



Literacy, Numeracy and School Survey

BASELINE REPORT

Papua New Guinea

Central, Madang, and Morobe Provinces

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The findings, interpretations and conclusions expressed in this report do not necessarily reflect the views of World Vision, ChildFund, Library for All Australia, or CIMC (Consultative Implementation and Monitoring Council).

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List of acronyms

ADB Asia Development Bank

ASPBAE Asia South Pacific Association for Basic and Adult Education

BOM Board of Management

CIMC Consultative Implementation and Monitoring Council

CLE Community learning environment

DFAT Australia's Department of Foreign Affairs and Trade

E1 Elementary 1 (Grade 1)

E2 Elementary 2 (Grade 2)

GER Gross enrolment rate

HIES Household Income and Expenditure Survey

HLE Home literacy environment

NDOE National Department of Education

NEP National Education Plan

NER Net enrolment rate

P&C Parents and Citizens

PaBER Pacific Benchmarking for Education Results

PNG Papua New Guinea

PPF PNG Partnership Fund

SBC Standards-Based Curriculum

SIL Summer Institute of Linguistics

SLIPs School Learning and Improvement Plans

TFF Tuition Fee Free

TTC Teacher Training College



Executive summary

This report provides a baseline for the Together for Education project which is being carried out in selected elementary schools in three provinces of Papua New Guinea (PNG).

This report has four main purposes:

- 1** to provide a baseline for the overall outcome for the project;
- 2** to provide baselines for the literacy and numeracy and teacher training outcomes and outputs of project interventions;
- 3** to inform and confirm the directions taken in the project to improve overall outcomes; and
- 4** to help track and inform whether the project is having an impact.

A Literacy and Numeracy Assessment and School Survey was conducted between November 2017 and April 2018. The literacy and numeracy assessment was completed by 1154 children from the 2017 Elementary 1(E1) cohort, from 79 schools in Central, Madang and Morobe. Approximately 20 randomly selected children were assessed at each school. Together for Education schools were selected through a participatory process by project staff in conjunction with provincial and district administration and education officials, as well with other concerned stakeholders that include churches and other service providers. Through a quasi-experimental design, the schools were divided into 2018 project schools and 2019 project schools, with 2018 project schools receiving interventions this school year and 2019 schools next year. The school survey was conducted in 59 schools with Head Teachers, Teachers, children and School Boards of Management (BOM) representatives.

The interventions predominantly target teachers and parents and include World Vision's Unlock Literacy teacher support activities, teacher coaching and observations, teacher resource kits provision, School Learning and Improvement Plan (SLIP) training for School BOM and parent training on simple ways to support their children's education. Interventions targeting children involve reading clubs and culturally relevant readers. A small sample of children in four pilot schools in each province will have access to a digital library via tablets.

Primary purpose

The primary purpose of the baseline assessment is to identify children's current literacy and numeracy skills and school status. Significant differences between children's skills in the 2018 and 2019 project schools must be accounted at the beginning of the project so that we can confidently assign any later differences to the interventions.

Due to limitations in the size and selection process of the baseline sample, the results presented here are not representative at the provincial level. Rather, they should be understood as a detailed snapshot of particular schools.

The Literacy and Numeracy Assessment collected data relating to children's demographic backgrounds and tested children's emergent literacy and numeracy skills. Overall, children's literacy skills do not meet the expectations of the PNG E1 Standards Based Curriculum. Approximately 26% of children could correctly identify all the letters of the alphabet. Around 88% of children could identify half or more of the letters. Only three percent of children could read all the most frequently used words in English. Around one third of children (36%) could not read any of the words. Slightly more children could read all the most frequently used words in Tok Pisin (4%), however 49% of children could not read any of these words.

Overall, children's literacy skills do not meet the expectations of the PNG E1 Standards Based Curriculum.



Only one third of children could read a passage in English. When asked comprehension questions about the passage, two thirds of the children could not answer a single question. Even fewer children were able to read a passage in Tok Pisin (15%). Of these children only 16% were able to answer any comprehension questions. There were only two statistically significant differences between 2018 and 2019 project schools in the literacy testing. Children in 2018 project schools knew more words than children from 2019 project schools and children in 2019 project schools read the passage in Tok Pisin faster than children in 2018 project schools.

Children performed better in the numeracy assessment than the literacy assessment. Approximately 54% of children could correctly identify all numbers shown. Sixty-two percent of children could correctly count by two up to 20. More than two thirds of children (67%) could count in fives up to 45 correctly. More than a third of children (37%) could correctly answer all simple addition problems. Children found subtraction tasks more difficult. Only 14% of children could correctly answer all subtraction problems while 32% could not answer any subtraction problems. Most children were able to answer at least one or more word problems (86%). Children were less able to identify shapes (17% could correctly identify all five shapes) but more able to tell the time (43% could correctly read three times). There were three statistically significant differences between the project year groups. Children from 2018 project schools could identify more numbers and accurately skip count by 5 compared to their counterparts in 2019 project schools.

Children performed better in the numeracy assessment than the literacy assessment.

The main background variable which affected literacy and numeracy results was attendance at preschool; this was found to have significant positive effect on knowledge of letters of the alphabet, words in English, words in Tok Pisin, knowledge of numbers, skip counting, addition, and subtraction. The proportion of children who attended preschool ranged from 22% in Central to 52% in Madang (41% in Morobe). The languages spoken at home had some effect on some variables, but there were no strong patterns of effect.

Other important findings from the literacy and numeracy assessment were that the vast majority of children were overage. The official age of school entry is six years, however the average age of children in the three provinces was 9 in Central, 11 in Madang and 10 in Morobe. The ages of children in the sample ranged from five to 17 years.

Other important findings from the literacy and numeracy assessment were that the vast majority of children were overage.

Approximately one third of children reported missing school in the previous week with illness being the most frequent reason given. Slightly more than a third of children reported having repeated first grade (E1). This was shown to have no effect on children's literacy and numeracy results, that is children who repeated E1 performed no better than children who had not repeated.

Classroom observations

Classroom observations were conducted in 65 schools across the three provinces. There were an equal number of mathematics and English classes observed (68 each). In less than 10% of lessons teachers were clearly observed to inform children what they were learning and why at the beginning of the lesson, refer to previous learning or experiences to teach new content or to summarise learning at the end of the lesson. In approximately 15% of lessons teachers were clearly observed to check for understanding of individual children while teaching, give feedback when checking for understanding and give clear expectations of what they were looking for in children's work. Role plays were the most frequently used strategy in English lessons. Teachers used the Standards Based Curriculum resources in less than 30% of these lessons. In just over half of the English lessons teachers read stories to children. Teachers most frequently used games in mathematics lessons. Differentiation of the curriculum, or catering for different ability levels was observed in less than a third of lessons.

During the first teacher support workshops held in January 2018, 280 elementary teachers completed a written survey. Just over 70% of teachers had received in-service training in the past three years. Slightly more than half of the teachers had received any in-service training on how to teach reading. When asked how they support gender inclusion nearly 60% of teachers reported using mixed gender seating and grouping. Thirty percent of teachers reported seating children at the front of the classroom as a strategy they used to support children with disabilities.

Other strategies included giving the child more time to complete activities, involving them in all activities, using sign language and gestures. Eight percent of teachers said they did nothing to support children with disabilities.

Eight percent of teachers said they did nothing to support children with disabilities.

The school survey was undertaken to better understand the schools we are working with. The survey focused on physical infrastructure of the school, teacher demographics and teaching and learning. General school survey findings are presented in *Table 1*. (Note: The results are not necessarily representative at the provincial level as the school survey covered only a total of 79 schools in Central, Madang and Morobe.)

Table 1: Summary of school survey findings

Schools	Central (n=21) Percent	Madang (n=11) Percent	Morobe (n=9) Percent
Were open every day last school year	67	45	89
Have clean drinking water available	52	36	44
Have electricity	14	27	11
Have clean toilets for teachers	43	55	22
Have clean toilets for children	38	78	67
Have water for washing hands	57	45	56
Have enough seating spaces in classrooms	43	18	56
Have a library	14	18	11
Have a School Learning and Improvement Plan (SLIP)	19	45	44
Have an active Parents and Citizens Association	57	91	78
Teacher to student ratios range	1: 14 – 1:53	1:25 – 1:95	1:11 – 1:46
Head Teachers	Central (n=21) Percent	Madang (n=11) Percent	Morobe (n=9) Percent
Are male	76	55	78
Year 10 was the highest level of education	86	55	100
Had a Certificate of Elementary Teaching	81	91	100
Had received Standards Based Curriculum training	90	82	89
Had received other in-service training in the past two years	67	55	67
Had received visits from district education personnel	38	45	22
Were absent less than 20 days last year	62	91	67
Teachers	Central (n=24) Percent	Madang (n=12) Percent	Morobe (n=18) Percent
Are male	63	58	67
Year 10 was the highest level of education	88	92	89
Had a Certificate of Elementary Teaching	63	75	83
Had received Standards Based Curriculum training	88	83	89
Had received other in-service training in the past two years	71	67	89
Had received training on teaching children with disabilities	17	33	33
Had received training on child protection	38	33	22
Were absent less than 20 days last year	58	80	78
Use physical punishment to manage children's behaviour	67	42	22

Table 1: Summary of school survey findings (continued)

Children	Central (n=184) Percent	Madang (n=80) Percent	Morobe (n=116) Percent
Had friends who do not attend school	91	80	83
Know children with a disability who do not attend school	57	60	28
Said their teacher uses a variety of teaching strategies	96	55	59
Feel unsafe at school	33	20	7
Said the teacher smacks children in their class	89	85	79
Think their teacher treats boys and girls the same	96	70	100
Said their parents come to the school and talk with teachers	72	90	97
Boards of Management	Central (n=24) Percent	Madang (n=12) Percent	Morobe (n=6) Percent
Were active	92	100	100
Male representatives	84	79	72
Had all positions filled	4	0	17



1 Introduction

This section provides a brief overview of the context of education in Papua New Guinea (PNG), to provide the rationale for the focus of the Together for Education project. The following sections cover a description of the project, and the baseline study.

1.1 Education in Papua New Guinea

The PNG education system formally begins at age 6 in Elementary school, which has three grades: Preparatory (EP), Grade 1 (E1), and Grade 2 (E2). This is followed by Grades 3 to 8 in Primary School, and Grades 9 to 12 in Secondary School, as well as non-formal or alternate pathways¹.

The structure of the formal pathway is shown in *Table 2*.

Table 2: Structure of formal schooling in PNG

	ELEMENTARY			PRIMARY						SECONDARY			
Grade	EP	E1	E2	3	4	5	6	7	8	9	10	11	12
Age	6	7	8	9	10	11	12	13	14	15	16	17	18

1.1.1 School enrolment

The enrolment rates for elementary school in PNG in 2016 are provided in *Table 3*. The Gross Enrolment Rates (GER) show the number of children enrolled in elementary school, regardless of age, as a percentage of all elementary school age children, whereas the Net Enrolment Rates (NER) show the number of children of elementary school age enrolled in elementary school as a percentage of the total population of elementary school age children. The total GER ranged from 95.2% in the National Capital District, to 163.5% in Morobe Province. This indicates a high rate of participation in education, with considerable numbers of over-age children.

This indicates a high rate of participation in education, with considerable numbers of over-age children.

There was no clear pattern of differentiation between girls and boys. The NER ranged from 49.3% in Gulf Province to 129.5% in Kiunga Lake Murray. The NER should not be higher than 100%, so these figures may indicate incorrect population assessments or problems with data quality.

The 2013 PNG Household Income and Expenditure Survey (HIES) found a national elementary NER of 35.9% (26.9% in rural areas and 45.9% in urban areas)². Therefore, these varying figures³ indicate great national disparities, high rates of absenteeism and repetition, low retention rates, and many over-aged children throughout the schooling system. They also indicate a need for more consistent education statistics.

The introduction of a Tuition Fee Free (TFF) policy in 2012 resulted in increased enrolments, although enrolments grew more rapidly than attendance⁴, and a report at the end of the first year of TFF found that strengthening of systems was necessary to ensure improved quality of education⁵.

More recent studies have found that challenges remain for schools meeting the increased enrolments, and 'project fees' are being charged by schools to meet costs⁶.

1 NDOE, 2016, p. 25.

2 NSO, 2013, p. 2.

3 ADB, 2012, p. 63.

4 Howes et al., 2014.

5 NDOE, 2012.

6 Paraide, 2015; Walton, 2018.

Table 3. Gross Enrolment Rates (GER) and Net Enrolment Rates (NER) in elementary education in PNG, 2016

PROVINCE	GROSS ENROLMENT RATE (GER)			NET ENROLMENT RATE (NER)		
	Male	Female	Total	Male	Female	Total
Autonomous Region Of Bougainville	137.5%	129.1%	133.4%	95.0%	90.0%	92.6%
Central Province	136.4%	139.2%	137.7%	86.2%	90.9%	88.4%
East New Britain Province	125.2%	125.5%	125.4%	74.1%	76.9%	75.4%
East Sepik Province	150.5%	144.4%	147.5%	57.0%	55.8%	56.4%
Eastern Highlands Province	142.8%	145.4%	144.0%	97.0%	99.9%	98.4%
Enga Province	143.2%	142.1%	142.7%	123.7%	124.4%	124.0%
Gulf Province	100.1%	90.9%	95.7%	51.5%	46.8%	49.3%
Hela Province	133.9%	130.5%	132.3%	96.2%	92.6%	94.5%
Jiwaka Province	117.8%	116.5%	117.2%	98.7%	98.5%	98.6%
Kiunga Lake Murray	143.8%	149.7%	146.5%	125.8%	133.7%	129.5%
Madang Province	162.1%	161.0%	161.6%	75.8%	77.1%	76.4%
Manus Province	107.0%	104.5%	105.8%	50.0%	53.0%	51.4%
Milne Bay Province	145.3%	150.3%	147.7%	81.1%	87.2%	84.0%
Morobe Province	164.9%	162.0%	163.5%	77.5%	79.3%	78.4%
National Capital District	92.2%	98.7%	95.2%	57.0%	61.7%	59.2%
New Ireland Province	122.3%	131.1%	126.3%	86.5%	92.8%	89.4%
Northern Province	179.0%	172.2%	175.7%	106.6%	103.4%	105.1%
Sandaun Province	156.4%	145.6%	151.2%	58.9%	58.0%	58.4%
Simbu Province	112.0%	113.9%	112.9%	94.1%	96.0%	95.0%
Southern Highlands Province	134.9%	125.7%	130.5%	93.1%	87.9%	90.7%
West New Britain Province	156.4%	151.8%	154.2%	121.4%	117.9%	119.7%
Western Highlands Province	131.4%	127.5%	129.5%	112.1%	110.2%	111.2%
Western Province	123.4%	124.9%	124.1%	65.2%	68.0%	66.6%

Source: Department of Education EMIS 2016 School Census Data.

1.1.2 Literacy and numeracy

PNG is regarded as the most linguistically diverse country in the world, with around 800 distinct local languages, Tok Pisin and Hiri Motu as lingua franca, and English as a third official language and major focus of education⁷. Major educational reform in 1993 aimed at linguistic and cultural maintenance⁸, and in 2003 Outcomes Based Education (OBE) was introduced in which elementary education was taught through local languages.

⁷ Malone and Paraide, 2011, p. 705.

⁸ Franken and August, 2011.

Although this follows international evidence to support multilingual children's early learning⁹, problems occurred when children transitioned to English-medium primary schools¹⁰, and OBE was replaced with a new Standards-Based Curriculum (SBC) aiming to improve abilities in English¹¹.

Every culture in PNG also has its own traditional counting system integral to its language, requiring new concepts as well as vocabulary when children transition to English medium learning¹².

There are insufficient curriculum materials¹³, and quality age-appropriate reading materials in many PNG communities, including schools¹⁴, forming a severe barrier to early-grade literacy. The ASPBAE literacy survey of five provinces in 2011 found that a lack of desks or books was one of the reasons for school non-completion for around a quarter of cases in Simbu and Sandaun Provinces¹⁵. When books are available they tend to serve as 'windows' providing children with a view into another world, rather than 'mirrors' reflecting their own identities and experiences¹⁶.

1.1.3 Teachers

International studies have highlighted the importance of teacher effort, knowledge and skills in improving the quality of education¹⁷. In PNG, reviews have consistently identified the insufficient quality and quantity of PNG's teacher education and professional development¹⁸.

The National Department of Education (NDOE) released the Standards-Based Curriculum (SBC) and teaching resources to enable delivery of SBC in all elementary and primary school classrooms in 2016. Research has identified that the new approach to scripted lessons gives teachers confidence with the SBC even without training¹⁹. Other analyses have highlighted the need for a culturally connected perspective of teaching in elementary teacher education in PNG²⁰.

Some evidence points to gaps in teacher knowledge. Although PNG has committed to reform of laws to prohibit corporal punishment, the law currently allows force 'by way of correction' by teachers, and corporal punishment is still used in PNG schools²¹. Classroom assessment practices in PNG have been identified as weak and variable²².

Other analyses have highlighted the need for a culturally connected perspective of teaching in elementary teacher education in PNG.

Elementary teacher training is in the process of institutionalisation; teacher training colleges (TTCs) now offer a Certificate of Elementary Teaching (CET) that replaces the distance learning model.

Yet provincial officials report that some teachers who completed the distance learning program through the Papua New Guinea Education Institute (PNGEI) after 2005 are yet to receive their CET, which means they have not been officially registered as teachers with the Department of Education.

9 UNESCO, 2016.

10 Howes et al., 2014, p. 8.

11 Pilgram, 2015, p. 10.

12 Matang & Owens, 2014.

13 PaBER, 2016, p. 27.

14 Hopkins et al., 2005.

15 ASPBAE, 2011.

16 Bishop, 1990.

17 Bold et al., 2017.

18 PaBER, 2016, p. 27; Pryke & Barker, 2017 p. 5.

19 Pilgram, 2015.

20 Hahambu, Brownlee & Petriwskyj, 2012.

21 Global Initiative to End all Corporal Punishment of Children, 2017.

22 World Bank Group, 2014a.

1.1.4 Physical infrastructure

The need for improved school infrastructure has been consistently identified for PNG schools²³, with poor quality of teacher housing and classrooms, although there are some indications of improvements in classroom buildings²⁴.

1.1.5 School governance

PNG schools are managed by Head Teachers in Elementary and Primary schools and principals in secondary schools, and governed by a Board of Management (BOM), augmented by Parents and Citizens (P&C) Committees. The TFF policy has encouraged wider community input into the management of school finances and governance, to jointly manage the school subsidies²⁵.

The importance of school management and the meaningful role of community stakeholders have been highlighted in a recent World Bank Global Education Report²⁶, however this area remains a significant challenge in PNG²⁷.

Churches have an important role in the provision of PNG education, including at elementary level; they provide supervision and some provide additional funding, although teachers and salaries are provided by the government²⁸.

1.1.6 Gender

Gender inequality has recently been described as perhaps PNG's single largest development challenge, with a 'severe gender bias' resulting in an opportunity cost for families which rely on girls for domestic labour. This may partly be offset in rural areas where girls' education impacts on bride price considerations²⁹, or where there is matrilineal descent³⁰.

Table 4. Gender Parity Index (GPI) for Gross Enrolment Rates (GER) and Net Enrolment Rates (NER) in elementary education in PNG, 2016

Province	GPI (GER)	GPI (NER)
Autonomous Region Of Bougainville	0.94	0.95
Central Province	1.02	1.05
East New Britain Province	1.00	1.04
East Sepik Province	0.96	0.98
Eastern Highlands Province	1.02	1.03
Enga Province	0.99	1.01
Gulf Province	0.91	0.91
Hela Province	0.97	0.96
Jiwaka Province	0.99	1.00
Kiunga Lake Murray	1.04	1.06
Madang Province	0.99	1.02
Manus Province	0.98	1.06
Milne Bay Province	1.03	1.07
Morobe Province	0.98	1.02
National Capital District	1.07	1.08
New Ireland Province	1.07	1.07
Northern Province	0.96	0.97
Sandaun Province	0.93	0.99
Simbu Province	1.02	1.02
Southern Highlands Province	0.93	0.94
West New Britain Province	0.97	0.97
Western Highlands Province	0.97	0.98
Western Province	1.01	1.04
Grand Total	0.99	1.00

Source: Department of Education EMIS 2016 School Census Data.

23 Devette-Chee & Magury, 2017; Packer, Emmett & Hinchliffe, 2009.

24 Howes et al., 2015.

25 Walton, Davda, & Kanaparo, 2017.

26 World Bank Group, 2018, p. 79, 108.

27 World Bank Group, 2014b; PaBER, 2016, p. 27; Devette-Chee & Magury, 2017.

28 Howes et al., 2014, p. 8; Pryke & Barker, 2017.

29 Pryke & Barker, 2017, p. 8.

30 Gibson & Rozelle, 2004.

However, NDOE data shows that girls' participation rates in education have been improving³¹, and the 2013 HIES found that national NER for girls at 36.2% was slightly higher than that of boys at 35.5%, and that this difference occurred in both rural and urban regions³².

The 2016 Gender Parity Index (GPI), indicating the ratio of females to males, is shown for the GER and NER in elementary education in each province in *Table 4*. This data shows that there appears to be no clear pattern in favour of boys (less than 100%) or in favour of girls (more than 100%) in either the GER or NER. These findings seem to indicate that a strong gender bias does not occur at enrolment level, but it may nevertheless be seen in differentiated attendance or retention rates, or may appear as girls get older.

1.1.7 Inclusiveness

The 2003 curriculum in PNG focused on inclusiveness, but research has found that teachers struggled with the implementation of this, and have reported that they do not have the expertise to include disabled children³³.

In one study, parents were reluctant to invest in their children's education if they believed they would not gain future employment, but a more recent study found a supportive approach, and both studies highlighted the background issue of poverty, including hunger and illness³⁴.

1.1.8 The context of education in PNG

The context of education in PNG includes challenges such as remoteness of communities, coordination between national and sub-national levels and the complexity of society³⁵, as well as poverty. A specific issue highlighted in a 2017 report is the impact of hunger on PNG education, which found that one in two PNG children have stunted growth from chronic malnutrition³⁶.

This affects their lifelong health prospects, as well as their prospects for educational achievement. It helps explain very low levels of literacy and numeracy in PNG.

Such wider contextual issues affect the enrolment and retention rate of students³⁷, especially girls³⁸, as well as their levels of achievement. They will not be overcome by improvements in teaching or school environment alone. Challenges to educational quality include school issues of infrastructure, teacher education, class sizes, curriculum and support³⁹.

1.2 Together for Education project

The Together for Education project⁴⁰ aims to enhance access to quality elementary education for girls and boys in Central, Madang, and Morobe provinces of PNG, with a special focus on literacy and numeracy skills. The project is supported by the Australian Government in partnership with the Government of PNG through the PNG Partnership Fund (PPF). World Vision is leading a project consortium comprising ChildFund, Consultative Implementation and Monitoring Council (CIMC), Library For All Australia, and the University of Canberra.

31 NDOE, 2016, p. 21.

32 NSO, 2013, p. 2.

33 Le Fanu, 2013.

34 Le Fanu, 2013; Jenkin et al, 2017.

35 NDOE, 2016.

36 Save the Children, 2017.

37 Pryke and Barker, 2017, p. 6.

38 Ryan et al., 2017, pp. 29-30.

39 Pryke and Barker, 2017, p. 6; Rena, 2011.

40 www.wvi.org/gallery/together-education



The consortium is working together with schools, communities, National Department and Provincial Divisions of Education, church education agencies, and other local stakeholders. Interventions are designed in accordance with the NDOE Planning Framework in the National Education Plan (NEP) 2015-2019⁴¹ to promote the development and utilisation of School Learning Improvement Plans (SLIPs). This is within a model which reflects an integrated community-based approach to quality schooling.

The project builds upon the experience and expertise of consortium partners in education, gender and child protection, social accountability, reading materials, digital library development, and research and learning⁴². Together for Education project activities are grouped in four categories that are aligned with key focus areas of the National Education Plan (NEP) 2015 to 2019⁴³.

1. **Community and family engagement** contributing to NEP focus areas of Access & Equity and Local Management;
2. **Teacher education and support** contributing to NEP focus areas of Teachers & Teaching and Learning;
3. **Learning environment and materials** contributing to NEP focus areas of Learning and Access & Equity;
4. **Knowledge sharing** contributing to NEP focus area of Systems Strengthening.

1.2.1 Project locations

The project is being carried out in three provinces: Central, Madang and Morobe. These were chosen through a mixture of pragmatic and developmental considerations; ChildFund is implementing the project

41 NDOE, 2016.

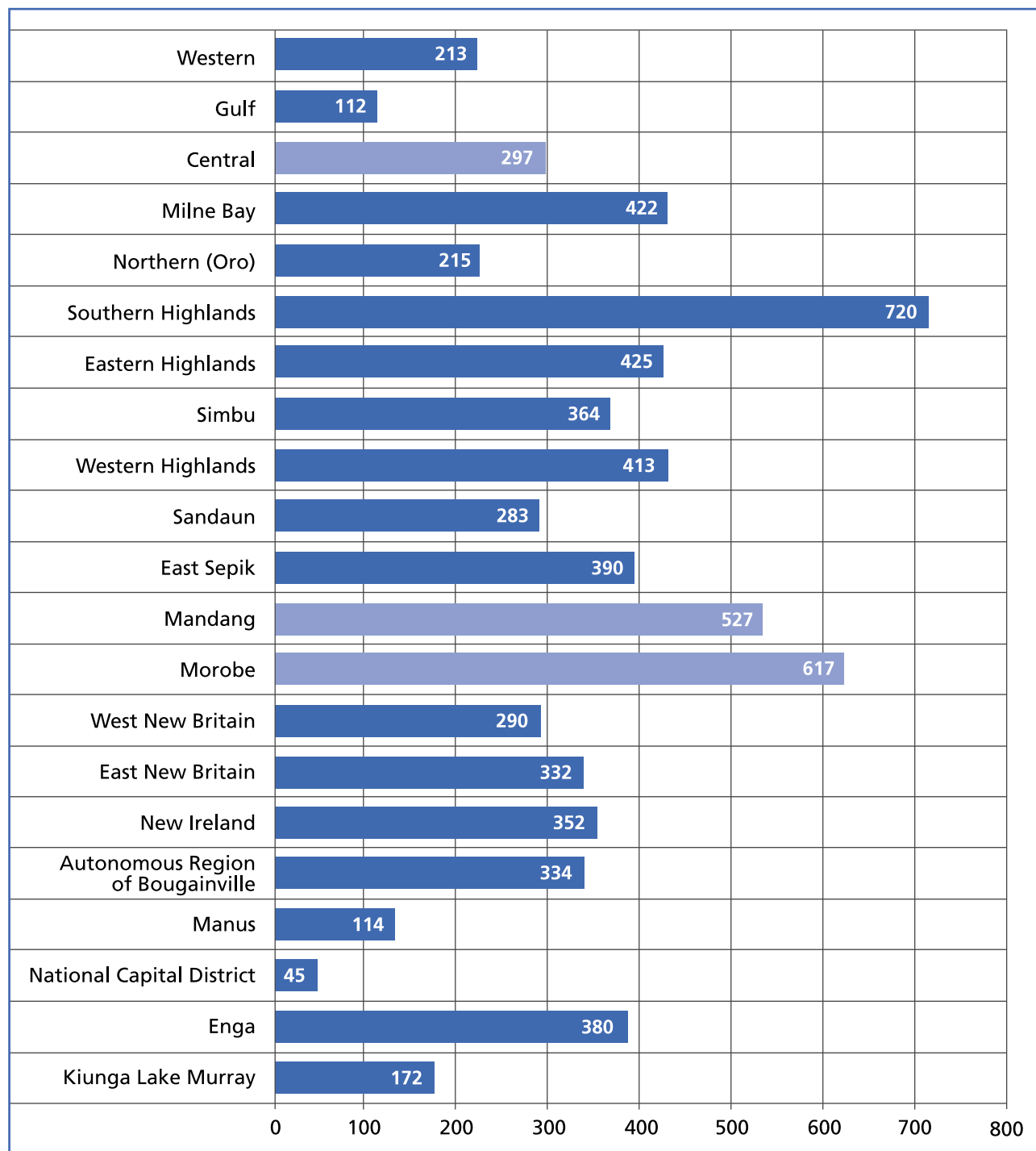
42 The importance of skilled and experienced teacher educators in professional development interventions is emphasised by Kennedy, 2016; Popova, Evans & Arancibia, 2016.

43 NDOE, 2016.

in Central Province where it has a long-standing presence, established partnerships and other development initiatives, and World Vision is implementing the project in Morobe and Madang Provinces, where it also has existing operations and established partnerships with the government and communities.

Figure 1 shows that in 2013, the year after the TTF policy was introduced, Morobe and Madang Provinces had the second and third highest numbers of elementary schools in the 21 provinces of PNG, at 617 and 527 respectively. Central Province was 13th, at 297 elementary schools.

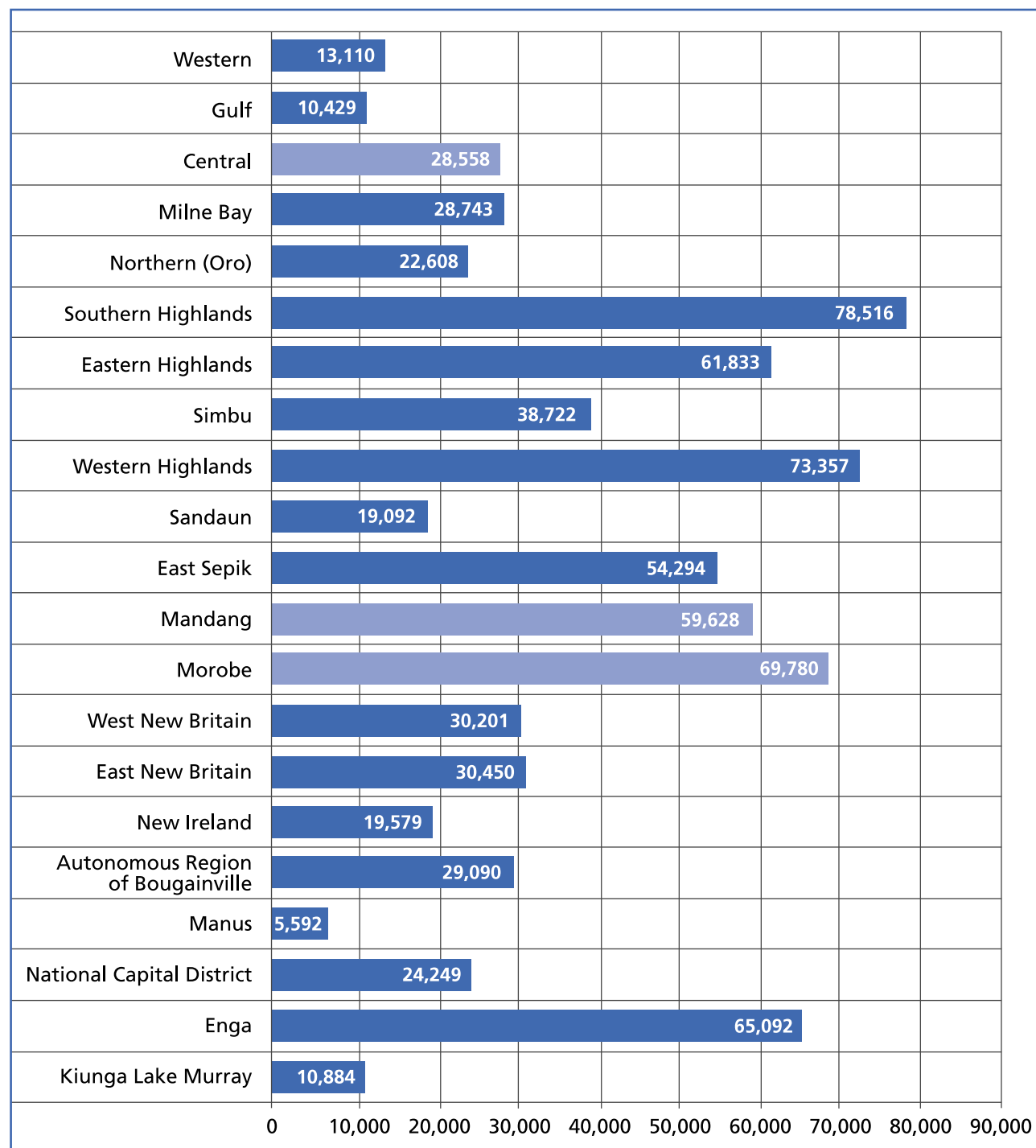
Figure 1: Elementary schools in PNG, 2013



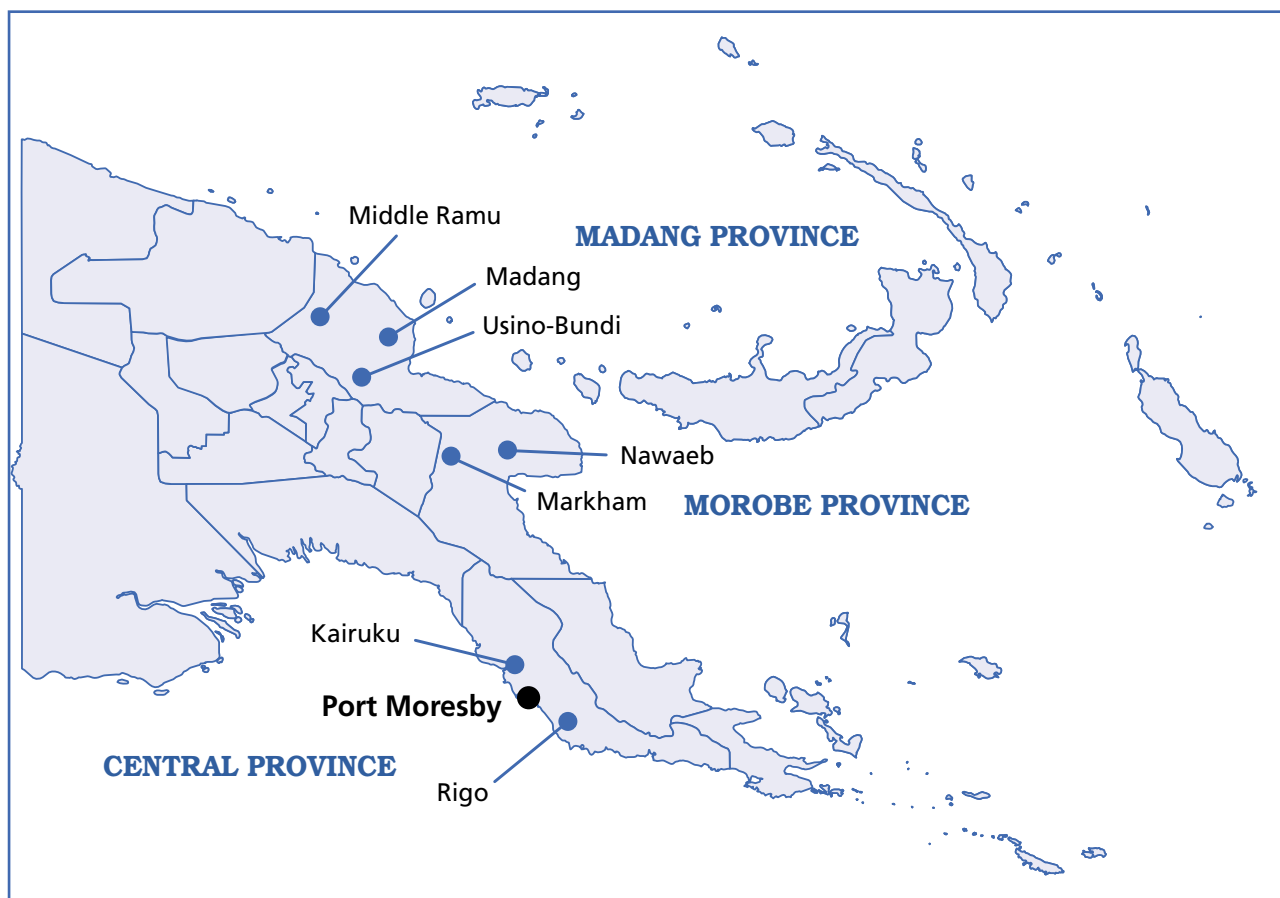
Source: 2013 Education Statistics Bulletin, NDOE (2013)

In terms of numbers of enrolments of elementary children, *Figure 2* shows that in 2013 Morobe Province was the third highest at 69,780, Madang was sixth at 59,628, and Central was again 13th at 28,558.

Figure 2: Elementary enrolment numbers in PNG, 2013



Source: 2013 Education Statistics Bulletin, NDOE (2013)

Figure 3: Location of Together for Education project districts⁴⁴

Within the three provinces, the Together for Education project targets seven districts.

These are shown in: Kairuku and Rigo in Central Province; Middle Ramu, Madang and Usino-Bundi in Madang Province; and Nawaeb and Markham in Morobe Province.

1.2.2 Selection of project schools

Together for Education schools were selected through a participatory process by project staff in conjunction with provincial and district administration and education officials, as well with other concerned stakeholders that include churches and other service providers.

One hundred schools were chosen for the intervention in each province, taking into account the criteria shown in *Table 5*.

⁴⁴ PNG Map by Keith Edkins - Derived from File: Papua New Guinea LLGs.png, Public Domain, <https://commons.wikimedia.org/w/index.php?curid=19629181>

Table 5: Criteria for consideration in schools selection

Number	Criteria	Sub-Criteria
1	Accessibility	By road By boat/dinghy
2	Teacher level of qualification	Minimum level Grade 10
3	Equality	Inclusive of all Local-Level Government areas Inclusive of professional development clusters Size of school Gender of Head Teacher
4	Community Support (for sustainability)	Community cohesion Support from: Teachers Parents BOM Ward Councillors Community leaders District Administration
5	SLIP Implementing Schools	Schools have SLIP existing
6	No involvement in other programs	No other programs implemented by NGOs, Development partners (e.g. World Bank & JICA), Churches, CSOs, Digicel, etc.
7	Teaching & Learning Resources	Insufficient teaching & Learning resources
8	Land Issues	School land: State land Customary land Not disputed

1.2.3 Project implementation

Schools were then assigned for the Unlock Literacy intervention in 2018 or 2019, and are designated in this report as 2018 and 2019 Project Schools. These schools are designated to receive an Unlock Literacy program, adapted from Save the Children's Literacy Boost⁴⁵ program to include a numeracy component, and aligned to PNG's SBC⁴⁶.

While Unlock Literacy covers teachers from all elementary grades, top priority is given to E2 teachers from 50 project schools in each province to receive the intervention in 2018, and another 50 in 2019.

1.3 Baseline study

A learner Literacy and Numeracy Assessment and School Survey was conducted from November 2017 to February 2018. The survey covered 1,168 children from the 2017 Elementary 1(E1) cohort, from 79 schools. This was approximately half of the schools drawn from 50 project schools in each province: 26 in Madang, 28 in Morobe, and 25 in Central.

The data gathered from these schools is analysed in this report to present a snapshot of the emergent literacy and numeracy skills of learners in the target districts at the end of E1, and the school context which supports their learning.

⁴⁵ Save the Children, 2012.

⁴⁶ NDOE, n.d.



The key questions explored in this baseline report include:

1. What can the baseline tell us about the learners' emergent literacy and numeracy skills?
2. What is the current status of the schools currently (physical infrastructure, teacher demographics, teaching and learning) as reported by children, Head Teachers and Boards of Management?
3. What are the implications of the findings for Together for Education project programming?
4. How comparable are learners in 2018 and 2019 project schools, so that any changes as a result of the Together for Education intervention can be attributed to the program?

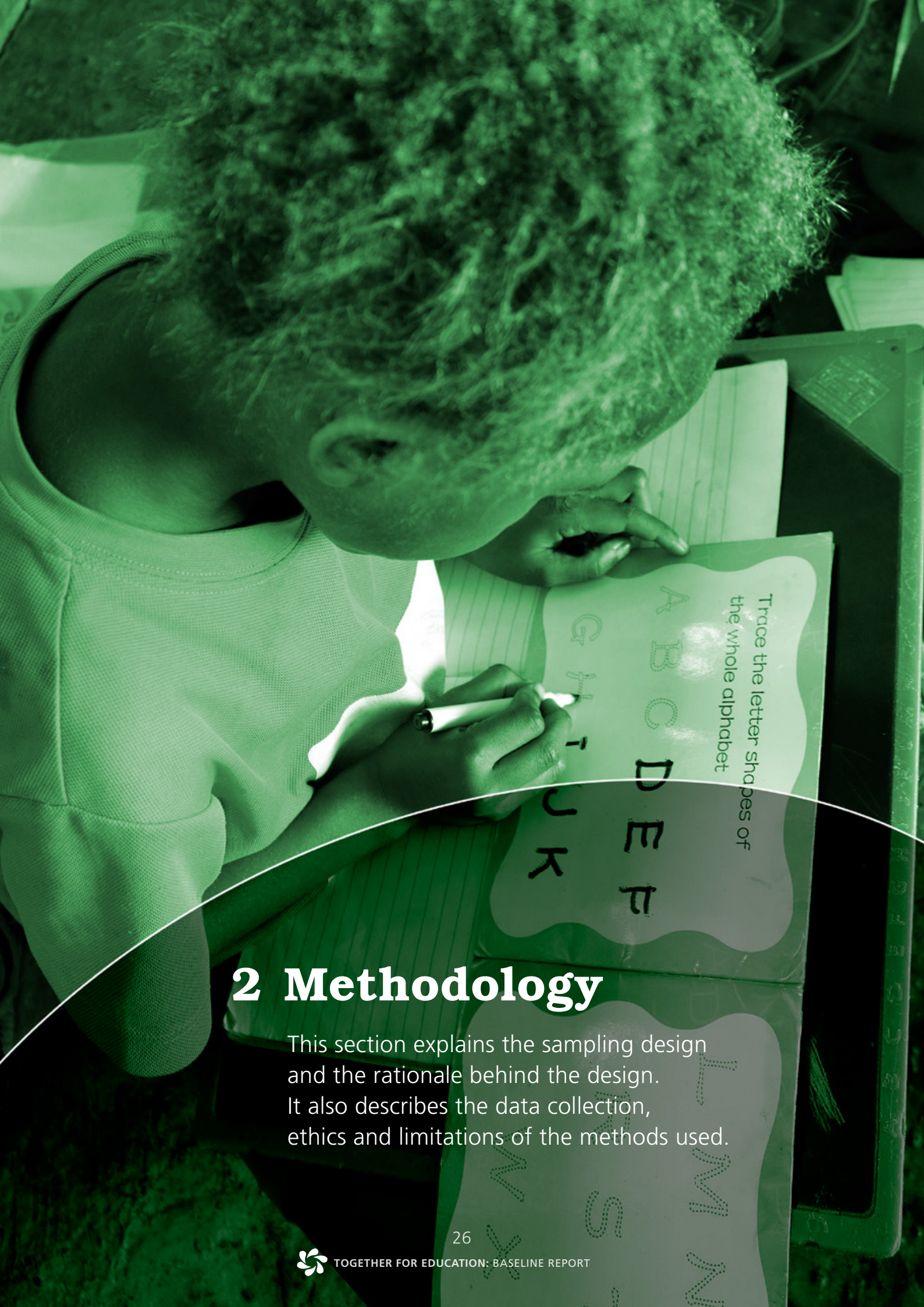
To investigate these questions, this report will first describe the research methods used, including sampling, measurement, and analysis. In order to see if the groups of learners are statistically similar, the comparability of the project's 2018 and 2019 project school children will be examined.

The children's strengths and weaknesses in each skill will be described, as a guide to areas of focus for the Together for Education program.

The report will then investigate any relationships among the children's background, school learning environment, and home learning environment.

It will then describe the findings from the school survey including infrastructure, teacher absenteeism, student drop out rates, SLIPs and teaching and learning practices.

The report will then investigate any relationships among the children's background, school learning environment, and home learning environment.



2 Methodology

This section explains the sampling design and the rationale behind the design. It also describes the data collection, ethics and limitations of the methods used.

2.1 Sampling design

The baseline survey is the first part of a quasi-experimental design for assessing the effectiveness of the project interventions:

Quasi-experimental research designs, like experimental designs, test causal hypotheses. In both experimental (i.e., randomized controlled trials or RCTs) and quasi-experimental designs, the programme or policy is viewed as an ‘intervention’ in which a treatment – comprising the elements of the programme/policy being evaluated – is tested for how well it achieves its objectives, as measured by a pre-specified set of indicators. A quasi-experimental design by definition lacks random assignment, however. (White & Sabarwal, 2014, p. 1)

They are used when there are logistical constraints on the use of randomisation, such as in the current project. In order to show that the intervention has been effective, a control group is used in a quasi-experimental design:

Quasi-experimental designs identify a comparison group that is as similar as possible to the treatment group in terms of baseline (pre-intervention) characteristics. The comparison group captures what would have been the outcomes if the programme/policy had not been implemented (i.e., the counterfactual). (White & Sabarwal, 2014, p. 1)

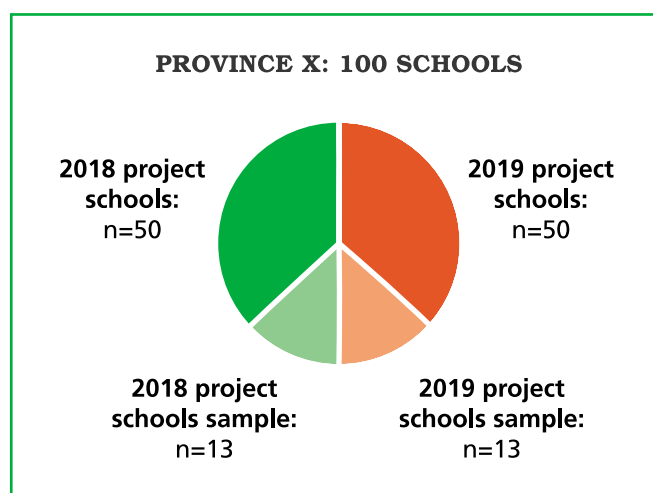
Of the 100 project schools, a sample of 26 schools was drawn in each province for the baseline study: 13 schools from the 50 intervention schools in 2018, and 13 schools from the 50 intervention schools in 2019. This design is shown diagrammatically in *Figure 4* for one province.

In order to provide the best comparisons, the schools in the samples from 2018 and 2019 were matched as far as possible for the pre-intervention characteristics of size, location, and type (government or church).

The challenging geographical and social environment in Papua New Guinea means that precedence was given to accessibility and project team safety over representational sampling in each district.

This follows the approach taken in previous studies such as World Bank’s Early Grade Reading Assessment (EGRA) in the Western Highlands⁴⁷. These issues meant that there were adjustments to the sample 26 schools; the final numbers were 26 in Madang, 28 in Morobe, and 25 in Central, each divided into 2018 and 2019 project schools.

Figure 4: Project schools and survey sample schools in each province



47 World Bank Group, 2014c, p. 21.

2.2 Measurement

A set of targeted tools were used for the Literacy and Numeracy and Schools survey. The aims of these two types of assessments were to investigate both the children's baseline knowledge and the context of school functioning⁴⁸. Details of each tool are provided in the next two sections, *Section 3: Literacy and Numeracy Assessment*, and *Section 4: School Survey*.

2.3 Ethics

The procedures of data collection for the Together For Education project had ethics approval from the University of Canberra under university policy and the Australian National Statement on Ethical Conduct in Human Research, 2007⁴⁹. The Literacy and Numeracy assessment tool had Save the Children ethics approval, and the Schools assessment tool was incorporated into the University of Canberra ethics approval.

2.4 Data collection

Schools were contacted with the letter provided in *Appendix A*.

Teams of enumerators recruited and trained locally in each province carried out the data collection. These were divided into teams for each district and accompanied by World Vision and ChildFund staff.

Once the project had been introduced at the school, a sample of male and female participants were interviewed. The data was entered directly into the computer tablets offline and then taken back to project offices for uploading. Unfortunately, at this stage in Morobe an office break-in resulted in the theft of some computer tablets before all the data could be uploaded, resulting in a loss of some data⁵⁰. When data collection was finished a process of data cleaning took place in Port Moresby for all provinces.

2.5 Analysis

Descriptive statistics were carried out to provide a baseline picture of this cohort of children in the seven districts. In order to allow a measurement of the effects of the Together for Education intervention, the cohort assigned for the intervention in 2018 is compared with the cohort assigned for the intervention in 2019.

2.6 Limitations

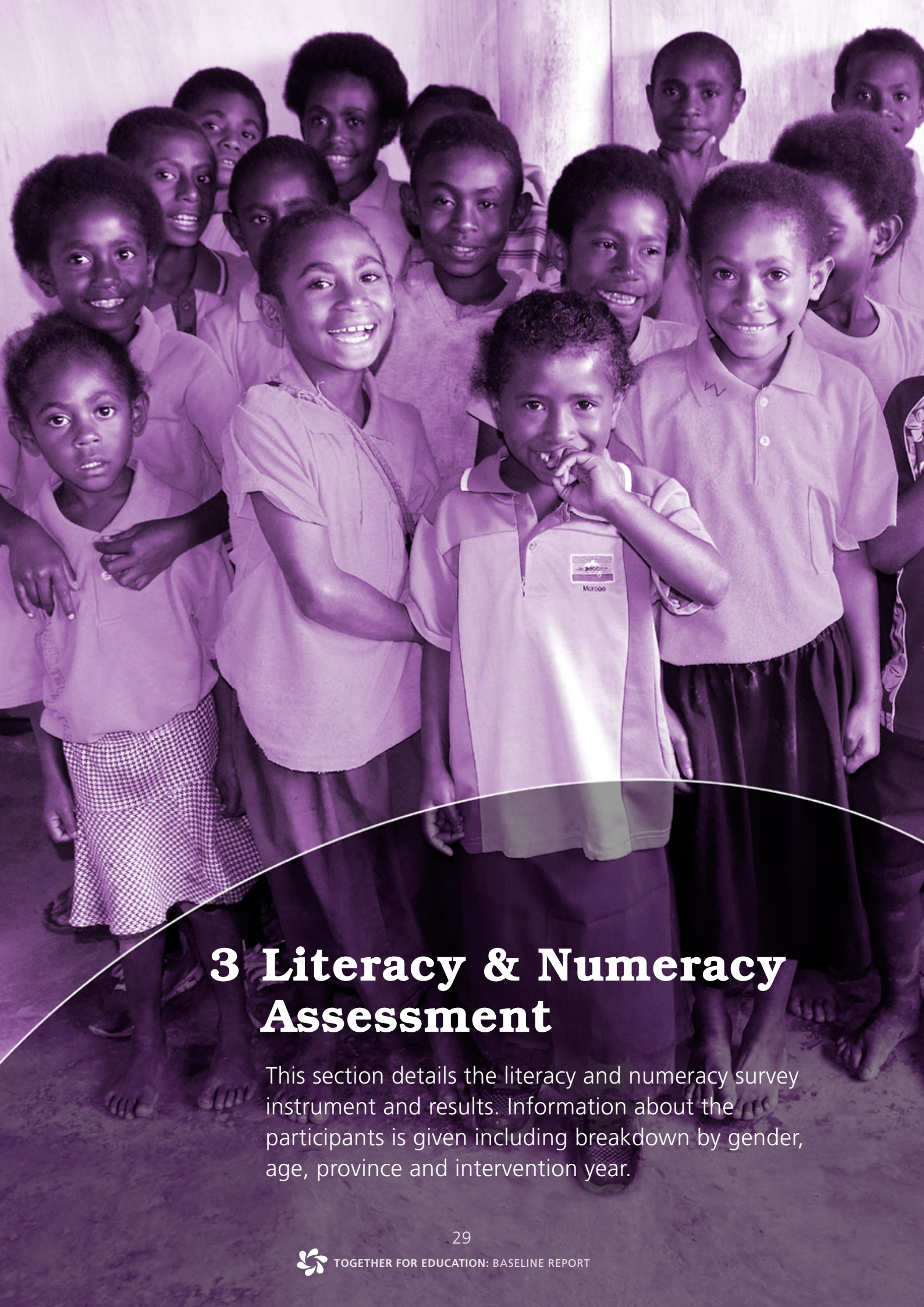
The complex social and geographical environment in Papua New Guinea necessitated the pragmatic approach to project and survey sampling (noted above). The sample schools are representative of the project schools rather than schools in the entire district or province. A particular complication in Morobe resulted from the theft of project equipment after which only half of the school data was recovered.

Nevertheless, the results in this report represent a rich picture of the teaching and learning situation for 1154 children in 79 schools, forming a wide-ranging set of baseline data for the project in Central, Madang and Morobe Provinces.

48 For a discussion of different aspects improving the functioning of schools in improving student learning, see Clarke, 2017.

49 University of Canberra Human Research Ethics Committee Approval No. HREC 17-257.

50 A total of 23 tablets were stolen which contained data from 28 schools. Some data from these 28 schools had been uploaded in full.



3 Literacy & Numeracy Assessment

This section details the literacy and numeracy survey instrument and results. Information about the participants is given including breakdown by gender, age, province and intervention year.

3.1 Survey instrument

The tool used to assess literacy and numeracy was based on the Early Grade Reading Assessment (EGRA) and Early Grade Mathematics Assessment (EGMA). The EGRA and EGMA have been developed by the Research Triangle Institute (RTI) with support from the World Bank, for use by the international community to inform education policy and instruction⁵¹.

They are designed to assess core sub-skills which can be improved through instruction and are adapted locally according to the particular language and country context⁵².

This means that direct international comparisons are not possible, except where they show evidence of no knowledge (for example, no ability to name letters of the alphabet, or to name basic numbers)⁵³.

EGRA assessments have been used in PNG previously in Western Highlands and Madang⁵⁴.

The assessment instrument for this baseline survey was provided by Save the Children PNG through a Memorandum of Understanding with World Vision, and programmed into tablets for direct data entry.

This tool had been 'versioned' by Save the Children to reflect the PNG cultural context and the PNG Elementary School Syllabus at E1 and E2, and was accompanied by relevant consent forms.

Assessment was in both English and Tok Pisin, and covered questions on the children's background, literacy, numeracy, home learning environment and community learning environment. The questions are summarised in *Table 6*.

The tool was created using KoBoToolbox⁵⁵, a free open-source survey software designed for data collection in developing country contexts. The surveys were loaded onto project tablet computers for direct data collection and recording in the field.

Table 6: Literacy and numeracy assessment components

Section	Question
Background	Eat breakfast Name Parent or guardian's name Gender Grade Pre-school Repeat E1 Languages spoken at home Missed school in past week Age
Literacy	Letter identification Most used words – English Most used words – Tok Pisin Reading passage – English Reading comprehension - English Reading pas sage – Tok Pisin Reading comprehension – Tok Pisin
Numeracy	Number identification Skip counting Addition Subtraction Word problems Shapes Telling time
Home literacy environment	Home literacy environment Home literacy and numeracy activities

51 Gove et al., 2013, p. 373.

52 Gove et al., 2013, p. 374; Reubens & Crouch, 2009; Dubeck & Gove, 2015.

53 For EGRA, see Gove & Cvelich, 2011; for EGMA, see Gove et al., 2013.

54 World Bank Group, 2014c, 2014d.

55 <http://www.kobotoolbox.org/>



3.2 Participants

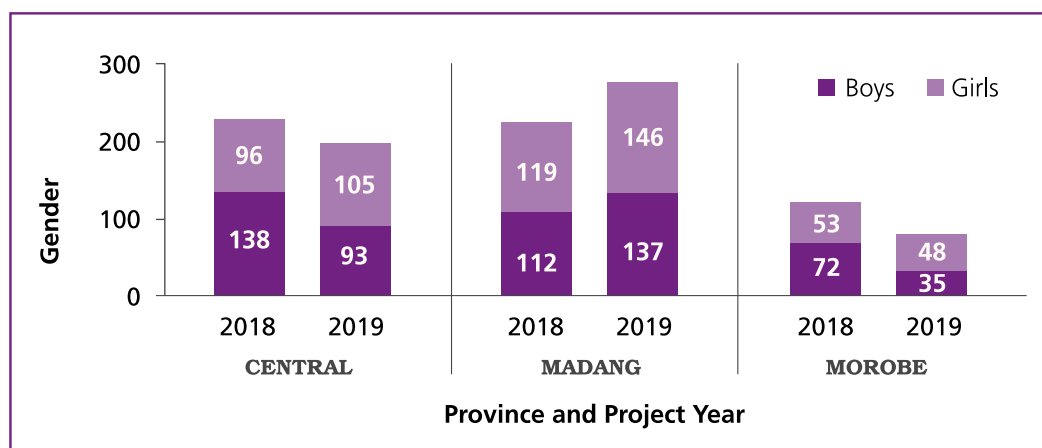
A total of 1154 children were surveyed: 432 in Central Province, 514 in Madang, and 208 in Morobe.

3.2.1 Gender

The total number of girls in the Literacy and Numeracy Assessment was 567, and the number of boys was 587. The sample included around half girls in Morobe (49%) and Madang (52%), but more girls in Central (68%). The breakdown of children's gender for each province and project year in the sample is shown in *Figure 5*.

There were more boys than girls in the samples for 2018 in Central (138:96) and Morobe (72:53) and this was reversed in the 2019 sample (93:105, 35:48 respectively). Madang had the opposite pattern, with fewer boys than girls in the 2018 sample (112:119), and more in the 2019 (137:146).

Figure 5: Gender of sample by gender, province and year

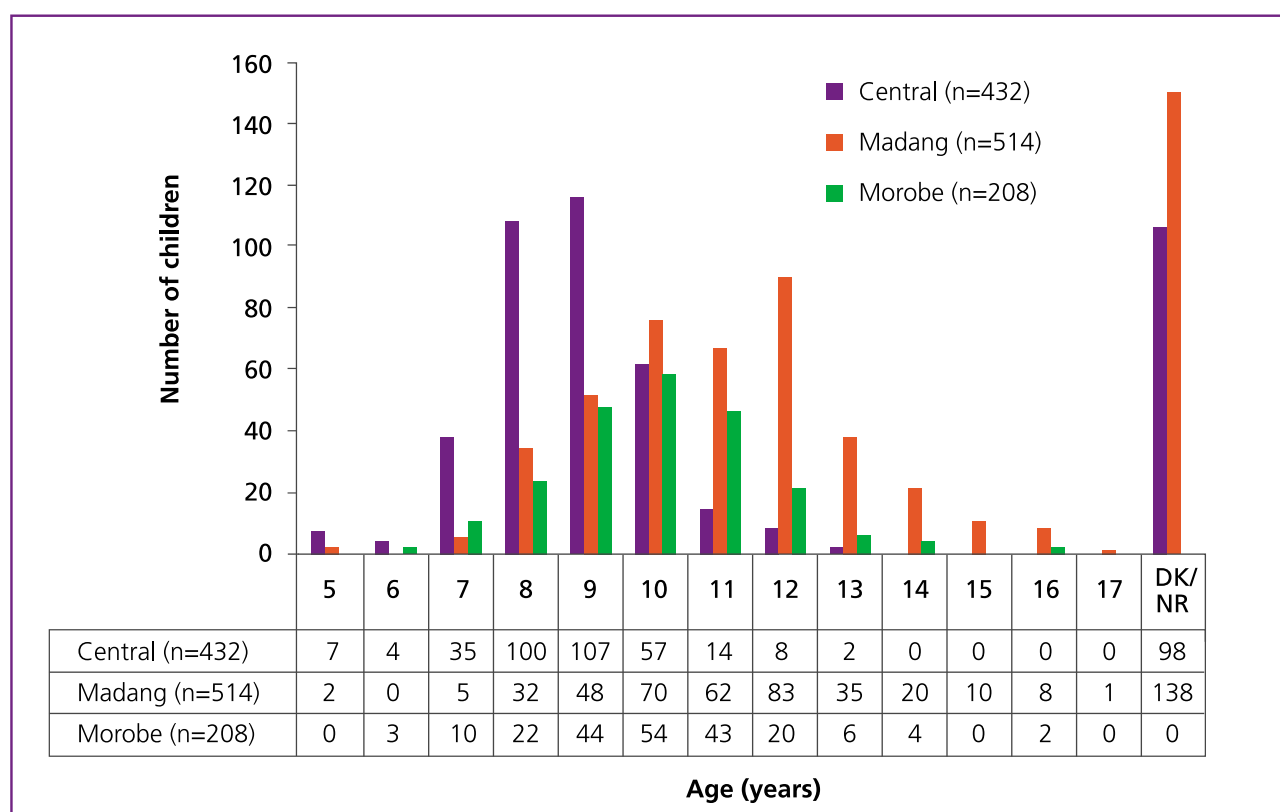


3.2.2 Age

Children were asked their age, as shown in *Figure 6*. This shows that the reported ages ranged from five to 17. Only seven children reported being the right age (6 years is the official school entry age). This means that the vast majority of children in the sample are very over-age. However, there were high numbers of children in two of the provinces who either responded that they did not know their ages, or gave no response: Central (98) and Madang (138). It is possible that those children who did respond gave incorrect answers.

The average age of the children was similar in the three provinces: 9 in Central, 11 in Madang, and 10 in Morobe.

Figure 6: Age of children



3.3 Children's literacy skills

3.3.1 Letter identification

Children were shown all the letters of the alphabet in random order, and asked to name them.

Table 7 shows that the highest number and percentage of children (25.9%) correctly identified 26 letters. More than 88% of children could identify half or more of the letters. Only 2.43% of children could not identify any letters of the alphabet. Madang had higher percentages of children who had 26 or 25 letters correct (34.82% and 25.88% respectively) compared with Central (18.52% and 15.72%) and Morobe (19.23% and 19.71%).

Table 7: Letter identification

No. of letters correct	Central (n=432)	Madang (n=514)	Morobe (n=208)	Total percent (n=1154)	No. of letters correct	Central (n=432)	Madang (n=514)	Morobe (n=208)	Total percent (n=1154)
26	18.52	34.82	19.23	25.91	12	1.85	0.00	1.44	0.95
25	15.74	25.88	19.71	20.97	11	1.16	0.58	0.96	0.87
24	13.19	14.59	14.90	14.12	10	2.08	0.39	0.48	1.04
23	9.03	6.61	11.06	8.32	9	1.16	0.19	0.96	0.69
22	4.86	4.86	9.13	5.63	8	1.39	0.39	0.00	0.69
21	4.40	2.33	2.88	3.21	7	1.39	0.19	0.00	0.61
20	3.94	1.95	2.40	2.77	6	1.39	0.78	0.48	0.95
19	2.08	0.39	0.96	1.13	5	0.46	0.39	0.48	0.43
18	1.85	0.97	0.96	1.30	4	0.69	0.00	0.48	0.35
17	0.93	0.58	4.81	1.47	3	1.16	0.19	0.48	0.61
16	2.31	0.97	0.48	1.39	2	1.16	0.00	0.48	0.52
15	1.62	0.58	1.92	1.21	1	0.69	0.39	0.48	0.52
14	1.16	0.19	1.92	0.87	0	4.40	1.36	0.48	2.34
13	1.39	0.39	2.40	1.13					

3.3.2 Most used words – English

Children were asked to read a list of 22 words. This was comprised of the 20 most frequently used words from the Elementary 2 SBC English textbooks, and two words from Elementary 1 ('to' and 'and') to help the children gain some confidence at the beginning of the assessment. The full list of words is shown in *Table 8*.

Different pronunciations were accepted. *Table 9* shows that 3.47% of children correctly read all 22 words. Around a third of the children (36.48%) could not correctly read any of the words on the list.

Central Province had the highest percentage of children who correctly read all 22 words (4.86% compared with 1.95% in Madang and 4.33% in Morobe), as well as the highest percentage who could not read any words (47.92% compared with 25.29% in Madang and 40.38% in Morobe).

Table 8: List of most used words – English

1	to	12	took
2	and	13	red
3	us	14	home
4	say	15	let
5	for	16	made
6	how	17	did
7	ran	18	after
8	play	19	eat
9	sat	20	under
10	fast	21	lots
11	car	22	think

**Table 9: Reading most used words – English**

No. of English words correct	Central (n=432)	Madang (n=514)	Morobe (n=208)	Total percent (n=1154)	No. of English words correct	Central (n=432)	Madang (n=514)	Morobe (n=208)	Total percent (n=1154)
22	4.86	1.95	4.33	3.47	10	1.16	5.25	1.92	3.12
21	0.69	1.17	0.00	0.78	9	0.69	5.45	0.96	2.86
20	2.08	1.95	2.40	2.08	8	0.46	2.72	1.92	1.73
19	1.16	1.75	1.44	1.47	7	2.55	1.95	0.96	1.99
18	1.85	3.11	2.88	2.60	6	1.85	2.33	3.85	2.43
17	0.93	2.72	0.96	1.73	5	2.55	2.53	2.40	2.51
16	1.39	1.56	1.92	1.56	4	3.24	4.09	3.85	3.73
15	0.23	2.92	1.44	1.65	3	3.70	4.67	6.25	4.59
14	1.62	3.50	0.00	2.17	2	6.71	4.47	4.81	5.37
13	0.93	3.31	2.88	2.34	1	11.81	5.84	10.58	8.93
12	1.16	5.06	2.88	3.21	0	47.92	25.29	40.38	36.48
11	0.46	6.42	0.96	3.21					

3.3.3 Most used words – Tok Pisin

A list of 20 of the most used words in Tok Pisin for E2 level was identified with help from the Summer Institute of Linguistics (SIL). The list is shown in *Table 10*.

Table 10: List of most used words – Tok Pisin

1	yu	6	save	11	bilong	16	na
2	meri	7	taim	12	man	17	wanpela
3	long	8	mekim	13	olsem	18	em
4	go	9	tok	14	gat	19	ken
5	dispela	10	manmeri	15	ol	20	bai

Table 11 shows that 4.07% of children correctly read all 20 words. Around half of the children (49.39%) could not correctly read any words on the list. Central Province had the highest percentage of children who did not get any words correct (64.81% compared with 35.21% in Madang and 52.40% in Morobe). Morobe had the highest percentage of children who correctly read all of the words (9.62% compared with 1.85% in Central and 3.70% in Madang).

Table 11: Reading most used words – Tok Pisin

No. of Tok Pisin words correct	Central (n=432)	Madang (n=514)	Morobe (n=208)	Total percent (n=1154)	No. of Tok Pisin words correct	Central (n=432)	Madang (n=514)	Morobe (n=208)	Total percent (n=1154)
20	1.85	3.70	9.62	4.07	9	1.16	2.72	1.92	1.99
19	1.16	1.36	4.33	1.82	8	1.62	5.45	0.48	3.12
18	0.46	2.33	3.85	1.91	7	1.16	2.53	1.44	1.82
17	1.16	1.36	1.44	1.30	6	1.85	2.53	2.40	2.25
16	0.93	1.95	0.48	1.30	5	1.62	4.28	0.96	2.69
15	0.93	1.95	0.96	1.39	4	1.85	2.92	1.92	2.34
14	0.93	1.95	0.96	1.39	3	3.01	4.47	1.92	3.47
13	0.23	3.50	0.48	1.73	2	4.17	6.42	5.29	5.37
12	0.23	2.14	1.44	1.30	1	8.56	6.81	5.77	7.28
11	0.93	2.33	0.96	1.56	0	64.81	35.21	52.40	49.39
10	1.39	4.09	0.96	2.51					

3.3.4 Reading passage – English

The children were given a reading passage of 43 words in English, 'Dan the pig', and were asked to read the story while being timed⁵⁶.

Children who read at least five words correctly during the first 30 seconds are shown for each province in Table 12, with the average words correct. The total percentage of children with at least five correct in 30 seconds was 35.44%. The highest percentage was 41.25% in Madang, followed by 31.25% in Central and 29.81% in Morobe.

For those children who did read the passage, Table 12 also shows the average words correct out of a total of 43. There was an average of 31.35 words correct out of the total of 43 words, and this ranged from 29.6 in Central to 32.25 in Madang and 32.75 in Morobe.

Table 12: Words read correctly in 30 secs – English

VARIABLE	Central (n=432)	Madang (n=514)	Morobe (n=208)	Total percent (n=1154)
Percentage of children with at least five correct in 30 seconds	31.25%	41.25%	29.81%	35.44%
Average words correct (total=43)	29.6	32.25	32.75	31.35

⁵⁶ Unfortunately the quality of the data meant that a score of words per minute could not be calculated.

3.3.5 Reading comprehension – English

The children were then asked eight comprehension questions about the passage.

Table 13 shows how many children gave correct answers. All eight questions were answered correctly by only 1.65% of children, and 66.98% of children could not give any correct answers. However, 7.97% of children gave five correct answers, and 6.76% gave four correct answers. This finding suggests that children are decoding rather than reading for meaning. Morobe had the highest percentage of correct answers at 73.08%, compared to Central at 71.76% and Madang at 60.51%.

Table 13: Reading comprehension – English

No. correct (max=8)	Central (n=432)	Madang (n=514)	Morobe (n=208)	Total percent (n=1154)	No. correct (max=8)	Central (n=432)	Madang (n=514)	Morobe (n=208)	Total percent (n=1154)
8	1.16	2.33	0.96	1.65	3	4.17	3.31	3.37	3.64
7	0.93	3.70	2.40	2.43	2	6.02	1.56	2.40	3.38
6	1.62	7.00	6.25	4.85	1	3.94	1.17	1.92	2.34
5	3.24	13.23	4.81	7.97	0	71.76	60.51	73.08	66.98
4	7.18	7.20	4.81	6.76					

3.3.6 Reading passage – Tok Pisin

The children were given a reading passage of 64 words in Tok Pisin, 'Papa na Pam', and were asked to read the story while being timed.

Children who read at least five words correctly during the first 30 seconds are shown for each province in Table 14, with the average words correct. The total percentage of children with at least five correct in 30 seconds was 15.86%. The percentages in each province ranged from 13% in Central to 17% in Madang and Morobe.

For those children who did read the passage, the table also shows the average words correct out of a total of 68. There was an average of 44.10 words correct out of the total of 68 words, and this ranged from 40.2 in Central, to 42.82 in Madang and 55.36 in Morobe.

Table 14: Reading words correct – Tok Pisin

Item	Central (n=432)	Madang (n=514)	Morobe (n=208)	Total percent (n=1154)
Percentage of children with at least five correct in 30 seconds	12.96%	17.70%	17.31%	15.86%
Average words correct (total=63)	40.20	42.82	55.36	44.10

3.3.7 Reading comprehension – Tok Pisin

The children were then asked nine comprehension questions about the passage.

Table 15 shows the percentages of children who gave correct answers. All nine questions were answered correctly by only 1.73% of children, and 84.14% of children gave no correct answers. Central had the highest percentage of correct answers at 87.04%, followed by Morobe at 82.69% and Madang at 82.30%.

Table 15: Reading comprehension – Tok Pisin

No. correct (max=9)	Central (n=432)	Madang (n=514)	Morobe (n=208)	Total percent (n=1154)	No. correct (max=9)	Central (n=432)	Madang (n=514)	Morobe (n=208)	Total percent (n=1154)
9	0.23	2.33	3.37	1.73	4	1.62	2.53	1.44	1.99
8	0.46	1.56	2.40	1.30	3	2.08	1.75	1.44	1.82
7	0.69	1.95	2.88	1.65	2	1.85	0.39	1.44	1.30
6	1.39	3.11	1.92	2.25	1	0.93	0.39	0.00	1.13
5	1.85	2.92	0.96	2.17	0	87.04	82.30	82.69	84.14

3.4 Children's numeracy skills

3.4.1 Number identification

Children were shown a list of 12 numbers between one and 50, and asked to read each one.

Table 16 shows how many numbers were correctly identified. This shows that all numbers were correctly identified by the largest percentage of children, at 53.90%, and only 0.69% of children did not correctly identify any numbers. Madang had the highest percentage of children identifying all 12 correctly at 58.56%, followed by Central at 51.39% and Morobe at 47.60%.

Table 16: Numbers correctly identified

No. of correct numbers (max=9)	Central (n=432)	Madang (n=514)	Morobe (n=208)	Total percent (n=1154)	No. of correct numbers (max=9)	Central (n=432)	Madang (n=514)	Morobe (n=208)	Total percent (n=1154)
12	51.39	58.56	47.60	53.90	5	2.55	0.19	0.48	1.13
11	12.04	17.51	11.54	14.38	4	0.93	0.78	0.00	0.69
10	9.95	10.31	8.17	9.79	3	0.93	0.39	0.48	0.61
9	5.79	6.61	10.58	7.02	2	1.16	0.00	0.48	0.52
8	4.86	3.50	10.58	5.29	1	0.69	0.39	0.96	0.61
7	5.09	0.97	5.77	3.38	0	1.16	0.39	0.48	0.69
6	3.47	0.39	2.88	1.99					

3.4.2 Skip counting

Children were asked to count out loud from 2 up to 20 in twos.

Table 17 shows that the largest number of children 62.13% gave all numbers correct. Only 5.29% of children did not get any numbers correct. Over three-quarters of children in Madang gave all numbers correct (75.88%), although this dropped to around half of children in Central and Morobe (50.93% and 51.44% respectively).

Table 17: Skip counting by 2

No. of correct numbers	Central (n=432)	Madang (n=514)	Morobe (n=208)	Total percent (n=1154)	No. of correct numbers	Central (n=432)	Madang (n=514)	Morobe (n=208)	Total percent (n=1154)
10	50.93	75.88	51.44	62.13	4	3.70	0.39	1.92	1.91
9	4.63	5.25	5.77	5.11	3	1.62	0.97	1.44	1.30
8	1.62	2.92	3.85	2.60	2	0.23	0.00	0.48	0.17
7	5.56	3.70	7.69	5.11	1	0.23	0.00	0.96	0.26
6	10.65	4.28	7.69	7.28	0	6.94	3.50	6.25	5.29
5	13.89	3.11	12.50	8.84					

Children were then asked to count out loud from 5 up to 45 in fives.

Table 18 shows that around two-thirds of children (67.50%) were able to count correctly to 45, while 5.63% of children did not get any numbers correct. Again, the highest percentage of children with all correct answers was in Madang (80.54%), followed by Central (59.03%) and Morobe (52.88%).

Table 18: Skip counting by 5

No. of correct numbers (max=10)	Central (n=432)	Madang (n=514)	Morobe (n=208)	Total percent (n=1154)	No. of correct numbers (max=10)	Central (n=432)	Madang (n=514)	Morobe (n=208)	Total percent (n=1154)
10	59.03	80.54	52.88	67.50	4	12.96	2.92	6.73	7.37
9	0.69	1.95	1.92	1.47	3	7.41	2.14	5.29	4.68
8	1.16	2.14	1.44	1.65	2	1.16	0.58	4.33	1.47
7	2.08	1.95	1.92	1.99	1	0.23	0.00	1.44	0.35
6	2.08	2.53	3.37	2.51	0	6.94	3.11	9.13	5.63
5	6.25	2.14	11.54	5.37					

3.4.3 Addition

Children were given 10 basic single or double-digit addition problems to complete, as shown in Table 19. The first question was included to help the children's confidence.

Table 20 shows that nearly a third of children (37.24%) correctly completed all 10 additions, while only 6.07% of all children did not answer any correctly.

Table 19: Addition questions

1	1+1 (= 2)	6	6+8 (=14)
2	6+6 (=12)	7	7+6 (=13)
3	10+10 (=20)	8	5+6 (=11)
4	3+8 (=11)	9	16+1 (=17)
5	8+12 (=20)	10	17+3 (=20)

Madang had the highest percentage of all answers correct at 33.85%, followed by Central at 3.10% and Morobe at 26.44%.

Table 20: Addition responses

No. of sums correct (max=10)	Central (n=432)	Madang (n=514)	Morobe (n=208)	Total percent (n=1154)
10	33.10	33.85	26.44	32.24
9	14.58	20.04	15.38	17.16
8	10.65	11.09	8.17	10.40
7	4.63	7.98	4.33	6.07
6	3.47	4.86	4.81	4.33
5	1.62	2.92	6.25	3.03

No. of sums correct (max=10)	Central (n=432)	Madang (n=514)	Morobe (n=208)	Total percent (n=1154)
4	2.55	2.72	3.37	2.77
3	4.86	2.92	8.65	4.68
2	6.71	4.47	8.17	5.98
1	9.95	4.28	9.13	7.28
0	7.87	4.86	5.29	6.07

3.4.4 Subtraction

Ten subtraction problems were then given to the children, as shown in *Table 21*.

Table 22 shows that this was a more difficult task. Only 13.52% of children correctly answered all 10 problems, while 31.63% of children did not answer any correctly. Central had the highest percentage of children who answered all problems correctly (16.20%), followed by Morobe (13.94%) and Madang (11.09%).

Table 21: Subtraction problems

1	1+1 (= 2)	6	6+8 (=14)
2	6+6 (=12)	7	7+6 (=13)
3	10+10 (=20)	8	5+6 (=11)
4	3+8 (=11)	9	16+1 (=17)
5	8+12 (=20)	10	17+3 (=20)

Table 22: Subtraction responses

No. of subtractions correct (max=10)	Central (n=432)	Madang (n=514)	Morobe (n=208)	Total percent (n=1154)
10	16.20	11.09	13.94	13.52
9	8.80	9.92	7.69	9.10
8	8.10	6.81	7.69	7.45
7	4.17	8.75	4.81	6.33
6	3.24	4.67	5.29	4.25
5	2.08	5.25	3.85	3.81

No. of subtractions correct (max=10)	Central (n=432)	Madang (n=514)	Morobe (n=208)	Total percent (n=1154)
4	2.55	4.86	3.37	3.73
3	2.78	3.31	2.88	3.03
2	7.87	9.53	6.25	8.32
1	9.95	7.78	9.13	8.84
0	34.26	28.02	35.10	31.63

3.4.5 Word problems

Three word problem tasks were read to the children:

- 1 *Rosa has 3 pieces of chalk. She gathers 2 more from the teachers in her school. How many pieces of chalk does she have altogether? (Correct answer: 5)*
- 2 *Vare made 12 baskets. He sold 4 of them. How many baskets did he have left? (Correct answer: 8)*
- 3 *There are three dogs in a room. If each dog has four legs, how many dog-legs are in the room? (Correct answer: 12)*

Table 23 shows that 29.72% of all children correctly answered all three problems (34.44% in Madang, 26.92% in Morobe, and 24.46% in Central), while 13.69% did not answer any problems correctly (20.19% in Morobe, 18.52% in Central, and 7.00% in Madang).

Table 23: Word problem responses

No. of word problems correct	Central (n=432)	Madang (n=514)	Morobe (n=208)	Total percent (n=1154)
3	25.46	34.44	26.92	29.72
2	29.63	35.41	21.63	30.76
1	26.39	23.15	31.25	25.82
0	18.52	7.00	20.19	13.69

3.4.6 Shapes

Shape cards were shown to the children, who were asked to identify the circle and triangle. They were then assessed on their knowledge of different geometric shapes, and asked to identify real world examples:

- 1 *Can you show me which shape is the circle?*
- 2 *Can you show me which shape is the triangle?*
- 3 *How do you know it's a triangle?*
(Correct response: A response that includes any of these – it has three points, three sides, three angles)
- 4 *Can you name a real object that has a shape like this? *(point to circle)**
(Correct response: Any 3-dimensional object shaped like a sphere-a ball, a globe, an orange, a coconut, etc.)
- 5 *Can you name a real object that has a shape like this? *(point to rectangle)**
*(Correct response: Any 3-dimensional object shaped like a rectangle.)**

Table 24 shows that 17.42% of all children (24.90% in Madang, 12.50% in Morobe, and 10.88% in Central) correctly answered all five questions, while 5.20% of all children (7.18% in Central, 6.25% in Morobe, and 3.11% in Madang) did not answer any questions correctly.

Table 24: Identification of shapes responses

No. of shape questions correct	Central (n=432)	Madang (n=514)	Morobe (n=208)	Total percent (n=1154)
5	10.88	24.90	12.50	17.42
4	24.07	29.18	25.96	26.69
3	28.01	25.10	28.37	26.78
2	21.99	12.06	16.35	16.55
1	7.87	5.64	10.58	7.37
0	7.18	3.11	6.25	5.20

3.4.7 Telling time

Children were shown a clock with moveable hands, and asked to respond with the correct time shown (one o'clock, eleven o'clock and nine o'clock).

Table 25 shows that 43.41% of all children correctly answered the three times shown (46.63% in Morobe, 46.30% in Madang, and 38.43% in Central), while 28.34% of children did not answer any of the times correctly (37.71% in Central, 28.85% in Morobe, and 25.29% in Madang).

Table 25: Telling time

No. of times questions correct	Central (n=432)	Madang (n=514)	Morobe (n=208)	Total percent (n=1154)
3	38.43	46.30	46.63	43.41
2	18.75	18.68	16.83	18.37
1	11.11	9.73	7.69	9.88
0	37.71	25.29	28.85	28.34

3.5 Children's background

Background information about the children was collected through a series of questions in the survey, designed to give a picture of their home and educational environments.

3.5.1 Demographic summary

Table 26 provides a demographic summary of the children in the Literacy and Numeracy assessment in the three provinces.

Table 26: Demographic summary of Literacy and Numeracy sample (%)

Variable	Central (n=432)	Madang (n=514)	Morobe (n=208)
Speak Tok Ples at home	72	39	46
Speak Tok Pisin at home	37	94	75
Speak English at home	20	9	3
Ate breakfast this morning	90	93	96
Attended preschool	22	52	41
Repeated E1	34	36	35
Missed school previous week	37	33	30

Discussion and analysis for each of these variables is now provided.

3.5.2 Languages spoken at home

Children were asked, 'What languages do you speak at home?' and their responses were recorded without the enumerator reading answer choices. The responses were very different between provinces. In Central, 72% reported speaking Tok Ples, 37% Tok Pisin, and 20% English. In Madang, 94% reported speaking Tok Pisin, followed by 39% who reported speaking Tok Ples, and 9% English.

A similar pattern to Madang was found in Morobe, with 75% for Tok Pisin, 46% for Tok Ples, and 3% English.

A comparison of overall home use of Tok Ples, Tok Pisin, and English in the three provinces is shown in *Figure 7*. This shows that Tok Pisin is reported as the highest home use at 69.06%, followed by Tok Ples at 52.43%, and English at 12.31%. A surprisingly high percentage (38.15%) identified another unspecified language.

An analysis by gender, province and year is shown in *Figure 8*. This gives the numbers of girls and boys who reported that each language is spoken at home.

There is a noticeable difference in the patterns between provinces, with Tok Ples reported more frequently by both boys and girls in both project years in Central, but Pisin reported more frequently in Madang and Morobe. In Morobe, English was spoken at home in 7 cases in the 2018 group, and not at all in the 2019 group.

Figure 7: Languages spoken at home (% , n=1154)

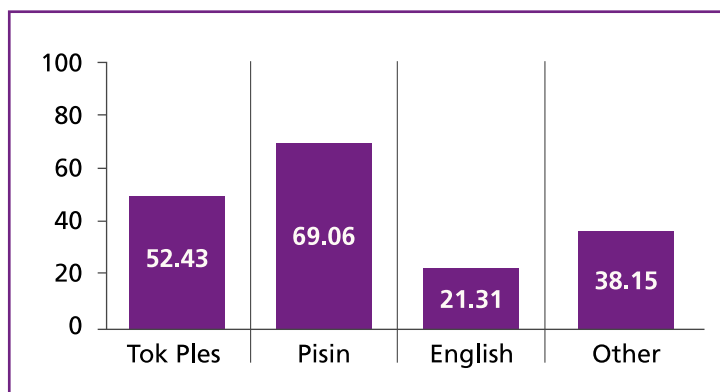
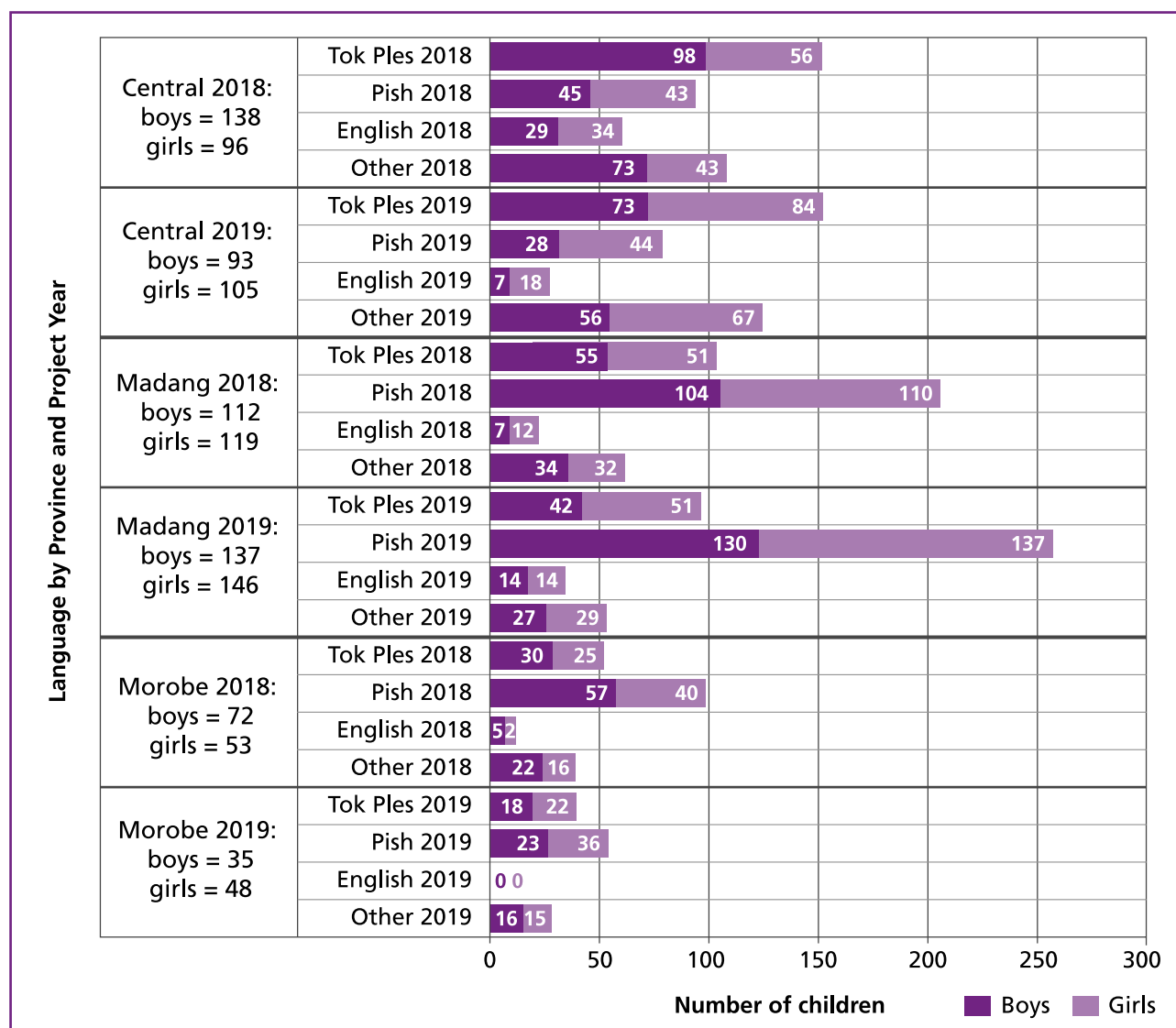


Figure 8: Languages spoken at home by gender, province and year





3.5.3 Eating breakfast

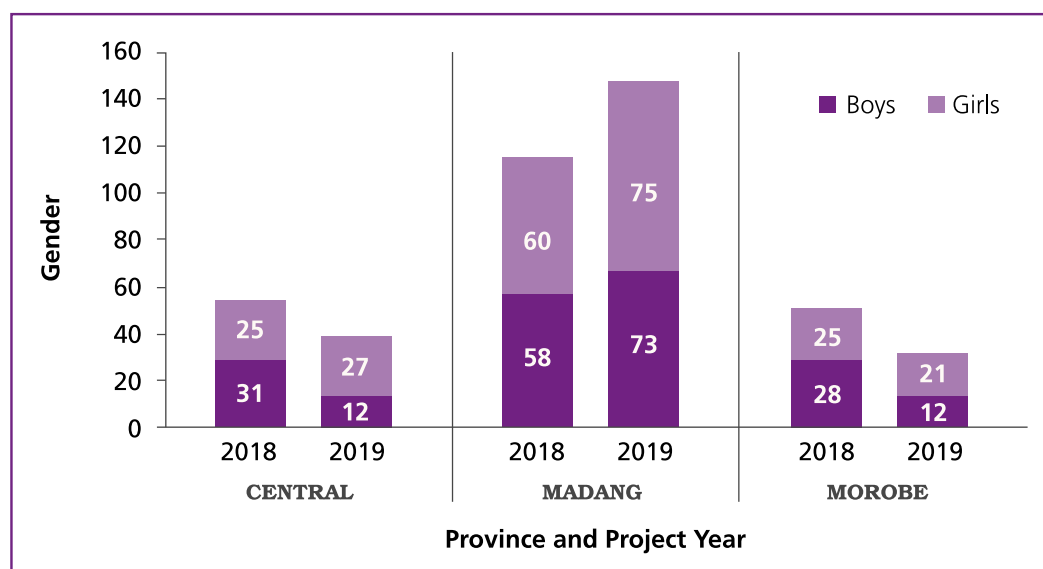
A high percentage of children reported eating breakfast: 90% in Central, 93% in Madang, and 96% in Morobe.

3.5.4 Attended preschool

Table 26 shows that the proportion of children who had attended preschool was lowest in Central at 22% and highest in Madang at 52%. Morobe was in between at 41%.

A further breakdown is shown in Figure 9. This shows that there was no overall pattern of gender difference in the children who had attended preschool. The numbers in project years were lower for 2019 in Central and Morobe, but higher for 2019 in Madang.

Figure 9: Children who had attended preschool by gender, province and year



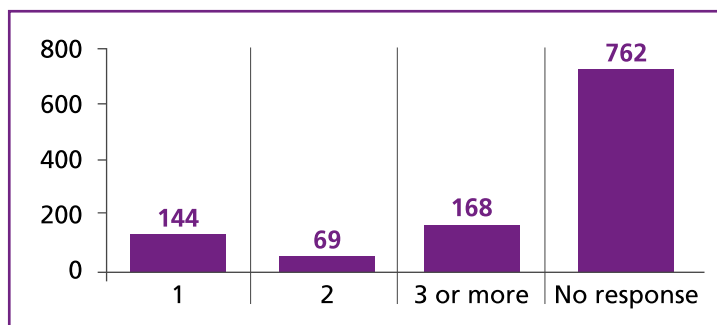
3.5.5 School absence

Around a third of all children reported having missed school in the previous week: 37% in Central, 33% in Madang, and 30% in Morobe.

Those children were then asked how many times they had missed school.

Figure 10 shows there was no response by most children, and the next highest number of times was three or more.

Figure 10: Number of times missed by those who had missed school in previous week (n=1143)



Children who reported missing school in the previous week were further asked for the reasons, as outlined in Table 27. This shows that sickness was the most frequent reason, for 12.31% of children (14.79% in Madang, 13.46% in Morobe, and 8.8% in Central).

Table 27: Reasons for missing school in the last week

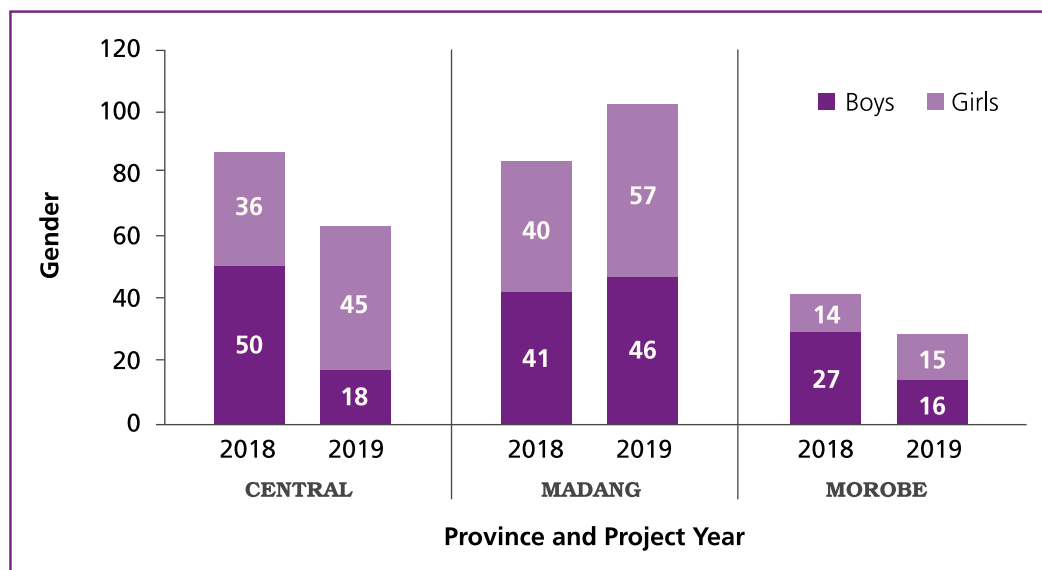
REASON*	Central (n=432)	Madang (n=514)	Morobe (n=208)	Total percent (n=1154)
Child was needed to work at home	5.79	1.95	2.88	3.55
Child was needed to work (for wages)	2.78	0.00	0.00	1.04
Child was sick	8.80	14.79	13.46	12.31
School was too far from home	0.69	0.78	0.96	0.78
Teacher was absent	5.56	2.14	0.00	3.03
No food at home	1.85	2.33	2.40	2.17
Weather (rain, flood, etc.)	0.46	1.36	1.92	1.13
Death in the family	0.93	1.75	2.40	1.56
Other reason (unspecified)	15.51	10.70	9.13	12.22

*More than one response was possible.

3.5.6 Repeated E1

Around a third of all children reported having repeated their first grade (E1): 34% in Central, 36% in Madang, and 35% in Morobe.

Further analysis by gender and project year is shown in Figure 11. This again shows no pattern of gender difference among those children who had repeated their first grade.

Figure 11: Children who had repeated E1 by gender, province and year

3.5.7 Home literacy environment (HLE)

To investigate the home literacy environment, children were asked if they had any of four types of reading materials in their home: school textbooks, religious books/Bibles, newspapers or storybooks for children. *Table 28* shows that the highest percentage of all children (80.21%) reported having religious books such as a Bible at home. This was followed by having newspapers (64.17%), having storybooks for children (55.31%), and having school textbooks (50.65%).

Table 28: Reading materials at home (%)

Reading materials at home	Central (n=432)	Madang (n=514)	Morobe (n=208)	Total percent (n=1154)
School textbooks	53.94 (n=432)	49.22 (n=514)	47.32 (n=205)	50.65 (n=1151)
Religious books/Bible	81.02 (n=432)	77.43 (n=514)	85.71 (n=196)	80.21 (n=1142)
Newspaper	69.84 (n=431)	59.53 (n=514)	63.87 (n=191)	64.17 (n=1136)
Storybooks for children	60.42 (n=432)	53.50 (n=514)	48.70 (n=193)	55.31 (n=1139)

3.5.8 Community learning environment (CLE)

As an indication of the learning environment in the community, children were asked about a number of learning activities in the last week. *Table 29* shows that the most frequent activity was doing mathematics, by around half of all children at 48.98% (52.78% in Central, 47.47% in Madang, and 44.71% in Morobe).

The least frequent activity in all provinces was reading by themselves, at just over a quarter of all children at 26.80% (26.62% in Central, 29.89% in Madang, and 20.77% in Morobe).

Table 29: Children who reported learning activities (%)

Activity in last week	Central (n=432)	Madang (n=514)	Morobe (n=208)	Total percent (n=1154)
Read anything outside school	40.97 (n=432)	37.82 (n=513)	28.16 (n=206)	35.27 (n=1151)
Read by self	26.62 (n=432)	29.38 (n=514)	20.77 (n=207)	26.80 (n=1153)
Helped anyone with their reading	32.87 (n=429)	31.96 (n=510)	28.64 (n=206)	31.70 (n=1145)
Read/share books with anyone	44.91 (n=432)	37.04 (n=513)	41.26 (n=206)	40.75 (n=1151)
Do mathematics with anyone	52.78 (n=432)	47.47 (n=514)	44.71 (n=208)	48.96 (n=1154)
Be read to	41.63 (n=430)	36.72 (n=512)	36.41 (n=206)	38.50 (n=1148)

3.6 Background influence on literacy and numeracy

T-tests were carried out with background variables which might have been predicted to influence literacy and numeracy, to see if they had any influence on the results. Variables tested were whether they had attended preschool, repeated E1, speak English at home, speak Tok Pisin at home, or speak Tok Ples at home. These were tested on literacy variables Letters, Words in English, and Words in Tok Pisin. They were also tested on numeracy variables Numbers, Skip Counting, Addition, and Subtraction.

- Attendance at preschool was found to have a significant positive effect ($p < .0001$) on all literacy and numeracy variables tested;
- Repeating E1 did not have any significant effect;
- Speaking Tok Pisin at home had a significant positive effect on Letters ($p < .0001$), Words in Tok Pisin ($p = .0001$) and Skip Counting ($p < .0001$). There was no significant effect on Words in English, Numbers, Addition or Subtraction;
- Speaking English at home had a significant positive effect on Letters ($p = .0001$), Words in English ($p < .0001$), and Subtraction ($p < .0001$). There was no significant effect on Words in Tok Pisin, Numbers, Skip Counting or Addition;
- Speaking Tok Ples had significant positive effect for Letters ($p = .0001$).

3.7 Comparison of 2018 and 2019 project schools

Statistical comparisons were carried out between the 2018 and 2019 project schools sampled in the survey, to ensure that any differences between them can be attributed to the intervention.

Appendix A gives a summary of t-tests used to test for differences between the two groups of schools. In general, there was little difference among them, although tests showed significant differences in the case of identification of English words, time taken to read a passage in Tok Pisin, number identification and skip counting by 5. Children in 2018 project schools could identify more English words, identify more numbers and skip count by 5 compared to children from 2019 schools. Children from 2019 project schools were able to read a passage in Tok Pisin more quickly than their counterparts in 2018 schools.

These findings will be controlled for in end-line analyses. Overall, the minimal differences between the 2018 and 2019 school groups shows that the matching of schools was successful in providing two equivalent samples of schools for the quasi-experimental survey design.



4 School Survey

This section describes the findings from the school survey including data from head teachers, teachers, students and BOM members. It also includes the results from classroom observations and teacher training surveys.

To better understand the schools we are working with a school survey was conducted. As the project is being implemented by different consortium partners in different provinces it was important to understand each province and as such the results are presented by province rather than cumulatively.

Interviews and focus group discussions were conducted with Head Teachers, teachers, groups of children and Board of Management representatives to gain valuable information about the schools. It was intended that all sample project schools where literacy and numeracy testing was conducted would be involved in the school baseline report. However, due to unforeseen circumstances not all schools were surveyed. In total, 41 Head Teachers, 55 teachers, 95 groups of children and 40 Board of Management (BOM) representatives were surveyed. Given the small sample sizes for some of the groups, numbers rather than percentages are given to reduce the generalisations being made. Detailed below is how the interviews and focus groups were conducted and topic areas covered in these.

Interviews were held with Head Teachers. These interviews were approximately 60 minutes in duration and focused on student demographics, Head Teacher qualifications, in-service training and support from the district education office, SLIPs, school infrastructure, teacher absenteeism and school and community relationships.

Focus groups with groups of four children (same gender) were conducted in the three provinces. Typically, two focus groups were held in each school and lasted approximately 20–30 minutes. The discussion topics related to access to schooling, effective teaching and learning, gender sensitivity, health, safety and protective environments and community relationships. In Central, focus groups were conducted with E2 students, while in Madang and Morobe they were conducted with E1 students. The decision to speak with E1 students rather than E2 was due to E2 students undergoing literacy and numeracy testing. Only children were surveyed (in some schools adults were enrolled in the elementary classes).

As the project is being implemented by different consortium partners in different provinces it was important to understand each province and as such the results are presented by province rather than cumulatively.

Interviews with one teacher randomly selected at each school were conducted. Interviews lasted approximately one hour and focused on teacher demographics and qualifications, absenteeism, in-service training and support from their Head Teacher, teaching and learning, classroom management, challenges and parent-teacher relationships.

4.1 Head Teachers

4.1.1 Central Province

Interviews were held with Head Teachers from 21 schools in Central Province. Eleven schools were 2018 project schools and 10 were 2019 project schools. Twelve schools were Government schools and nine were church schools.

Student demographics

Sample project schools ranged from small schools with approximately 30 students to large schools with more than 450 students. Student teacher ratios ranged from 1:14 to 1:58. *Table 30* shows student enrolment, number of teachers and student teacher ratios for the 2018 and 2019 project schools.

Table 30: No. students, teachers and student teacher ratios in 2018 and 2019 project schools – Central

Project year	School number	District	Number of students enrolled	Number of teachers	Student teacher ratio
2018	1	Rigo	457	10	1:46
	2	Rigo	322	9	1:33
	3	Rigo	44	1	1:44
	4	Rigo	57	2	1:29
	5	Rigo	84	3	1:28
	6	Rigo	34	1	1:34
	7	Kairuku	106	4	1:27
	8	Kairuku	64	2	1:32
	9	Kairuku	315	6	1:53
	10	Kairuku	52	3	1:17
	11	Kairuku	71	2	1:36
2019	1	Rigo	123	3	1:41
	2	Rigo	175	3	1:58
	3	Rigo	42	3	1:14
	4	Rigo	57	missing	missing
	5	Rigo	42	3	1:14
	6	Kairuku	83	3	1:28
	7	Kairuku	379	10	1:38
	8	Kairuku	260	6	1:43
	9	Kairuku	284	7	1:14
	10	Kairuku	40	1	1:40

According to Head Teachers children had dropped out of school in 16 schools. In half of these schools the number of children who dropped out was more than 15. Out of the 16 schools where children dropped out, the number of boys exceeded the number of girls in 11 schools. Seventeen Head Teachers reported that they had students with disabilities enrolled in their school.

Teaching qualifications

Of the 21 Head Teachers, 16 were male. Head Teachers had been in their current position between one and 18 years and had between one and 21 years of teaching experience. The highest level of schooling completed by 18 Head Teachers was Year 10; one teacher had completed Year 11 and two had completed Year 12. Seventeen of the Head Teachers had a Certificate of Elementary Teaching. Head Teachers were asked to rate their English language ability. Four teachers rated their English as 'excellent', seven as 'good' and 10 as 'okay'.



In-service training and support from the district education office

Nineteen of the 21 Head Teachers reported having received in-service training on the Standards Based Curriculum (SBC). Two thirds of the Head Teachers surveyed (n=14) had received other in-service training in the last year.

Thirteen Head Teachers reported not having received a visit from the elementary inspector last year. For those eight schools that received a visit from the district inspector, only five reported having classroom observations. Only five of the 21 Head Teachers were satisfied with the level of support from the district office. Twelve Head Teachers were very unsatisfied with the level of support. While seventeen schools out of the 21 surveyed had students with disabilities enrolled, only one school had received any support from outside the school for students with disabilities.

School Learning and Improvement Plans (SLIPs)

According to the 21 Head Teachers surveyed, only four schools had a SLIP. One school involved only teachers, while another school involved teachers and the BOM when creating the SLIP. Teachers, children, parents and the BOM were involved in creating the SLIP in the other two schools.

School infrastructure

Eleven of the 21 schools were reported to have clean drinking water. Twelve schools had water available for hand washing. Only three schools had electricity. Nine schools had clean toilets for teachers and eight schools had clean toilets for students. Twelve schools were reported as not having enough seating spaces in the classrooms. Three schools had a school library but only one school allowed students to borrow books and take them home.

Teacher absenteeism

Thirteen Head Teachers out of the 21 surveyed were absent 10 days or less in the past year. The other nine teachers were absent 20 days or more. According to the research literature absences numbering more than 10% of the school year (20 days out of the 200 days in a school year) is considered as chronic absenteeism. Reasons for absences included illness, family matters, school administration travel and travel to receive wages. When teachers are away, 10 schools merge classes, two schools send children home and nine schools get a replacement teacher. Two thirds of Head Teachers reported that their school was open everyday in the last school year.

School and community relationships

Just over half of the Head Teachers (n=11) reported that community members came to the school to teach culture. Similar numbers of Head Teachers (n=12) reported that there was an active Parents and Citizens committee at their school. Fifteen Head Teachers reported that their schools held meetings with parents to share ideas about how they could support their children's learning.

4.1.2 Madang Province

Interviews were held with Head Teachers from 11 schools in Madang Province. Four schools were 2018 project schools and seven were 2019 project schools. Five schools were Government schools and six were church schools.

Student demographics

Most of the sample project schools had between 100 and 300 students. Student teacher ratios ranged from 1:25 to 1:95. *Table 31* shows student enrolment, number of teachers and student teacher ratios for the 2018 and 2019 project schools.

Table 31: No. students, teachers and student teacher ratios in 2018 and 2019 project schools – Madang

Project year	School number	District	Number of students enrolled	Number of teachers	Student teacher ratio
2018	1	Usino Bundi	63	2	1:32
	2	Usino Bundi	55	1	1:55
	3	Middle Ramu	197	4	1:49
	4	Middle Ramu	75	3	1:25
2019	1	Madang	50	2	1:25
	2	Madang	300	4	1:75
	3	Madang	120	3	1:40
	4	Usino Bundi	173	5	1:35
	5	Usino Bundi	100	2	1:50
	6	Middle Ramu	168	6	1:28
	7	Middle Ramu	285	3	1:95

According to Head Teachers children dropped out in all but one school. The number of children who dropped out ranged between one and 18. In all six schools where children dropped out, the number of boys exceeded the number of girls. Head Teachers reported that students with disabilities were enrolled in seven out of the 11 schools.

Teaching qualifications

Of the 11 Head Teachers, six were male. Head Teachers had been in their current position between two and 19 years and had between three and 19 years of teaching experience. The highest level of schooling completed by one Head Teachers was Year 9, six teachers had completed Year 10 and four had completed Year 12.

The highest level of schooling completed by one Head Teachers was Year 9, six teachers had completed Year 10 and four had completed Year 12.

Ten out of the 11 Head Teachers had a Certificate of Elementary Teaching. Head Teachers were asked to rate their English language ability. One teacher rated their English as 'excellent', two as 'good' and eight as 'okay'.

In-service training and support from the district education office

Nine of the 11 Head Teachers reported having received in-service training on the SBC. Just over half of the Head Teachers surveyed (n=6) had received other in-service training in the last year. Five Head Teachers reported having received a visit from the elementary inspector last year. For those five schools that received a visit from the district inspector, four reported having classroom observations. Only four of the seven Head Teachers were satisfied with the level of support from the district office. Seven out of the 11 schools surveyed had students with disabilities enrolled. Of these seven schools, only one school had received any support from outside the school for students with disabilities. Two schools that currently do not have any students with disabilities had received outside support in the past.

School Learning and Improvement Plans (SLIPs)

According to the 11 Head Teachers surveyed, only five schools had a SLIP. Of the five schools with a SLIP, four involved teachers in creating the SLIP, three involved students, two involved parents and one involved the BOM.

School infrastructure

Four of the 11 schools were reported to have clean drinking water. Five schools had water available for hand washing. Only three schools had electricity throughout the school. Six of the 11 schools had clean toilets for teachers and eight schools had clean toilets for students.

Four of the 11 schools were reported to have clean drinking water and five schools had water available for hand washing.

Nine schools were reported as not having enough seating spaces in the classrooms. Two schools had a school library and only one school allowed students to borrow books and take them home.

Teacher absenteeism

Seven Head Teachers out of the 11 surveyed were absent 10 days or less in the past year. Three teachers were absent between 11 and 13 days. Only one Head Teacher was chronically absent with 40 days. Reasons for absences included illness, family matters and school administration travel. When teachers are away, six schools merge classes, one school send children home and four schools get a replacement teacher. Five Head Teachers reported that their school was open every day in the last school year.

School and community relationships

Just over half of the Head Teachers (n=6) reported that community members came to the school to teach culture to the students (arts, craft, dance etc.). Nearly all Head Teachers (n=10) reported that there was an active Parents and Citizens committee at their school. Similarly, all but one Head Teacher reported that their schools held meetings with parents to share ideas about how they could support their children's learning.

4.1.3 Morobe Province

Interviews were held with Head Teachers from nine schools in Morobe Province. Six schools were 2018 project schools and three were 2019 project schools. Six schools were Government schools and three were church schools.

Student demographics

Sample project schools had between 33 and 134 students. Student teacher ratios ranged from 1:11 to 1:46. *Table 32* shows student enrolment, number of teachers and student teacher ratios for the 2018 and 2019 project schools.

Table 32: No. students, teachers and student teacher ratios in 2018 and 2019 project schools – Morobe

Project year	School number	District	Number of students enrolled	Number of teachers	Student teacher ratio
2018	1	Markham	134	3	1:46
	2	Markham	47	2	1:23
	3	Markham	105	3	1:35
	4	Markham	54	3	1:18
	5	Nawaeb	83	3	1:27
	6	Nawaeb	94	3	1:31
2019	1	Markham	77	3	1:26
	2	Markham	70	3	1:24
	3	Nawaeb	33	3	1:11

According to Head Teachers children dropped out in five schools. In those schools where children dropped out, three schools had one child drop out, one had four children drop out and one had 15 children drop out. In schools where children dropped out, the number of boys exceeded the number of girls. Only three Head Teachers reported that students with disabilities were enrolled in their schools.

Teaching qualifications

Of the nine Head Teachers, seven were male. Head Teachers had been in their current position between seven and 18 years and had between eight and 19 years of teaching experience. The highest level of schooling completed by all Head Teachers was Year 10. All nine Head Teachers had a Certificate of Elementary Teaching. Head Teachers were asked to rate their English language ability. One teacher rated their English as 'excellent', two as 'good' and eight as 'okay'.

In-service training and support from the district education office

Eight of the nine Head Teachers had received in-service training on the SBC. Two thirds of the Head Teachers surveyed (n=6) had received other in-service training in the last year. Only two Head Teachers reported having received a visit from the elementary inspector last year. Of the two schools that received a visit from the district inspector, only one reported having classroom observations. The two Head Teachers who had received visits from the district office were satisfied with the level of support from the district office. Six Head Teachers were unsatisfied with the level of support. One third of the schools surveyed (n=3) had students with disabilities enrolled. None of the Head teachers reported receiving any support from outside the school for students with disabilities.

School Learning and Improvement Plans (SLIPs)

According to the nine Head Teachers surveyed, four schools had a SLIP. Of the four schools with a SLIP, three involved the BOM in creating the SLIP and one school involved the teachers.

School infrastructure

Four of the nine schools were reported to have clean drinking water. Five schools had water available for hand washing. Only one school had electricity throughout the school. Two of the nine schools had clean toilets for teachers and six schools had clean toilets for students. Five out of the nine schools were reported as having enough seating spaces in the classrooms. Only one school had a school library, however three Head Teachers reported that children could borrow books and take them home.

Teacher absenteeism

Six out of the nine Head Teachers surveyed were absent 10 days or less in the past year. The other three teachers were chronically absent with 21, 28 and 30 days away from school in the past year. Reasons for absences included illness and school administration and training travel. When teachers are away, five schools merge classes one school send children home and three schools get a replacement teacher). Eight of the nine Head Teachers reported that their school was open everyday in the last school year.

School and community relationships

Just over half of the Head Teachers (n=5) reported that community members came to the school to teach culture to the students (arts, craft, dance etc.). Seven out of the nine Head Teachers reported that there was an active Parents and Citizens committee at their school. All but one Head Teacher reported that their schools held meetings with parents to share ideas about how they could support their children's learning.

4.2 Boards of Management (BOM)

Interviews with school BOM representatives were conducted in all three provinces. In the most part, male, chair of the board participated in the interviews. Typically a single board member was interviewed, however there were occasions where two or more representatives took part. Interviews were approximately 20 minutes duration and focused on membership of the board, frequency of meetings and SLIPs.

4.2.1 Central Province

Interviews were conducted with school BOM representatives from 22 schools. An additional two schools from Rigo were visited but they did not have an active BOM. There were 11 schools from both Rigo and Kairuku districts, eight were 2018 project schools and 14 were 2019 project schools. Only one school BOM had filled all the positions/ roles of Chair, Secretary, Treasurer, Head Teacher, Teacher Representative and Community Leader. The majority of schools had a chair, secretary and treasurer. BOM were much less likely to have Head Teacher, Teacher Representative or Community leader as members. See *Table 33* for breakdown of roles and schools. Members of the board were reported to have been in the role between one and five years. Of the 44 named BOM positions in the interviews only seven were held by females.

One school BOM met monthly, two met annually, 14 met biannually, and six met at other frequencies. No BOM reported meeting each term. Only five BOM reported that the school had a SLIP. The five schools that had a SLIP included two plans for one year and two plans for three years. One BOM was unsure how long the SLIP plan was for.

4.2.2 Madang Province

Interviews with 18 school BOM representatives were conducted in 12 schools. There were four schools from each of the three project districts (Madang, Usino Bundi and Middle Ramu). There were six schools each from the 2018 and 2019 projects.

None of the 12 schools had filled all the positions/ roles of Chair, Secretary, Treasurer, Head Teacher, Teacher Representative and Community Leader. Most schools had a chair but less than half the sample had the Head Teacher or Teacher. The schools had various combinations of the positions (see *Table 34*). Twenty-six out of 33 named BOM positions in the interviews were held by males. Board members were reported to have been in their role between one and six years except for three members who had been in the role for 14 or 15 years.

The majority of representatives reported that the BOM met each term (n=seven schools). Three school BOMs met annually, one school BOM met each semester (twice a year) and one school BOM met at other times. Representatives reported that seven of the 12 schools had a SLIP. Of the seven schools that had a SLIP three had a plan for one year and four had a plan for three years.

4.2.3 Morobe Province

Interviews with school BOM representatives were conducted in six schools. All six schools were in the Markham district and five were 2018 project schools. All schools had the Head Teacher as part of the BOM. Only one school had filled positions for Chair, Secretary, Treasurer, Head Teacher, Teacher Representative and Community Leader. The other five schools had combinations of the positions (see *Table 35*).

Members of the board had been in the role between one and five years. Of the 18 named BOM positions in the interviews five were held by females.

Four of the six BOM representatives reported meeting each term while the other two reported meeting each month. Three of the BOM representatives reported that the school had a SLIP. Of these, one was for one year while two were for three years.

Table 33: Board of Management positions filled – Central

Role	No. of Schools
Chair	18
Secretary	17
Treasurer	18
Head Teacher	8
Teacher Representative	5
Community or church leader	9

Table 34: Board of Management positions filled – Madang

Role	No. of Schools
Chair	9
Secretary	5
Treasurer	7
Head Teacher	4
Teacher Representative	1
Community or church leader	3

Table 35: Board of Management positions filled – Morobe

Role	No. of Schools
Chair	2
Secretary	4
Treasurer	3
Head Teacher	6
Teacher	3
Community leader	4

4.3 Children's focus group discussions

4.3.1 Central Province

A total of 46 groups of children were surveyed in Central (28 in Rigo district and 18 in Kairuku district). There were 23 groups for both males and females. Twenty groups comprised 2018 project schools.

Access to schooling

More than 90% (n=42) of the groups of children surveyed have friends in the village/town who are not attending school. Of the four groups who did not have friends who are not attending school, three were female groups. Just over 55% (n=26) of the groups knew other children who do not attend school due to disability. There were slightly more male groups who knew children with a disability who did not attend than female groups (14 vs 12) and vice versa for not knowing children with disability who are not attending (11 female groups vs nine male groups).

Teaching and learning

All but two groups of female children thought their teacher did other things than talk and write on the board to teach them. While teachers most frequently used chalkboards, teachers also used manipulatives, materials from the environment and pictures, charts and posters. Games and puzzles were least used. *Table 36* displays the number of gender groups who reported what materials teachers use to help them learn.

Children were also asked about strategies teachers use in the classroom such as using group work and going outside to learn. Most children thought the teacher explained things so they could understand, read stories and asked students to share their ideas and opinions. *Table 37* outlines the different strategies teachers used according to the groups.

Most groups of children (n=44) thought their teachers treated girls and boys the same. Fewer groups (n=33) reported working together in mixed gender groups – 16 girl groups and 17 boy groups.

Table 36: Types of materials used by teachers to help students learn according to overall and gender groups – Central children

Type of materials	No. of groups (n=46)	No. of female groups (n=23)
Blackboard	44	22
Games and puzzles	25	12
Manipulatives (hands-on materials)	34	18
Materials from the environment	27	16
Pictures, charts, posters	32	16
Textbooks	29	13

Table 37: Teaching strategies used by teachers to help students learn according to overall and gender groups – Central children

Teaching strategy	No. of groups (n=46)	No. of female groups (n=23)
Explaining schoolwork so they can understand	44	22
Games and puzzles	25	12
Manipulatives (hands-on materials)	34	18
Materials from the environment	27	16
Pictures, charts, posters	32	16
Textbooks	29	13

Health, safety and protective environments

Forty-three out of the 46 groups reported that they could play outside during lunch and recess. Fifteen groups of children, 10 of whom were females, reported that they feel unsafe at school. Reasons children mentioned for feeling scared were poisonous snakes, being bullied, not completing their work and being smacked by the teacher. Approximately 90% of the groups (n=41) reported that the teacher smacks students in their class.

Community relationships

Approximately 70% of both gender groups (n=33) reported that their parents come to the school. More groups (n=36) reported that their teachers talk to their parents. Five groups each of boys and girls said their teacher did not talk to their parents.

4.3.2 Madang Province

Twenty groups of children were surveyed in Madang province, five in Madang district, seven in Usino Bundi district and eight in Middle Ramu district. Ten groups of males and 10 groups of females were surveyed. Seven groups were from 2018 project schools.

Access to schooling

Approximately 80% (n=16) of the groups of children surveyed have friends in the village/town who are not attending school. Of the four groups who did not have friends who are not attending school, one was female. Sixty percent (n=12) of the groups knew other children who do not attend school due to disability. There were double the numbers of female groups who knew children with a disability who did not attend than male groups (eight vs four).

Teaching and learning

Nearly all female groups (nine out of 10) thought their teacher did other things than talk and write on the board to teach them. In contrast, nearly all boy groups thought their teacher did not do other things (eight out of 10).

While teachers most frequently used chalkboards, teachers also used pictures, charts and posters and textbooks. Games and puzzles were least used.

Table 38: Types of materials used by teachers to help students learn according to overall and gender groups – Madang children

Type of materials	No. of groups (n=20)	No. of female groups (n=10)
Blackboard	19	10
Games and puzzles	8	7
Pictures, charts, posters	12	8
Textbooks	13	7

Table 38 displays the number of gender groups who reported what materials teachers use to help them learn.

Children were also asked about strategies teachers use in the classroom such as using group work and going outside to learn. According to the children all teachers read stories and asked students to share their ideas and opinions. Many teachers used small group work and played learning games. Table 39 outlines the different strategies teachers used according to the groups.

Seventy percent (n=14) of groups of children thought their teachers treated girls and boys the same. Of the six groups who thought the teacher did not treat them the same two were female groups. More groups of children (n=17) reported working together in mixed gender groups. Of these 17 groups, nine groups were female.

Health, safety and protective environments

Seventeen out of the 20 groups reported that they could play outside during lunch and recess.

Table 39: Teaching strategies used by teachers to help students learn according to overall and gender groups – Madang children

Teaching strategy	No. of groups (n=20)	No. of female groups (n=10)
Explaining schoolwork so they can understand	13	10
Ask students to share ideas and opinions	19	10
Play learning games	17	9
Small group work	18	9
Go outside to learn things	14	8
Set independent work	12	7
Read stories	19	10

Of the three groups who were not allowed to play, three were male. Eighty percent of children (n=16) reported feeling safe at school. Of the four groups that felt unsafe at school three were female groups. Reasons children mentioned for feeling scared were: being bullied, doing the wrong thing, drug addicts and tribal fighting. Eighty-five percent of the groups (n=17) reported that the teacher smacks students in their class.

Community relationships

Nineteen out of the 20 groups reported that their parents come to the school. Only one group of boys said their parents do not come to the school. Slightly fewer groups (n=18) reported that their teachers talk to their parents. Two groups of males said their teacher did not talk to their parents.

4.3.3 Morobe Province

Twenty-nine groups of children were surveyed in Morobe province, one group in Markham district and twenty-eight groups in Nawaeb district. Fifteen groups of male children and 14 groups of female children were surveyed. Fourteen groups were from 2018 project schools.

Access to schooling

Just over 80 percent (n=24) of the groups of children surveyed have friends in the village/town who are not attending school. Of the five groups who did not have friends who are not attending school, four were female. Only 28 percent (n=8) of the groups knew other children who do not attend school due to disability. There were slightly more female groups who knew children with a disability who did not attend school than male groups (five vs three).

Teaching and learning

Nearly 60 percent of groups (n=17) thought their teacher did other things than talk and write on the board to teach them – 10 male and seven female groups.

Of the 12 groups who disagreed, seven were female. While teachers most frequently used chalkboards, teachers also used pictures, charts and posters. Games and puzzles were least used.

Table 40 displays the number of gender groups who reported what materials teachers use to help them learn.

Children were also asked about strategies teachers use in the classroom such as using group work and going outside to learn. Table 41 outlines the different strategies teachers used according to the groups.

All groups of children thought their teachers treated girls and boys the same. Twenty-five out of the 29 groups (86%) reported that they worked in mixed gender groups.

Health, safety and protective environments

More than 90% of children (n= 27 groups) reported that they could play outside during lunch and recess. More than 90% of children (n= 27 groups) reported feeling safe at school. Of the two groups that felt unsafe at school one was a female group. The one reason mentioned for feeling scared was the teacher getting angry with them. Nearly 80% of the groups (n =23) reported that their teacher smacks students in their class.

Community relationships

All but one of the groups reported that their parents come to the school. One male group said their parents do not come to the school. The same numbers of children reported that their teacher talks to their parents.

Table 40: Types of materials used by teachers to help students learn according to overall and gender groups – Morobe children

Type of materials	No. of groups (n=29)	No. of female groups (n=14)
Blackboard	28	13
Games and puzzles	5	4
Pictures, charts, posters	26	12
Textbooks	14	7

Table 41: Teaching strategies used by teachers to help students learn according to overall and gender groups – Morobe children

Teaching strategy	No. of groups (n=29)	No. of female groups (n=14)
Explaining schoolwork so they can understand	20	14
Ask students to share ideas and opinions	20	12
Play learning games	25	14
Small group work	25	13
Go outside to learn things	12	11
Set independent work	21	13
Read stories	29	14

4.4 Teachers

4.4.1 Central Province

Teachers from 24 schools in Central were interviewed. 14 teachers were from Rigo district and 10 were from Kairuku district. There were 12 groups each from 2018 and 2019 project schools.

Teacher demographics and qualifications

Of the 24 teachers, nine were female. Teachers were aged between 25 and 33 years. Teachers had been teaching between 5 and 21 years. Twenty-one teachers had completed Year 10 and one had completed Year 11 (two were missing data). Fifteen teachers had a Certificate of Elementary Teaching. Of the nine who did not have a Certificate, three were female. Teachers were asked to rate their English language ability. Two teachers rated their English as 'excellent', nine as 'good' and 13 as 'okay'.

Teacher absenteeism

Eleven out of the twenty-four teachers surveyed were absent 10 days or less in the past year. Three teachers were absent between 11 and 13 days. The other 10 teachers were chronically absent with 20 days or more away from school. Reasons for absences included illness, family matters, school administration travel and travel to receive wages.

In-service training and support from their Head Teacher

More than 85% of teachers (n=21) had received in-service training on the SBC. Seventy-one percent of teachers (n=17) had received in-service training other than SBC in the past two years. Only four out of the 24 teachers (17%) had received any training on teaching children with disabilities. Nine out of the 24 teachers had been trained on child protection.

Only five teachers reported that their school had a SLIP. Sixteen teachers said their school did not have a SLIP and three teachers did not know whether their school had a SLIP. Of the five teachers whose school had a SLIP, four had been involved in developing the plan and three teachers had received training about SLIP. All but one teacher felt supported by their Head Teacher.

Teaching and learning

All but two teachers reported that they did other things than talk and write on the board to teach them. Teaching strategies most frequently used by teachers beyond talking and writing on the blackboard were group work, role-plays and singing songs.

Table 42 outlines the different strategies teachers use and the number of teachers who use them.

Table 42: Teaching strategies most frequently used by teachers to help students learn – Central teachers

Teaching strategy	No. of teachers (n=24)	No. of female teachers (n=9)
Peer learning	8	4
Group work	17	8
Role-plays	16	7
Singing songs	17	7
Flash cards	7	4

These results must be taken with caution as when teachers were asked how often they use group work, the most common response was 'sometimes' (n=14). Only four teachers said 'everyday' and six teachers said 'often'.

Teachers were also asked what materials they use to help children learn. Teachers most frequently used chalkboards, however, they also used manipulatives, materials from the environment and pictures, charts and posters. Games and puzzles were least used.

Table 43 displays the types of materials teachers use and the number of teachers who use them.

Teachers were asked how they assess children's learning. The most frequently reported methods were assessing children's daily work, assessing their homework, end of term/semester tests and questioning. See Table 44 for details of teacher's ways of assessing children's learning.

Teachers were asked if they give different activities to girls and boys based on their gender. Twelve teachers said they did. Of the 12 teachers four were females.

Classroom management

According to teachers, 16 out of the 24 interviewed (67%) use physical punishment to manage student behaviour. This is in contrast to the children's reports where more than 90% of the children reported that their teacher smacks students in their class. A possible explanation for this is that teachers are more likely to be influenced by social desirability than children, that is, teachers are more likely to give socially acceptable answers than students. Teachers were also asked if they use different kinds of discipline for boys and girls. One third of teachers (n=6) said they did use different discipline. Of these six, four were females.

Table 43: Types of materials used by teachers to help students learn – Central teachers

Type of materials	No. of teachers (n=24)	No. of female teachers (n=9)
Blackboard	23	9
Games and puzzles	5	3
Manipulatives (hands-on materials)	18	9
Materials from the environment	16	7
Pictures, charts, posters	18	7
Textbooks	14	5

Table 44: Ways teachers assess children's learning and numbers of teachers who use them – Central teachers

Ways of assessing learning	No. of teachers (n=24)	No. of female teachers (n=9)*
Children's daily work	22	7
End of term/semester tests	18	9
Homework	20	9
Questioning	17	8
Quizzes	6	4
Weekly/monthly tests	12	6

*Total of nine female teachers in sample

Challenges

Teachers were asked about the challenges they face in their day-to-day work. Sixteen teachers named lack of teaching materials and resources, 13 teachers mentioned lack of support from the community, 10 teachers mentioned financial problems and seven teachers mentioned insufficient time. Teachers were also asked how often they discuss their experiences and ideas about teaching with other teachers at their school. Five teachers said never, 10 teachers said sometimes, five teachers said often and three teachers said everyday.

Parent-teacher relationships

Only two out of the 24 teachers had not met all the parents of children in their class. Most teachers speak to parents each term. *Table 45* details how often teachers talk to parents about their children's learning.

Table 45: Frequency of teachers talking to parents about their children's learning – Central teachers

Frequency	No. of teachers (n=24)	No. of female teachers (n=9)
Never	2	1
Weekly	3	0
Monthly	4	1
Each term	13	6
Each semester	3	0
Annually	2	1

Table 46: Ways teachers encourage parents to support their children's learning and numbers of teachers – Central teachers

Ways suggested by teachers	No. of teachers (n=24)	No. of female teachers (n=9)
Help with homework	21	9
Read to children	11	4
Talk to children about what happened at school	13	4
Observe children in class	6	3

Teachers were asked how they encourage parents to support their children's learning. Teachers most frequently mentioned asking parents to help with homework (see *Table 46* for more details).

4.4.2 Madang Province

Teachers from 12 schools in Madang province were interviewed. Four teachers from Madang, Middle Ramu and Usino Bundi districts participated in the interviews. Five teachers were 2018 project schools.

Teacher demographics and qualifications

Of the 12 teachers, five were female. Teachers were aged between 27 and 56 years. Teachers had been teaching between 1 and 20 years. Eleven of the 12 teachers had completed Year 10 (data was incomplete from one teacher). Three quarters of teachers (n = 8) had a Certificate of Elementary Teaching. Teachers were asked to rate their English language ability. Ten teachers rated their English as 'okay' and two teachers rated their English as 'good'.

Teacher absenteeism

Seven out of the 12 teachers surveyed were absent 10 days or less in the past year. One teacher was absent 11 days. Four teachers were chronically absent with 20 days or more away from school. Reasons for absences included illness, pregnancy, lack of accommodation and teacher training.

In-service training and support from their Head Teacher

More than 80% of teachers (n=10) had received in-service training on the Standards Based Curriculum. Two thirds of teachers (n=8) had received in-service training other than Standards Based Curriculum in the past two years. One third of teachers (n = 4) had received some form of training on teaching children with disabilities. Similarly, only third of teachers had been trained on child protection.

Four out of the 12 teachers reported that their school had a SLIP. Only two teachers had been involved in developing the plan and both teachers had received training about SLIP. All but one teacher felt supported by their Head Teacher.

Teaching and learning

All but one teacher reported that they did other things than talk and write on the board to teach children. Singing songs and group work were the most popular teaching strategies used by teachers (see *Table 47* for more details).

Teachers were also asked what materials they use to help children learn. Most teachers used materials from the environment (sticks, stones etc.) and half used the blackboard and textbooks. *Table 48* displays the types of materials teachers use.

Teachers were asked how they assess children's learning. All teachers reported using children's daily work to assess their learning and 10 teachers used homework. See *Table 49* for details of teacher's ways of assessing children's learning.

Teachers were asked if they give different activities to girls and boys based on their gender. Eight out of the 10 teachers who responded said they did.

Classroom management

According to teachers, five out of the 12 teachers interviewed (42%) use physical punishment to manage student behaviour. This contrasts with the children's reports where approximately 85% of the children reported that their teacher smacks students in their class. Teachers were also asked if they use different kinds of discipline for boys and girls. All but one teacher said they did use different discipline methods.

Table 47: Teaching strategies used by teachers to help students learn – Madang teachers

Teaching strategies	No. of teachers (n=12)
Peer learning	5
Group work	7
Role-plays	4
Singing songs	8
Flash cards	1

Table 48: Types of materials used by teachers to help students learn – Madang teachers

Type of materials	No. of teachers (n=12)
Blackboard	7
Manipulatives (hands-on materials)	4
Materials from the environment	9
Pictures, charts, posters	6
Textbooks	7

Table 49: Ways teachers assess children's learning – Madang teachers

Ways of assessing learning	No. of teachers (n=12)
Children's daily work	12
End of term/semester tests	4
Homework	10
Questioning	6
Weekly/monthly tests	6

Challenges

Teachers were asked about the challenges they face in their day-to-day work. Teachers could name more than one thing. Eight teachers mentioned insufficient time, seven teachers mentioned lack of teaching materials and resources, six teachers mentioned lack of support from the community, and three teachers mentioned financial problems. Teachers were also asked how often they discuss their experiences and ideas about teaching with other teachers at their school. All teachers spoke with other teachers at their school. Nine teachers said sometimes, one teacher said often and two teachers said everyday.

Parent-teacher relationships

Nearly half of the teachers (n=5) had not met all of the parents of the children they are teaching.

This finding may be explained by how frequently teachers talk to parents. One teacher reported speaking to parents weekly, nine teachers speak to parents each term and two teachers speak to parents each semester. Teachers were asked how they encourage parents to support their children's learning. Teachers most frequently mentioned asking parents to talk to their children about what happened at school (see *Table 50* for more details).

Table 50: Ways teachers encourage parents to support their children's learning and numbers of teachers – Madang teachers

Ways suggested by teachers	No. of teachers (n=12)
Help with homework	9
Read to children	6
Talk to children about what happened at school	9
Observe children in class	2

4.4.3 Morobe Province

Teachers from 18 schools in Morobe province were interviewed. Six teachers were from Markham district and 12 were from Nawaeb district. There were 10 2018 project schools and eight 2019 project schools.

Teacher demographics and qualifications

Of the 18 teachers, six were female. Teachers were aged between 28 and 48 years. Teachers had been teaching between 5 and 20 years. Sixteen teachers had completed Year 10, one had completed Year 11 and one had completed Year 12. Fifteen out of the 18 teachers had a Certificate of Elementary Teaching. Of the three who did not have a Certificate, one was female. Teachers were asked to rate their English language ability. Two teachers rated their English as 'excellent', three as 'good' and 13 as 'okay'.

Teacher absenteeism

Thirteen out of the eighteen teachers surveyed were absent 10 days or less in the past year. Two teachers were absent between 11 and 13 days. Four teachers were chronically absent with 20 days or more away from school. Reasons for absences included illness, travel to receive wages, teacher in-services, pregnancy and lack of accommodation.

In-service training and support from their Head Teacher

More than 85% of teachers (n=16) had received in-service training on the Standards Based Curriculum. Similarly, 16 teachers had received in-service training other than Standards Based Curriculum in the past two years. One third of teachers (n=6) had received some form of training on teaching children with disabilities. Only four teachers had been trained on child protection. Of those four teachers trained, one was female. Fourteen out of the 18 teachers reported that their school had a SLIP. Eight teachers had been involved in developing the plan but only three teachers had received training about SLIP. Eleven of the 18 teachers felt supported by their Head Teacher.

Teaching and learning

All teachers reported that they did other things than talk and write on the board to teach them. Singing songs was the most popular teaching strategy used by teachers. *Table 51* outlines the different strategies teachers use and the number of teachers who use them.

Teachers were also asked what materials they use to help children learn. All but one teacher used materials from the environment (sticks, stones etc.) and all but two teachers used the blackboard and pictures, charts and posters. *Table 52* displays the types of materials teachers use and the number of teachers who use them.

Teachers were asked how they assess children's learning. The most frequently reported methods were questioning, weekly/monthly tests and assessing children's daily work. See *Table 53* for details of teacher's ways of assessing children's learning.

Table 51: Teaching strategies used by teachers to help students learn – Morobe teachers

Teaching strategies	No. of teachers (n=18)	No. of female teachers (n=6)
Peer learning	4	2
Group work	4	1
Role-plays	1	1
Singing songs	11	4
Flash cards	4	2

Table 52: Types of materials used by teachers to help students learn – Morobe teachers

Type of materials	No. of teachers (n=18)	No. of female teachers (n=6)
Blackboard	15	6
Games and puzzles	11	3
Manipulatives (hands-on materials)	11	5
Materials from the environment	17	6
Pictures, charts, posters	15	4
Textbooks	1	0

Table 53: Ways teachers assess children's learning and numbers of teachers who use them – Morobe teachers

Ways of assessing learning	No. of teachers (n=18)	No. of female teachers (n=6)*
Children's daily work	8	2
End of term/semester tests	2	1
Homework	5	1
Questioning	15	5
Quizzes	3	1
Weekly/monthly tests	9	5

*Total of six female teachers in sample

Teachers were asked if they give different activities to girls and boys based on their gender. Ten out of the 18 teachers said they did, of these teachers four were females.

Classroom management

According to teachers, four out of the 18 interviewed (22%) use physical punishment to manage student behaviour. This contrasts with the children's reports where approximately 80% of the children reported that their teacher smacks students in their class. Teachers were also asked if they use different kinds of discipline for boys and girls. Only three said they did use different discipline. Of these three, one was female.

Challenges

Teachers were asked about the challenges they face in their day-to-day work. Twelve teachers named lack of support from the community, 10 teachers mentioned insufficient time and one teacher mentioned financial problems. No teachers mentioned lack of teaching resources. Teachers were also asked how often they discuss their experiences and ideas about teaching with other teachers at their school. All teachers spoke with other teachers at their school. Two teachers said sometimes, 10 teachers said often and two teachers said everyday.

Parent-teacher relationships

Only one teacher (female) had not met all the parents of children in their class. Five teachers reported speaking to parents monthly, six teachers spoke to parents each term and seven teachers spoke to parents each semester.

Teachers were asked how they encourage parents to support their children's learning. Teachers most frequently mentioned asking parents to talk to their children about what happened at school (see *Table 54* for more details).

Table 54: Ways teachers encourage parents to support their children's learning and numbers of teachers – Morobe teachers

Ways suggested by teachers	No. of teachers (n=18)	No. of female teachers (n=6)*
Read to children	7	2
Talk to children about what happened at school	15	5
Observe children in class	2	0

4.5 Teacher knowledge

4.5.1 Teacher training survey

During the three provincial Unlock Literacy teacher training workshops held in January 2018, teachers were asked to complete a written survey. Two hundred and eighty teachers participated, and females accounted for 38% (n = 105). There were slightly fewer teachers at the Madang workshop (n = 75) compared to Central and Morobe (111 and 94 teachers respectively).

Of the 280 teachers, nearly half were classroom teachers (n = 137), 40% were Head Teachers (n = 111) and 4% were deputy Head Teachers (n=10). Highest level of schooling and teacher qualifications was only collected in Morobe province. In this province, nearly all teachers had completed Year 10 (92%) while 5% had completed Year 12 and 2% had completed Year 8. Two thirds of teachers had a Certificate of Elementary Teaching (n = 63) while one third did not (n=31). This finding contrasts with the school survey where nearly all teachers surveyed had a Certificate of Elementary Teaching. Differences in the numbers of teachers with a Certificate of Elementary Teaching may be due to issues related to teacher registration. Teacher training colleges (TTCs) now offer a Certificate of Elementary Teaching (CET)

that replaces the distance learning model. Yet provincial officials report that teachers who completed the distance learning program through the Papua New Guinea Education Institute (PNGEI) after 2005 are yet to receive their CET, which means they have not been officially registered as teachers with the Department of Education.

Teachers were asked about in-service training. Just over 70% of teachers (n=200) had received in-service training in the past three years. This number dropped to just over half when asked if they had received any training about how to teach reading (n = 148). District education personnel largely conducted the training (78%) with other private businesses such as Bilum Books and Theodist providing the rest.

Teachers were asked about how they teach children to read in their class. This was an open-ended question and responses were coded. Teachers mostly used phonics, letter knowledge, chanting and reading poems and songs. Some teachers used rhyming and syllables, matching words to pictures, flashcards and sight words, print conventions and alphabet charts. *Table 55* gives details of the different strategies and how many teachers use them.

Teachers were also asked how they assess children's reading ability. Again this was an open-ended question and responses were coded.

Nearly half the teachers reported that they listened to children reading. Other strategies were using running records, testing letter sounds and blends, testing sight words and asking comprehension questions. *Table 56* gives the frequencies of how teachers assess children's reading.

Teachers were asked if they talk to parents about how they can help support their children's learning.

Like the last two questions, this was an open-ended question and responses were coded. Ninety percent of teachers said they did talk to parents about this. Teachers most frequently encouraged parents to help with homework. Other popular responses included asking children about their day at school, buying books, asking children to read words they see in their environment and reading to children. *Table 57* details the different ways teachers encourage parents to support their children's learning.

Teachers were asked how they ensure equal participation of boys and girls in the classroom. Responses were coded. Nearly 60% of all responses related to mixed gender grouping, pairing girls and boys and

Table 55: Strategies teachers use to teach reading

Teaching strategies	Frequency*	Percent
Phonics	124	44
Letter knowledge	82	29
Chanting (copying teacher read)	75	27
Reading poems and songs	52	19
Rhyming and syllables	41	15
Matching words to pictures	35	13
Flashcards and sight words	24	9
Print conventions	22	8
Alphabet charts	21	8
Blank or did not relate to reading	28	10

*Teachers could write more than one answer

Table 56: Strategies teachers use to assess children's reading

Assessment strategies	Frequency*	Percent
Listen to children read	130	46
Running records	74	26
Testing letter sounds and blends	72	26
Testing sight words with flash cards	35	13
Asking comprehension questions	35	13
Blank or does not relate to assessing reading	28	10

*Teachers could write more than one answer

Table 57: Ways teachers encourage parents to support their children's learning

Ways for parents to support their children's learning	Frequency*	Percent
Help with homework	82	29
Ask children what they did at school	50	18
Buy reading books	47	17
Ask children to read words in their environment	44	16
Read to children	42	15
Give children space to do homework	28	10
Listen to children read	24	9
Practice phonics	22	8
Speak English at home	11	4
Teach/talk Tok Ples	7	3
Ask children to read the newspaper/Bible	6	2
Blank or did not relate to supporting children's learning	50	18

*Teachers could write more than one answer

seating girls and boys together. The only two other responses were ensuring equal participation of both genders in activities and questions (25%) and equally distributing learning materials (15%).

Finally, teachers were asked to describe things they do to support children with disabilities. Responses were coded. The most popular response was to put the child with a disability at the front of the room. Other responses comprised giving them extra time, using sign language or gestures, preparing separate activities, teaching them separately and having a buddy system. *Table 58* outlines the different strategies and the number of teachers who mentioned them.

Table 58: Strategies teachers use to support children with a disability

Strategies	Frequency*	Percent
Seat the child at the front of the room	84	30
Give the child more time	44	16
Involve them in all activities	30	11
Use sign language and gestures	29	10
Prepare separate activities	26	9
Nothing	22	8
Teach child separately or give extra support	21	8
Have a buddy or group support	18	6
Charts and pictures	17	6
Encourage and motivate child	13	5
Use another adult to help	6	2
Send them to a hospital or special school	5	2
Blank or does not relate to supporting children with disabilities	42	15

*Teachers could write more than one answer

4.6 Classroom observations

Classroom observations were conducted in all three provinces. A new observation schedule was used which consisted of items relating to elements of a lesson, specific teaching strategies related to mathematics and English, student-centred learning and classroom management.

Classroom observations were conducted by two observers who were in the most part, ex-teachers. In Madang province, district Department of Education officials also conducted observations. Observers participated in a two-day training course that included lesson observations in schools not part of the Together for Education project. Training was conducted by the creators of the tool. The two observers sat at the back of the classroom to observe the lesson and had to reach a consensus before submitting a single report. Teachers were also interviewed briefly to gain background information.

A total of 136 classroom observations were conducted in sixty-five schools across the three provinces (three schools did more than two observations). There were an equal number of mathematics and English classes observed (68 each).

Most classes were Elementary 2 (E2) while 15% were multi-grade classes. The same teacher was observed for both mathematics and English in each school.

More observations were conducted in Morobe and Madang provinces than Central (see *Table 59*).

Of the 136 classroom observations, just fewer than two-thirds were conducted in 2018 project schools ($n = 86$), two-thirds of the lessons were taught by males ($n = 88$) and nearly 60% of observations were conducted in government schools ($n = 81$). A total of 68 teachers were observed.

Table 59: Number of classroom observations per province

Province	No. of observations
Central	34
Madang	48
Morobe	54

4.6.1 Teacher background

Teachers in this sample had been teaching between one and 20 years. The teachers observed in the classroom observations were less qualified than the previous samples of teachers. Of the 68 teachers, only 25 had a Certificate of Elementary Teaching (37%). Like in the other teacher samples the highest grade completed by the majority of teachers was Year 10. Only 10 teachers had completed Year 12. Far fewer teachers in this sample had received any training on the SBC (8%) or reported that their school had SBC box (8%).

4.6.2 Elements of a lesson

There are several common elements or parts within a lesson that are acknowledged to bring about better learning outcomes for children. These include informing children what they will be learning and why it is important, referring to previous learning when teaching new content, checking for understanding to inform teaching, using guided practice where teachers and children work through examples or activities together before children work individually, giving feedback and summarising the learning at the end of the lesson. Observers were asked to rate the different elements as clearly observed, somewhat observed or not observed at all. *Table 60* details the different elements and the number of lessons where the elements were clearly observed.

Table 60: Lesson elements that were clearly observed

Lesson elements	No. of lessons (n=136)	Percent
Teacher informs children what they are learning and why at the beginning of the lesson	12	9
Teacher refers to previous learning or experiences to teach new content	12	9
Teacher checks for understanding of individual children while teaching	19	14
Teacher leads guided practice of new skills	82	60
Teacher gives feedback when checking for understanding	21	15
Teacher gives clear instructions and children know what to do	22	16
Teacher gives clear expectations of what they are looking for or what good work looks like	19	14
Teacher walks around and assists children and checks for understanding	14	10
Teacher gives oral or written feedback to children when walking around	66	49
Teacher wraps up/summarises learning at the end of the lesson	12	9

The data indicates that teachers are not informing children of what they will be learning and why it is important, referring to previous learning to teach new content or summarising learning at the end of the lesson. The data also suggests teachers are not checking for understanding while teaching. By checking for understanding teachers can assess whether they need to reteach a concept, or if they can continue teaching. Teachers in this sample were not giving clear instructions on what children needed to do or what their expectations were. It is difficult for children to produce quality work when expectations are not clear.

Finally, teachers were not giving feedback when they did check for understanding. That is, teachers were not confirming that children had given a correct or incorrect response and/or expanding on the children's responses. Far more teachers were giving feedback to children when they walked around the classroom while children were working and leading guided practice of new skills. There is a great opportunity for teachers to improve their teaching by incorporating these important elements in their lessons.

4.6.3 English lessons

During English lessons, observers recorded whether teachers used specific strategies known to assist children develop language skills. These strategies comprised reading a story, reading poems or singing songs, games and using the SBC materials. Chanting and copying from the board were included because they are so pervasive in classrooms across the developing world. Unlike elements of lesson, ratings were either observed or not as these teaching strategies were much less subjective.

The data in *Table 61* shows that teachers used these strategies much more than they included different elements of a lesson. The strategy least used was using SBC resource kit materials. This finding is consistent with teacher reports about not having received SBC training or having the SBC box at their school. The most popular strategies were organising a role play, singing a song/reciting a poem in vernacular and organising learning games. Chanting and copying from the board were not observed as often as expected. That only 51% of teachers read a story during an English lesson is most likely due to the limited print resources found in PNG classrooms.

Table 61: Number of teachers using different strategies during English lesson classroom observations

Teaching strategy	No. of lessons (n=136)	Percent
Teacher reads a story	35	51
Teacher asks children to chant	41	60
Teacher asks children to copy from the board	28	41
Teacher uses SBC resource kit materials or asks children to use them	19	28
Sings a song/recites poem in vernacular	51	75
Sings a song/recites poem in English	37	54
Organises learning games	47	69
Organises a role play	61	89

4.6.4 Mathematics lessons

As in English lessons, observers recorded whether teachers used specific strategies known to assist children develop mathematical skills. These strategies comprised giving children manipulatives as learning materials, modelling how to solve problems, giving different examples and playing games. Chanting and copying from the board were again included. Ratings were similarly either observed or not.

Table 62 shows that the most frequent strategy observed was learning games, at 72%.

Table 62: Number of teachers using different teaching strategies during mathematics lesson classroom observations

Teaching strategy	No. of lessons (n=68)	Percent
Teacher gives children manipulatives as learning materials	35	51
Teacher asks children to chant	37	54
Teacher asks children to copy from the board	23	34
Teacher models how to solve problems	12	18
Teacher gives different examples	11	16
Teacher organises learning games	49	72

4.6.5 Language use

The language used by teachers was also recorded during the observations. *Table 63* details the language teachers used during English and mathematics lessons. Tok Pisin was used more than vernacular to teach both English and mathematics. Similarly, teachers should encourage or allow children to translate and swap between languages.

Table 63: Languages used by teachers in English and mathematics lessons

Language use	No. of lessons (n=68)	Percent
Teacher uses vernacular to teach English	38	56
Teacher uses Tok Pisin to teach English	56	82
Teacher uses vernacular to teach mathematics	16	24
Teacher uses Tok Pisin to teach mathematics	47	69
Teacher uses English to teach mathematics	64	94

Across the 136 lessons observed, children listened to, spoke, read or wrote in vernacular in 58 lessons (43%).

4.6.6 Student-centred learning

Observers rated lessons according to whether children were afforded opportunities to ask questions, discuss ideas and work in small groups. In one third of the lessons observed (n=46) children could ask questions. In slightly more than half the lessons (n=54) children were able to work in small groups and in just over 60% of lessons (n=61), children were able to discuss ideas with a partner or a small group. Observers also rated whether teachers had differentiated or modified the learning tasks or activities according to ability level. This was observed in only 30% of lessons (n=41).

4.6.7 Classroom management

Positive behaviour was reinforced in only 24 of the 136 lessons observed (18%). That is, when children were doing the right thing they were praised or given positive feedback. Negative behaviour was redirected more often, whereby in 52 lessons teachers dealt with negative behaviour (38%).

A group of children in school uniforms, with one child in the foreground having face paint.

5 Conclusions

We now return to the questions which framed this baseline, with the findings from the various survey components.

5.1 PNG elementary children's literacy and numeracy skills

5.1.1 Literacy skills

In general, children's literacy skills are not meeting the required standards. According to the baseline study close to 90% of children could identify half or more of the letters of the alphabet, one third of children could not read any of the most frequently used English words. Only one third of children could read a passage in English and when asked comprehension questions about the passage, two thirds of the children could not answer a single questions. Fewer children could read frequently used Tok Pisin words, read a passage or answer comprehension questions. These findings suggest that when children are able to read they are simply decoding and not reading for meaning. Overall, children's literacy skills are not meeting the expected standards of and Elementary 1 (E1) child as per the PNG Standards Based Curriculum.

5.1.2 Numeracy skills

Children's numeracy skills were stronger than their literacy skills, however they still do not meet the PNG Standards Based Curriculum level. More than half the children could correctly identify all numbers shown and more than 60% of children skip count in 2 and 5 correctly. More than a third of children could accurately answer simple addition questions. Children found subtraction tasks more difficult. Only 14% of children could correctly answer all subtraction problems while 32% could not answer any subtraction problems. Most children were able to answer at least one or more word problems (86%). Children were less able to identify shapes (17% could correctly identify all five shapes) but more able to tell the time (43% could correctly read three times).

5.2 Current school status

The current status of schools was assessed by Head Teachers, Teachers, Boards of Management (BOMs), children's focus groups, and classroom observations.

5.2.1 General Head Teacher findings

There were several differences between the provinces. Head Teachers in Central province were more likely to be aged 65 and older than in Madang or Morobe. Similarly, Head Teachers in Central were more likely to have been Head Teachers for more than 10 years than the other two provinces. Schools in Central province were less likely to have a School Learning and Improvement Plan (SLIP) than the other provinces. Morobe schools were less likely to have teachers help develop the SLIP than Central and Madang. In terms of gender, female Head Teachers were more likely to receive visits from district education officers.

5.2.2 General BOM findings

Nearly all schools in the sample had a school BOM. While representatives reported both male and female members of their BOM, there were four times as many males as there were females. Very few BOM have all roles/positions filled. In Morobe, all school BOM included the Head Teacher, whereas in Madang and Central BOM many had a chair and treasurer. Except for three board members in Madang, all other board members had been in their positions between one and five years. In Morobe and Madang most BOM meet each term, while in Central they mostly meet each semester. Just over half the sample schools in Morobe and Madang have SLIPs, while only a quarter of the sample schools in Central did. See *Table 64* for an overview of 2018 and 2019 project school with SLIPs for the three provinces.



Table 64: No. schools with a SLIP according to province

Province	Schools surveyed	SLIP status	2018 project schools	2019 project schools
Central	22	With SLIP	2	3
		Without SLIP	6	11
Madang	12	With SLIP	4	3
		Without SLIP	1	4
Morobe	6	With SLIP	2	1
		Without SLIP	3	0

5.2.3 General teacher findings

There were several reported differences between the provinces. Teachers in Central reported not having training in teaching children with disabilities more than teachers in Madang and Morobe. Teachers in Morobe reported feeling they were not supported by their Head Teachers more than teachers in Central and Madang provinces. Teachers in Central mentioned financial difficulties and a lack of teaching resources and materials more than teachers in Madang and Morobe.

In relation to teaching and learning, teachers in Central district reported using group work and role-play as teaching strategies more than teachers in Morobe and Madang. Similarly, teachers in Central used blackboards and textbooks more than teachers in Morobe and Madang. In contrast, teachers in Morobe used games and puzzles more than teachers in Central and Madang. When assessing learning, teachers in Central reported using children's daily work, homework and end of term and semester tests more than teachers in Madang and Morobe. Teachers in Central also reported asking parents to help with homework more than teachers in Madang and Morobe.

5.2.4 General children's focus group findings

There were several differences between the provinces according to the children's focus groups. For access to schooling, fewer children in Morobe reported that they know other children with a disability who do not come to school than the other two provinces. For effective teaching and learning, more children in Central province thought that their teacher does something more than talk and write on the board than in Madang and Morobe. Fewer children in Morobe reported their teacher used puzzles and games, asks them to share their ideas or opinions or takes the children outside to learn compared to children in Central and Madang. In contrast, more children in Morobe thought their teacher treated girls and boys the same compared to Central and Madang. One in three children felt unsafe at school in Central compared to one in five in Madang and less than one in ten in Morobe.

5.2.5 General classroom observation findings

The results from the teacher training survey suggest that teachers had a basic understanding of teaching reading as evidenced by their reports of teaching phonics, letter names and reading poems and songs. However, there was an over reliance on chanting and little focus on comprehension. Similarly teachers knew they needed to listen to children read to assess children's reading. Again there was little focus on children's comprehension. Teachers knew only a handful of strategies for gender inclusive and disability inclusive teaching. Nearly all teachers reported talking to parents about how they could support their children's learning. Many of their suggestions presupposed that parents could read themselves and were able to buy resources.

5.3 Implications of results

Literacy and numeracy assessment results suggest that the project should focus heavily on literacy instruction, in particular on reading for meaning. The creation of culturally relevant reading books should assist with children's reading. The research literature suggests that reading comprehension is easier when books are culturally relevant and that children's reading achievement is higher when they have access to print materials. While numeracy results were better than literacy results, children's achievement can improve considerably.

The significant effects of attendance at preschool have implications for wider community awareness-raising and planning of education programs.

As indicated in the teacher training survey, teachers require training on how to teach and assess reading. Children's focus groups and teacher interviews in the school baseline assessment suggest that teachers too often rely on chalk and talk (talking and writing on the blackboard) methods. Teachers will benefit from learning about more child centred teaching strategies such as group work, peer learning, games and role plays. The use of manipulatives would increase children's numeracy skills, particularly in subtraction through the use of concrete materials.

Findings from the teacher interviews and surveys also suggest that teachers require in-service training on supporting children with disabilities, gender inclusivity and positive behaviour management. Without new knowledge and skills teachers will continue to use physical punishment, gender-biased and non-inclusive practices.

Many schools, especially in Central province do not have a SLIP. The provision of SLIPs training will assist Head Teachers develop these plans in collaboration with teachers, parents, children and BOMs.



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transphonic bridge	English
grin	green
lives	leaves
wash	wash
the	the
flawa	flawa
deti	dirty
hes	has

word puzzle									
g	a	o	o	f	g	h	t		
r	d	a	m	n	f	u	s		
e	c	t	n	m	e	o	x		
e	x	b	e	e	n	c	d		
n	o	m	u	d	t	d			
w	s	a	e	u	s				
d	x	w	f	g	s	e			
green					feet				
bee									

Appendices

Appendix A: Letter of introduction to participating schools



TOGETHER FOR EDUCATION PROJECT
WORLD VISION PAPUA NEW GUINEA
MADANG AREA PROGRAM
MADANG PROVINCE

Fax: (675) 422 3577

Phone: (675) 422 3148

From: World Vision PNG

To: _____

Madang District, Madang Province

Date: 1st Feb, 2018

RE: INVITATION TO PARTICIPATE IN THE TOGETHER FOR EDUCATION PROJECT BASELINE SURVEY

Good day to you and I hope this letter finds you well.

As per the above subject, the World Vision's Together for Education project is proposing to conduct a baseline survey in your elementary school targeting the members of the school Board of Management, Parents and Caregivers of children attending the elementary school, community members (men, women, youth and children), teachers, and elementary 2 children.

World Vision has been working in partnership with Usino/Bundi district for the past 15 years, facilitating basic development programmes/projects within most of the communities in the district. This new project as mentioned above, is a 3 years project which is supported by Australian Government in Partnership with the PNG government and it aims to enhance access to quality elementary education focused in literacy and numeracy skills for girls and boys.

This project will be working closely with the District and Provincial Education Department and other local Partners (BOM, LLG, Parents/Caregivers etc.) to ensure children access quality elementary education. It will be targeting selected elementary schools in 3 districts, Usino/Bundi, Middle Ramu and Madang.

This baseline survey is purposely to establish current information base against which to monitor and assess current situation in the target schools and communities and also it is crucial to establish good working relationship with communities and other partners. Furthermore, it will help us to identify the approaches that could be used during the project implementation.

It is also important to plan on how the Province/District/LLGs etc needs to take on board to support these activities so they are sustained in the target schools/communities.

Survey dates: _____

Venue: _____

Therefore your attendance and input to this baseline survey will be of great help to the successful implementation of the project and the total direct beneficiaries it will serve in the district.

Sincerely,

Aileen. Watakpaura

Project Officer

Family & Community Engagement

Appendix B: Tests of significance between project years – Literacy and Numeracy

Variable	2018	2019	Difference	t-test significance	Variance test significance	Type of t-test
Letters – total	–	–	–	–	–	–
English words – total	38.65	37.66	0.99	0.0152		P
Tok Pisin words – total	–	–	–	–	–	–
English story – time	–	–	–	–	–	–
English story – answers	–	–	–	–	–	–
Tok Pisin story – time	216.4	271.1	20.7	0.0322	0.0005	S
Tok Pisin story – answers	–	–	–	–	–	–
Numbers_total1	–	–	–	–	–	–
Numbers_total2	7.25	7.03	0.22	0.0252	–	P
Numbers_total	13.58	13.29	0.29	0.0269	0.0068	S
Skip counting – by2	–	–	–	–	–	–
Skip counting – by5	12.16	11.74	0.42	0.0234		P
Skip counting – total	–	–	–	–	–	–
Addition – total	–	–	–	–	–	–
Subtraction –total	–	–	–	–	–	–
Word Problems – total	–	–	–	–	–	–
Shapes – total	–	–	–	–	–	–
Telling time – total	–	–	–	–	–	–
HLE – total	1.61	1.39	0.22	0.0034	0.0444	S
CLE – total	–	–	–	–	–	–

Notes:

1. A p value less than 0.05 is being treated as significant, since there is less than one chance in 20 of the difference occurring by chance.
2. Blanks imply result was not significant, i.e. 2018 and 2019 project schools were not significantly different.
3. Pooled t-test used when difference between variance in 2018 and 2019 are not significant; otherwise Satterthwaite t-test used (P=Pooled, S=Satterthwaite).
4. Tests are not able to allow for the clustering by school in the survey design, so p-values may show more results with significant differences between 2018 and 2019 than otherwise.
5. Statistical significance does not imply practical importance. Here even some small differences are statistically significant.
6. Sample sizes for 2018 and 2019 project schools are 590 and 564 respectively, although there may be slight variation due to missing values for some variables.

