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Scaling up Interventions to Improve Basic Reading: Evidence from Madagascar after the COVID-19 Pandemic Shock on Education

Takao Maruyama* and Kengo Igei†

Abstract

The COVID-19 pandemic disrupted education worldwide, especially in low-income countries. After the long-term school closures due to the pandemic in Madagascar, the Ministry of Education conducted training on basic reading and writing pedagogy, called “Teaching at the Right Level (TaRL),” for primary teachers and community volunteers. The training was a part of a package of interventions that aimed to strengthen the capacity of school management committees (SMC) to lead extra-curricular remedial activities using TaRL. In Madagascar, the package was scaled up progressively to increase the coverage of regions, which created a quasi-experimental situation for areas near the border of neighboring regions with similar social backgrounds. This study used the setting to investigate the impact of the scaled-up interventions on basic reading for primary students, employing a difference-in-differences strategy. With the foundation of the improved capacity of the SMCs, the TaRL training increased the proportion of grade 2 through 4 students who could read words written in the local language by 15.9 percentage points and those who could read a story by 3.1 percentage points. In addition to survey data on students, this study also analyzed assessment data at the school level. These results suggest that these impacts were realized widely across the targeted region. The case of Madagascar indicates that it is possible to improve learning at scale through extra-curricular remedial activities organized by SMCs toward the learning recovery.

Keywords: Educational development, COVID-19 pandemic, Basic reading, School management, Sub-Saharan Africa

JEL Codes: I28, O15

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1. Introduction

The COVID-19 pandemic caused school closures that disrupted education for more than 698 million primary-school-age children worldwide (UNICEF 2021). Before the pandemic, approximately 80 percent of primary-school-age children were not reaching the minimum proficiency level in reading in low- and lower-middle-income countries (UNESCO 2017), and this learning crisis worsened by the learning loss for children due to COVID-related school closures (Angrist et al. 2021; UNESCO 2021; UNICEF 2020). Following the COVID-19 shock, learning recovery has become an urgent item on the policy agenda to avoid long-term negative impacts on socio-economic development (Azevedo et al. 2021). The improvement of reading skills in primary education is a priority, as it constitutes the foundation for learning (World Bank, UNESCO, and UNICEF 2021).

Madagascar is a country in sub-Saharan Africa severely affected by the COVID-19 pandemic. The GDP per capita of the country decreased by 9.6 percent in 2020 (World Bank 2022). The percentage of the population living on less than 1.9 US dollars per day increased from 77.4 percent (2019) to 81 percent (2020) (World Bank 2022). In mid-March 2020, the government declared a health emergency and closed all primary schools (Ministry of Education in Madagascar 2020a). While the government permitted primary grade 5 students to go to school from mid-April 2020, primary schools remained closed for grade 1 through 4 students until the end of October 2020 (Ministry of Education in Madagascar 2020a).¹ During the seven months of school closures, the Ministry of Education in Madagascar introduced measures for distance learning using radio and television; however, access to this technology was limited for students in rural areas (INSTAT 2019; Barron Rodriguez et al. 2020).

After the long-term school closures, the Ministry of Education in Madagascar conducted training for teachers and community volunteers on basic reading and writing pedagogy with technical cooperation from the Japan International Cooperation Agency (JICA) in a region called Amoron'i Mania. The pedagogical approach was called "Teaching at the Right Level" (TaRL), developed by the Indian NGO "Pratham" (Pratham 2020). The TaRL training was a part of a package of interventions referred to as PMAQ-TaRL.² The package was mainly comprised of two parts: school management and pedagogical components, and the latter corresponded to TaRL training. The package aimed to strengthen the capacity of school management committees (SMCs) to

¹ The schools were closed until the end of the 2019–2020 school year (July 2020) and students were on vacation from July to the end of October 2020. Thus, schools were closed for approximately seven months in total.

² PMAQ is the abbreviation of "*Paquet Minimum Axé sur la Qualité*" (minimum package for quality learning). The package was originally developed in Niger and adapted to the local context in Madagascar with integrating TaRL as PMAQ-TaRL (Hara et al. 2020).

organize extra-curricular remedial activities using TaRL through collaboration among parents, teachers, and community members.

The package was scaled up progressively to increase the coverage of regions in Madagascar, which created a quasi-experimental situation for areas near the border of neighboring regions with similar social backgrounds. This study investigates the impact of scaling up PMAQ-TaRL on basic reading for primary grade 2 through 4 students, using the phase-in design of the project plan. Specifically, this study targeted two neighboring regions situated in the central highlands of south-central Madagascar: Amoron'i Mania and Haute Matsiatra. The two regions were created in 2004 from the same province, and the educational statistics were at a similar level (World Bank 2017; INSTAT 2019). Scaling up the package of interventions was completed on the Amoron'i Mania side in the 2020–2021 school year, one school year earlier than the Haute Matsiatra side. This study conducted a survey of the schools in the communes near the regional border.

This study contributes to the literature on educational development mainly in two ways. First, this study presents evidence on scaled-up interventions for learning recovery in the context of low-income country. Previous research has revealed the severity of learning loss that occurred during the school closures in low- and lower-middle-income countries (Ardington et al. 2021; Wolf et al. 2021; Moscoviz and Evans 2022; UNESCO, GPE, and ACER 2022). The impact of interventions to support learning continuity during the school closures was also studied. For example, Angrist et al. (2022) investigated the impact of an intervention using SMS messages and phone calls to support learning continuity during school closures in Botswana. This study investigates the impact of the scaled-up interventions right after the schools reopened in Madagascar. In the baseline and end-line surveys, student basic reading in the local language, Malagasy, was assessed. With the foundation of the improved capacity of the SMCs, the TaRL training increased the proportion of students who could read words written in local language by 15.9 percentage points and those who could read a story by 3.1 percentage points. The impact was larger for female students. Students with family support to learn Malagasy at home also improved basic reading more through extra-curricular remedial activities.

While the survey in this study focused on the area near the border of two neighboring regions, this study explored the impact of the scaled-up intervention for out-of-sampled schools in Amoron'i Mania. The schools in the region conducted student basic reading assessment with the same type of assessment tool as this study.³ Using the school-level data, we compared the

³ Although the ASER tools were used by schools in their extra-curricular remedial activities, the surveys in this study used the tool with different words, paragraph, story, and sets of letters. The words, paragraph, story, and sets of letters in the ASER tool in the end-line survey were also changed from those in the baseline survey.

assessment results for the surveyed schools in Amoron'i Mania with the out-of-sampled schools in the region. The regression results suggest that positive impacts on basic reading were realized widely across the region.

Second, this study examines the impact of scaling-up the intervention whose effectiveness was verified in the pilot phase through a randomized controlled trial (RCT) (Maruyama and Igei 2022). In the 2018–2019 school year, the RCT on PMAQ-TaRL was conducted in Amoron'i Mania, targeting grade 3 through 5 students. The result of the experiment demonstrated that the package significantly improved students' basic reading.⁴ While the experiment provides proof of concept, the scaling-up phase often faces implementation challenges (Banerjee et al. 2017). For example, the fidelity of targeted persons for the program implementation might decrease in the scaling-up phase compared to the pilot (Al-Ubaydli et al. 2019). The modification in the implementation structure of the interventions and reduction of intervention elements can also affect the impact of the intervention (Kerwin and Thornton 2021; Vivalt 2020).

In the scaling-up phase of PMAQ-TaRL, the Ministry of Education in Madagascar modified the implementation structure of the interventions. Regarding the TaRL training, trainers from the Ministry directly conducted the training for teachers and community volunteers in the RCT. However, a cascade-type training was employed for the scaling-up. The distribution of teaching and learning materials was also excluded to reduce costs. The number of targeted students expanded from approximately 7500 students in the RCT to more than 89000 students in the scaling-up phase, while the cost of the pedagogy component of PMAQ-TaRL was reduced by more than 50 percent. When we compare the magnitude of the impact for grades 3 and 4 with the RCT, the magnitude was smaller for students whose baseline reading was at the letter or word level in the scaling-up phase.

The remainder of this paper is organized into the following four sections. Section 2 explains the contents of the package of interventions, evaluation design, and estimation strategy. Section 3.1 reports the estimated impact on basic reading while Section 3.2 explores the impact for the out-of-sampled schools. Section 4 discusses the estimated impact in comparison with the results in the RCT and section 5 concludes.

⁴ PMAQ-TaRL increased the proportion of students who could read a paragraph or story by 25.3 percentage points for grade 3, 25.6 percentage points for grade 4, and 14.4 percentage points for grade 5 (Maruyama and Igei 2022).

2. Evaluation strategy

2.1 Context, content, and the timeline of interventions

In Madagascar, the learning crisis was already severe before the COVID-19 pandemic occurred. Approximately 80 percent of students in the last grade (grade 5) of primary education did not reach the minimum proficiency level of reading (PASEC 2017; 2020). Early-grade students in primary education were struggling to learn to read. Approximately 45 percent of second-grade students have not attained the minimum proficiency level of reading (PASEC 2020). In this context, the Ministry of Education in Madagascar launched “*Projet d’Appui à la Gestion Participative et Décentralisée de l’école*” (Participatory and Decentralized School Management Support Project, hereinafter referred to as the “TaFita Project”) with technical cooperation from JICA.⁵ The TaFita Project developed a package of interventions, called PMAQ-TaRL, to improve children’s learning (JICA 2020).

The package of interventions is comprised of two components (Ministry of Education in Madagascar 2019a, 2019b). The first component aims to strengthen the capacity of SMCs to develop and implement action plans through collaboration among parents, teachers, and community members. The component is made up of two sessions of training. One is the training for school principals on the democratic establishment of SMCs. The participants learn how to establish an SMC by secret ballot. The other training is provided for the president, secretary (school principal), and accountant of the SMC on the development of the school action planning cycle and resource management. They learn how to facilitate the discussions on the school action plan in the community general assembly and manage the plan cycle. The other component of the package was training for teachers and community volunteers on the pedagogy of basic reading and writing, TaRL. The pedagogy was developed by the Indian NGO “Pratham” and adapted by the TaFiTa Project to the local language in Madagascar. In the pedagogical approach, students are grouped by the assessment results and learn basic reading and writing through various activities (Pratham 2020).⁶ This set of two components aimed to improve students’ basic reading and writing through the extra-curricular remedial activities using TaRL organized by the SMCs.

2.2 Evaluation design

This study targeted two neighboring regions in the central highlands of south-central Madagascar, Amoron’i Mania and Haute Matsiatra, which were created from the same province in 2004 (World Bank 2017). The majority of people in both regions belong to the same ethnic group, the *Betsileo*,

⁵ “TaFita” is an abbreviation of the Malagasy words, *Tantsoroka ho an’ny Fitantanana ny sekoly*. The phrase means “support for school management.” The project was initiated in June 2016 and the second phase began in July 2020.

⁶ TaRL is designed to include math (Pratham 2020). However, in the 2020–2021 school year, the TaRL training focused on basic reading according to the project plan.

and share cultural characteristics (CREAM 2013a, 2013b). More than 70 percent of people in the two regions work in agriculture, such as rice farming and livestock, and more than 80 percent of the population lives in poverty in both regions (CREAM 2013a, 2013b; INSTAT 2019, 2020). The educational statistics in the two regions were at a similar level (INSTAT 2019). The passing rate of the certification exam of primary education in public schools was 49.4 percent in Amoron'i Mania and 53.2 percent in Haute Matsiatra in the 2018–2019 school year (national average: 57.7 percent) (Ministry of Education in Madagascar 2019c). The primary net enrolment rate was 76.1 percent (boys) and 84.4 percent (girls) in Amoron'i Mania and 82.4 percent (boys) and 87.5 percent (girls) in Haute Matsiatra (national average: 73.5 percent for boys and 78.7 percent for girls) (INSTAT 2019).

The plan of scaling-up PMAQ-TaRL for the two regions was the phase-in (see Figure 1). The Ministry of Education in Madagascar conducted the trainings on the school management component of PMAQ-TaRL for the public primary schools in Amoron'i Mania in the 2019–2020 school year and the schools in Haute Matsiatra in the following school year. After the seven-month school closures, the Ministry conducted the TaRL training, the pedagogy component of PMAQ-TaRL, in Amoron'i Mania in the 2020–2021 school year.⁷ Using the phase-in design in the project plan, this study investigates the impact of the scaling-up of PMAQ-TaRL on basic reading. Specifically, this study estimates the impact of the provision of the pedagogy component of PMAQ-TaRL in addition to the school management component, compared with the schools that received only the school management component.

The survey in this study targeted communes near the border that separated the two neighboring regions (see Figure 2). There were 120 schools on the Amoron'i Mania side and 118 schools on the Haute Matsiatra side in the targeted communes.⁸ This study randomly sampled 65 schools from the former as the treatment group and 65 schools from the latter as the comparison group.⁹ This study conducted the baseline survey from the end of October to December 2020 and the end-line survey from May to June 2021.¹⁰ The survey conducted a basic reading assessment of grade

⁷ In March 2020, The Ministry organized a public education forum to discuss the improvement of basic reading, inviting the executive members of the SMC federations, local educational officers, and local government representatives. The SMC federations were planning to organize the general assembly to share the discussions of the forum with the member SMCs. However, the process was interrupted in March 2020 by the COVID-19 emergency.

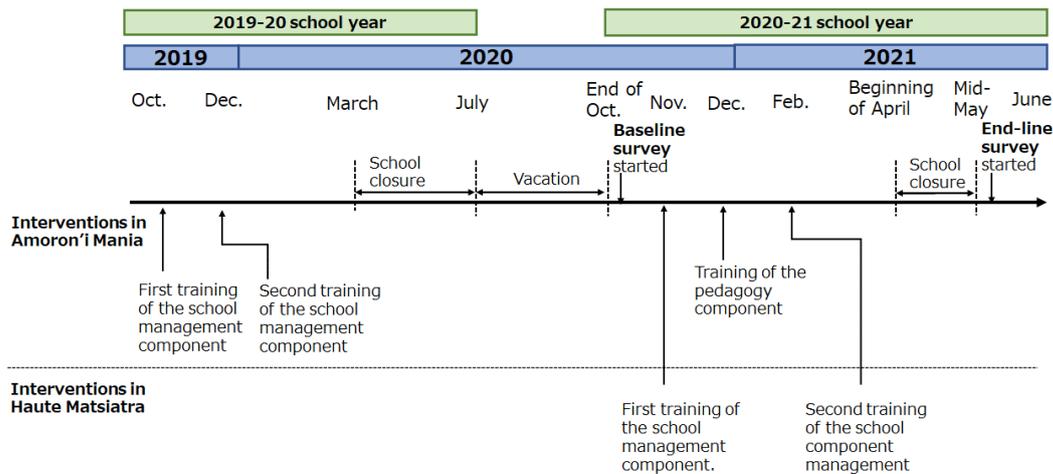
⁸ Seven communes in the Amoron'i Mania region and nine communes in the Haute Matsiatra region were targeted for the survey. We excluded the schools in Amoron'i Mania that were targeted in the RCT from the sampling frame for this study.

⁹ Additionally, ten schools were randomly sampled from outside the communes near the regional border in Amoron'i Mania.

¹⁰ The surveys were conducted based on the agreement signed on February 2020 for the TaFita Project between the Ministry of Education in Madagascar and JICA.

2 through 4 students and also collected information on students, schools, and SMCs through interviews.¹¹ Out of 65 sampled schools on the Amoron'i Mania side, 63 schools participated in the first training, and all the schools received the second training of the school management component. Approximately 93 percent of teachers of the 65 schools on the Amoron'i Mania side participated in the TaRL training. On the Haute Matsiatra side, all the 65 sampled schools received the two trainings of the school management component.

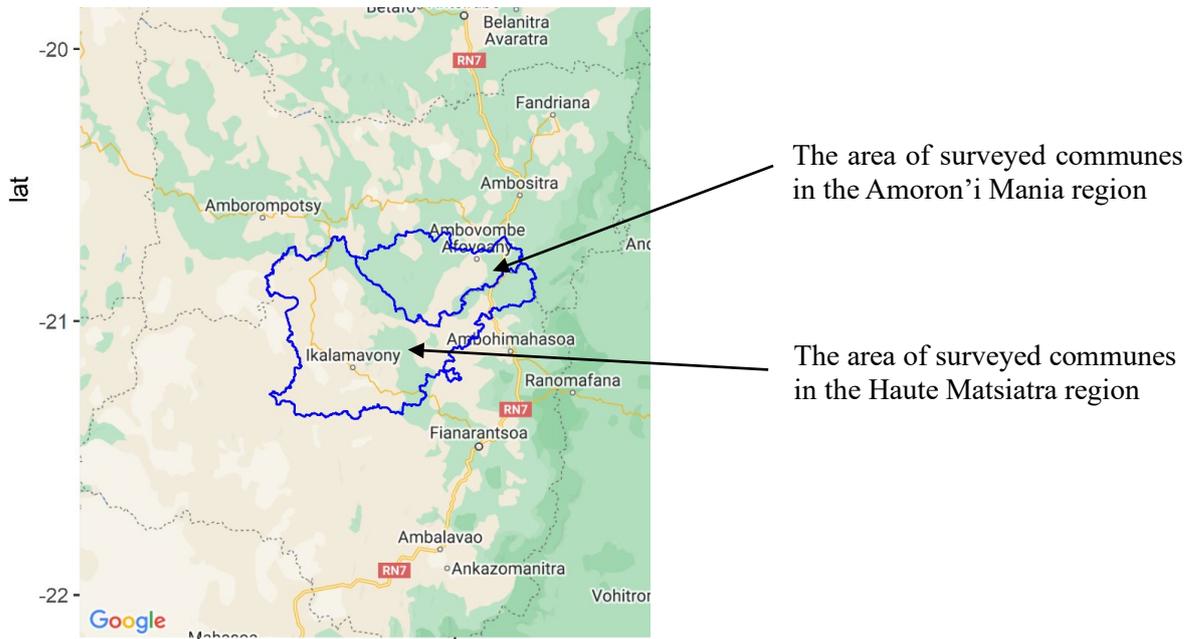
Figure 1: Timeline of events in the Amoron'i Mania and Haute Matsiatra regions



From the baseline to the end-line surveys, we observed student attrition. Of the 4754 grade 2 students in the baseline survey, 445 were absent in the end-line survey. In grade 3, of the 3579 students in the baseline survey, 424 were absent at the end-line. Out of 2405 grade 4 students present in the baseline survey, 265 were absent in the end-line survey. We confirmed that differential attrition did not occur between the two groups by the regression analysis (see Table A1 in Appendix A).

¹¹ While the TaFiTa Project targeted grade 2 through 5 students in PMAQ-TaRL, due to budget limitations, the survey in this study focuses on grade 2 through 4 students.

Figure 2: Location of the area of the surveyed communes



Source: Google (2022)

2.3 Baseline characteristics of students

Table 1 presents the baseline characteristics of students for the Amoron'i Mania and Haute Matsiatra sides. Access to technology for distance learning during the school closures was limited in both groups. For example, radios were not available for approximately 60 percent of student households, and more than 95 percent of student households did not have a television or computer. Less than 10 percent of students learned Malagasy using radios or TVs during the school closures.¹² Parental support for children studying Malagasy during school closures was also limited, with less than 15 percent of parents teaching children Malagasy at home. Several differences in student characteristics were observed in the two groups. For example, the ratio of students enrolled in pre-primary education was higher on the Amoron'i Mania side.¹³ The ratio of students who had a textbook at home was slightly higher on the Amoron'i Mania side, with the books used by students to study Malagasy while schools were closed down.

¹² The ratio of students who learned Malagasy using radio or TV during the school closures on the Amoron'i Mania side was slightly higher than the Haute Matsiatra side. When we regress the baseline reading level on student characteristics, learning Malagasy using radio or TV during the school closures was not correlated with the baseline reading level (Table B1 in Appendix B).

¹³ The ratio of public schools that offered a classroom for preschool children was higher on the Amoron'i Mania side (90.8 percent) than the Haute Matsiatra side (76.9 percent). The availability of a preschool in the public school was a background of the difference in the ratio of students enrolled in preschool in the two regions. When we regress the baseline reading level on student characteristics, enrollment in preschool is not correlated with the baseline reading level (see Table B1 in Appendix B).

Table 1: Comparison of student baseline characteristics (Grades 2 through 4)

	(I) AM	(II) HM	(III) (I)-(II)
Age	10.1	10.1	-0.04
Female students (%)	51.2	50.3	0.85
Enrolled at pre-school (%)	41.6	22.0	19.6***
Household assets			
Computer (%)	0.41	0.09	0.32
TV (%)	4.55	3.68	0.87
Radio (%)	40.4	40.8	-0.40
Smartphone (%)	1.30	0.64	0.66**
Cell phone (%)	54.2	50.5	3.75
Study at home during school closures			
Malagasy book at home (%)	13.0	7.81	5.17***
Took Malagasy textbook home from school (%)	3.27	2.79	0.48
Used Malagasy book for learning at home (%)	8.69	4.68	4.02***
Family taught Malagasy at home (%)	14.8	14.8	0.02
Learned Malagasy using TV or radio at home (%)	6.85	2.32	4.52***
Basic reading level			
Beginner (%)	61.6	66.9	-5.28
Letter (%)	24.6	16.2	8.39**
Word (%)	10.8	10.2	0.62
Paragraph (%)	2.76	5.37	-2.60**
Story (%)	0.20	1.32	-1.12*
Number of schools	65	65	
Number of students	6019	7194	

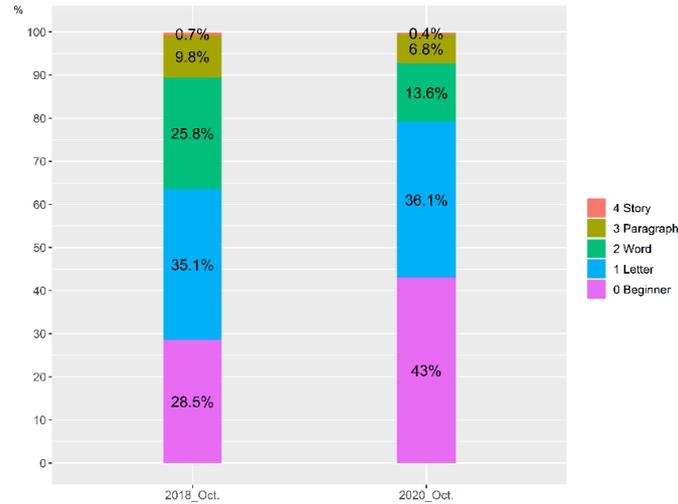
Notes: AM: Amoron'i Mania side. HM: Haute Matsiatra side. Data source is the baseline survey of this research. Column (III) reports the difference between the treatment and comparison groups and the result of the test for the difference in means between the two groups. Robust standard errors clustered at the school level are used. * p<0.1, ** p<0.05, *** p<0.01.

The surveys conducted a basic reading assessment using the Annual Status of Education Report (ASER) tool. The ASER tool was originally developed by the Indian NGO “Pratham” (ASER Center 2015). The TaFita Project adapted the assessment tool for the local language in Madagascar, Malagasy. Surveyors conducted interviews using the adapted tool with the individual students to evaluate basic reading using five levels: 1) cannot read letters (*beginner level*); 2) can read letters but cannot read words (*letter level*); 3) can read words but cannot read paragraph (*word level*); 4) can read paragraph but cannot read story (*paragraph level*); and 5) can read story (*story level*). Compared with the Haute Matsiatra side, the proportion of students in the letter level is larger and the proportion of the students in the paragraph and story levels is smaller on the Amoron'i Mania side (Table 1).

As we conducted our previous study (RCT) in Amoron'i Mania in the 2018–2019 school year, we can compare the basic reading assessment results of grade 3 and 4 students with this study to examine the learning loss resulting from the school closures. While the two studies sampled different schools for surveys, there were seven communes targeted by both studies. Figure 3 compares the baseline reading levels of grade 3 and 4 students who were eight to ten years old in

the seven communes in the two studies. Compared with the survey results in October 2018, the proportion of students at the beginner level became larger and at the word level became smaller by approximately 12 to 15 percentage points in October 2020 (Figure 3). The decline in the basic reading level indicates the learning loss that occurred during school closures.

Figure 3: Comparison of basic reading levels between October 2018 and October 2020 in Amoron'i Mania



Notes: (1) Data source is the baseline surveys of this study and previous research (Maruyama and Igei, 2022). (2) The number of grade 3 and 4 students (8 to 10 years old) was 569 in Oct. 2018 and 902 in Oct. 2020. The surveys were conducted for randomly sampled schools in the seven communes (Ambohimahazo, Ambohimilanja, Ambovombe-Afovoany, Anjoma-Nandihizana, Fandriana, Fiandanana, Mahazoarivo, and Sandrandahy).

2.4 Estimation Strategy

We employ the difference in differences (DD) strategy to investigate the impact of the scaled-up interventions on basic reading. Specifically, this study estimates the impact of the provision of the pedagogy component of PMAQ-TaRL in addition to the school management component, compared with the schools that received only the school management component. Thus, the estimated impact represents how much the pedagogy component enhanced the improvement of basic reading in combination with the school management component. The impact is estimated using equation,

$$Y_{isr} = \alpha_i + \gamma \text{Post}_r + \delta (T_s \cdot \text{Post}_r) + \varepsilon_{isr}, \quad (1)$$

where Y_{isr} takes the basic reading level dummy of student i in school s at survey round r (baseline: 0, and end-line: 1). T_s takes the value one for the school s on the Amoron'i Mania side. Post_r is the post-treatment period dummy (baseline: 0, and end-line: 1). In the equation, ε_{isr} is the error term. α_i represents student fixed effect which captures unobservable characteristics of student i .

The coefficient of our interest is δ , which represents the average impact on basic reading. Robust standard errors clustered at the school level are used.

We also estimate the heterogeneous impacts by student characteristics using equation,

$$Y_{isr} = \alpha + \delta T_s + \gamma Post_r + \delta_1 (T_s \cdot Post_r) + \delta_2 (T_s \cdot Post_r \cdot \dot{C}_{is0}) + \dot{C}_{is0} \beta_C + \dot{S}_{s0} \beta_S + \varepsilon_{isr}, \quad (2)$$

where C_{is0} represents the baseline characteristics of student i at school s , such as age, grade, sex, repeated the same grade or not, availability of Malagasy book at home, and household assets such as television or radio. S_{s0} represents the characteristics of school s , such as the number of students, multi-grade class, the school principal in charge of class, the ratio of the regular teacher, and school infrastructure. \dot{C}_{is0} and \dot{S}_{s0} are the values subtracted by the means (i.e., $\dot{C}_{is0} = C_{is0} - \bar{C}_{is0}$ and $\dot{S}_{s0} = S_{s0} - \bar{S}_{s0}$).

The identification of the causal impact using DD requires the parallel trends assumption to be met. As the past assessment results of basic reading for the sampled students are not available, we referred to educational statistics at the school-level beginning with the 2018–2019 school year to check the trends (Table 2). Column (X) in Table 2 reports difference in differences in educational statistics from the 2018–2019 school year to the 2019–2020 school year in the Amoron'i Mania and Haute Matsiatra sides. None of the values are statistically significant, and the values are small compared with the levels of educational indicators, which supports the parallel trends in the two groups. For example, the trends in the repetition rates across grades 1 through 4 are similar for the two groups. In Madagascar, as students repeat the same grade when students do not pass the exam at the end of the previous school year (JICA and IDCJ 2015), the repetition rate is a proxy of student learning levels. The trends in the indicators for the student learning environment, such as the pupil-teacher ratio, ratio of multi-grade classes, and the student-textbook (Malagasy) ratio, are also similar. For example, regarding the profile of teachers, more than half were locally hired and were not regular teachers in both groups.

The educational statistics represent the situation in the school one month after the beginning of the school year.¹⁴ As the educational statistics for the 2019–2020 school year indicated the situation in the school year before the school closures from March 2020, we thus also checked whether any differential trends for educational statistics could be observed between the 2019–2020 and the 2020–2021 school years. As reported in Column (XI) in Table 2, none of the values for difference in differences in the educational statistics are statistically significant.

¹⁴ The school year in Madagascar starts from the end of October.

Table 2: Trends in educational statistics for the 130 surveyed school

	2018-2019 school year			2019-2020 school year			2020-2021 school year			(X): (VI)–(III)	(XI): (IX)–(VI)
	(I) AM	(II) HM	(III): (I)–(II)	(IV) AM	(V) HM	(VI): (IV)–(V)	(VII) AM	(VIII) HM	(IX): (VII)–(VIII)		
(a) Ratio of female students											
Grade 1	0.476	0.506	-0.029	0.475	0.510	-0.034	0.473	0.494	-0.022	-0.005	0.013
Grade 2	0.516	0.497	0.019	0.498	0.517	-0.018	0.488	0.530	-0.042	-0.037	-0.023
Grade 3	0.537	0.493	0.044	0.499	0.496	0.003	0.521	0.501	0.020	-0.041	0.017
Grade 4	0.548	0.545	0.003	0.512	0.516	-0.004	0.496	0.490	0.006	-0.007	0.009
(b) Ratio of repeated students											
Grade 1	0.367	0.340	0.027	0.331	0.331	-0.001	0.318	0.331	-0.012	-0.028	-0.011
Grade 2	0.307	0.334	-0.028	0.303	0.316	-0.013	0.344	0.341	0.003	0.015	0.015
Grade 3	0.346	0.368	-0.022	0.307	0.291	0.016	0.296	0.335	-0.039	0.038	-0.055
Grade 4	0.246	0.251	-0.005	0.233	0.252	-0.019	0.249	0.261	-0.012	-0.014	0.007
(c) Ratio of grade 5 students who passed primary certificate exam	0.352	0.394	-0.043	0.279	0.312	-0.033				0.009	
(d) Ratio of schools with multi-grade classes											
Grade 1	0.446	0.338	0.108	0.446	0.308	0.138	0.431	0.385	0.046	0.031	-0.092
Grade 2	0.492	0.369	0.123	0.538	0.400	0.138	0.462	0.431	0.031	0.016	-0.108
Grade 3	0.200	0.292	-0.092	0.262	0.369	-0.108	0.231	0.308	-0.077	-0.015	0.031
Grade 4	0.492	0.446	0.046	0.523	0.585	-0.062	0.600	0.538	0.062	-0.108	0.123
(e) Student-textbook (Malagasy) ratio											
Grade 1	0.883	0.684	0.199	0.840	0.652	0.189	0.731	0.766	-0.035	-0.010	-0.224
Grade 2	0.791	0.688	0.103	0.777	0.644	0.133	0.634	0.562	0.073	0.029	-0.060
Grade 3	1.146	0.735	0.411	1.007	0.622	0.385	0.796	0.635	0.162	-0.025	-0.224
Grade 4	1.179	0.939	0.240	1.067	0.850	0.217	0.784	0.618	0.167	-0.022	-0.051
(f) Pupil-teacher ratio	35.487	40.951	-5.463	34.453	41.095	-6.642	39.354	47.776	-8.422	-1.179	-1.779
(g) Ratio of regular teachers	0.076	0.085	-0.009	0.042	0.064	-0.022	0.060	0.056	0.005	-0.013	0.027
(h) Ratio of contract teachers	0.335	0.373	-0.038	0.325	0.357	-0.032	0.337	0.396	-0.059	0.007	-0.028
(i) Ratio of locally-hired non-regular teachers	0.590	0.542	0.047	0.633	0.580	0.054	0.602	0.548	0.054	0.006	0.001
(j) Number of years of experience of teachers	10.324	9.971	0.353	8.737	9.750	-1.013	9.328	9.845	-0.517	-1.367	0.496
Number of schools	65	65		65	65		65	65			

Notes: AM: Amoron'i Mania side. HM: Haute Matsiatra side. Data source is statistics of the Ministry of Education in Madagascar. The educational statistics represent the situation in the school one month after the beginning of the school year. Columns (III), (VI), and (IX) report the difference in the educational statistics in each school year. Columns (X) and (XI) report the difference in differences between the two groups and the test results. Robust standard errors are used. * p<0.1, ** p<0.05, *** p<0.01.

2.5 Functionality of SMCs in the 2020–2021 school year

As noted in Section 2.2, the school management component in PMAQ-TaRL was provided for the Amoron'i Mania side in the 2019–2020 school year and for the Haute Matsiatra side in the following school year. As shown in Table 3, the SMCs functioned well in the two groups in the 2020–2021 school year. Almost all the schools in both groups organized a community general assembly to discuss the school action plan, and more than 90 percent developed a plan.

Whereas the number of planned activities in the school action plan was at similar levels in both groups, the number of implemented activities was slightly higher on the Amoron'i Mania side than on the Haute Matsiatra side. The major source of the difference was the organization of supplementary classes. While almost all the schools on the Haute Matsiatra side planned the activity, approximately 45 percent of the schools implemented it. This was mainly due to the school closures from the beginning of April to mid-May 2021, resulting from the increase in COVID-19 cases.¹⁵

Table 3: Comparison of the SMC functionality in the 2020–2021 school year

	(I) AM	(II) HM	(III) (I)–(II)
Percent of SMCs that organized a general assembly to develop a school action plan	98.41	100	-1.59
Percent of SMCs that shared assessment results in the general assembly	85.48	88.89	-3.41
Percent of SMCs that developed a school action plan	96.92	96.92	0
Total number of planned activities	8.18	8.35	-0.17
Total number of implemented activities	7.25	5.65	1.60***
Percent of SMCs that planned supplementary classes	100	96.92	3.08
Percent of SMCs that implemented supplementary classes	100	44.62	55.38***
Number of schools	65	65	

Notes: AM: Amoron'i Mania side. HM: Haute Matsiatra side. Data source is the end-line survey of this study. Column (III) reports the difference between the two groups and the test results for the difference in means. Robust standard errors are used. *** p<0.01.

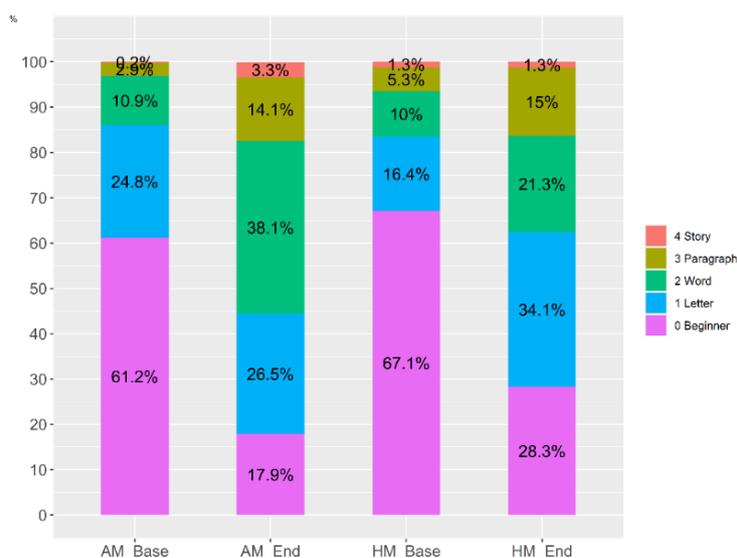
3. Results

3.1 The impact on basic reading levels

Figure 4 compares the percentage of students at each basic reading level between the two groups. While the proportion of students at the beginner level decreased from the baseline to the end-line survey in both groups, the proportion of students at the word level increased substantially on the Amoron'i Mania side compared to the Haute Matsiatra side.

¹⁵ The schools in Haute Matsiatra received a training session on the school action plan in February 2021 and developed action plans; however, the school closures from the beginning of April to mid-May 2021 hampered the implementation of supplementary classes. On average, schools were closed for 40.2 days on the Amoron'i Mania side and 41.3 days on the Haute Matsiatra side during the period. The average total hours for supplementary classes was approximately 11 hours for the schools that organized the activity on the Haute Matsiatra side.

Figure 4: Comparison of the basic reading level (Grades 2 through 4)



Note: AM: Amoron'i Mania side; HM: Haute Matsiatra side. Base: baseline survey, End: end-line survey. Data source is the baseline and end-line surveys of this study. The figure includes grade 2 through 4 students who were present both for the baseline and end-line surveys. The number of students was 4339 (AM) and 5265 (HM).

Table 4 presents the estimated impacts on basic reading level for grade 2 through 4 students. The provision of the pedagogy component, in addition to the school management component of PMAQ-TaRL, increased the proportion of students in the word level by 15.9 percentage points and the proportion of students in the story level by 3.1 percentage points, compared with the schools that received only the school management component (Columns (III) and (V) in Table 4). The magnitude of the impact differs depending on student grades. For example, for grade 4 students, the proportion of students at the story level increased by 11 percentage points (Table C1 in Appendix C). As noted in Section 2.5, approximately 45 percent of schools on the Haute Matsiatra side organized supplementary classes. As a robustness check of the regression results in Table 4, we estimated equation (1) using the sample excluding the schools on the Haute Matsiatra side that did not organize supplementary classes. While the increase in the proportion of students at the word level became slightly smaller, the estimated impact remained almost the same (Table C2 in Appendix C).

Table 4: Regression results for the impacts on basic reading (Grades 2 through 4)

	Beginner (I)	Letter (II)	Word (III)	Paragraph (IV)	Story (V)
$T_s \times \text{Post}$	-0.045 (0.045)	-0.161** (0.068)	0.159*** (0.036)	0.016 (0.032)	0.031*** (0.007)
Post	-0.388*** (0.030)	0.177*** (0.043)	0.114*** (0.022)	0.097*** (0.025)	0.000 (0.000)
Average in the HM side (baseline)	0.671	0.164	0.100	0.053	0.013
Number of schools	130	130	130	130	130
Number of observations	19208	19208	19208	19208	19208

Notes: HM: Haute Matsiatra. Data source is the baseline and end-line surveys of this study. The dependent variable is a binary variable for each reading level. Student fixed effects are controlled in all the regressions. Robust standard errors clustered at the school level are used. ** $p < 0.05$, *** $p < 0.01$.

To understand the average impacts from a different angle, we estimated equation (1) using the sub-samples by the baseline basic reading level. As presented in Table 5, the impact was heterogeneous by student baseline reading levels. While the impact was positive and statistically significant for students whose baseline reading level was beginner, word, or paragraph, the impact was not statistically significant for students at the letter level in the baseline.

Using the sub-samples by baseline reading level, we also estimated equation (2) to see the heterogeneous impacts by student characteristics. As shown in Table C3 in Appendix C, the impact was larger for female students. The impact was also larger for students whose family members taught them Malagasy during the school closures. It indicates that family support for students to learn Malagasy enhanced their learning in the extra-curricular remedial activities. Regarding the Amoron'i Mania side, teachers and community volunteers were trained to use Malagasy textbooks in remedial activities. Better availability of Malagasy textbooks helped teachers and community volunteers to organize remedial activities using TaRL effectively (Table C3 in Appendix C).

Table 5: Regression results for the impacts by baseline reading levels (Grades 2 through 4)

	Beginner (I)	Letter (II)	Word (III)	Paragraph (IV)	Story (V)
Panel A: Beginner (baseline)					
T _s ×Post	-0.129** (0.059)	-0.099* (0.052)	0.228*** (0.040)		
Post	-0.578*** (0.046)	0.445*** (0.036)	0.133*** (0.021)		
Number of observations	12376	12376	12376		
Panel B: Letter (baseline)					
T _s ×Post		-0.040 (0.070)	0.037 (0.046)	0.003 (0.066)	
Post		-0.747*** (0.052)	0.391*** (0.033)	0.355*** (0.053)	
Number of observations		3878	3878	3878	
Panel C: Word (baseline)					
T _s ×Post		-0.002 (0.003)	0.032 (0.123)	-0.160 (0.112)	0.129*** (0.038)
Post		0.002 (0.003)	-0.542*** (0.089)	0.540*** (0.089)	0.000 (0.000)
Number of observations		1994	1994	1994	1994
Panel D: Paragraph (baseline)					
T _s ×Post		-0.007 (0.010)	-0.249*** (0.093)	-0.337*** (0.122)	0.593*** (0.076)
Post		0.007 (0.010)	0.273*** (0.089)	-0.284*** (0.094)	0.004 (0.005)
Number of observations		804	804	804	804

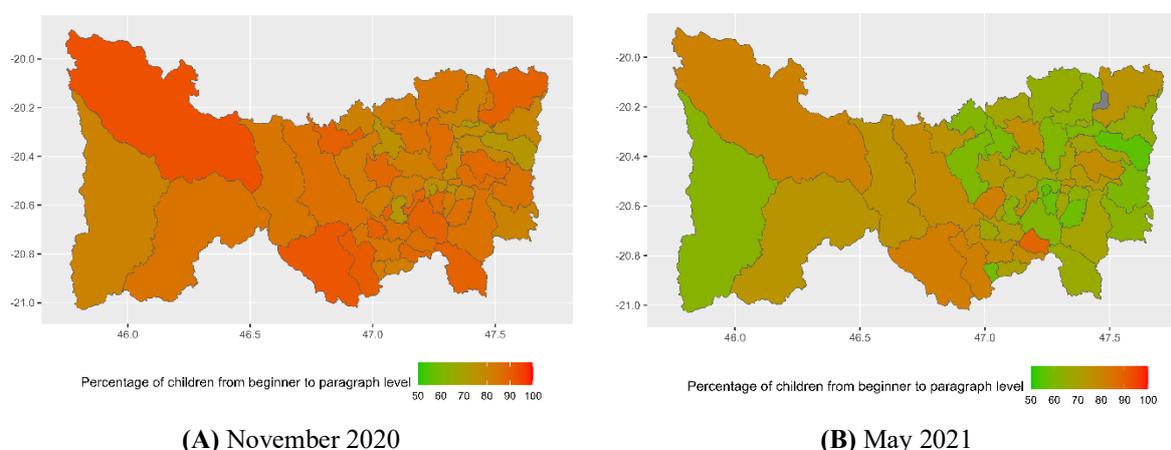
Notes: Data source is the baseline and end-line surveys of this study. The dependent variable is a binary variable for each reading level. Student fixed effects are controlled in all regressions. Robust standard errors clustered at the school level are used. * p<0.1, ** p<0.05, *** p<0.01.

3.2 Comparison between the sampled and out-of-sampled schools in Amoron'i Mania

While we identified positive impacts on basic reading on the Amoron'i Mania side near the regional border, the interventions originally targeted all the public primary schools in the region. This raises a

question: did the improvement in basic reading occur across the region? Apart from our survey in this study, schools in Amoron'i Mania conducted basic reading assessments in November 2020 and May 2021 using the same type of assessment tool as the survey.¹⁶ We used the school-level assessment data compiled by the TaFiTa Project to explore the impact on the out-of-sample schools in the region. Figure 5 describes the situation of the basic reading levels for Grade 2 through 5 students in Amoron'i Mania. The communes with a high percentage of students who did not attain the story level are colored in red, while communes with a lower percentage are colored in green. The improvement was not limited to the communes near the regional border with Haute Matsiatra.

Figure 5: Situation of basic reading in Amoron'i Mania in the 2020–2021 school year



Notes: (1) The number of grade 2 through 5 students was 98578 (Figure 5A) and 89435 (Figure 5B) in the 1027 schools. (2) Data source: TaFita Project.

Using the school-level assessment data, we compare the basic reading level of grade 2 through 4 students in the 65 surveyed schools near the border and the out-of-sampled schools in Amoron'i Mania using the following equation,¹⁷

$$R_{st}^L = \kappa \text{Surveyed}_s + \tau \text{Post}_t + \psi(\text{Surveyed}_s \times \text{Post}_t) + Z_s + S_{s0} \beta_S + v_{st}, \quad (3)$$

where R_{st}^L represents the ratio of students at the basic reading level L in school s at the assessment timing t (November 2020: 0 and May 2021: 1). The basic reading level L takes one of the five levels: beginner, letter, word, paragraph, or story. Surveyed_s indicates the 65 surveyed schools in Amoron'i Mania. Z_s represents the fixed effects for the local educational zones, called “*Zone Administrative et Pédagogique*” (*ZAP*). Robust standard errors clustered at the local education zone level are used.

¹⁶ As mentioned in footnote 3, although the ASER tools were used by schools in the extra-curricular remedial activities, the surveys in this study used the tool with different words, paragraph, story, and set of letters. The words, paragraph, story, and set of letters in the ASER tool in the end-line survey were also changed from those in the baseline survey.

¹⁷ In the 2019–2020 school year, there were 1040 schools in Amoron'i Mania. While school-level assessment data were available for 1027 schools, the original data did not include the school ID given by the Ministry of Education. Out of the 1027 schools, we were able to identify the school ID for 979 schools to link to the educational statistics collected by the Ministry of Education.

As shown in Table 6, the increase in the ratio of students at the story level was larger for the out-of-sampled schools than the surveyed schools (Column (V)). Conversely, the increase in the ratio of students at the letter and word levels was larger for the surveyed schools than the out-of-sampled schools (Columns (II) and (III)). Thus, the magnitude of the improvement in basic reading was larger for the out-of-sampled schools than the sampled schools, which suggests that the impact on basic reading was not limited to the communes near the regional border.^{18,19}

Table 6: Comparison between the sampled and out-of-sampled schools in Amoron'i Mania

	Beginner (I)	Letter (II)	Word (III)	Paragraph (IV)	Story (V)
Surveyed × Post	-0.007 (0.024)	0.043** (0.016)	0.055*** (0.016)	-0.008 (0.015)	-0.082*** (0.019)
Surveyed	0.054 (0.034)	-0.005 (0.022)	-0.059*** (0.020)	-0.010 (0.016)	0.020 (0.014)
Post	-0.110*** (0.009)	-0.082*** (0.008)	-0.002 (0.008)	0.059*** (0.007)	0.135*** (0.009)
Average in the out-of-sampled schools (baseline)	0.158	0.233	0.272	0.235	0.101
Number of observations	1958	1958	1958	1958	1958

Notes: Data source is TaFiTa project and statistics of the Ministry of Education. School characteristics and the fixed effects for the local education area are controlled but not shown. Robust standard errors are used. There were the school-level assessment data for 1027 schools. Out of the schools, we could identify the school ID of 979 schools to combine the school-level assessment data with the data of educational statistics. ** p<0.05, *** p<0.01.

4. Discussions: Comparison of the magnitude of impact between the pilot and scaled-up interventions

We conducted our previous study (RCT) in Amoron'i Mania to investigate the impact of PMAQ-TaRL on student learning in the 2018–2019 school year. As this study was conducted after the COVID-19 pandemic occurred, the research context differed between the two studies. The treatment assignment was also different. While the control group in the RCT did not receive any interventions of PMAQ-TaRL, the comparison group in this study (Haute Matsiatra) received the school management component.

Despite the differences between the two studies, it is still worthwhile comparing the estimated impacts in the two studies to obtain policy implications.²⁰ We compared the estimated impacts for students in grades 3 and 4 in the two studies with respect to their magnitude. As shown in Table C5 in Appendix C, the magnitude of the impact became significantly smaller for students whose baseline reading was at

¹⁸ We also estimated equation (4) using the sub-samples by student grades. As shown in Table C4 in Appendix C, the results are similar to Table 6.

¹⁹ In addition to the school-level assessment data, we also used the surveyed data for the ten schools that were not located near the border in Amoron'i Mania to estimate the impact for the schools outside the communes near the regional border. There was no statistically significant difference in the magnitude of impacts between the ten schools and the original 65 schools (see Table D1 in Appendix D).

²⁰ As the RCT targeted grades 3 through 5, we compare the impacts for grades 3 and 4 between the RCT and this study.

the letter or word level. For example, the magnitude of the impact for students who were at the word level at the baseline was 0.613 reading level points in the RCT and 0.105 in this study (Column (I) in Panel C1 and C2).

As the number of schools to be covered by the interventions in Amoron'i Mania increased significantly from the 70 schools in the pilot to more than 1000 schools in the scaling-up phase, the implementation was modified in three major ways. First, whereas the trainers from the Ministry of Education directly organized the TaRL training for teachers and community volunteers in the pilot (RCT), the Ministry used cascade-type training in the scaling-up phase. The regular training sessions for teachers, called *Journée Pédagogique* (JP), were also used. The JP was conducted in each local educational area or group of areas, and participation was mandatory for teachers.²¹ Second, while the trainers practiced TaRL at local schools for one week during the training of trainers in the pilot (RCT), the on-site practices were reduced in the scaling-up phase due to logistical and budgetary reasons.²² Third, in the pilot (RCT), the teaching and learning materials on TaRL, including syllable charts and letter cards, were provided for the schools in the treatment group; however, in the scaling-up phase, this component was also omitted.²³ While in total, more than 50 percent of the cost of the pedagogical component in the pilot was reduced in the scaling-up phase, the number of targeted students was significantly expanded from approximately 7500 students in the RCT to more than 89000 students in the scaled-up interventions in Amoron'i Mania.

The changes in the implementation of the intervention in the scaling-up phase were possible factors attenuating the impact on basic reading for students whose baseline reading level was letter or word.²⁴ In the scaling-up phase, local educational officers became trainers in the TaRL training. The reduction of on-site practice might have hampered the mastery of TaRL for trainers. Second, reducing the distribution of teaching and learning materials such as booklets could have made it difficult for students to practice reading in the extra-curricular remedial activities.

²¹ Teachers were traditionally responsible for the transportation costs for their participation in JP. Each local educational area called ZAP is comprised of approximately 10 to 30 schools. The local educational officers placed in each ZAP are the ZAP leaders, who were in charge of organizing JP. The cost for the training sessions, such as transportation and accommodation for the participants—which represented approximately 25 percent of the total cost of the pedagogy component in the RCT—was reduced in the scaling-up phase.

²² The cost for the on-site practice represented approximately 9 percent of the cost for the pedagogy component.

²³ The reduced expenditures on teaching and learning materials accounted for approximately 23 percent of the cost of the pedagogy component. Teachers and community volunteers were trained to produce teaching and learning materials using local materials. They were also advised to use the Malagasy textbooks available in their schools in TaRL.

²⁴ The average total hours of extra-curricular remedial activities for basic reading was around 40 hours in the RCT and 49 hours in this study. Out of 65 schools on the Amoron'i Mania side, 57 schools grouped students not according to assessment level but by grade.

In addition to these two possible factors, the average number of community volunteers who supported extra-curricular remedial activity decreased from 2.8 in the RCT to 0.8 in this study.²⁵ Of the 65 schools on the Amoron'i Mania side, the ratio of the number of enrolled students to teachers and community volunteers was over 30:1 in the 16 schools. In environments with a high student-facilitator ratio, teachers and community volunteers might not be able to properly manage the extra-curricular remedial activities.

5. Conclusions

The COVID-19 pandemic disrupted education in Madagascar. In mid-March 2020, the government declared a health emergency and closed all primary schools (Ministry of Education in Madagascar 2020a). While schools were partially opened for the grade 5 students from mid-April 2020 for their exam preparation, schools remained closed until the end of October 2020 for grade 1 through 4 students. After seven months of school closures, the Ministry of Education conducted training on basic reading and writing pedagogy of TaRL for teachers and community volunteers. The TaRL training was a part of the package of interventions, PMAQ-TaRL. The package aimed to strengthen the capacity of SMCs to organize extra-curricular remedial activities using TaRL through the collaboration among parents, teachers, and community members.

This study targeted the two neighboring regions, Amoron'i Mania and Haute Matsiatra, located in the south-central part of the country. The former region completed the scaling-up of PMAQ-TaRL one year earlier than the latter region. Using the phase-in design in the project plan, this study investigated the impacts of the scaling-up of PMAQ-TaRL. This study surveyed 130 schools near the border of the two regions. With the foundation of the improved capacity of SMC, the TaRL training increased the proportion of students who could read words written in the local language by 15.9 percentage points and those who could read a story by 3.1 percentage points. The impact was larger for female students. Students with family support to learn Malagasy at home improved basic reading more due to the extra-curricular remedial activities. In addition to survey data of students, this study also analyzed assessment data at the school level. The results suggest that the impact was realized widely in the targeted regions.

We compared the estimated impacts for grade 3 and 4 students in this study with our previous study (RCT) with respect to the magnitude of the impact. The Ministry of Education modified the implementation of the interventions in PMAQ-TaRL to cover more than 89000 students in Amoron'i Mania in the scaling-up phase. During this phase, the magnitude of the impact became smaller for students whose baseline reading level was at the letter or word level. The change in the implementation of interventions, such as the on-site practice for trainers of training and the reduction of the distribution of teaching and learning materials for students, might be a possible factor for the attenuated impact.

²⁵ The percentage of teachers in the treatment group who were involved in the remedial activities was 92.2 percent in the pilot in the RCT and 92 percent in the scaled-up interventions in this study.

While it is necessary to reduce the cost of interventions to cover more students within a limited budget, it is essential to continue seeking a balance in the changing context and finding better ways of enhancing both the coverage and magnitude of the impact.

To accelerate learning recovery in low- and middle-income countries, the World Bank, UNESCO, and UNICEF (2021) have proposed three policy levers: (a) consolidating curricula, (b) extending instructional time, and (c) improving the efficiency of learning. PMAQ-TaRL is a package of interventions that applies the three policy levers at the school level in an integrated manner. PMAQ-TaRL focused on basic reading as a foundational skill for children using a targeted instruction method, TaRL. The package extended the instructional time for children through extra-curricular remedial activities. The case in Madagascar indicates that it is possible to improve learning at scale through extra-curricular remedial activities organized by SMC toward learning recovery.

Appendix A. Attrition analysis

Appendix B. Correlates in student characteristics for the baseline basic reading level

Appendix C. Tables on the impact estimates

Appendix D. Comparison of the impacts for the 10 schools in communes outside the border area and the 65 schools in communes near to the border in Amoron'i Mania

References

- Al-Ubaydli, Omar, Min Sok Lee, John A. List, Claire L. Mackevicius, and Dana Suskind. 2019. "How Can Experiments Play a Greater Role in Public Policy? 12 Proposals from an Economic Model of Scaling." Working paper 2019-131. Becker Friedman Institute.
- Angrist, Noam, Andreas de Barros, Radhika Bhula, Shiraz Chakera, Chris Cummiskey, Joseph DeStefano, John Floretta, Michelle Kaffenberger, Benjamin Piper, and Jonathan Stern. 2021. "Building Back Better to Avert a Learning Catastrophe: Estimating Learning Loss from COVID-19 School Shutdowns in Africa and Facilitating Short-Term and Long-Term Learning Recovery." *International Journal of Educational Development* 84: 102397.
- Angrist, Noam, Peter Bergman, and Moitshepi Matsheng. 2022. "Learning Using Low-Tech When School's Out." *Nature Human Behaviour* 6: 941-50.
- Ardington, Cally, Gabrielle Wills, and Janeli Kotze. 2021. "COVID-19 Learning Losses: Early Grade Reading in South Africa." *International Journal of Educational Development* 86: 102480.
- Azevedo, João Pedro, Amer Hasan, Diana Goldemberg, Koen Geven, and Syedah Aroob Iqbal. 2021. "Simulating the Potential Impacts of COVID-19 School Closures on Schooling and Learning Outcomes: A Set of Global Estimates." *World Bank Research Observer* 36 (1): 1-40.
- Banerjee, Abihijit, Rukmini Banerji, James Berry, Esther Duflo, Harini Kannan, Shobhini Mukerji, Marc Shotland, and Michael Walton. 2017. "From Proof of Concept to Scalable Policies: Challenges and Solutions, with an Application." *Journal of Economic Perspectives* 31 (4): 73-102.
- Barron Rodriguez, Maria, Cristobal Cobo, Alberto Munoz-Najar, Inaki Sanchez Ciarrusta. 2020. *Remote Learning During the Global School Lockdown: Multi-Country Lessons*. World Bank Group.
- Centre de Recherches, d'Etudes et d'Appui a l'Analyse Économique de Madagascar (CREAM). 2013a. *Monographie Région Haute Matsiatra*. https://www.pseau.org/outils/ouvrages/mg_mef_monographie-region-haute-matsiatra_2014.pdf.
- . 2013b. *Monographie Région Haute Matsiatra*. https://www.pseau.org/outils/ouvrages/mg_mef_monographie-region-amoroni-mania_2014.pdf
- Google. 2022. *Google map: Madagascar (online)*. Retrieved June 10, 2022.
- Hara, Masahiro, Takao Maruyama, Akiko Kageyama, and Nobuhiro Kunieda. 2020. "Quality Learning through Community-wide Collaboration: A Methodology to Overcome the 'Learning Crisis' in Niger." In *Community Participation with Schools in Developing Countries: Towards Equitable and Inclusive Basic Education for All*, edited by M. Nishimura (Ed.), pp.165-83. Routledge Research in Educational Equality and Diversity Series. New York & Oxon: Routledge.
- L'Institut National de la Statistique (INSTAT) Madagascar. 2019. "Multiple Indicator Cluster Survey Madagascar 2018: Executive summary of survey results." <https://www.unicef.org/madagascar/media/3121/file/UNICEF%20Madagascar%20Executive%20Summary%20MICS%20ENG.pdf>.
- INSTAT Madagascar. 2020. *Troisieme Recensement General de la Population et de L'Habitation (RGPH-3)*. https://www.instat.mg/documents/upload/main/INSTAT_RGPH3-Definitif-ResultatsGlogaux-Tome1_17-2021.pdf.
- Japan International Cooperation Agency (JICA) and International Development Center in Japan (IDCJ). 2015. *Etude sur le Secteur de L'Education de Base en Afrique : Madagascar: Rapport d'analyse du Secteur de l'Education de Base*. Tokyo: JICA.
- Japan International Cooperation Agency (JICA). 2020. *Project Completion Report of Participatory and Decentralized School Management Support Project in Madagascar (in Japanese)*. Tokyo: JICA.

- Kerwin, Jason, and Rebecca Thornton. 2021. "Making the Grade: The Sensitivity of Education Program Effectiveness to Input Choices and Outcome Measures." *Review of Economics and Statistics* 103 (2): 251-64.
- Maruyama, Takao and Kengo Igei. 2022. "Community-Wide Support for Primary Students to Improve Basic Reading and Math Learning: Empirical Evidence from Madagascar." <https://ssrn.com/abstract=4076787>.
- Ministry of Education in Madagascar. 2019a. "Guide du Formateur sur la Mise en place Démocratique de la FEFFI Fonctionnelle." 3ème Edition. Antananarivo.
- Ministry of Education in Madagascar. 2019b. Manuel sur le processus d'Elaboration, d'Exécution et de Suivi/Evaluation des Plans d'Actions de l'Ecole Axés sur la Qualité : Projet d'Etablissement Contractualisé (PEC): 3ème Edition. Antananarivo.
- Ministry of Education in Madagascar. 2019c. *Donnees Par Region Des Etablissements Scolaires Publics*.
- Ministry of Education in Madagascar. 2020a. *Note Stratégique sur la Réponse du Secteur de l'Education Face à la Pandémie du COVID-19 Madagascar*. <https://www.education.gov.mg/note-strategique-sur-la-reponse-du-secteur-de-leducation-face-a-la-pandemie-du-covid-19/>.
- Ministry of Education in Madagascar. 2020b. *Donnees Par Region Des Etablissements Scolaires Publics*.
- Ministry of Education in Madagascar. 2021. *Donnees Par Region Des Etablissements Scolaires Publics*.
- Moscoviz, Laura, and David Evans. 2022. "Learning Loss and Student Dropouts during the COVID-19 Pandemic: A Review of the Evidence Two Years after Schools Shut Down." Centre for Global Development Working Paper 609. <https://www.cgdev.org/publication/learning-loss-and-student-dropouts-during-covid-19-pandemic-review-evidence-two-years>.
- PASEC 2017. *Performances du Système Éducatif Malgache: Compétences et facteurs de réussite au primaire*. Dakar: PASEC. CONFEMEN.
- . 2020. *PASEC 2019: Qualité des Systèmes Éducatifs en Afrique Subsaharienne Francophone*. Dakar: PASEC. CONFEMEN.
- Pratham 2020. "Teaching at the Right Level: From Concern with Exclusion to Challenges of Implementation." Background Paper Prepared for the 2020 Global Education Monitoring Report. https://www.handbook.uts.edu.au/dates_academic_2023.html
- UNESCO. 2017. "More than One-half of Children and Adolescents are not Learning Worldwide." UNESCO Institute for Statistics Fact Sheet No. 46 (UIS/FS/2017/ED/46). <https://uis.unesco.org/sites/default/files/documents/fs46-more-than-half-children-not-learning-en-2017.pdf>.
- . 2021. *Pandemic-related Disruptions to Schooling and Impacts on Learning Proficiency Indicators: A Focus on the Early Grades*. Montreal: UNESCO Institute for Statistics.
- UNESCO, GPE, and ACER. 2022. *COVID-19 in Sub-Saharan Africa: Monitoring Impacts on Learning Outcomes*. Montreal: UIS.
- UNICEF. 2020. "COVID-19: Are Children Able To Continue Learning During School Closures? A Global Analysis of the Potential Reach of Remote Learning policies using Data from 100 Countries." <https://data.unicef.org/resources/remote-learning-reachability-factsheet/>.
- . 2021. "Data: Covid-19 and School Closure: One Year of Education Disruption." <https://data.unicef.org/resources/one-year-of-covid-19-and-school-closures/>.
- Vivalt, Eva. 2020. "How Much Can We Generalize From Impact Evaluations?" *Journal of the European Economic Association* 18 (6): 3045-89.
- World Bank. 2017. *ID4D Country Diagnostic: Madagascar*, Washington, DC.
- . 2022. *World Development Indicators*.

- World Bank, UNESCO, and UNICEF. 2021. *The State of the Global Education Crisis: A Path to Recovery*. Washington DC, Paris, New York: The World Bank, UNESCO, and UNICEF.
- Wolf, Sharon, Elisabetta Aurino, Noelle Suntheimer, Esinam Avornyo, and Edward Tsinigo. 2021. "Learning in the Time of a Pandemic and Implications for Returning to School: Effects of COVID-19 in Ghana." CPRE Working Papers.
https://repository.upenn.edu/cpre_workingpapers/28.

Appendix A

Table A1: Attrition analysis

	(I) Grade 2	(II) Grade 3	(III) Grade 4
Intercept	-0.013 (0.044)	0.031 (0.097)	-0.197*** (0.072)
Treatment (AM side =1)	0.020 (0.018)	0.047 (0.038)	0.014 (0.026)
Basic reading level: letter (baseline)	-0.004 (0.017)	-0.035** (0.014)	0.001 (0.019)
Basic reading level: word (baseline)	0.005 (0.039)	-0.039* (0.022)	0.011 (0.020)
Basic reading level: paragraph (baseline)	0.001 (0.100)	-0.038 (0.024)	-0.016 (0.021)
Basic reading level: story (baseline)		-0.063 (0.052)	0.007 (0.045)
Age	0.011** (0.004)	0.007 (0.008)	0.023*** (0.006)
Sex (female=1)	-0.003 (0.009)	0.007 (0.010)	0.025 (0.015)
Computer at home	-0.103*** (0.020)	0.075 (0.151)	-0.132* (0.073)
TV at home	0.014 (0.022)	0.092** (0.038)	0.027 (0.033)
Radio at home	-0.004 (0.010)	-0.001 (0.015)	-0.000 (0.014)
Parent has smartphone	-0.024 (0.045)	0.046 (0.061)	0.109 (0.122)
Parent has cellphone	-0.007 (0.009)	0.001 (0.015)	0.019 (0.012)
Malagasy book at home	0.012 (0.016)	-0.028 (0.019)	0.006 (0.019)
Repeated the same grade	-0.007 (0.010)	0.027 (0.017)	0.025 (0.015)
Enrolled in preschool	0.008 (0.013)	-0.026 (0.022)	-0.011 (0.017)
Number of schools	130	129	123
Number of observations	4754	3579	2405

Notes: AM: Amoron'i Mania. Data source is the baseline survey of this study. The dependent variable is the student attrition dummy. Robust standard errors clustered at the school level are used. * p<0.1, ** p<0.05, *** p<0.01.

Appendix B

Table B1: Correlates in student characteristics for the baseline basic reading level

	Grade 2	Grade 3	Grade 4
	(I)	(II)	(III)
Intercept	-0.017 (0.046)	0.532*** (0.209)	1.077 (0.294)
Age	0.010** (0.005)	0.003 (0.017)	0.010 (0.022)
Female dummy	-0.003 (0.012)	0.165*** (0.043)	0.163*** (0.048)
Enrolled at pre-school	0.013 (0.012)	-0.068 (0.066)	-0.116 (0.093)
Radio at home	0.010 (0.014)	-0.000 (0.034)	0.074 (0.050)
TV at home	0.002 (0.028)	0.198* (0.110)	0.522*** (0.183)
Computer at home	0.159 (0.124)	0.179 (0.479)	0.690** (0.343)
Parent has cellphone	0.043*** (0.011)	0.064* (0.036)	-0.079 (0.064)
Parent has smartphone	-0.048 (0.033)	0.213 (0.182)	0.116 (0.398)
Malagasy book at home	-0.013 (0.029)	-0.331 (0.099)	-0.289 (0.143)
Family taught Malagasy during school closures	-0.032 (0.026)	0.300*** (0.095)	0.289** (0.114)
Learned Malagasy using book during school closures	0.039 (0.046)	0.385*** (0.109)	0.330** (0.160)
Learned Malagasy using radio or TV	-0.013 (0.031)	-0.153 (0.111)	-0.261 (0.170)
Number of schools	130	129	123
Number of observations	4309	3155	2140

Notes: Data source is the baseline survey of this study. Dependent variable takes one of the values from 0 to 4 corresponding to the student baseline reading level (beginner: 0; letter: 1; word: 2; paragraph: 3; and story: 4). Robust standard errors clustered at the school level are used. All the regressions used the baseline data of samples who were present both in the baseline and end-line surveys. * p<0.1, ** p<0.05, *** p<0.01.

Appendix C

Tables on the impact estimates

Table C1: Regression results of the impacts on basic reading by student grades

	Beginner (I)	Letter (II)	Word (III)	Paragraph (IV)	Story (V)
Panel A: Grade 2					
$T_s \times \text{Post}$	-0.106 (0.069)	-0.036 (0.058)	0.135*** (0.050)	0.007 (0.011)	0.000 (0.000)
Post	-0.429*** (0.049)	0.303*** (0.040)	0.113*** (0.029)	0.013 (0.008)	0.000 (0.000)
Average on the HM side (baseline)	0.933	0.055	0.010	0.002	0.000
Number of schools	130	130	130	130	130
Number of observations	8618	8618	8618	8618	8618
Panel B: Grade 3					
$T_s \times \text{Post}$	0.011 (0.075)	-0.302*** (0.110)	0.215*** (0.056)	0.061 (0.051)	0.015*** (0.005)
Post	-0.425*** (0.054)	0.168*** (0.076)	0.150*** (0.036)	0.106*** (0.038)	0.001 (0.001)
Average on the HM side (baseline)	0.562	0.231	0.128	0.065	0.014
Number of schools	129	129	129	129	129
Number of observations	6310	6310	6310	6310	6310
Panel C: Grade 4					
$T_s \times \text{Post}$	-0.024 (0.076)	-0.159 (0.118)	0.127 (0.095)	-0.054 (0.070)	0.110*** (0.025)
Post	-0.245*** (0.054)	-0.080 (0.091)	0.061 (0.066)	0.264*** (0.053)	0.000** (0.000)
Average on the HM side (baseline)	0.274	0.292	0.250	0.144	0.040
Number of schools	123	123	123	123	123
Number of observations	4280	4280	4280	4280	4280

Notes: HM: Haute Matsiatra. Data source is the baseline and end-line surveys of this study. The dependent variable is a binary variable for each basic reading level. Student fixed effects are controlled in all the regressions. Robust standard errors clustered at the school level are used. *** p<0.01.

Table C2: Robustness check of the estimates of the impact on basic reading

	Beginner (I)	Letter (II)	Word (III)	Paragraph (IV)	Story (V)
$T_s \times \text{Post}$	-0.014 (0.054)	-0.129 (0.087)	0.146*** (0.047)	-0.033 (0.040)	0.031*** (0.007)
Post	-0.419*** (0.042)	0.145** (0.069)	0.127*** (0.038)	0.147*** (0.035)	0.000 (0.000)
Average on the HM side (baseline)	0.646	0.203	0.093	0.042	0.015
Number of schools	94	94	94	94	94
Number of observations	13784	13784	13784	13784	13784

Notes: HM: Haute Matsiatra. Data source is the baseline and end-line surveys of this study. The dependent variable is a binary variable for each reading level. Student fixed effects are controlled in all the regressions. Robust standard errors clustered at the school level are used. ** p<0.05, *** p<0.01.

Table C3: Heterogeneous impacts by student characteristics

	Beginner (I)	Letter (II)	Word (III)	Paragraph (IV)	Story (V)
Panel A: Beginner (baseline)					
T _s ×Post (DD)	-0.124*** (0.043)	-0.094** (0.038)	0.217*** (0.029)		
DD×Female	-0.006 (0.018)	-0.033* (0.020)	0.039* (0.021)		
DD×Family taught Malagasy during the school closure period dot	-0.038 (0.036)	-0.072** (0.030)	0.110*** (0.039)		
DD×Malagasy book at home dot	0.025 (0.030)	-0.020 (0.035)	-0.006 (0.028)		
DD×Student-textbook ratio dot	-0.016 (0.044)	-0.078* (0.045)	0.095** (0.042)		
Number of observations	12376	12376	12376		
Panel B: Letter (baseline)					
T _s ×Post (DD)		-0.031 (0.049)	0.037 (0.032)	-0.006 (0.047)	
DD×Female		-0.016 (0.030)	-0.049 (0.043)	0.065** (0.032)	
DD×Family taught Malagasy during the school closure period dot		-0.013 (0.043)	-0.037 (0.037)	0.050 (0.044)	
DD×Malagasy book at home dot		-0.037 (0.040)	0.028 (0.060)	0.009 (0.044)	
DD×Student-textbook ratio dot		-0.063 (0.064)	0.009 (0.052)	0.054 (0.055)	
Number of observations		3878	3878	3878	
Panel C: Word (baseline)					
T _s ×Post (DD)		-0.002 (0.002)	0.044 (0.089)	-0.023 (0.040)	0.123*** (0.026)
DD×Female		-0.002 (0.002)	0.002 (0.047)	-0.041 (0.047)	0.041 (0.030)
DD×Family taught Malagasy during the school closure period dot		-0.003 (0.003)	-0.092 (0.058)	-0.008 (0.051)	0.104* (0.055)
DD×Malagasy book at home dot		0.001 (0.001)	-0.077 (0.085)	0.071 (0.072)	0.005 (0.046)
DD×Student-textbook ratio dot		0.001 (0.001)	-0.091 (0.101)	0.026 (0.095)	0.064 (0.042)
Number of observations		1994	1994	1994	1994
Panel D: Paragraph (baseline)					
T _s ×Post (DD)		-0.007 (0.008)	-0.242*** (0.069)	-0.337*** (0.094)	0.586*** (0.063)
DD×Female		0.002 (0.002)	-0.015 (0.034)	-0.133 (0.084)	0.146* (0.081)
DD×Family taught Malagasy during the school closure period dot		-0.006 (0.007)	-0.048* (0.029)	0.025 (0.077)	0.029 (0.072)
DD×Malagasy book at home dot		0.002 (0.003)	-0.035 (0.030)	0.000 (0.084)	0.033 (0.073)
DD×Student-textbook ratio dot		-0.013* (0.007)	-0.096* (0.049)	-0.049 (0.109)	0.158* (0.089)
Number of observations		804	804	804	804

Notes: Data source is the baseline and end-line surveys of this study. The dependent variable is a binary variable for each basic reading level. The characteristics of students and schools are controlled but not shown. The student-textbook ratio was calculated by dividing the total number of Malagasy textbooks (Grades 2 through 4) by the number of total students (Grades 2 through 4). Robust standard errors clustered at the school level are used. * p<0.1, ** p<0.05, *** p<0.01.

Table C4: Comparison of basic reading between the sampled and out-of-sampled schools in Amoron'i Mania

	Beginner (I)	Letter (II)	Word (III)	Paragraph (IV)	Story (V)
Panel A: Grade 2					
Surveyed × Post	0.037 (0.033)	0.046 (0.029)	-0.029 (0.021)	-0.025 (0.032)	-0.030** (0.015)
Surveyed	0.053 (0.052)	-0.010 (0.034)	-0.031 (0.028)	-0.010 (0.021)	0.000 (0.008)
Post	-0.210*** (0.016)	-0.076*** (0.012)	0.115*** (0.012)	0.118*** (0.010)	0.052*** (0.007)
Average in the out-of-sampled schools (baseline)	0.310	0.353	0.246	0.079	0.013
Number of observations	1946	1946	1946	1946	1946
Panel B: Grade 3					
Surveyed × Post	-0.014 (0.020)	0.062** (0.029)	0.065** (0.031)	-0.012 (0.028)	-0.102*** (0.029)
Surveyed	0.274 (0.252)	0.013 (0.040)	-0.045 (0.038)	0.014 (0.025)	-0.010 (1.719)
Post	-0.060*** (0.008)	-0.117*** (0.011)	-0.065*** (0.013)	0.072*** (0.014)	0.169*** (0.013)
Average in the out-of-sampled schools (baseline)	0.077	0.214	0.328	0.282	0.099
Number of observations	1940	1940	1940	1940	1940
Panel C: Grade 4					
Surveyed × Post	-0.007 (0.010)	0.009 (0.021)	0.113*** (0.026)	0.019 (0.031)	-0.134*** (0.033)
Surveyed	0.008 (0.007)	0.002 (0.039)	-0.036 (0.036)	-0.055 (0.035)	0.082* (0.049)
Post	-0.020*** (0.007)	-0.039*** (0.007)	-0.091*** (0.013)	-0.076*** (0.013)	0.225*** (0.015)
Average in the out-of-sampled schools (baseline)	0.025	0.065	0.217	0.437	0.255
Number of observations	1844	1844	1844	1844	1844

Notes: Data source is TaFiTa project and statistics of the Ministry of Education. The dependent variable is the ratio of students at each school for each reading level. School characteristics and the fixed effects for the local education area (ZAP) are controlled but not shown. Robust standard errors are used. The TaFiTa Project compiled the assessment data for 1027 schools. Out of the schools, we identified the school ID of 979 schools to combine the school-level assessment data with the data of educational statistics. ** p<0.05, *** p<0.01.

Table C5: Comparison of the impacts for grade 3 and 4 students between the pilot (RCT) and scaled-up interventions (this study)

	Reading Level (I)	Beginner (II)	Letter (III)	Word (IV)	Paragraph (V)	Story (VI)
Panel A1: Beginner level (baseline), scaled-up interventions (this study)						
T _s ×Post	0.487*** (0.083)	-0.100** (0.049)	-0.287*** (0.057)	0.387*** (0.052)		
Post	0.973*** (0.061)	-0.789*** (0.043)	0.605*** (0.041)	0.184*** (0.030)		
Number of observations	4500	4500	4500	4500		
Panel A2: Beginner level (baseline), pilot (RCT)						
T _s ×Post	0.403** (0.186)	-0.138* (0.076)	0.009 (0.055)	0.016 (0.082)	0.091*** (0.034)	0.022** (0.009)
Post	1.167*** (0.144)	-0.680*** (0.060)	0.257*** (0.047)	0.360*** (0.072)	0.063*** (0.017)	0.000 (0.000)
Number of observations	2572	2572	2572	2572	2572	2572
Panel B1: Letter level (baseline), scaled-up interventions (this study)						
T _s ×Post	0.055 (0.126)		-0.050 (0.064)	0.045 (0.047)	0.005 (0.070)	
Post	1.180*** (0.097)		-0.791*** (0.047)	0.402*** (0.036)	0.389*** (0.056)	
Number of observations	3224		3224	3224	3224	
Panel B2: Letter level (baseline), pilot (RCT)						
T _s ×Post	0.503*** (0.107)	-0.047*** (0.014)	-0.110*** (0.036)	-0.064 (0.067)	0.141*** (0.046)	0.080*** (0.030)
Post	0.958*** (0.071)	0.047 (0.014)	-0.812*** (0.030)	0.562*** (0.038)	0.169*** (0.030)	0.035*** (0.013)
Number of observations	2754	2754	2754	2754	2754	2754
Panel C1: Word level (baseline), scaled-up interventions (this study)						
T _s ×Post	0.105 (0.145)		-0.002 (0.003)	0.030 (0.123)	-0.158 (0.112)	0.130*** (0.039)
Post	0.541*** (0.089)		0.002 (0.003)	-0.545*** (0.089)	0.543*** (0.089)	-0.000 (0.000)
Number of observations	1992		1992	1992	1992	1992
Panel C2: Word level (baseline), pilot (RCT)						
T _s ×Post	0.613*** (0.100)		-0.054* (0.028)	-0.286*** (0.064)	0.123*** (0.042)	0.218*** (0.049)
Post	0.411*** (0.058)		0.075*** (0.027)	-0.470*** (0.046)	0.304*** (0.030)	0.091*** (0.024)
Number of observations	3234		3234	3234	3234	3234
Panel D1: Paragraph level (baseline), scaled-up interventions (this study)						
T _s ×Post	0.894*** (0.128)		-0.007 (0.010)	-0.266*** (0.090)	-0.339*** (0.123)	0.613*** (0.080)
Post	-0.277*** (0.100)		0.007 (0.010)	0.266 (0.090)	-0.277*** (0.094)	0.004 (0.005)
Number of observations	788		788	788	788	788
Panel D2: Paragraph level (baseline), pilot (RCT)						
T _s ×Post	0.630*** (0.113)			-0.254*** (0.060)	-0.122* (0.067)	0.376*** (0.071)
Post	-0.171** (0.069)			0.372*** (0.046)	-0.574*** (0.047)	0.202*** (0.037)
Number of observations	1400			1400	1400	1400

Notes: Data source is the baseline and end-line data of this study and previous research (Maruyama and Igei, 2022). In Column (I), the dependent variable takes one of the values from 0 to 4 corresponding to the student baseline reading level (beginner: 0; letter: 1; word: 2; paragraph: 3; and story: 4). In Columns (II) through (VI), the dependent variable is a binary variable for each reading level. The impacts are estimated using equation (1) in all the regressions. Robust standard errors clustered at the school level are used. * p<0.1, ** p<0.05, *** p<0.01.

Appendix D

Comparison of the impacts for the ten schools in communes outside the border area and the 65 surveyed schools in Amoron'i Mania

This study surveyed the ten schools not located near to the border in Amoron'i Mania. We compare the impact for 65 schools near the border on the Amoron'i Mania region with the impact for the ten schools using equation,

$$Y_{ist} = \alpha_i + \delta T_s + \gamma Post_t + \lambda(T_s \times Post_t) + \zeta(T_s \times Post_t \times D_s) + \varepsilon_{ist}$$

where D_s is a dummy for the ten schools not located near the regional border. As shown in Table C, none of coefficient ζ , which represents the difference between the impacts for the 65 schools and the ten schools in the region, are statistically significant.

Table D1: Comparison of the impacts on basic reading level

	Beginner (I)	Letter (II)	Word (III)	Paragraph (IV)	Story (V)
$T_s \times Post$	-0.045 (0.045)	-0.161** (0.068)	0.158*** (0.036)	0.016 (0.032)	0.031*** (0.007)
$T_s \times Post \times D$	-0.042 (0.089)	0.074 (0.088)	-0.018 (0.098)	-0.051 (0.038)	0.038 (0.053)
Number of schools	140	140	140	140	140
Number of observations	20602	20602	20602	20602	20602

Notes: Data source is the baseline and end-line surveys of this study. The dependent variable is student basic reading level. Student fixed effects are controlled. Robust standard errors clustered at the school level are used. *** $p < 0.01$.

Abstract (in Japanese)**要 約**

2020年の新型コロナウイルス感染拡大は世界中の教育に影響を及ぼし、特に低所得国における学習の危機を深刻化させた。マダガスカルでは新型コロナウイルスの感染拡大をうけて小学校が長期間閉鎖された後、同国教育省は子ども達の読み書きの改善のため、“Teaching at the Right Level (TaRL)”と呼ばれる教授法の研修を初等教員及び地域ボランティアに対して実施した。同研修は PMAQ-TaRL と呼ばれる介入パッケージの一部であるが、同パッケージは各学校の学校運営委員会の機能を改善し、学校運営委員会のイニシアティブで TaRL を用いた補習活動が行われることにより子どもの学習改善を図るものである。本研究は、マダガスカルにおいて介入パッケージが段階的に対象県を拡大する形でスケールアップされたことに着目し、社会経済状況の類似した 2 県の県境付近の学校を対象とし、差分の差法により介入効果を識別する。学校運営を改善した上で TaRL 研修を行うことにより、初等第 2～4 学年の子どものうち、マダガスカル語で書かれた単語を読める子どもの割合が 15.9 パーセントポイント、物語の段落を読める子どもの割合が 3.1 パーセントポイント増加した。また、本研究では、現地調査で収集したデータに加え、対象県の学校レベルのアセスメントデータを分析したところ、介入による子どもの読みへのインパクトは県境付近に限らず、県内で広範囲に生じたものと考えられる。マダガスカルにおける本事例は、学校運営委員会のイニシアティブによる補習活動を通じ、新型コロナウイルス感染拡大で深刻化した学習の危機の克服に向け、子どもの学習改善を広範囲に実現することが可能であることを示唆している。

キーワード： 教育開発、新型コロナウイルス感染拡大、子どもの読み、学校運営、サブ
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