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Early Grade Learning Baseline- Endline Student Assessment: Briefing Note

Background

Programme background and key achievements

In 2021, the Australian Government's Department of Foreign Affairs and Trade (DFAT) and UNICEF Indonesia began a three year (2021-24) partnership with the aim of improving foundational skills learning outcomes for disadvantaged and marginalised children living in rural and remote areas of two provinces in Papua. Due to the COVID-19 pandemic, this programme partnership focused mainly on safe return to school and advocacy for catch-up learning, with an emphasis on three key pillars – schools, systems, and evidence generation. Programme components encompassed (i) COVID-19 response; (ii) capacity strengthening in schools; (iii) strengthening district-level systems; and (iv) evidence generation.

The programme focused its interventions on 16 districts in Papua and West Papua Provinces¹,

¹Districts covered by the programme include: (1) Biak Numfor, (2) Supiori, (3) Jayawijaya, (4) Kabupaten Jayapura, (5) Mimika, (6) Manokwari; Phase 3 (DFAT Funded): (1) Merauke, (2) Memberamo Raya, (3) Paniai, (4) Yahukimo, (5) Raja Ampat, (6) Kaimana, (7) Fak Fak, (8) Kota Sorong. But through DFAT funded programme advocacy, enabled independent subnational funding to expand the programme to (9) Memberamo Tengah and (10) Sarmi.

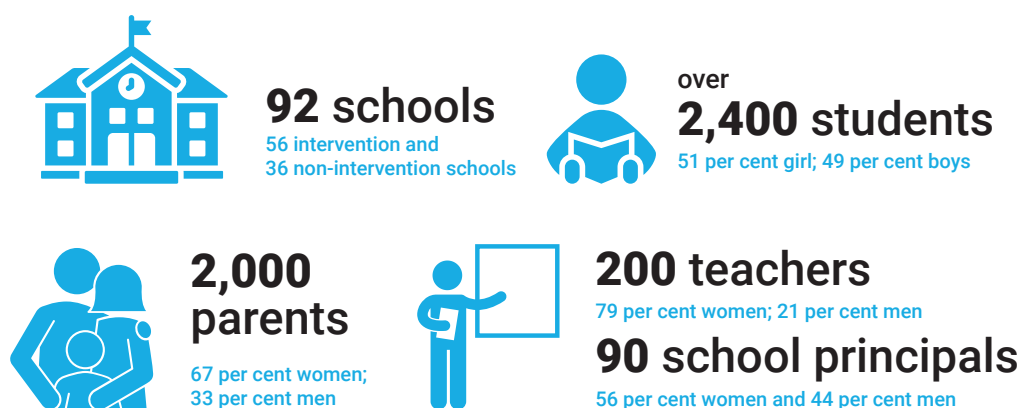
with support from the Ministry of Education, Culture, Research and Technology (MoECRT), the Ministry of Home Affairs (MoHA) and key education stakeholders, including five civil society organisations (CSOs), seven universities / teacher training institutions, and a number of local government partners. Key achievements throughout the programme, by year, include:

- **In 2021:** The development of an Early Grade Literacy (EGL) scalability roadmap to assist with leveraging local government resources for programme replication and scale-up.
- **In 2022:** Teacher in-service training and mentoring to improve the pedagogical skills of teachers in 159 schools; teacher pre-service training courses in seven universities started to mainstream the EGL module; the EGL module for Papua was simplified into an EGL practical guidebook for teachers and made available on the MoECRT's national digital learning platform for teachers; and seven district governments allocated local budgetary funding equivalent to USD 240,000 to EGL replication and scale-up within their primary schools.
- **In 2023:** Improvement in student reading ability at endline of 35 per cent in Papua Province and 19 per cent in West Papua Province compared with the baseline; 17 districts developed replication and scale-up plans with local budgetary funding allocations equivalent to USD 1.2 million for the year and commitments of USD 4.1 million for 2024 to further scale-up EGL in schools.

Research background and methodology

The research was conducted to establish baseline and endline student assessment data to measure the impact and effectiveness of programme interventions from 2021-2023, and to report on key learning outcome indicators. Additionally, it served as a means of collecting and analysing data on factors influencing learning outcome results. Quantitative, qualitative and observational research methods were employed to ensure that data and results were triangulated.

The study was conducted in six districts in Papua and West Papua Provinces², covering a total of 92 schools (56 intervention and 36 non-intervention schools) and over 2,400 (51 per cent girl; 49 per cent boys) students across grades 1 to 3, 2,000 parents (67 per cent women; 33 per cent men), 200 teachers (79 per cent women; 21 per cent men) and 90 school principals (56 per cent women and 44 per cent men). The baseline study was conducted in August 2022, while the endline study was completed in 2023.



²The districts covered by the study are Paniai, Yahukimo, and Mamberamo Raya districts in Papua Province; and Kaimana, Raja Ampat, and Sorong districts in West Papua Province.

The research focused mainly on students' literacy and numeracy abilities, using contextualised Early Grade Reading Assessment (EGRA)³ and Early Grade Mathematics Assessment (EGMA)⁴ formative learning assessment tools to determine reading comprehension, fluency, and number operation ability (addition and subtraction). The data gathered from these assessments can be used to provide information about pedagogical or system needs for improving instruction.

It is important to mention the constraints that affected the study, which included limited data collected on Grade 1 students for both EGRA and EGMA in Papua and West Papua Provinces; inaccuracies and inconsistencies in the sampled students from baseline to endline – a particular issue due to a lack of systematic procedures used by teachers to capture attendance; and instrument limitations that render the instruments unable to accurately capture or accommodate the needs of children with disabilities. The qualitative interviews that were conducted were also constrained by issues related to access, security, and illiteracy, particularly when collecting data from parents.



Image 1. Map of intervention areas in Papua and West Papua Provinces

Key results in Papua and West Papua Provinces

Early Grade Reading Assessment (EGRA)

Upon measuring the programme's impact between baseline data in 2022 and endline data in 2023, it was found that there were significant improvements overall in reading levels in all six districts that were sampled in Papua and West Papua Provinces.

In Papua Province, it was found that there was a 35 per cent improvement in student reading with comprehension, from 17 per cent at baseline to 52 per cent at endline, in the intervention schools in grades 1-3. Similarly, there was on average a 45 per cent reduction (improvement) in students categorized as non-readers across grades 1-3.

³EGRA assesses critical skills that early grade students (Grades 1-3) need to be able to read with understanding and to be successful in other subjects and later grades. It measures competencies in alphabetic principles, phonemic awareness, vocabulary, fluency, and comprehension.

⁴The EGMA overall score is a combined score of the correct answers across all the numeracy-based/mathematics subtasks calculated as one. EGMA subtasks include number identification, quantity discrimination, missing numbers, addition level 1, addition level 2, subtraction level 1, subtraction level 2, and word problems.

In West Papua Province, reading with comprehension among grades 1-3 students in intervention schools increased by 19 per cent - from 62 per cent at baseline to 81 per cent at endline. With regard to non-readers, there was generally a lower number of non-readers in West Papua province, with a baseline of around 23 per cent of non-readers across the province, resulting in under 5 per cent of non-readers remaining at endline.

Table 1. Students categorized as non-readers (by grade)

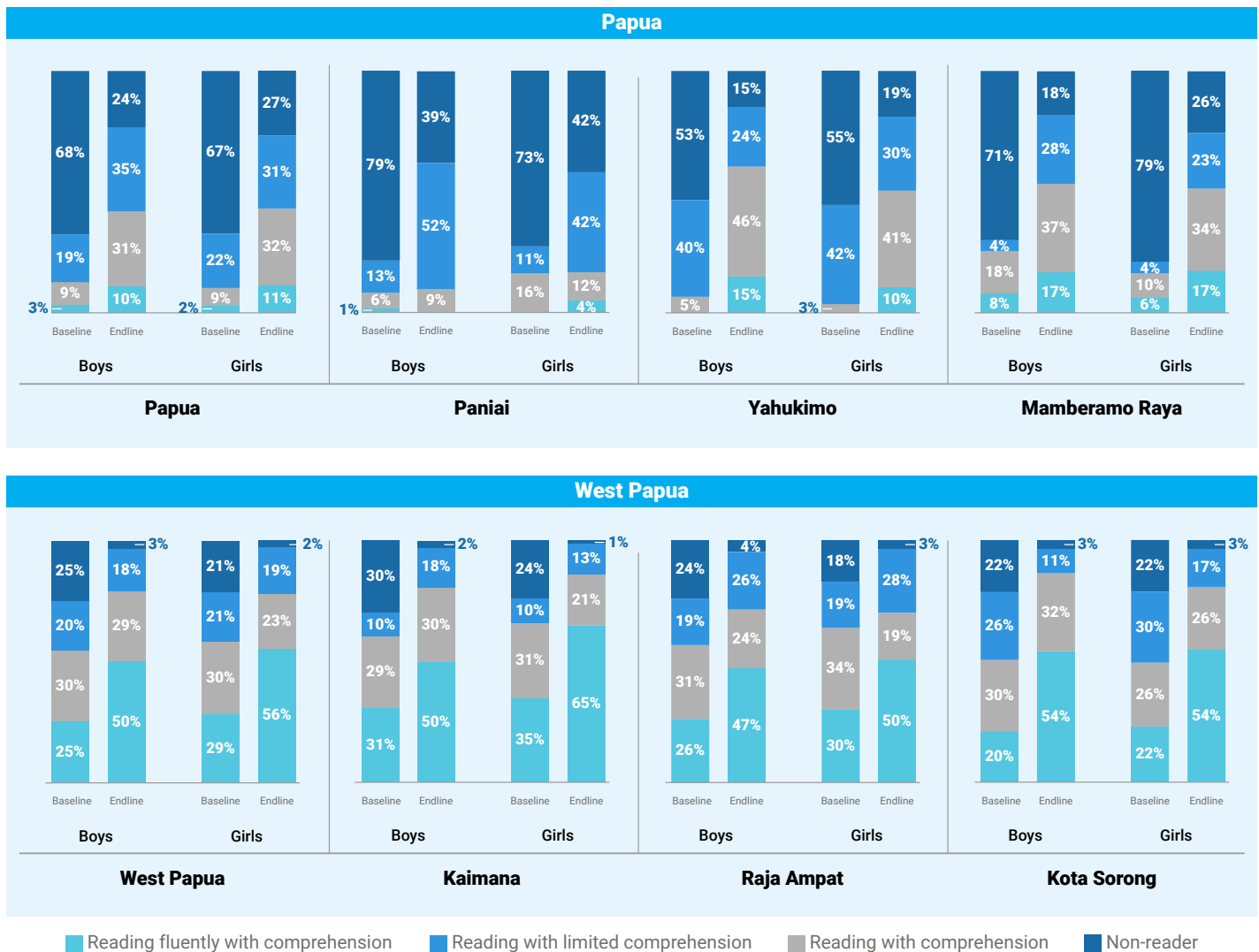
Province/ District	Grade 1		% improved	Grade 2		% improved	Grade 3		% improved
	Baseline	Endline		Baseline	Endline		Baseline	Endline	
Papua Province	78%	36%	42%	71%	17%	54%	56%	17%	39%
Paniai	82%	62%	20%	78%	32%	46%	69%	24%	45%
Yahukimo	67%	23%	44%	64%	12%	52%	31%	10%	21%
Mamberamo Raya	82%	35%	47%	76%	10%	66%	68%	19%	49%
West Papua Province	46%	2%	44%	25%	4%	21%	15%	2%	13%
Kaimana	46%	2%	44%	22%	1%	21%	12%	0%	12%
Raja Ampat	-	-	-	25%	4%	21%	17%	2%	15%
Kota Sorong	-	-	-	27%	4%	23%	17%	2%	15%

With regard to reading improvements by gender, there was a substantial improvements in results from both girls and boys. There was a decline in non-readers across both genders in the two provinces, where for both girls and boys, the number of non-readers declined by at least 50 per cent. In West Papua Province, significant improvements could be found in results from girls reading fluently with comprehension. This was particularly noteworthy in Kaimana District, where the percentage of girls reading fluently with comprehension increased by 30 per cent, from 35 to 65 per cent, as well as in Sorong City, where there was a 32 per cent increase, from 22 to 54 per cent. In Papua Province, there were notable improvements in both girls' and boys' reading with comprehension in Yahukimo and Mamberamo Raya Districts. In Paniai district, both girls and boys saw dramatic improvements in reading with limited reading comprehension, where results from boys increased from 13 per cent to 52 per cent, and girls increased from 11 per cent to 42 per cent.



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Figure 1: Overall student reading ability by gender in Papua and West Papua Provinces



Students with disabilities

Of the five students with disabilities who were sampled during the endline EGRA test, four were categorized as non-readers.

While there are several special schools in the province – 10 in Papua Province and five in West Papua Province, the EGL programme was not implemented in these schools. Hence, identifying students with disabilities as part of the EGL programme lays with teachers' and school principals' often minimal conceptual understanding of what disability is, and how it can manifest. The use of disability assessment tools and basic knowledge of inclusive education was also found to be minimal in these areas.⁵



“It was found that teachers required stronger support and training to identify students' functional learning barriers and provide sufficient support to address these barriers and needs. This also indicates a need for differentiated instruction for children with special needs.”

⁵This means the data we have for children with disabilities within mainstream government schools, including in the schools we work in through the EGL programme, is likely to be inaccurate.

Table 2. Students reading with comprehension (by grade)

Province/ District	Grade 1		% improved	Grade 2		% improved	Grade 3		% improved
	Baseline	Endline		Baseline	Endline		Baseline	Endline	
Papua Province	17%	45%	28%	15%	59%	44%	18%	57%	39%
Paniai	30%	14%	-16%	9%	14%	5%	13%	24%	11%
Yahukimo	0%	61%	61%	4%	79%	75%	8%	78%	70%
Mamberamo Raya	24%	41%	17%	50%	79%	29%	32%	65%	33%
West Papua Province	27%	68%	41%	56%	78%	22%	72%	85%	13%
Kaimana	27%	68%	41%	43%	76%	33%	80%	92%	12%
Raja Ampat	-	-	-	61%	71%	10%	72%	78%	6%
Kota Sorong	-	-	-	55%	86%	31%	70%	91%	21%

Early Grade Mathematics Assessment (EGMA)

In both Papua and West Papua Provinces, EGMA results throughout grades 1 to 3 have shown substantial improvement in mathematical proficiency between baseline and endline (refer Tables 3a, b, and c). Both girls and boys show an increase in overall EGMA scores and exhibit very similar scores to each other across both provinces and all the districts (see Figure 2).

EGMA results across the three grades indicate that students in West Papua Province seem to be achieving slightly better EGMA scores than students in Papua Province. The greatest improvements were seen in grade 1 students in Yahukimo District in Papua Province, where there was an increase of 31 per cent, while the lowest increase was in Paniai District in Papua Province, which recorded an increase of 11 per cent from baseline to endline.⁶ For grade 2 students, there was on average an increase of 19 per cent in both Papua and West Papua Provinces, while students in grade 3 showcased an average 12 per cent increase in Papua Province, and 14 per cent in West Papua Province.

Tables 3a, b, c. Baseline-Endline EGMA (numeracy) results of grades 1-3 students (by district)

	Districts	Baseline	Endline
Grade 1	Papua Province	27%	47%
	Paniai	21%	32%
	Yahukimo	27%	58%
	Memberamo Raya	31%	47%
	West Papua	28%	48%
	Kaimana	28%	51%

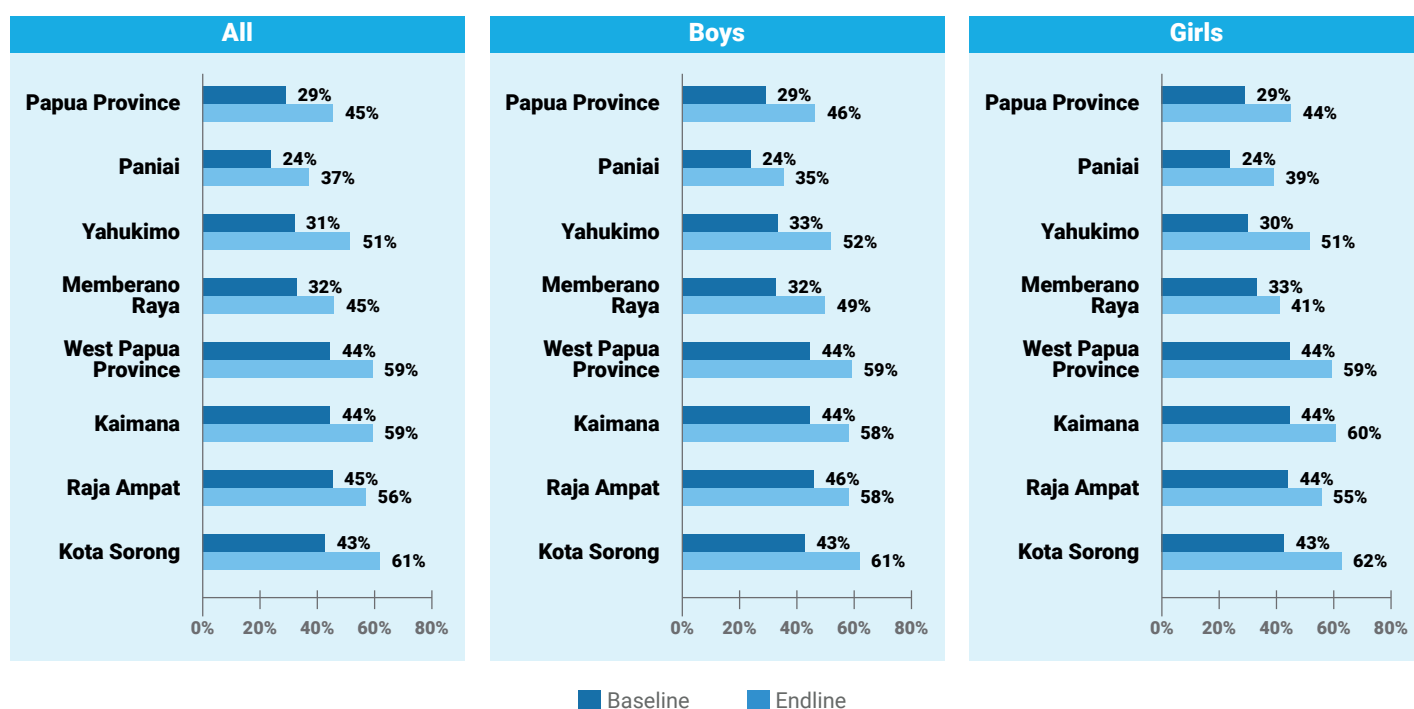
	Districts	Baseline	Endline
Grade 2	Papua Province	30%	49%
	Paniai	26%	46%
	Yahukimo	32%	52%
	Memberamo Raya	34%	47%
	West Papua	41%	58%
	Kaimana	38%	48%
	Raja Ampat	43%	58%
	Kota Sorong	40%	60%

	Districts	Baseline	Endline
Grade 3	Papua Province	40%	52%
	Paniai	35%	49%
	Yahukimo	43%	53%
	Memberamo Raya	43%	54%
	West Papua	51%	65%
	Kaimana	51%	64%
	Raja Ampat	52%	61%
	Kota Sorong	50%	69%

⁶Only data from Kaimana district in West Papua Province was collected due to the reduction in the number of intervention schools in Paniai, Yahukimo, Mamberamo Raya, and Kaimana districts. Samples in these four districts included grade 1 students to make up for the low number of students if only grades 2 and 3 students were sampled. Raja Ampat and Kota Sorong included only grades 2 and 3 students as originally planned.

When it comes to gender-related trends, both girls and boys exhibited very similar trends in numeracy performance improvement across both provinces. In Papua Province, girls increased their numeracy scores from 29 to 44 per cent, while those of boys were up from 29 to 46 per cent. Similar trends were observed in Paniai, Yahukimo, and Memberamo Raya districts, with both genders demonstrating noticeable progress in mathematics proficiency. In West Papua Province, consistent improvements were exhibited among both girls and boys, with identical baseline and endline scores of 44 per cent and 59 per cent, representing a total improvement of 15 per cent. In Kaimana District, the proficiency of girls increased from 44 to 60 per cent, while that of boys rose from 44 to 58 per cent, representing substantial progress for both genders. In total, both girls' and boys' overall EGMA scores rose by 15 per cent, with girls up from 40 to 55 per cent, and boys from 39 to 54 per cent.

Figure 2. Baseline-Endline EGMA results of grades 1-3 students (by gender per district)



Overall Findings

From the baseline and endline research, qualitative data were collected and analysed to identify factors affecting learning.⁷ These included correlations between the language students most often use, preschool attendance, and parents' literacy levels, all of which influence student learning outcomes. Additionally, data on the teaching process were gathered, revealing its impact on student learning outcomes. The baseline endline research also delved into the issue of corporal punishment in schools, highlighting its effects on student learning outcomes.

It is important to note that of all the parents interviewed in the six districts, at least 96 per cent stated that they believed education to be important for a child's development, and at least 92 per cent of them believed that education will help their children get better jobs.

⁷The qualitative data collected through interviews, analysed below, aggregate responses from students, teachers, and parents/community members across six districts in Papua and West Papua. Due to the limited sample size of qualitative participants, this briefing note cannot disaggregate findings for each district. Instead, it presents the findings as a whole across the Papua and West Papua Provinces.

Language use, pre-school attendance, school libraries, and parents' literacy levels

The study found significant positive correlations of students' EGRA and EGMA scores with influencing factors, including use of Bahasa Indonesia, attendance in pre-school, parents' literacy levels, and a supportive home reading environment. Availability of a school library also correlated with significantly higher reading and mathematics scores, indicating the importance of access to books and reading materials for student learning.

Additionally, results showed that giving homework to students tended to help students achieve better learning outcomes, as did the praising (positive affirmation) of students who did well in their learning, thus motivating them to continuously improve.

The findings also show that giving homework to students tended to help students achieve better learning outcomes, as did the praising (positive affirmation) of students who did well in their learning, thus motivating them to continuously improve. Additionally, it is worthy to note that students attending pre-school were reading 50 per cent faster compared to students who did not attend pre-school.

Table 4. Factors affecting student literacy and numeracy improvements.

Factors	Category	Changes in literacy		Changes in numeracy	
		n = Number of students	Average change in ORF score (words/ minute)	n = Number of students	Average change in overall EGMA score (% correct)
Language most often used	Bahasa Indonesia	1043	32.57*	1069	27.00%
	Local Language	183	14.68	166	26.83%
Preschool attendance	Attended Preschool	825	33.48*	833	26.75%
	Did not attend preschool	401	22.27	402	26.39%
Parents literacy	Both can read (ref)	1076	31.51	1095	26.60%
	Only one parent can read	97	20.61*	96	29.01%
	No one can read	53	12.28*	44	22.11%
Have experienced physical punishment by teacher	No	815	32.53*	819	28.09%*
	Yes	411	27.89	416	25.46%
School has Library	Yes	698	34.29*	698	26.03%
	No	528	23.89	528	27.50%

Asterisk (*) signifies that the result is statistically significant.

Lesson plans, higher education acquisition, certification and training, and teacher supervision

The study findings also reveal that students generally do better in both literacy and numeracy acquisition when the school is accredited, has a library and teachers are certified. These include when teachers use lesson plans; attend higher education, particularly pre-service primary school teacher training (Pendidikan Guru Sekolah Dasar – PGSD) and are subject to supervision by school supervisors. It was also found that students who are taught by certified teachers exhibit more statistically significant improvements, particularly in literacy acquisition.

The specialised training and skills that certified and PGSD teachers acquire, which involve rigorous training and assessment and are directly relevant to teaching at the primary level, equip teachers

with better teaching skills and methodologies. These teachers are likely to be more adept at creating effective learning environments and using innovative teaching strategies, positively impacting student learning.

The correlation between teacher capabilities and student outcomes underscores the importance of investing in teacher education and professional development. It highlights the need for educational systems to prioritize teacher quality as a key factor in enhancing student learning and academic achievement.

The baseline-endline data revealed various strategies deployed to enhance teacher and school capacity. These strategies included increased teachers' participation in teacher working groups (Kelompok Kerja Guru, KKGs), providing peer-led training, through collaborative learning and reflection with other teachers training, receiving guidance from school principals, and greater use of work and budget planning. Notably, the practice of work and budget planning increased significantly in the two Papuan provinces. In Mamberamo Raya district, the percentage of schools with budget plans rose from 0 per cent to 75 per cent, and those with work plans increased from 11 per cent to 45 per cent. In West Papua Province, these rates remained consistently high. In Kaimana and Raja Ampat Districts, 100 per cent and 93 per cent of schools, respectively, consistently had both work and budget plans. In Sorong City, 92 per cent of schools had work plans, with an increase in the percentage of schools having budget plans from 69 to 92 per cent. However, the data also revealed no increase in the number of visitations conducted by school supervisors across the two provinces from baseline to endline.

Prevalence of corporal punishment in schools

Besides assessing student literacy and numeracy abilities, the study also assessed the student learning environment in the schools sampled, particularly the use of corporal punishment in school. Results show that most students continued to experience one or more forms corporal of violent punishment in school. Specifically, a significant negative association was identified between experiencing physical punishment by teachers and academic performance in both literacy and numeracy skills.

Pinching and ear twisting were the most prevalent forms of corporal punishment, with the highest rates recorded in Yahukimo District (up from 67 per cent to 74 per cent), followed by Sorong City, Kaimana District, and Paniai District. Students were often hit with rulers or other items, with approximately 20 per cent of students across both provinces having experiences such forms of punishment.

Specifically, in terms of fluency score improvements, students who had never experienced physical punishment showed an average increase of 32 words per minute. In contrast, those who had experienced physical punishment demonstrated a lower average increase, at 27 words per minute. This pattern was also observed in overall numeracy scores, as measured by EGMA. Students not subjected to physical punishment exhibited an average improvement of 28 per cent, compared to a lesser improvement of 25 per cent among those who had experienced physical punishment. (See Table 4 in page 8)

Table 5: Most common physical punishments applied by teachers

Type of physical punishment	Paniai		Yahukimo		Memberamo Raya		Kaimana		Raja Ampat		Kota Sorong	
	Base	End	Base	End	Base	End	Base	End	Base	End	Base	End
Pinch or twist ear	56%	58%	67%	74%	68%	29%	52%	62%	51%	50%	72%	70%
Hitting with a ruler or other items	36%	25%	7%	10%	8%	33%	19%	25%	27%	24%	36%	24%
Spank	17%	15%	16%	5%	5%	16%	19%	10%	24%	11%	14%	11%
Slapping a child's hand, arm or leg	4%	11%	8%	15%	11%	19%	1%	3%	8%	10%	11%	10%

Challenges

Following visits to schools in the six districts, several significant challenges were identified. These include:

- **Security, access and language challenges** – these challenges were particularly relevant to ensuring that respondents' information was captured accurately. The security situation in Papua and West Papua Provinces is often volatile, especially in the remote highland areas. This volatility makes visiting these areas costly and unpredictable in terms of student and teacher attendance, and there is often limited access to the community and parents outside of school. In these areas, the capacity of districts to sustain and innovate is often low, necessitating difficult decisions about the breadth and depth of support that can be provided to schools experiencing such challenges.
- **Capturing data on students with disabilities** remained a challenge, particularly because the tools (EGRA and EGMA instruments) used to measure learning outcomes may not adequately accommodate the identification of different learning barriers, especially for children with mental or invisible disabilities. Teachers and education personnel also lack the knowledge and skills to identify and provide the necessary learning conditions for children with various disabilities. Additionally, social factors at the family level may continue to limit the access and inclusion of children with disabilities in schools.



Lessons learned

The findings underscore the importance of investing in pre-primary education as student participation at this level correlates positively with higher literacy scores, highlighting the importance of including early childhood education in any future programme aimed at enhancing foundational skills. Strengthening readiness and facilitating smooth transitions for children entering primary school should be a key component of such initiatives.

There is a need for stronger support for teachers in identifying functional learning barriers and in determining the types of learning support needed by children with disabilities, alongside differentiated learning strategies for girls and boys. Considering the cultural norms in Papua and West Papua Provinces, where violence is normalized and gender roles sharply defined, it is crucial to recognize that these deeply engrained norms, coupled with limited exposure to progressive ideas, pose significant barriers to rapid change. Therefore, even the introduction of fundamental Gender Equality, Disability and Social Inclusion (GEDSI) concepts could be considered a success, given the challenging context.

It was found that teachers often teach multiple grades simultaneously, primarily due to a lack of teachers and high levels of teacher absenteeism. This underscores how, despite improvements in teacher quality, persistent teacher absenteeism continues to affect most schools and must be addressed through broader incentives, including policy and financial incentives, increased district oversight, stronger leadership and community demand.

Through engaging and training Civil Society Organizations (CSO) as implementing partners, the impacts of the EGL methodology were carried onto non-intervention schools that then saw improvements in EGRA and EGMA scores, as these strategies were implemented when the CSOs engaged in locally funded district in-service trainings.

Finally, the study revealed that a 3-year intervention period for implementation in underperforming schools in rural and remote areas is notably short. Constraints such as COVID-19, security issues, and limited access—coupled with the volatile security situation and inconsistent school attendance by teachers and students—made it a challenge to implement the programme, however despite the challenges, improvements were still seen as a result of the programme's interventions.



Recommendations

From the EGRA and EGMA results, along with the findings on the learning environment, several key recommendations emerge. These encompass various areas, including enhancing pre-primary education; supporting students with disabilities; providing greater support for teachers, including training in positive discipline and facilitating differentiated learning; enhancing teacher professional development; and encouraging greater community and parental engagement in learning.

Our key recommendations are as follows:

- 1. Enhance teacher support and professional development, including on the use of positive discipline and its promotion by community leaders.** This includes: (i) tailoring training needs for teachers who are not graduates of university teaching courses; (ii) promoting constructive feedback and positive reinforcement for student achievement; (iii) establishing a system of regular supervision and mentoring of teachers; (iv) given the prevalence of corporal punishment that negatively affects student learning performance, engage community leaders and religious figures to advocate against the practice. Schools should also intensify campaigns that focus on the adverse psychological and physical impacts of corporal punishment.
- 2. Exploring alternative assessment for students with disabilities and differentiating pedagogy for girls and boys.** The standard assessment tools used in this study do not fully capture the capabilities of students with disabilities. Alternative assessment instruments should be explored for children with disabilities. Cross-district learning on the benefits of differentiated pedagogy should also be encouraged, such as by highlighting Kaimana's excellent results for girls on reading and Yahukimo's impressive results in reducing non-readers among boys.
- 3. Stronger community and family engagement to support children learning early and at home:** (i) enhancing the home learning environment by supporting parent or caregiver workshops on active tutoring and reading-at-home techniques – especially for illiterate parents; (ii) promoting positive parental engagement through parent-teacher meetings that include discussion on the effects of positive reinforcement and the potential harm of punitive measures; and (iii) encouraging enrolment in preschool education.
- 4. Target contextualized interventions for 3T areas – particularly schools in the highlands – supporting accreditation and school library provision.** The results highlight the importance of implementing context-specific strategies that take into account geographical, infrastructural, and socio-cultural factors. Teacher training may involve incorporating multi-grade teaching and utilizing mother tongue as a tool to enhance reading skills. This can be facilitated by enhancing school accreditation, advocating for policies to support accreditation of schools in remote areas, and investing in school libraries, as they have a significant impact on improving oral reading fluency.

Next steps

Strengthening ownership of EGL interventions among district and provincial government authorities is crucial for replication and scaling up evidence-based teaching and learning approaches.

UNICEF remains committed to supporting local government capacity building in utilizing learning assessment data to inform the preparation of annual budget plans, ensuring that local resources are allocated to activities aimed at enhancing foundational learning outcomes.

Acknowledgement

UNICEF Indonesia would like to thank the Australian Government for its partnership in implementing the EGL programme in Papua and West Papua Provinces, a significant contribution to Indonesia's education sector. This programme has supported some of the most marginalized and disadvantaged children in enhancing their foundational skills, which will benefit them now and in their later years. The findings from the baseline and endline research will enhance the targeting of key interventions delivered through the education system, both presently and in the future.



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