll-out of Output Stream 4 intervention. Activities under Output Stream 4 began the year after CS1 in 2012 and have been scaled up to include full packages of the intervention for all schools. Furthermore, these improvements could be related to the decision taken between CS1 and CS2 to move from a cluster-based system of SBMCs to a school-based one in Lagos (ESSPIN 2015). The school-based SBMCs may be more functional, and it also may be the case that the indicators in the Composite Survey are more appropriate for a school-based system than for measuring the functionality of cluster-based SBMCs.

Table 15:   Lagos: SBMC functionality in CS1, CS2 and CS3

	2012 (CS1)	2014 (CS2)	2016 (CS3)	Change: 2012 vs. 2016	Change: 2014 vs. 2016
(1) Two or more meetings this school year	30.9	80.9	85.8	**+54.9***	+4.8
(2) Conducted awareness-raising	29.8	75.2	77.3	**+47.5***	+2.1
(3) Addressed exclusion	21.8	68.5	51.4	**+29.6***	**-17.1***
(4) Networked with CBOs/institutions/other SBMCs	5.1	66.0	89.8	**+84.7***	**+23.9***
(5) Interacted with LGEA	16.4	43.7	42.7	**+26.3***	-1.0
(6) Has women's committee	22.2	64.4	81.3	**+59.1***	**+16.9***
(7) Has children's committee	22.6	66.0	96.9	**+74.3***	**+30.9***
(8) Contributed resources for school	27.3	77.0	53.6	**+26.3***	**-23.4***
(9) Chair visited school three or more times	10.6	51.6	44.6	**+34.0***	-7.1
Schools meet functioning SBMC standard (%)	14.4	81.1	84.1	**+69.6***	+3.0
Number of SBMC functionality criteria met (out of nine)	2	5.9	5.9	**+4.0***	+0.0
Additional criteria: inclusion					
(A1) Action for commonly excluded groups (%)	9.4	35.9	4.9	-4.5	**-31.0***
(A2) Raised issue of children's exclusion (%)	1.4	40.6	11.4	**+10.0***	**-29.2***
(A3) Raised cash to support vulnerable children (%)			24	n/a	n/a
(A4) Monitored drop-out or non-attendance (%)			68	n/a	n/a
(A5) Communicated with school or community about drop-out (%)			98.5	n/a	n/a
(A6) No. of actions taken to address non-attendance			1.2	n/a	n/a
Additional criteria: organising					
(A7) School has an SBMC (%)	79.5	100	100	**+20.5***	0.0
(A8) Cashbook available (%)	12.3	20.6	30	**+17.6***	+9.3
(A9) Requested support from LGEA or SUBEB (%)			60.1	n/a	n/a
(A10) Raised cash to support school improvement (%)	5.5	57.2	3.6	-1.9	**-53.6***

(A11) Mobilised non-cash resources (%)	21.9	63	51.8	**+29.8***	-11.2
(A12) Involved in making SDP (%)		59.6	55.1	n/a	-4.5

* indicates change over time is statistically significant (p < .05)

Looking at the results from 2016 only, there is a small but not statistically significant difference between medium intervention group schools (three years of Output Stream 3 intervention) and maximum intervention group schools (five years of Output Stream 3 intervention) (Table 16). In addition, a larger percentage of maximum intervention group schools met the functioning SBMC standard (namely 88%), compared to 82% of medium intervention group schools. Albeit positive, the estimated effect of one extra year of full intervention is not statistically significant.

Table 16: Lagos: SBMC functionality in CS3, by intervention group

Intervention group	Med.	Max.	Estimated effect of one year of full intervention by 2016
(1) Two or more meetings this school year (%)	85.9	84.2	-0.8
(2) Conducted awareness-raising (%)	75.8	90.8	+10.0
(3) Addressed exclusion (%)	11	16.9	+2.5
(4) Networked with CBOs/institutions/other SBMCs (%)	89.7	90.6	+0.4
(5) Interacted with LGEA (%)	42.7	43.3	+0.3
(6) Has women's committee (%)	81.9	76.1	-2.6
(7) Has children's committee (%)	96.8	97.7	+0.5
(8) Contributed resources for school (%)	52.9	60.6	+3.9
(9) Chair visited school three or more times (%)	44.8	41.8	-1.5
Number of SBMC functionality criteria met (out of nine)	5.5	5.9	+0.2
School meeting functioning SBMC standard (five out of nine criteria met) (%)	81.5	88.4	+4.0
Additional indicators: inclusion and drop-outs			
(A1) Took action for commonly excluded groups (%)	4.4	9.3	+1.8
(A2) Raised issues of children's exclusion (%)	10.8	16.9	+2.6
(A3) Raised cash to support vulnerable children (%)	23.5	28.5	+2.4
(A4) Monitored drop-outs or non-attendance (%)	68.3	65.7	-1.3
(A5) Communicated with school or community about drop-out (%)	98.6	97.4	-0.5

(A6) No. of actions taken to address non-attendance	1.2	1.4	+0.1
Additional indicators: organising and mobilising resources			
(A7) School has an SBMC (%)	100	100	n/a
(A8) Cashbook available (%)	28.3	45.3	+7.6
(A9) Requested support from LGEA or SUBEB (%)	59.2	68.9	+5.1
(A10) Raised cash to support school improvement (%)	3.7	2.3	-0.8
(A11) Mobilised non-cash resources (%)	50.8	60.6	+5.0
(A12) Involved in making SDP (%)	53.7	68.7	+7.8
* indicates estimated effect of one year of full intervention is statistically significant (p < .05)			

3.4.1   How inclusive are SBMCs of women and children?

Box 10: SBMC women's and children's inclusiveness: Key findings

- In 2016, around 64% of all SBMCs in Lagos met the women's inclusiveness standard and 14% met the children's inclusiveness standard.
- Over time there were some clear improvement in SBMC women's inclusiveness criteria across all relevant indicators. Children's inclusiveness criteria also increased but the proportion of SBMCs that met the children's inclusiveness standard did not change significantly.
- There is no evidence that SBMCs in maximum intervention group schools performed better in terms of women's and children's inclusiveness than SBMCs in medium intervention group schools.

As noted above, SBMCs are expected to have women's and children's committees. We also record a number of other measures of the extent to which SBMCs are inclusive of women's and children's concerns. In each case, there are four criteria and an overall standard (

Box 11: Logframe standard for SBMCs' inclusiveness of women and children

).

Box 11: Logframe standard for SBMCs' inclusiveness of women and children

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

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 a female member of the SBMC); and

4) at least one SBMC women's committee meeting took place.[5]

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

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[6]

The percentage of SBMCs in Lagos that met the women's inclusiveness standard increased from 22% in 2012 to 64% in 2016, a large, statistically significant change (Table 17). The change has slowed down a little since 2014 but has remained mainly positive. Only in the proportion of SBMCs that had meetings attended by women was there a slight decrease between 2014 and 2016, which, however, was not statistically significant.

Looking at SBMC children's inclusiveness across time, the findings show mixed results. The overall proportion of SBMCs that meet the children's inclusiveness standard has increased slightly since 2012, but this is not a statistically significant change. With only 14% of all SBMCs meeting the children's inclusiveness standard, the level still remains very low.

However, there were positive developments across some individual indicators. Since 2012, the proportion of SBMCs that has an active children's committee including a facilitator increased from 6% to 43%. The number of children's inclusiveness criteria met increased from 0.5 to 1.2. These changes are both statistically significant. Furthermore, the proportion of SBMC meetings attended by children decreased significantly, but the proportion of issues raised by children that led to action increased.

Table 17:   Lagos: SBMC inclusiveness of women and children in CS1, CS2 and CS3

	2012 (CS1)	2014 (CS2)	2016 (CS3)	Change: 2012 vs. 2016	Change: 2014 vs. 2016
Participation of women in SBMCs					

---

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

[6] 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 failure to keep minutes does not mean the committee is not functioning.

---

(1) At least one woman attended two or more meetings (%)	36.7	77.6	72.4	**+35.7***	-5.1
(2) Female member raised an issue (%)	47.2	78.3	79.8	**+32.6***	+1.5
(3) Issue raised by female member led to action (%)	33.7	23.8	55.1	**+21.3***	**+31.3***
(4) Women's committee met (%)	4.1	62.4	68.9	**+64.8***	+6.5
Number of criteria met (out of four)	1.0	2.4	2.7	**+1.7***	+0.3
Meets women's inclusiveness standard (three out of four) (%)	22.0	52.8	64.3	**+42.3***	+11.5
Participation of children in SBMCs					
(1) At least one child attended two or more meetings (%)	20.3	43.2	19.7	-0.6	**-23.5***
(2) Child raised an issue (%)	20.8	40.1	48.4	+27.6	+8.3
(3) Issue raised by child led to action (%)	14.9	10.4	27.9	+13.0	**+17.5***
(4) Children's committee met and has a trained facilitator (%)	6.3	50.1	42.9	**+36.6***	-7.2
Number of criteria met (out of four)	0.5	1.5	1.2	**+0.7***	-0.2
Meets children's inclusiveness standard (three out of four) (%)	7.6	14.1	13.6	+6.0	-0.5
* indicates change over time is statistically significant (p < .05)					

In terms of women's inclusiveness there does not seem to be a significant advantage of maximum intervention group schools over medium intervention group schools. In fact, medium intervention group schools actually perform slightly better in some of the indicators, including the proportion of schools that meet the women's inclusiveness standard. However, this effect is not statistically significant.

Across some individual indicators of children's inclusiveness, schools from the maximum intervention group (five years of ESSPIN Output Stream 3 activities) perform better than schools from the medium intervention group (three years of ESSPIN Output Stream 3 activities) (

Table 18). For example, it was estimated that one extra year of full intervention leads to an almost 15 percentage points increase in the proportion of SBMCs having a children's committee with a trained facilitator.

However, this is not reflected in any difference between medium and maximum intervention groups meeting the overall children's inclusiveness standard. Almost exactly the same proportion of schools from both groups met this standard in 2016 (13.6% and 13.2%, respectively).

Table 18: **Lagos: SBMC inclusiveness of women and children in CS3, by intervention group**

Intervention group	Med.	Max.	Estimated effect of one year of full intervention by 2016
Participation of women in SBMCs			
(1) At least one woman attended two or more meetings (%)	71.9	77.6	+3.0
(2) Female member raised an issue (%)	81.0	69.0	-5.2
(3) Issue raised by female member led to action (%)	55.2	53.9	-0.6
(4) Women's committee met (%)	69.1	67.6	-0.7
Number of criteria met (out of four)	2.7	2.7	0
Meets women's inclusiveness standard (three out of four) (%)	65.1	56.2	-4.3
Participation of children in SBMCs			
(1) At least one child attended two or more meetings (%)	17.8	36.8	+7.6*
(2) Child raised an issue (%)	49.8	37.6	-6.2
(3) Issue raised by child led to action (%)	28.2	25.1	-1.6
(4) Children's committee met and has a trained facilitator (%)	40.1	69.3	+14.5*
Number of criteria met (out of four)	1.2	1.6	+0.2
Meets children's inclusiveness standard (three out of four criteria) (%)	13.6	13.2	-0.2

* indicates estimated effect of one year of full intervention is statistically significant (p < .05)

3.5   Summary and discussion

Lagos rolled out the ESSPIN intervention to all primary school in the state relatively early. Since 2012, all schools have received the full package of the intervention every year, except for 2013/14, when 60% of the schools did not receive any teacher training (see Annex B). Arguably, the lack of teacher training is less relevant for school management and head teacher effectiveness, and therefore, considering the high number of years for which all Lagos primary schools have received continuous intervention from ESSPIN, we would expect to find considerable improvements between 2012 and 2016.

Box 12 shows the average progress in the different standards of school management and head teacher effectiveness in Lagos primary schools between 2012 and 2016. We would expect the proportion of schools that achieved the standards to be the lowest in 2012 and the highest in 2016, as schools benefitted from additional years of the intervention. The farther to the right a point appears on the graph, the better the average performance of schools in that category.

Indeed, the proportion of schools meeting each of the respective standards was higher in 2016 than in 2012 across all six categories. The increases were statistically significant in all categories except for school inclusiveness and SBMC inclusiveness of children. However, it must also be noted that much of the progress happened between 2012 and 2014. Since 2014 progress slowed down across most categories – and in terms of head teacher effectiveness we even found a decrease.

Box 12: Lagos: Change in school management and head teacher standards over time
Comparing CS1 (2012), CS2 (2014) and CS3 (2016)
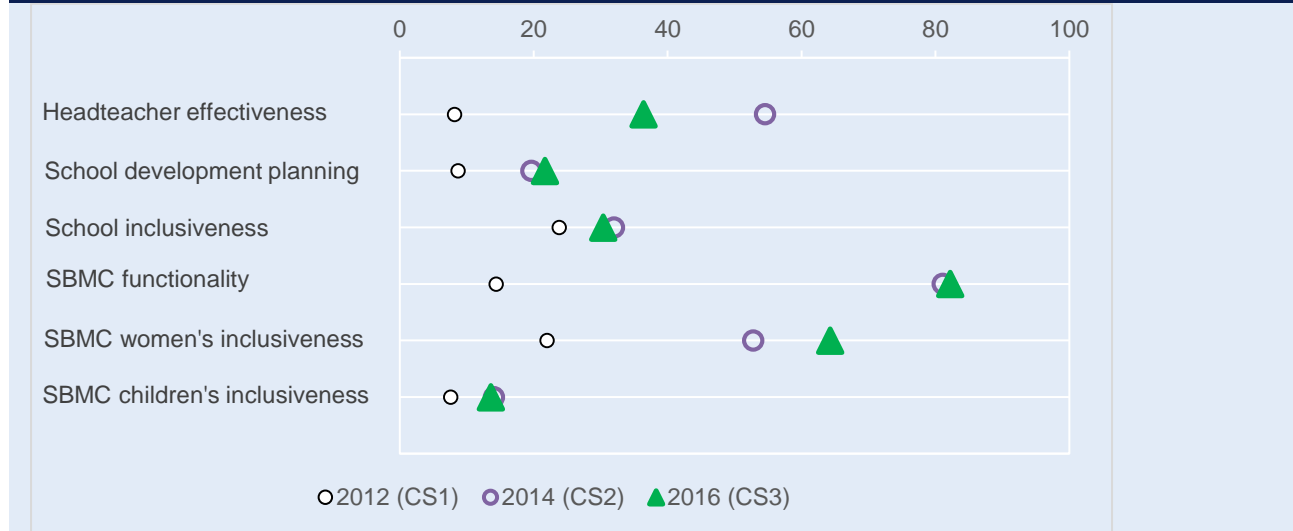
While there have been mostly improvements across time, in 2016 we found no statistically significant differences between schools that had received three years of Output Stream 3 intervention versus schools that had received five years of Output Stream 3 intervention (

Box 13: Lagos: Difference in school management and head teacher standards by ESSPIN intervention

Comparing minimum and medium Output Stream 3 intervention schools in 2016

). Although across some categories the proportion of schools that met the respective standard was higher among the maximum intervention group, most of these differences were not statistically significant. The only area where an additional year of intervention seemed to make a difference was in regard to meeting the full school inclusiveness standard. These findings may suggest that schools that are new to the intervention appear to catch up quickly to schools that have been exposed to it for a greater number of years. However, this point must be taken with caution as school staff are not necessarily static within schools: both teachers and head teachers can be transferred or redeployed across schools in the state.

Box 13: Lagos: Difference in school management and head teacher standards by ESSPIN intervention

Comparing minimum and medium Output Stream 3 intervention schools in 2016
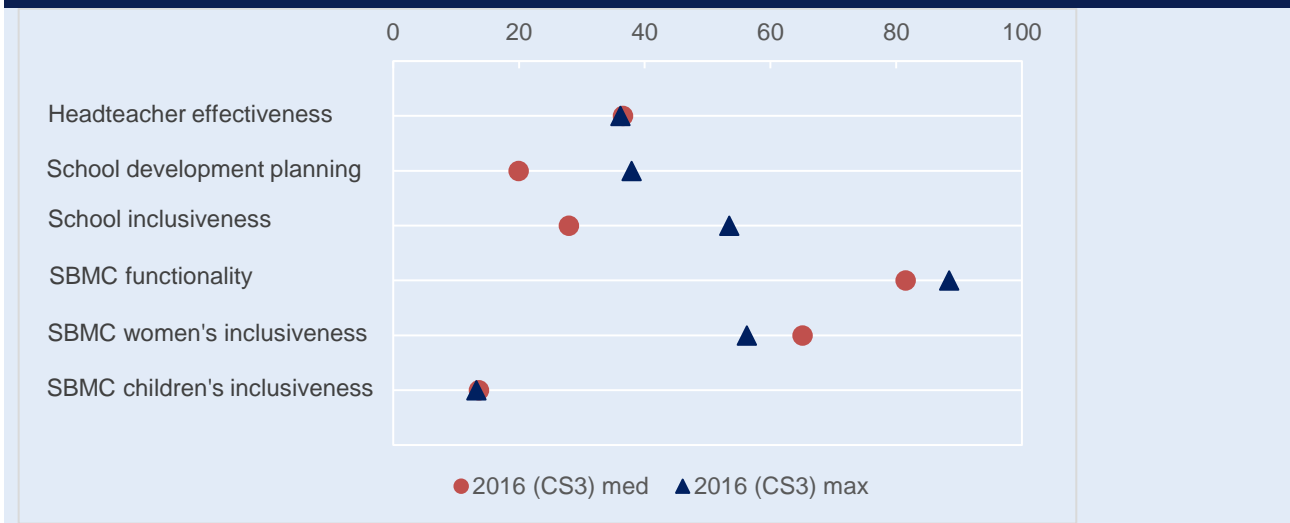
4 Teachers

ESSPIN's interventions include teacher training on teaching skills, including the use of teaching aids, participation and praise, and techniques for classroom organisation. The training also includes basic literacy and numeracy training. This chapter examines the changes in teacher competence over time and across different intervention groups. In this chapter, we first look at how teacher competence has changed according to the teacher competence logframe indicator that combines the various aspects on which teachers receive training. We then take a more in-depth look at teachers' performance on the literacy and numeracy content knowledge tests.

4.1 Teacher competence

Box 14: Teacher competence: Key findings from Lagos
• Since 2012 there have been clear improvements in the teaching behaviour and competence of Lagos primary school teachers.
• In 2016 almost 80% of teachers in Lagos met the teacher competence standard, and 67% met the stricter competence standard.
• There is no evidence that teachers that had been trained by ESSPIN performed better in 2016 than teachers that were not trained by ESSPIN.

4.1.1 Criteria for assessing teacher competence

Teacher competence is based on four criteria set out by the ESSPIN logframe (Box 15). Teachers who teach English and mathematics meet the competence standard if they fulfil three of the four criteria. Teachers who teach subjects other than English and mathematics are exempted from criteria 1 and therefore meet the competence standard if they fulfil two out of the three remaining criteria.

For CS2 and CS3, the criteria were modified. The second criterion was refined so as to state: 'Use of at least one teaching aid during lesson observation excluding reading/writing on/copying from the blackboard.' A fifth criterion was introduced and included in the teacher competence standard. According to this, a teacher is defined as competent if they are competent according to the original criteria, and if they can also score at least 50% in primary school-level literacy and numeracy tests.

Box 15: Criteria 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 mathematics. 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 and CS3, stricter criteria for teacher competence were introduced. These modified (2) to exclude reading from or writing on, or having pupils copy from, the blackboard as a use of a teaching aid. A fifth criterion was added:
5) literacy and numeracy: scores at least 50% in both an English literacy and a numeracy test.

Table 19 compares the results for Lagos' teachers in CS1, CS2 and CS3. It shows the average for all teachers in Lagos, balancing the results of teachers from different intervention groups in order to make the table representative of the average.

Compared to 2012 and 2014, teachers significantly improved their knowledge of the English and mathematics curriculum, the use of more than one teaching aid and the use of praise rather than reprimands. There was a slight decline in the assignment of more than two individual or group tasks during a lesson but this decline was not statistically significant.

In 2016 nearly 80% of all teachers in Lagos met the teacher competence standard. This is almost 13 percentage points higher than in 2014. It is also higher than at the time of CS1 in 2012, but this change is not statistically significant. The proportion of teachers that met the stricter competence standard (see Box 15) also increased by almost 11 percentage points from 56% in 2014 to 67% in 2016.

When interpreting these results, it is important to note that it is possible that CS1 over-estimated the indicators of teacher competence. It was noted in the CS1 report that performance was surprisingly strong given the weak scores for teachers found in an earlier (2010) Teacher Development Needs Assessment (ESSPIN, 2013b). This could have been, for example, because data collectors administered the question about English and mathematics curriculum benchmarks incorrectly.

Table 19:   Lagos: Teacher competence in CS1, CS2 and CS3

	2012 (CS1)	2014 (CS2)	2016 (CS3)	Change: 2012 vs. 2016	Change: 2014 vs. 2016
(1) Knowledge of Eng./mathematics curriculum (%)	53.2	43.2	64.5	+11.3	**+21.3***
(2) Use of one or more teaching aid (%)	83.2	96.8	98.3	**+15.1***	+1.5
(2a) Use of one or more teaching aid, excl. blackboard (%)		85.4	91.0	n/a	**+5.6***
(3) Praise more than reprimand (%)	80.5	98.0	96.0	**+15.6***	-1.9
(4) Assigns two or more ind./group tasks (%)	52.0	38.5	41.2	-10.8	+2.7
(5) Passes English and mathematics test (%)		88.2	86.0	n/a	-2.2
Teacher competence score (% of criteria fulfilled)	68.7	69.5	75.2	+6.4	**+5.7***
Teacher competence standard fulfilled (three out of four criteria met) (%)	71.2	67.0	79.1	+7.9	**+12.1***
Teacher competence score (% of criteria fulfilled; strict version)		68.3	73.2	n/a	**+4.9***
Teacher competence standard fulfilled (strict version: four out of five criteria met) (%)		55.8	66.8	n/a	**+10.9***
* indicates change over time is statistically significant (p < .05)					

Next, we examined how teachers who reported having been trained by ESSPIN performed in 2016, compared to teachers who reported not having received any ESSPIN training (Table 20).

Across most indicators the differences in results between the ESSPIN-trained teachers and the non-ESSPIN-trained teachers are not statistically significant. As the previous table showed, teachers across the state became more competent. However, teachers who had received training by ESSPIN were not significantly more competent in 2016 than their peers who had not received such training. This might be partly due to spill-over effects from trained teachers to non-trained teachers. In fact, it is expected that the teachers who were selected to be trained would positively influence other teachers in the school, by spreading the teaching practices they learn.

Table 20:   Lagos: Teacher competence in CS3, by teacher training

Intervention group	Non-ESSPIN-trained	ESSPIN-trained	Difference in means
(1) Knowledge of Eng./mathematics curriculum (%)	67.0	62.8	-4.2
(2) Use of one or more teaching aid (%)	99.3	97.5	**-1.8***
(2a) Use of one or more teaching aid, excl. blackboard (%)	92.0	90.2	-1.8
(3) Praise more than reprimand (%)	94.8	97.0	+2.2
(4) Assigns two or more ind./group tasks (%)	35.8	45.4	**+9.5***
(5) Passes English and mathematics test (%)	85.5	86.5	+1.0
Teacher competence score (% of criteria fulfilled)	74.4	75.8	+1.4
Teacher competence standard fulfilled (three out of four criteria met) (%)	80.1	78.3	-1.8
Teacher competence score (% of criteria fulfilled; strict version)	72.4	73.9	+1.5
Teacher competence standard fulfilled (strict version: four out of five criteria met) (%)	68.3	65.6	-2.7
* indicates estimated effect of one year of full intervention is statistically significant (p < .05)			

4.2   Findings from teacher content knowledge tests

The findings above suggest that the results of teachers' content knowledge tests in Lagos did not change significantly between 2014 and 2016, and that teachers trained by ESSPIN did not perform significantly better than those that had not been trained by ESSPIN. Percentage scores in the teacher content knowledge tests provide a rough indication of teachers' test performance, but analysis using item response theory (IRT) provides more reliable learning scales that can also be interpreted more readily in terms of learning benchmarks (see Allen, 2016a). The teachers' results can be divided into four performance bands in literacy and five performance bands in numeracy. Review of the items that teachers in each band can mostly answer correctly then provides descriptors for each band (Table 21). For example, a teacher in Band 2 for literacy is one who shows knowledge of some basic phonics, can write a simple sentence, and can carry out basic comprehension of a passage, as well as achieving the easier items – testing limited comprehension of simple passages, basic nouns and verbs – associated with a teacher in Band 1.

The teacher in Band 2 cannot typically correctly answer the harder items associated with Bands 3 or 4, such as identifying simple antonyms.

Table 21:   Band descriptors based on IRT analysis

Band	Literacy	Numeracy
5		Understands conversion of fractions to decimals, and place values in decimals
4	Creates several sentences, shows knowledge of phonics, punctuation, formal letter layout, suffixes and alphabetical order	Understands ideas of area, nets, pictograms and rounding
3	Past/present of verbs, completes a sentence, extracts basic information from a passage, identifies simple antonyms, forms plurals	Understands basic sets, use of the number line to represent sums, conversion of units of time and mass, can complete word problems involving division
2	Shows knowledge of some basic phonics, writes a simple sentence, basic comprehension of a passage	Simple division, word problems involving addition, signs for arithmetic operations, integer comparisons and integer place values
1	Limited comprehension of simple passages, basic nouns and verbs	Simple addition with carrying over simple subtraction, identifying a fraction, counting, simple regular shapes

Within the literacy and numeracy tests, items can be grouped according to specific sub-domains of learning: reading, writing and grammar within literacy, and number concepts and calculation within numeracy.

In Lagos, teachers' scale scores in English have not changed significantly since 2014, but the scores for the mathematics test declined (Table 22). As a result, the distribution of teachers across the bands in English in 2016 is almost the same as it was in 2014 (Figure 2). In mathematics, there are fewer teachers in the higher performing bands in 2016 than there were in 2014, but more in the lower performing bands such as Bands 2 and 3.

Table 22:   Lagos: Teachers' test scores (IRT analysis) in 2014 and 2016

	2014 (CS2)	2016 (CS3)	Change: 2014 vs. 16
English IRT scale score (mean 500, s.d. 100)	588	584	-4.0
English Band 1 (%)	0.4	0.1	-0.4
English Band 2 (%)	6	7	+1.6
English Band 3 (%)	55	55	-0.2
English Band 4 (%)	39	38	-1.0
Reading (English sub-scale, mean 500, s.d. 100)	581	581	+0.4
Writing (English sub-scale, mean 500, s.d. 100)	579	575	-4.1
Grammar (maths sub-scale, mean 500, s.d. 100)	588	578	-9.2
Mathematics IRT scale score (mean 500, s.d. 100)	597	581	-16.1*
Mathematics Band 1 (%)	0.2	0	-0.2

Mathematics Band 2 (%)	3	7	**+4.5***
Mathematics Band 3 (%)	24	29	+4.7
Mathematics Band 4 (%)	44	38	-5.9
Mathematics Band 5 (%)	28	25	-3.1
Number concepts (maths sub-scale, mean 500, s.d. 100)	599	583	**-16.0***
Calculation (maths sub-scale, mean 500, s.d. 100)	582	568	**-13.6***
* indicates change over time is statistically significant (p < .05)			

Figure 2:   Lagos: Proportion of teachers in each English and mathematics performance band, by year
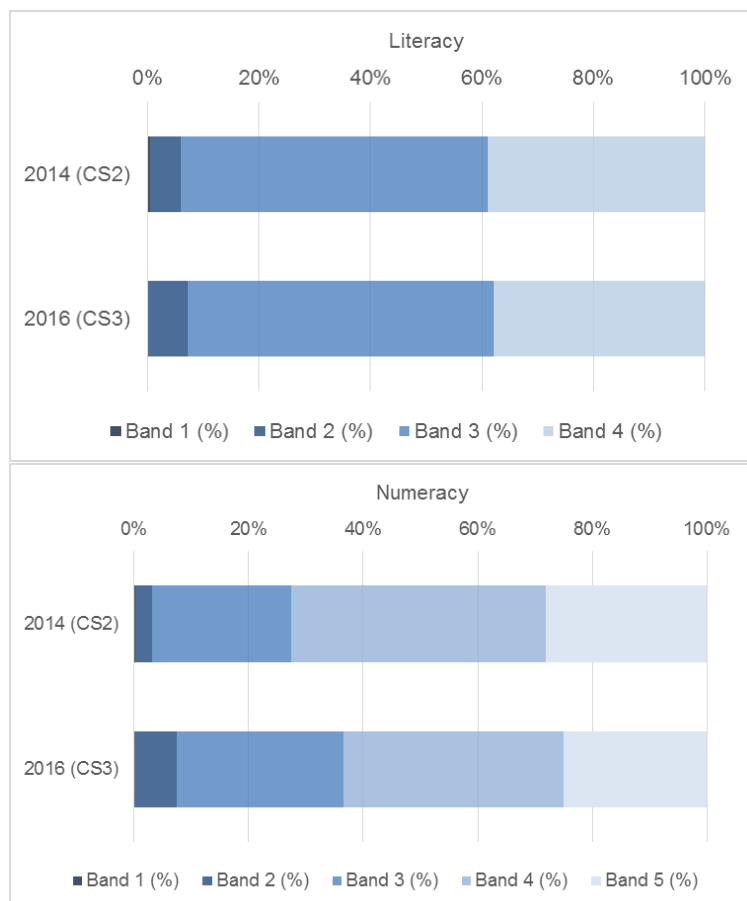
Teachers who had received ESSPIN training did not have significantly higher test scores in 2016 than those who had not, for both English and mathematics (Table 23). However, overall scores in English and mathematics are slightly higher for ESSPIN-trained teachers than for non-ESSPIN-trained teachers, although the differences are not statistically significant. The distribution across literacy bands is almost exactly the same for ESSPIN-trained and non-ESSPIN-trained teachers. In mathematics, significantly more ESSPIN-trained teachers can be found in the highest performing band (Figure 3). It should also be mentioned at this point that, compared to the other states, teachers from Lagos have the highest test scores and the largest proportion of teachers in the high performing bands.

Table 23:   Lagos: Teachers' test scores (IRT analysis) by ESSPIN training

	Non-ESSPIN-trained	ESSPIN-trained	Difference in means
English IRT scale score (mean 500, s.d. 100)	583	585	+1.3*

English Band 1 (%)	0	0	0
English Band 2 (%)	7	7	+0.9
English Band 3 (%)	55	55	-0.8
English Band 4 (%)	38	38	-0.3
Reading (English sub-scale, mean 500, s.d. 100)	580	582	+1.8
Writing (English sub-scale, mean 500, s.d. 100)	572	577	+4.5
Grammar (maths sub-scale, mean 500, s.d. 100)	580	577	-2.7
Mathematics IRT scale score (mean 500, s.d. 100)	577	585	+7.9
Mathematics Band 1 (%)	0	0	0.0
Mathematics Band 2 (%)	6	9	+3.4
Mathematics Band 3 (%)	31	27	-4.0
Mathematics Band 4 (%)	44	34	**-10.5***
Mathematics Band 5 (%)	18	30	**+11.1***
Number concepts (maths sub-scale, mean 500, s.d. 100)	580	585	+4.5
Calculation (maths sub-scale, mean 500, s.d. 100)	563	572	+8.7
* indicates difference is statistically significant (p < .05)			

Figure 3: **Lagos: Proportion of teachers in each English and mathematics performance band, ESSPIN-trained versus non-ESSPIN-trained**
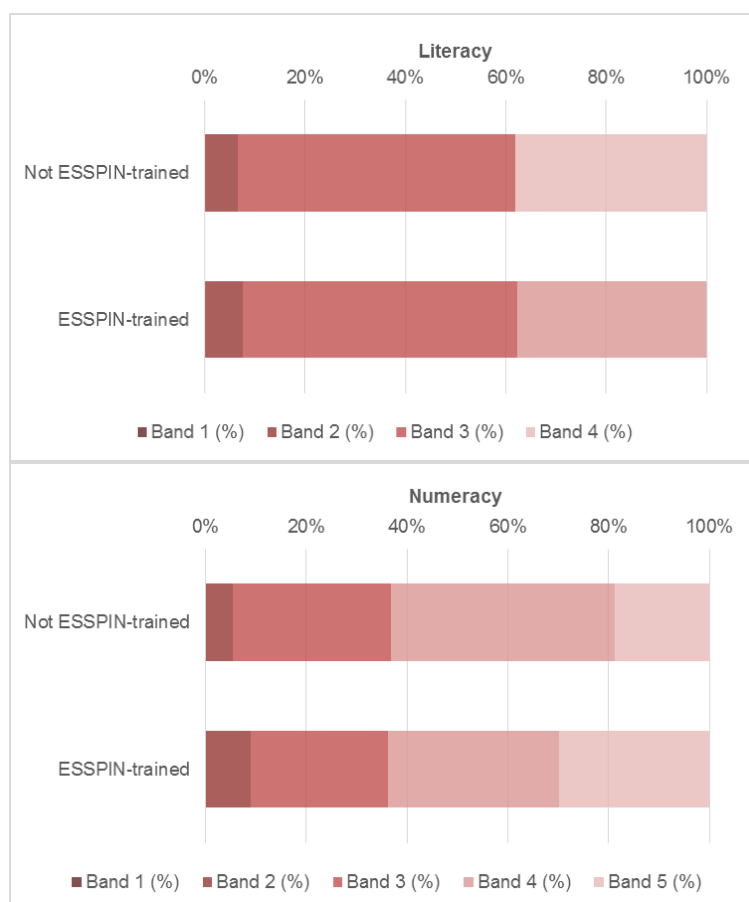
4.3   Teacher motivation

It has been proposed that teacher motivation is an important aspect which may sustain the effects of a training intervention. For example, as teachers acquire new skills through the teacher training, their motivation may increase as they feel more effective.

For this round of the survey (CS3) we included a measure of teacher motivation and teacher interaction using a scale that had been developed for the Nigerian context, and that had been used and tested in two previous school-based surveys. We define teacher motivation as the propensity of teachers to start and maintain behaviours that are directed towards fulfilling their professional goals, and in particular towards achieving better learning outcomes for the school's learners (Cameron, 2015b). Many existing instruments designed to measure teacher motivation focus exclusively on 'efficacy' – the extent to which teachers see themselves as able to influence their pupils' learning outcomes – which can also be seen as the 'can do' aspect of motivation (Bennell and Akyeampong, 2007). We wished to go beyond this to include measures relating more closely to teachers' willingness to work hard, and their commitment, effort and enjoyment, which might together be labelled as 'will do' aspects of motivation.

The motivation scale we developed was incorporated into the teacher interviews. Teachers were asked to what extent they agreed ('strongly disagree', 'disagree', 'agree', 'strongly agree') with a series of statements that measure different aspects of motivation. The scale consists of three sub-scales of teacher motivation (satisfaction, skills and engagement) and one scale of teacher–teacher interaction (collegiality). The three sub-scales of teacher motivation were combined into a composite motivation measure by calculating the mean of the three sub-scales[7]. The teacher motivation scale was also analysed using IRT.

Table 24 describes each of the different sub-scales and provides some examples of the items used to assess these.

Table 24:   Teacher motivation and interaction scale and sub-scales

Scale	Description	Example of items
Collegiality	How I see the extent of commitment and collaboration among my colleagues ('teacher–teacher interaction')	• All of the teachers in my school trust each other • All teachers at this school are highly committed to their job
Satisfaction	The value I place on my role as a teacher ('interest and enjoyment')	• I always enjoy teaching very much • I like to spend a lot of energy to make my classes interesting
Skills	The perception I have of my competences and skills as a teacher ('self-efficacy')	• I believe I know how to teach well • I believe I have the skills needed to encourage my learners to always work hard
Engagement	How engaged and committed I feel I am to my work as a teacher ('pressure/tension')	• It is difficult to manage learners in my classroom • Teaching is very tiring
Composite measure (mean of satisfaction, skills and engagement)		

---

[7] The three sub-scales were also combined into a composite measure using partially non-compensatory methods. These produced composite measures which were very highly correlated with the simple mean composite.

Table 25 shows the levels of motivation among teachers as reported during CS3, comparing those who reported having received ESSPIN training and those that did not report having received ESSPIN training.

In Lagos in 2016, teachers who were trained by ESSPIN in 2014 do not appear to be significantly more motivated than teachers who were not. However, ESSPIN-trained teachers do appear to have higher scores across almost all sub-scales than non-ESSPIN-trained teachers, even if the results do not reach the level of being statistically significant.

Table 25:   Lagos: Teacher motivation and interaction by ESSPIN training

	Non-ESSPIN-trained	ESSPIN-trained	Difference in means
Collegiality	510.6	525.5	+14.9
Satisfaction	530.5	544.7	+14.2
Skills	540.1	546.8	+6.7
Engagement	589.3	584.9	-4.4
Composite motivation measure	550.6	556.7	+6.1

Note: All scores are normalised to have an average (mean) of 500 and a standard deviation of 100.

* indicates change over time is statistically significant (p < .05)

4.4   Summary and discussion

Teachers in Lagos have become significantly more competent between 2012 and 2016. They have improved their teaching behaviour across most indicators. In 2016, 73% of all teachers fulfilled the original teacher competence standard and 69% fulfilled the stricter teacher competence standard, which also takes into account their results in the teacher knowledge tests. In summary, a large proportion of teachers in Lagos teach effectively.

On the other hand, we did not find any evidence that teachers in Lagos improved their test scores in English and mathematics over the last two years. In mathematics, the test scores even worsened compared to 2014. However, it must be noted that, relative to the other states, teachers in Lagos scored the highest on both tests.

The results also showed that teachers who were trained in Lagos by ESSPIN were not different in 2016 from their peers who were not trained by ESSPIN. They did not show significantly better teaching behaviour, but they do appear to have slightly higher test scores and to be slightly more motivated, although these differences are not statistically significant.

This could be attributed to the fact that teachers who attend training sessions are encouraged and supported to share their workshop learnings with colleagues. Head teachers also carry out professional development meetings with all teachers in their schools, which is a form of in-school training under the SIP. This leads to spill-over effects, which could be responsible for the absence of a statistically significant difference between ESSPIN-trained and non-ESSPIN-trained teachers.

5   Trends in school quality

Box 16: School quality: Key findings

- In 2016 around 37% of all schools in Lagos met the school quality standard. A similar proportion, 35%, met the stricter school quality standard.
- School quality has been improving since 2012, with a statistically significant increase in the proportion meeting the standard since 2012 and a non-significant but still positive increase since 2014
- The proportion of schools that met the (original and strict) quality standard in 2016 is around 16 percentage points higher among schools that had five years of intervention, compared to those that only had three years. However, the estimated effect of an additional year of intervention on school quality is not statistically significant.

For a broader sense of school quality – how it differs between schools with different levels of ESSPIN intervention, and how it has changed over time – it is useful to define an overall measure of school quality. We do this using the standard developed as part of ESSPIN's logframe. This is a combination of the standards discussed above in relation to teacher competence, head teacher effectiveness, school development planning and SBMC functionality. A quality school is defined as one that meets the teacher competence standard and at least two of the other standards (Box 17). We also use a 'quality score' indicator, which is an average of the continuous indicators developed in the previous sections for teacher competence, head teacher effectiveness, school development planning and SBMC functionality. A school that meets all of the criteria under all of the standards will get 100%, while a school that meets none of the criteria will get 0%. The original version of these indicators, used in CS1, did not take into account teachers' content knowledge. For CS2 and CS3, however, we also present a 'strict' version of the standard, which takes into account results in the teacher content knowledge tests (see Section 4 above).

Box 17: 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 half the teachers sampled in each school must be competent);
2) head teacher effectiveness standard;
3) school development planning effectiveness standard; and
4) SBMC functionality standard.

The version of this standard used in CS1 did not rely on teacher content knowledge tests. For CS2, we introduce a second, stricter version of the standard, in which teachers must get above 50% in literacy and numeracy tests to be classed as competent (see Section 4.1 and Box 15 above).

We find that almost 37% of all schools in Lagos met the original standard for school quality in 2016, compared to 35% in 2014 and around 7% in 2012 (Table 26). This is a large and statistically significant increase from 2012. The strict version of the quality standard was met by 28% of all schools in 2014 and 35% of all schools in 2016. Although the increases from 2014 to 2016 are not statistically significant, this shows the expected upwards trend. The corresponding increase in the quality score confirms the improvements in the quality of Lagos's primary schools between 2012 and 2016. While these improvements may partly have to do with the continuing support provided to

Lagos primary schools through the ESSPIN school improvement intervention, there are other state-level effects which might have led to better quality schools in Lagos.

Table 26:   Lagos: School quality in 2012–2016

	2012 (CS1)	2014 (CS2)	2016 (CS3)	Change: 2012 vs. 2016	Change: 2014 vs. 2016
School meets quality standard (%)	7.4	34.7	36.9	**+29.5***	+2.2
Quality score (%)	39.8	62.9	65.1	**+25.4***	+2.3
School meets quality standard (strict version) (%)		28.2	34.8	n/a	+6.6
Quality score (strict version) (%)		62.4	64.5	n/a	+2.1
* indicates change over time is statistically significant (p < .05)					

The results from CS3 provide further evidence of a positive impact of the ESSPIN intervention on school quality in Lagos (Table 27). 52% of all primary schools that received five years of ESSPIN intervention reached the school quality standard, while only 35% of the primary schools that received three years of ESSPIN intervention reached that same standard. We estimate an effect of one year of full intervention by 2016 of almost 8 percentage points, although this is not statistically significant. The difference between the proportion of maximum and medium intervention group schools that met the stricter school quality standard is of a similar magnitude.

Table 27:   Lagos: School quality across different intervention groups

Intervention group	Med.	Max.	Estimated effect of one year of full intervention by 2016
School meets quality standard (%)	35.3	52.1	+7.9
Quality score (%)	64.8	68	+1.6
School meets quality standard (strict version) (%)	33.2	49.8	+7.8
Quality score (strict version) (%)	64.2	67.6	+1.7
* indicates estimated effect of one year of full intervention is statistically significant (p < .05)			

6   Learning outcomes

The ultimate aim of ESSPIN is to improve learning outcomes in government schools in the six states. In this chapter, we examine the trends in learning outcomes over time, and differences in learning outcomes between schools that have received more or less ESSPIN intervention, and we evaluate whether effects on learning achievement can be attributed to ESSPIN.

Box 18: Learning outcomes: Key findings

- Test scores in Lagos are relatively high compared to other states. There have been large and statistically significant improvements in learners' performance across all tests between 2012 and 2016. The largest increase was achieved in Grade 4 numeracy scores.
- Learners in schools that have received more years of ESSPIN intervention did not perform better on the tests than learners in schools which have received fewer years of ESSPIN intervention. In fact, scores have been increasing at a very similar rate.

6.1   Pupil learning achievement in English literacy and numeracy

Learning outcomes were measured for literacy and numeracy at Grades 2 and 4, and analysed using IRT (see Allen, 2016b and Allen, 2016c). The analysis for each test produces a scale score which, by design, has an average (mean) of 500 and standard deviation of 100. This scale is also divided into bands, indicating the level of proficiency of the learner. For the Composite Surveys, bands have been designed to correspond to the levels of proficiency expected at each grade in the Nigerian curriculum. For example, a learner in Band 2 for literacy is one who is able to demonstrate knowledge and skills in at least some of the tasks that are considered to be within the range of Grade 2 proficiency. Table 28 and Table 29 list some examples of the tasks within each band.

Table 28:   Examples of knowledge and skills that learners in each literacy band can demonstrate

Band 4: Grade 4 and above	Read and understand the grammatical structure of a sentence and complete a missing word using 'where', 'which', 'what' and 'who'
	Follow the conventions of letter-writing to complete a letter template. Completing grammatically accurate sentences, with correct spelling, and a greeting and sign off
	Independently read for meaning a short, simple text with a range of sentence structures
Band 3: Grade 3 literacy	Read phonically decodable two-syllable and three-syllable words that include common diagraphs and adjacent consonants
	Independently plan and write a grammatically correct simple sentence
	Read a simple sentence for meaning and complete a missing word using correct spelling
Band 2: Grade 2 literacy	Use phonic knowledge to utter initial sounds of the names of familiar animals
	Use knowledge of common inflections in spellings, plurals, to write the answer to a question
	Spell simple high frequency words accurately
Band 1: Emerging literacy	Verbally compose a short grammatically correct sentence in the continuous present tense in response to a question about a picture
	Listen to a short passage and remember specific details to respond verbally to a question

	Clearly shaped and correctly orientated copying of words, with an understanding of space and full stops
Band 0: Pre-literacy	Understand and respond verbally with a grammatically correct sentence to a simple question about their age
	Understand and respond verbally with a grammatically correct sentence to a simple question about their name
	Use phonic knowledge to utter initial sounds of the names of familiar objects and animals

Table 29: **Examples of knowledge and skills that learners in each numeracy band can demonstrate**

Band 5: Grade 5 and above	Solve a word problem involving differences in time
	Determine which number rule was used to make one number into another
	Solve a simple algebra problem
Band 4: Grade 4 numeracy	Being able to gather information by interpreting simple graphs
	Calculate the area of a rectangle, multiplying a decimal number, to one decimal place, by a one-digit number, and record the answer in m2
	Choose the most appropriate strategy to subtract a decimal number, to two decimal places and a two-digit number, involving measure
Band 3: Grade 3 numeracy	Multiply a two-digit number by a one-digit number
	Use short division; subtract a two-digit number from a two-digit number crossing the tens boundary
	Choose a strategy to add a three-digit number and a two-digit number crossing the tens boundary, involving money
Band 2: Grade 2 numeracy	Use non-standard units of measure to compare the capacity of three containers
	Subtract a two-digit number from a two-digit number
	Name common 2D shapes
	Extend counting past 800 and count in tens
Band 1: Emerging numeracy	Recognise and complete a sequence of three two-digit numbers that are multiples of five
	Subtract a one-digit number from a two-digit number from 1 to 19
	Read analogue clock to the hour
Band 0: Pre-numeracy	Compare the length of two straight lines
	Use non-standard units of measure to compare the capacity of three containers
	Count to 10

The trend in learning outcomes among students in Lagos primary schools has been very promising (Table 30). Literacy and numeracy score in Grades 2 and 4 have improved consistently and

significantly between 2012 and 2014, and between 2014 and 2016. The improvement has been most profound in Grade 4 numeracy scores, which increased from 521 in 2012 to 605 in 2016.

The increases in scores were matched with changes in the distribution of students across bands. In 2016 very large proportions of students in Lagos primary schools lie within the highest performing band of their category. The proportion of students in the lowest performing bands was lower than 5% across all grades, in both literacy and numeracy. These are very significant improvements from 2012 and 2014.

Table 30: Lagos: Learning outcomes in 2012–16

	2012 (CS1)	2014 (CS2)	2016 (CS3)	Change: 2012 vs. 2016	Change: 2014 vs. 2016
Grade 2 literacy score	570.5	594	625.1	**+54.7***	**+31.2***
Band 0: Pre-school (%)	15.4	5.4	4.6	**-10.8***	-0.9
Band 1: Grade 1 (%)	22	19.1	13	**-9.0***	-6.1
Band 2: Grade 2 (%)	62.6	75.5	82.4	**+19.8***	+6.9
Grade 4 literacy score	557.1	562.7	597.7	**+40.5***	**+35.0***
Band 1: Grade 1 (%)	19.7	19.2	9.6	**-10.2***	**-9.7***
Band 2: Grade 2 (%)	19.4	20.2	11.7	**-7.7***	**-8.4***
Band 3: Grade 3 (%)	13.2	10.3	8.5	-4.7	-1.8
Band 4: Grade 4 (%)	47.7	50.3	70.2	**+22.5***	**+19.9***
Grade 2 numeracy score	543.5	564.7	611.4	**+67.9***	**+46.7***
Band 0: Pre-school (%)	0.2	0.2	0	-0.2	-0.2
Band 1: Grade 1 (%)	55.5	37.6	26.2	**-29.3***	**-11.4***
Band 2: Grade 2 (%)	44.2	62.3	73.8	**+29.5***	**+11.5***
Grade 4 numeracy score	521.6	541.9	605.2	**+83.5***	**+63.3***
Band 1: Grade 1 (%)	3.4	2.4	1.3	**-2.1***	-1.1
Band 2: Grade 2 (%)	29.7	20.6	10.3	**-19.4***	**-10.3***
Band 3: Grade 3 (%)	25.3	29.4	14.1	**-11.2***	**-15.3***
Band 4: Grade 4 (%)	33	30.8	29.2	-3.8	-1.6
Band 5: Grade 5 (%)	8.5	16.8	45.1	**+36.6***	**+28.4***

While there has been much improvement across time in learning outcomes in Lagos, there is no statistically significant difference between students from schools that received five years compared to those that received only three years of ESSPIN intervention. While there are some slight differences across the scores, none of these are statistically significant. Therefore, we are unable to find evidence that children in schools with more years of intervention perform better in tests.

Table 31: Lagos: Learning outcomes by ESSPIN intervention group in 2016

	Med.	Max.	Estimated effect of one year of full intervention
Grade 2 literacy score	625.2	624.9	-0.3
Band 0: Pre-school (%)	5.3	0	n/a

Band 1: Grade 1 (%)	12.9	13.6	+0.4
Band 2: Grade 2 (%)	81.8	86.4	+2.5
Grade 4 literacy score	597.7	597.7	0.0
Band 1: Grade 1 (%)	9.9	7.5	-1.3
Band 2: Grade 2 (%)	11.8	11.5	-0.1
Band 3: Grade 3 (%)	9	5.9	-1.7
Band 4: Grade 4 (%)	69.4	75	+3.0
Grade 2 numeracy score	613.1	600.7	-6.2
Band 0: Pre-school (%)	0	0	n/a
Band 1: Grade 1 (%)	25.1	33.1	+3.7
Band 2: Grade 2 (%)	74.9	66.9	-3.7
Grade 4 numeracy score	608.4	586.6	-10.9
Band 1: Grade 1 (%)	0.8	3.9	+0.9
Band 2: Grade 2 (%)	10	11.9	+0.9
Band 3: Grade 3 (%)	13.5	17.4	+1.8
Band 4: Grade 4 (%)	29.1	29.9	+0.4
Band 5: Grade 5 (%)	46.6	36.9	-4.9

Figure 4 shows the distribution of the test scores across the bands. For the literacy scores we can see that more students from medium intervention group schools are located in the lower bands, while a larger proportion of learners from the maximum intervention group are located in the highest bands. However, in mathematics the opposite is the case. A larger proportion of learners from medium intervention group schools is located in the highest performance band, while a larger proportion of learners from maximum intervention group schools is in the lower performing bands.

Figure 4: Lagos: Distribution of test scores by intervention group in 2016
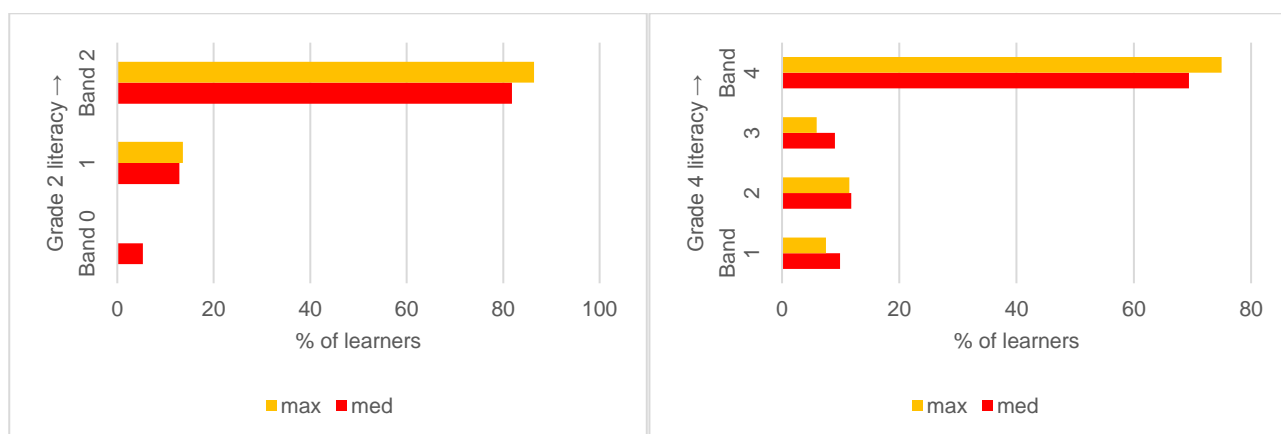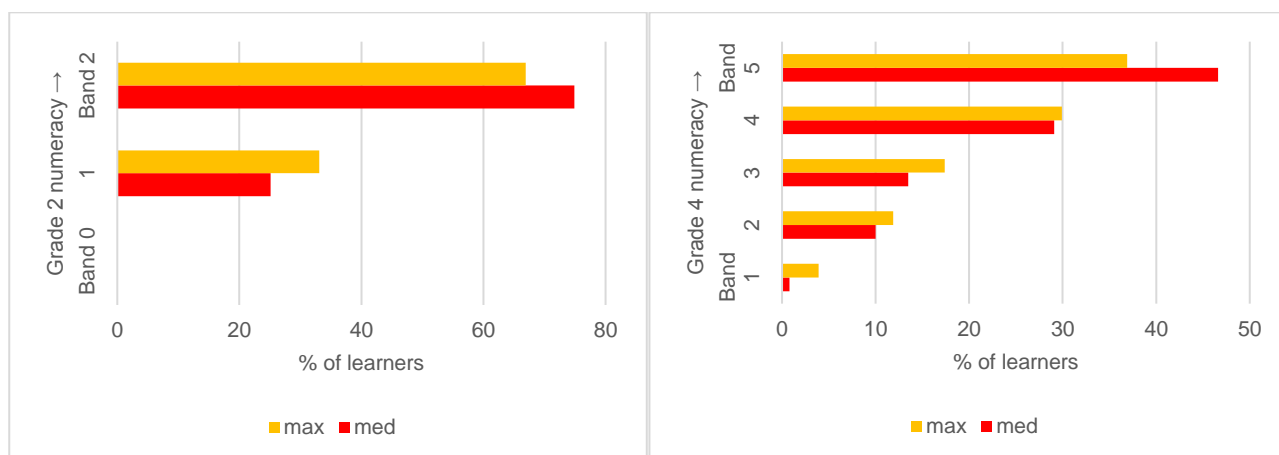
Looking at the change in learning outcomes across time and disaggregating by intervention group, we do not see any differences between learners from medium and maximum intervention group schools (Figure 5). The baseline levels are very similar across all grades and subjects, and they increased at a similar rate, reaching almost the same average tests scores by 2016. Learners from medium intervention group schools had even reached slightly higher test scores by 2016 and compared to learners from maximum intervention group schools. Nevertheless, it must be emphasised that the strong positive trends in test scores in Lagos is remarkable and unique among the ESSPIN states.

Figure 5:   Lagos: Learning outcomes by test, year and ESSPIN intervention group
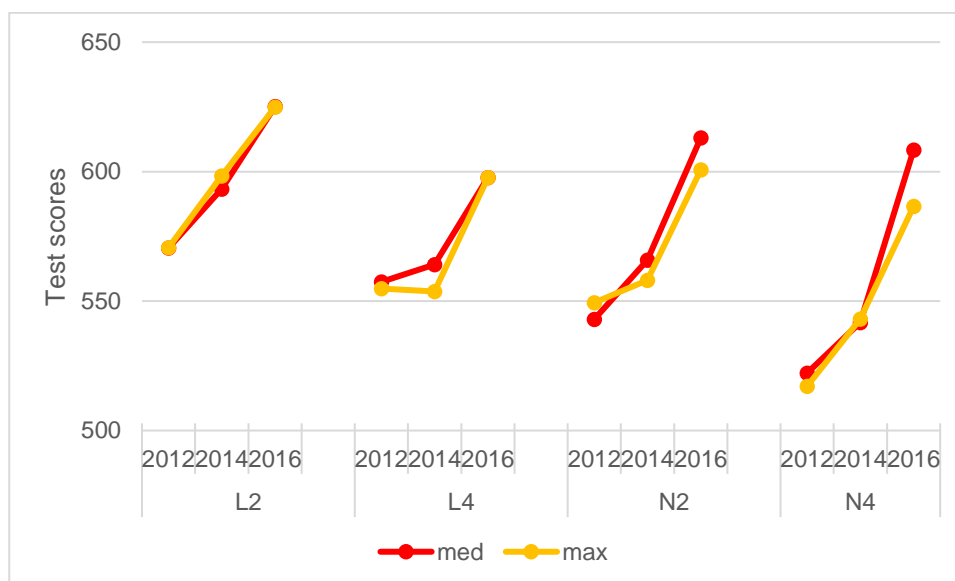
6.2   Controlling for school and pupil characteristics

6.2.1   Differences in background characteristics

Schools from different intervention groups in Lagos have somewhat different background characteristics (Annex A). Schools from the maximum intervention group tend to be located closer to local government headquarters, and are more likely to have access to the power grid, than medium intervention group schools. These factors may be conducive to a better learning environment and thus may impose a positive bias on test scores.

On the other hand, schools from the maximum intervention group in Lagos are less likely to have enough seating for their pupils, and are also less likely to have a good blackboard. Furthermore, they have had significantly higher enrolment rates and PTRs compared to medium intervention group schools. High PTRs make it more difficult for teachers to teach and for pupils to learn. In the previous section we noted that pupils from maximum intervention group schools did not have higher test scores than pupils from medium intervention group schools. However, it is possible that the above factors are responsible for the fact that we do not find a larger effect of five years of intervention compared to three years of intervention. Furthermore, there are likely to be additional differences that we have not measured.

In summary, there are a number of differences between the groups of schools that have had more ESSPIN intervention and those that have had less, and taken together these could bias our estimates of ESSPIN's effect in either direction. We use a number of statistical methods to control for these differences in the following section.

6.2.2   Are learning outcomes better in schools with more intervention in 2016?

In Section 6.1 we did not find any statistically significant differences in learning outcomes between learners from schools that received more intervention and those from schools that received less. However, there are also some pre-existing characteristics of the schools that received more intervention which might have biased these results (see Annex A). Therefore, in this section we add statistical controls for these 'confounding variables' – characteristics of schools that might affect learning outcomes and make it harder to tell whether the intervention is having an effect or not. We also estimate a model which controls for pre-existing differences in test scores by adding test scores in CS1 as a confounding variable.

We use ordinary least squares regression analysis to estimate the models. Regression analysis estimates the correlation of learning outcomes with ESSPIN intervention, conditional on school characteristics.

The results are shown in Table 32. After controlling for a variety of different school characteristics, we still do not find a statistically significant effect of more ESSPIN intervention on learning outcomes in Lagos (Model 2). Introducing lagged school-level learning outcomes, which also controls for pre-existing differences in test scores per school, also does not find a statistically significant effect across none of the four different tests (Models 3 and 4). However, it is worth noting that these results simply mean that we are unable to find any evidence of the impact of ESSPIN's intervention on children's learning outcomes, when comparing schools that received five years of intervention to schools that received three years of intervention. We do not have a counterfactual group of schools with no or very little intervention we could compare these schools to. In light of the relatively rapidly increasing learning outcomes it is still likely that ESSPIN is responsible for part of this trend.

Table 32:   Estimates of the effect of ESSPIN intervention on learning outcomes in 2016

Model	L2	L4	N2	N4	
(1) Simple regression, clustered standard error no sample weights	16.77	6.98	11.25	2.82	
(2) Full covariates	8.78	3.91	4.66	2.71	
(3) Lagged school-level learning outcomes	9.32	-0.2	6.24	-0.07	
(4) Lagged outcomes and covariates	7.16	-0.4	3.07	-0.09	
* indicates estimated effect is statistically significant (p < .05)					

7   Conclusions and implications of the Composite Surveys' findings for ESSPIN in Lagos

This report has found that Lagos State is doing fairly well in terms of meeting ESSPIN's standards for a good school, although naturally there are still some deficits. In 2016, 36% of schools met the standard on head teacher effectiveness; 22% on school development planning; 30% on inclusion; 84% on functional SBMCs; and 37% or 35% on overall school quality (depending on which indicator we use).

There have been significant and sometimes very large improvements over time since 2012, especially in terms of head teacher effectiveness, school development planning, SBMC functionality and their inclusiveness of women and children, and overall school quality. Across most standards schools that had more years of ESSPIN intervention perform slightly better than those that had fewer years of ESSPIN intervention, although these differences almost never reach the level of being statistically significant. The exception is school inclusiveness, where we estimated an effect of 11 percentage points on the proportion of schools that meet the standard for each year of full intervention.

Teachers' competence also appears to have improved with statistically significant increases between 2014 and 2016. Teachers improved their behaviour across all indicators, the exception being the proportion that assigned two or more group or individual tasks during the lesson observations. However, teachers performed worse in the mathematics test in 2016 than they did in 2014, and performed the same in the English test. Nevertheless, test scores in Lagos State remain fairly high in absolute terms. Over 90% of all teachers are within the two highest performing bands in English and the three highest performing bands in mathematics.

We find that pupils' learning outcomes in Lagos State have increased significantly since 2012 across all tests. However, there is no difference between pupils from schools with more years of ESSPIN intervention compared to those with fewer years of ESSPIN intervention. Looking at the characteristics of the schools in the different intervention groups, it emerges that learners at maximum intervention group schools may have been at a disadvantage because they have higher enrolment numbers and higher PTRs. Therefore, we estimated a regression model controlling for these confounding factors to make sure they do not bias our results. However, even after controlling for differing background characteristics we still do not find a statistically significant effect of more years of ESSPIN intervention on learning outcomes in 2016.

Considering the large improvements in learning outcomes across time, these results do not mean that ESSPIN has had no effect on children's learning outcomes: they only mean that we cannot say with certainty that these effects are caused by ESSPIN, and that we did not find any statistically significant difference between the learning outcomes of pupils from schools with five years of ESSPIN intervention compared to those with only three years of ESSPIN intervention.

Bibliography

Allen, R. (2016a) CACSA report ESSPIN2.3: ESSPIN scaled scores and subscores – literacy. Unpublished note. Curriculum, Assessment and Certification Systems Architects

Allen, R. (2016b) CACSA report ESSPIN3.1: ESSPIN teacher survey – notes on subscales (updated). Unpublished note. Curriculum, Assessment and Certification Systems Architects

Allen, R. (2016c) CACSA report ESSPIN3.5: ESSPIN scaled scores and subscores – numeracy. Unpublished note. Curriculum, Assessment and Certification Systems Architects

Bennell, P., and Akyeampong, K. (2007). Teacher Motivation in Sub-Saharan Africa and South Asia (Department for International Development: Educational Papers). DFID.

ESSPIN (2009) School Based Management Committees in Policy and Practice, Volume 1: Research Synthesis Report. Report number ESSPIN 404.

ESSPIN (2013a) Overall findings and technical report of ESSPIN Composite Survey 1 (2012). Report number ESSPIN 060.

ESSPIN (2013b) Lagos State report of ESSPIN Composite Survey 1 (2012). Report number LG202.

ESSPIN (2013c) Extension of the Education Sector Support Programme in Nigeria, August 2014–January 2017. [Business case for DFID.]

ESSPIN (2015) Lagos State report of ESSPIN Composite Survey 2 (2014).

Megill, D.J. (2014) Final Sample Design and Weighting Procedures for the ESSPIN Second Composite Survey (CS2) in Nigeria. Unpublished note written for ESSPIN and Oxford Policy Management.

RTI International (2014) 'Nigeria reading and access research and activity (RARA): adaptation of Education Sector Support Programme in Nigeria's teacher capacity development strategy'. Document produced for the United States Agency on International Development (USAID).

Sanni, K. (2015) Taking School Improvement to Scale: The Education Sector Support Programme in Nigeria, Cambridge Education.

Annex A   School characteristics

The table below sets out summary statistics for Lagos' schools, split into categories according to the level of Output Stream 3 intervention (minimum, medium, maximum). The data come from the Annual School Censuses from 2009/10, 2013/14 and 2014/15.

Lagos' schools by level of ESSPIN intervention	Total	Min.	Med.	Max.	
Distance from LGA headquarters	5.3	-	5.5	3.3	*
Age of the school in 2014	45.8	-	45.7	46.5	
Urban (%)	77.4	-	77.6	75	
Nomadic (%)	0	-	0	0	
Islamic (%)	0	-	0	0	
Double shift (%)	0.1	-	0.1	0	
Had parent–teacher association in 2014/15 (%)	99.2	-	99.1	100	
Had SBMC in 2014/15 (%)	99.2	-	99.1	100	
PTR in 2009/10	29.2	-	29.0	31.6	
PTR in 2013/14	38.0	-	37.5	42.1	*
PTR in 2014/15	26.7	-	26.3	30.0	*
% in PTR between 2009/10 and 2013/14	5.1	-	4.9	7.1	
% in PTR between 2013/14 and 2014/15	-20.6	-	-20.7	-19.2	
Number of classrooms in 2014/15	11.5	-	11.3	13.4	*
Number of teachers in 2014/15	16.2	-	16.0	17.8	*
Primary enrolment in 2009/10	394.8	-	383.6	495.8	*
Primary enrolment in 2013/14	399.4	-	390.3	483.0	*
Primary enrolment in 2014/15	398.6	-	390.7	470.2	*
% change in enrolment 2009/10–2014/15 (%)	10.1	-	11.1	1.0	
% change in enrolment 2013/14–2014/15	2.8	-	3.3	0	
% of teachers with academic diploma/degree	41.0	-	41.0	41.4	*
% of teachers with PGDE, BEd or MEd	18.5	-	18.4	19.0	
% of teachers with NCE, Grade II or equivalent	39.4	-	39.2	41	
School has a power source (grid/other)	74.4	-	72.3	93.9	*
% of classrooms with enough seating	44.2	-	45.9	31.3	*
% of classrooms with a good blackboard	67.6	-	68.1	63.6	*
% of classrooms in good condition/minor repairs	70.0	-	69.9	70.6	
School has at least one toilet (%)	29.8	-	30.5	23.7	
Number of schools	1,000	0	903	97	

Notes: (1) * indicates a significant coefficient when running a linear or logistic regression of the variable of interest (dependent variable) on the number of years of ESSPIN intervention (independent variable); (2) the 'total' column includes schools that do not have an intervention code; (3) the PTRs shown in the table are calculated as the average PTRs for schools in the state ($\frac{\sum P_i/T_i}{N}$) and not the PTR for the state as a whole ($\sum P_i / \sum T_i$).

Annex B   ESSPIN Output Stream 3 interventions

The table below shows the ESSPIN Output Stream 3 interventions delivered to date in Lagos State. In order to make the variation in interventions across and within states manageable for analysis, each combination of interventions was categorised as minimum, medium, or maximum, according to the number of years of continuous intervention.

Expected impact	Number of schools	2009/10			2010/11			2011/12			CS1	2012/13			2013/14			CS2	2014/15			2015/16			CS3
		L	T	SV	L	T	SV	L	T	SV		L	T	SV	L	T	SV		L	T	SV	L	T	SV	
Medium (1)	404										CS1	6	3	9	6	3	9	CS2	6	6	30	4	6	30	CS3
Medium (2)	499							6	3	9		6	3	9	3		9		6	6	30	4	6	30	
Maximum	97	5*	5*	9*	10*	5*	9*	6	3	9		6	3	9	3		9		6	6	30	4	6	30	

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 interventions in Lagos under different headings: SBMC training; women's and children's participation training; and mentoring visits.

Level of Output Stream 4 intervention	Number of schools	2010/11			2011/12			CS1	2012/13			2013/14			CS2	2014/15			2015/16			CS3
		S	P	M	S	P	M		S	P	M	S	P	M		S	P	M	S	P	M	
Post-CS1	499								7	6		1	6	4		1	2	4	1	2	4	
Post-CS1	407											7		4		1	2	4	1	3	4	

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 which were by SMOs.

Annex D   Regression results – Pupil learning outcomes

Test	Treatment variable	Model	Coefficient	SE	P value	N	R-squared
L2	pu_exposure	Simple model with survey weights	-0.07	3.16	0.983	415	1E-06
L2	pu_exposure	No survey weights but clustered SEs	11.56	1.43	0	2836	0.064225
L2	intervention_binary	Binary exposure variable	16.77	13.4	0.214	415	0.006924
L2	pu_exposure	Full covariates, survey weights	-0.14	3.25	0.965	391	0.122613
L2	pu_exposure	Full covariates, no weights	2.19	3.32	0.51	391	0.12435
L2	intervention_binary	Full covariates	8.78	13.27	0.51	391	0.12435
L2	pu_dexp13	Lagged school-level learning outcomes	9.32	12.19	0.446	406	0.125613
L2	pu_dexp13	Lagged outcomes and covariates	7.16	12.3	0.562	386	0.187259
L4	pu_exposure	Simple model with survey weights	0.53	1.06	0.616	807	0.000507
L4	pu_exposure	No survey weights but clustered SEs	6.78	0.64	0	3202	0.098513
L4	intervention_binary	Binary exposure variable	6.98	9.14	0.447	807	0.001837
L4	pu_exposure	Full covariates, survey weights	0.06	0.93	0.949	765	0.124608
L4	pu_exposure	Full covariates, no weights	0.3	0.93	0.744	757	0.12356
L4	intervention_binary	Full covariates	3.91	8.27	0.637	757	0.123836
L4	pu_dexp13	Lagged school-level learning outcomes	-0.2	1.41	0.889	792	0.074712
L4	pu_dexp13	Lagged outcomes and covariates	-0.4	1.28	0.757	750	0.147002
N2	pu_exposure	Simple model with survey weights	-3.1	5.19	0.552	413	0.002118
N2	pu_exposure	No survey weights but clustered SEs	11.62	1.47	0	2801	0.057978
N2	intervention_binary	Binary exposure variable	11.25	12.35	0.364	413	0.003247
N2	pu_exposure	Full covariates, survey weights	-3.32	4.73	0.485	389	0.085251
N2	pu_exposure	Full covariates, no weights	1.17	2.95	0.694	389	0.093777
N2	intervention_binary	Full covariates	4.66	11.82	0.694	389	0.093777
N2	pu_dexp13	Lagged school-level learning outcomes	6.24	12.27	0.612	405	0.031074
N2	pu_dexp13	Lagged outcomes and covariates	3.07	11.68	0.793	385	0.100292

N4	pu_exposure	Simple model with survey weights	-2.31	2.46	0.35	805	0.006371
N4	pu_exposure	No survey weights but clustered SEs	6.9	0.7	0	3177	0.085963
N4	intervention_binary	Binary exposure variable	2.82	11.26	0.803	805	0.000205
N4	pu_exposure	Full covariates, survey weights	-2.72	1.8	0.133	763	0.087153
N4	pu_exposure	Full covariates, no weights	0.04	1.22	0.973	755	0.077065
N4	intervention_binary	Full covariates	2.71	10.76	0.802	755	0.07724
N4	pu_dexp13	Lagged school-level learning outcomes	-0.07	1.84	0.97	790	0.008975
N4	pu_dexp13	Lagged outcomes and covariates	-0.09	1.82	0.961	749	0.078815

N4	pu_exposure	Simple model with survey weights	-2.31	2.46	0.35	805	0.006371
N4	pu_exposure	No survey weights but clustered SEs	6.9	0.7	0	3177	0.085963