



# Impact Evaluation of PINTAR Program in Paser District

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## **Abstract**

Using a mixed-methods approach, this study investigated the impact of the PINTAR Program in Paser District. The Tanoto Foundation partnered with regional education offices to provide support and guidance to school principals and teachers. The quantitative analysis involved surveys of 10 primary schools (SD) and 10 lower secondary schools (SMP) which consist of 10 intervention schools and 10 control schools. The surveys looked at student learning outcomes and the influence of the principal's leadership, teacher teaching practices, and parental assistance. Qualitative analysis involved interviews and in-depth discussions with stakeholders in the education sector to understand the dynamics of the program's implementation among students, teachers, school principals, and the education office. The results of the assessment using the Inverse Probability Weighted Regression Adjustment (IPWRA) method showed that the PINTAR Program had improved student learning scores by up to 38.8% and teacher performance by 27.2%. Based on Ordinary Least Squares (OLS) analysis, principal policies such as providing supportive learning resources, efforts to improve reading culture, and provision of information and communication technology (ICT) budgets correlated with higher student assessment results. At the teacher level, good practice in teaching related subjects was associated with higher student scores at the primary level. In addition, parental involvement in improving the school environment and non-learning activities had a higher correlation with the results of primary school students' assessments.

**Keywords:** student learning outcomes, principal leadership, teacher teaching practice, parental involvement, impact evaluation

## **A. Introduction**

### **1. Program Background**

Indonesia's population in quantity ranks fourth in the world after China, India and the United States. In terms of quality as indicated by the Human Development Index (IPM), Indonesia still ranks 114 out of 192 countries in the world. The HDI achievement in 2010 was still at 66.53 and in 2022 it will be 72.91. HDI is composed of three pillars, namely health, education and the economy. Of the three pillars, the education pillar has the lowest achievement.

Tanoto Foundation, through the PINTAR program, strives to improve the quality of education in Indonesia in a sustainable manner. To run the program, the Tanoto Foundation cooperates with regional education offices to intervene with teachers and school principals. Paser District is one of the PINTAR program intervention areas which began in 2019.

PINTAR Program is a whole-school improvement intervention which encompasses school leadership and management, teaching and learning, and the role of the parent and local community. At school level, PINTAR program brings quality learning by: training and mentoring teachers on the pedagogical skills to facilitate active learning that develops students' High Order Thinking Skills (HOTS); training and mentoring principals on school-based management and leadership skills to bring about transparent and participative school planning, reading culture, and conducive learning environment; build parent awareness and participation in student learning at home.

The PINTAR program interventions in Paser District were carried out in various ways due to the COVID-19 pandemic in the middle of the program. In 2019, at the start of program implementation, training was conducted offline. Meanwhile, training was conducted online for 2020 and hybrid for 2021 – 2023.

## 2. Research Questions

This study aims to determine the impact of PINTAR Program after 3 years of program implementation in Paser District. This study proposes three research questions, namely:

- a) What is the impact of the PINTAR Program on student learning outcomes?
- b) What are the factors that contribute to improving student learning outcomes?
- c) What are the recommendations for the PINTAR program?

## 3. Method and Sample Selection

The impact assessment of the PINTAR program was carried out using a mixed-methods approach, which was conducted simultaneously. The inference of the program attribution to the learning performances was drawn by analyzing the differences between schools that have received the PINTAR program intervention since 2019 (partner schools) and schools that did not received the PINTAR program (non-partner schools) as a comparison group.

Due to the absence of baseline information on non-partner schools, these differences can only be analyzed at one point in time after the program has started. In addition, the selection of partner and non-partner schools was not random. Therefore to overcome those potential bias, the quantitative assessment of the impact of the PINTAR program on students and teachers was conducted using the Inverse Probability Weighted Regression Adjustment (IPWRA)<sup>1</sup> method. In addition, to determine the factors that influence student assessment results and teacher achievement, an analysis was conducted using Ordinary Least Squares (OLS).

In November 2022, the quantitative data was collected through class observation, surveys of school principals, teachers, and parents, as well as assessments of student learning in grades 4, 5, and 8. Meanwhile, the qualitative information was collected using in-depth interviews with school principals, parents of students, and the local education office, as well as conducting focus group discussions (FGDs) with teachers.

In Paser District, the quantitative study was conducted in 10 partner schools (5 primary schools or SDs, and 5 lower secondary schools or SMPs), and 10 non-partner schools (5 SDs and 5 SMPs). The non-partner schools were selected based on their similarity to the partner schools in terms of school quality index, specifically the student-teacher ratio, student-study group ratio, laboratory ownership, library ownership, and accreditation status. For the qualitative study, the study chose two partner schools (one SD and one SMP) and two non-partner schools (one SD and one SMP).

At the teacher level, three teachers were selected to be observed in each school, representing each of the subjects Mathematics, Bahasa Indonesia, and Science. In total, there were 30 SD teachers and 30 SMP teachers who participated in this study. To measure student learning performance, 222 SD students and 252 SMP students participated in the reading and writing assessment. 224 SD students and 244 SMP students participated in the mathematic assessment. And 224 SD students and 238 SMP students participated in the science assessment.

## B. Findings

### 1. Comparison test of student assessment scores by subject and school level

Within three years of the program implementation, the learning scores of students from PINTAR partner schools in Paser, both at the primary and lower secondary levels, are relatively higher compared to students from non-partner schools. As shown in Table 1, partner school students scored significantly higher than non-partner school students in all four learning categories at the primary level. For the lower secondary school level in Paser, partner school students scored significantly higher than non-partners in math and science subjects.

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<sup>1</sup> Wooldridge (2007) <https://www.sciencedirect.com/science/article/abs/pii/S0304407607000437> , <https://blog.stata.com/2015/07/07/introduction-to-treatment-effects-in-stata-part-1/>

Table 1 Average student scores by subject for each level in Paser

	Partner	Non-partner	P-value
<b>Primary School (SD)</b>			
Reading	46.71	37.07	0.00***
Writing	38.68	33.43	0.03**
Math	38.64	31.19	0.00***
Science	41.69	36.27	0.01**
<b>Lower Secondary School (SMP)</b>			
Reading	61.12	60.20	0.65
Writing	49.88	47.60	0.27
Math	34.55	28.44	0.00***
Science	28.41	24.95	0.01**

\*\*\* significant at the level 1% (p<0.01); \*\* significant at the level 5% (p<0.05); \*significant at the level 10% (p<0.1)

The interviews and FGDs revealed that the literacy program was available to partner primary schools, but not on non-partner primary schools. Non-partner primary schools also faced problems with the low quality of learning during the online learning period in the early grades, which had an impact on students' low reading skills when they returned to face-to-face learning in higher grades. In non-partner primary schools, there were facilities that were not being used to their full potential or that were in inadequate condition. For example, the roof of the library at non-partner primary school A was damaged, which caused many books to be damaged by the rain. Non-partner primary school B did not have a reading corner, and even though they had a school library, the books available were considered to be insufficient to meet students' needs.

At the secondary school level, similar with partner schools, non-partner schools also implemented various programs to improve reading and writing skills. This qualitative findings are likely confirmed on why there are no differences in the reading and writing scores of students from partner and non-partner of secondary schools.

For math and science subjects, the qualitative findings show that there were a number of approaches used by the teachers in PINTAR partner schools to stimulate interest and improve students' abilities. There are teachers who use geometrical props, show videos, play guessing games with students, teach by discussion and so on. Based on FGD at secondary partner school, the qualitative team found that the mathematics teacher applied the learning methods obtained from PINTAR Program's workshop. The teacher uses the discovery learning method. In this method, the teacher invites students to find a formula. Students not only memorize a formula, but also understand the process of creating a formula.

## 2. Estimated effect of PINTAR program on student assessment scores

In general, the PINTAR program has had a positive and significant impact on student assessment results in Paser District, which has received the program for 3 years. This impact is seen at both the primary and secondary school levels, but it is more pronounced at the primary level. In fact, partner primary school students scored 38.8% or 12 points higher on assessment tests than non-partner students. Meanwhile, partner secondary school students scored 10% or 3.8 points higher than non-partner students.

Table 2 IPWRA analysis of student assessment in Paser

	SD	SMP	Bahasa Indonesia	Math	Science
Impact size (ATET)	11.98*** (0.28)	3.80*** (0.02)	5.25* (0.18)	8.38*** (0.18)	-3.69 (0.32)
Average estimated score of student in non-partner schools	30.88 (0.22)	37.21 (0.43)	55.71 (0.18)	25.19 (0.16)	34.63 (0.32)
% differences	38.79	10.21	9.43	33.28	-10.66
N	529	565	361	384	349

\*\*\* significant at the level 1% (p<0.01); \*\* significant at the level level 5% (p<0.05); \* significant at level 10% (p<0.1)

ATET: Average Treatment Effect on Treated

Although the PINTAR program is designed to improve achievement in Indonesian (Reading and Writing), Mathematics, and Natural Sciences, the positive and significant impacts are only seen for Indonesian and Mathematics. For Indonesian language subjects, partner school students scored 9.4% or 5 points higher than non-partners. The impact of the PINTAR program was even higher for Mathematics – students from partner schools scored 33.3% or 8 points higher than students from non-partner schools. However, even with this improvement, the actual achievement of partner school students in Mathematics is still very low.

### 3. Estimated effect of PINTAR program on teacher performances

In line with the results of the impact analysis on student achievement, a positive and significant impact on teacher performance scores was also seen in the Paser area. In fact, teachers from partner schools in Paser had a performance score 27.19% higher than if these teachers had not received the PINTAR program.

Based on the OLS analysis, it was found that there was a positive and significant influence from providing feedback related to the teaching process by the principal to the teacher on teacher achievement. Feedback provided by school principals will improve teachers' teaching skills and the effectiveness of classroom management by teachers (Hallinger et al. 2018; Krasniqi and Ismajli 2022; Murphy, Hallinger, and Heck 2013).

Table 3 IPWRA analysis on teacher performance

Impact size (ATET)	0.61*	(0.34)
Average estimated score of teacher in non-partner schools	2.19	(0.26)
% differences	27.19	
N	60	

\*\*\* significant at the level 1% (p<0.01); \*\* signifikan pada level 5% (p<0.05); \* signifikan pada level 10% (p<0.1)

Qualitative interviews at Paser found that there were schools that routinely held deliberations to resolve existing problems, one of which included teaching problems faced by teachers. In addition, one of the school principals also revealed that although class supervision should only be carried out once a semester, in reality this supervision is carried out every day. When conducting classroom supervision, the principal will simultaneously provide input to teachers regarding teaching techniques and the teacher's ability to develop learning tools. Even so, there are still teachers who are deemed not to have optimal performance.

### 4. Factors influencing student assessment results

OLS analysis was carried out to find out the factors that correlated with the results of student assessments. The results showed that the following factors had a significant effect on student assessment scores:

- Teaching & learning: Good teacher practice in teaching Indonesian, Mathematics, or Natural Sciences had a significant effect on student assessment scores at the elementary level.
- School management: The policies set by the school principal, such as the school's library program and the provision of an ICT budget in the annual plan, correlated with higher SD student assessment results.

In addition, schools that implement scheduled reading times for students tend to have higher junior high school student assessment results.

- Parental involvement: Involvement in improving the school environment and involvement in non-learning activities for elementary school students had a positive correlation with student achievement.

*Table 4 OLS analysis on student assessment score in Paser*

Category	Indicator	Sig SD	Sig SMP
School management	The school provides a budget for ICT tools	✓	
	The school optimizes the school library	✓	
	The school implements a dedicated schedule for reading		✓
Teaching & learning	The implementation of good teaching practices by the subject teachers of Bahasa Indonesia, Math, or Science	✓	
Parental involvement	Parental involvement in improving school environment		✓
	Parents are confident in supporting their child's learning		✓
	Parental involvement in peer learning with other parents	✓	
	Parental involvement in school non-academic activities	✓	
Student characteristics	Having a laptop	✓	✓
	Having a smartphone		✓

In addition to the capacity of teachers and principals, the availability of learning support facilities for parents also showed a significant influence on student assessment results. Laptop ownership had a positive and significant impact on student assessment results at both the primary and secondary school levels.

Several indicators related to parents' views regarding their involvement in children's learning also had a significant correlation with the achievement of elementary school students. These indicators include parental confidence in supporting children's learning and parental involvement in peer learning to encourage student learning.

The fact that indicators related to parental involvement tend to be significant at the primary level is in line with qualitative findings which state that parents of secondary school children tend to reduce learning assistance because children are considered capable of learning on their own and children are more comfortable learning on their own without assistance from parents. Therefore, learning assistance by parents tends to be given more intensively to primary school children than secondary schools.

### C. Recommendation

PINTAR program has demonstrated gain positive and significant impact on student and teacher achievements. The regression results have shown which factors of school leadership, teaching practice, and parent involvement are associated with the improvement of learning scores.

Based on the findings discussed previously, the study concluded recommendations through scaling or replicating PINTAR with focus on these areas:

- Improve good teaching practices through subject-based pedagogy teacher training.
- Increase the culture of interest in reading in schools through promoting scheduled reading and utilization of the school library.
- Increase parental involvement.

## Appendix 1 OLS regression on student assessment

a) SD (N=529)

Source	SS	df	MS
Model	154.834196	22	7.03791801
Residual	357.100984	506	.70573317
Total	511.93518	528	.969574205

Number of obs	=	529
F(28, 1009)	=	.
Prob > F	=	.
R-squared	=	0.3024
Root MSE	=	0.84008

Variable	Coeff	Robust SE	t-stat	p-val	95% CI		
					Lower	Upper	
<b>School characteristics</b>							
Rural Dummy	-0.43317	0.162704	-2.66	0.117	-1.13323	0.266893	
Subjects							
Match	-0.38189	0.028805	-13.26	0.006	-0.50583	-0.25795	
Science	-0.02859	0.06758	-0.42	0.713	-0.31936	0.262182	
PINTAR partner	-0.14115	0.152079	-0.93	0.451	-0.79549	0.513193	
<b>Teacher performances</b>							
Teachers promote Technology to Facilitate Learning	0.073613	0.10044	0.73	0.54	-0.35855	0.505772	
The teacher shows good practice in teaching	0.360537	0.091358	3.95	0.059	-0.03255	0.75362	
Students show positive learning behavior	-0.03334	0.044037	-0.76	0.528	-0.22281	0.156135	
<b>Principal performances</b>							
Provide a budget for ICT tools	0.107264	0.025526	4.2	0.052	-0.00257	0.217093	
Optimizing the library	0.859586	0.140793	6.11	0.026	0.253805	1.465367	
Set a custom schedule for reading	0.161273	0.142221	1.13	0.374	-0.45065	0.773199	
<b>Parents involvement/support</b>							
Parents/community involved in non-learning activities	0.733208	0.075423	9.72	0.01	0.40869	1.057726	
Parental involvement in improving the school environment	-0.33485	0.198962	-1.68	0.234	-1.19092	0.521214	
Parents know their role in a child's development and good practice	-0.06339	0.061135	-1.04	0.409	-0.32644	0.199651	
Parents communicate with their children regarding academic and non-academic issue	0.002497	0.051522	0.05	0.966	-0.21919	0.224179	
Parents are involved in peer learning with other parents in an effort to encourage the child's learning process	0.239274	0.030608	7.82	0.016	0.107578	0.370969	
<b>Student characteristics</b>							
Father's Education: High school or higher	0.093423	0.081091	1.15	0.368	-0.25548	0.442331	
Mother's education: High school or higher	0.03416	0.169581	0.2	0.859	-0.69549	0.763808	
Students study >1 hour outside of school hours	0.243535	0.121607	2	0.183	-0.2797	0.766769	
Take tutoring	-0.06416	0.294301	-0.22	0.848	-1.33044	1.202115	
Owned a laptop	0.265344	0.079397	3.34	0.079	-0.07627	0.606963	
Owned a smartphone	0.085005	0.04156	2.05	0.177	-0.09381	0.263822	
Student gender: Male	-0.02967	0.144575	-0.21	0.856	-0.65173	0.592387	
Constant	-1.14273	0.379159	-3.01	0.095	-2.77412	0.488655	

**b) SMP (N=562)**

Source	SS	df	MS
Model	356.404111	24	14.8501713
Residual	258.871886	537	0.482070552
Total	615.275997	561	1.09674866

Number of obs	=	562
F(27, 822)	=	.
Prob > F	=	.
R-squared	=	0.5793
Root MSE	=	0.69431

Variable	Coeff	Robust SE	t-stat	p-val	95% CI	
					Lower	Upper
<b>School characteristics</b>						
Rural Dummy	0.858059	0.332185	2.58	0.123	-0.57122	2.287334
PINTAR partner	-0.41611	0.234266	-1.78	0.218	-1.42408	0.591856
Subjects						
Match	-1.3625	0.053607	-25.42	0.002	-1.59315	-1.13184
Science	-1.55891	0.081643	-19.09	0.003	-1.91019	-1.20763
<b>Teacher performances</b>						
The teacher shows good practice in teaching	-0.2448	0.232989	-1.05	0.404	-1.24727	0.757671
Students show positive learning behavior	0.219238	0.239029	0.92	0.456	-0.80922	1.247699
<b>Principal performances</b>						
Optimizing the library	0.75575	0.370579	2.04	0.178	-0.83872	2.350224
Have a school policy regarding reading on the annual plan	-1.7037	0.584455	-2.92	0.1	-4.2184	0.811008
Set a custom schedule for reading	0.841272	0.132211	6.36	0.024	0.272414	1.41013
<b>Parents involvement/support</b>						
Parental involvement in improving the school environment	1.302255	0.339272	3.84	0.062	-0.15751	2.762025
Parents know their role in a child's development and good practice	-0.0456	0.063616	-0.72	0.548	-0.31932	0.228112
Parents are confident in supporting their child's learning	0.113841	0.012737	8.94	0.012	0.059039	0.168643
Parents communicate with their children regarding academic and non-academic fields	0.135012	0.158061	0.85	0.483	-0.54507	0.815092
Parents communicate with schools regarding the child's learning process	-0.11623	0.075803	-1.53	0.265	-0.44239	0.209921
Parents are involved in peer learning with other parents in an effort to encourage the child's learning process	-0.01505	0.10672	-0.14	0.901	-0.47423	0.444126
<b>School characteristics</b>						
Father's Education: High school or higher	0.012055	0.031213	0.39	0.737	-0.12224	0.146352
Mother's education: High school or higher	0.062712	0.062267	1.01	0.42	-0.2052	0.330624
Students study >1 hour outside of school hours	0.250805	0.114374	2.19	0.16	-0.24131	0.742917
Take tutoring	0.053113	0.105526	0.5	0.665	-0.40093	0.507157
Owned a laptop	0.134004	0.033816	3.96	0.058	-0.0115	0.279504
Owned a smartphone	0.119918	0.006912	17.35	0.003	0.090179	0.149657
Student gender: Male	-0.23299	0.090944	-2.56	0.125	-0.62429	0.158306
Constant	5.658465	3.973512	1.42	0.29	-11.4382	22.75511



Notes:

OLS regression with standard error clusters does not display the ANOVA table because the information contained in the ANOVA table is no longer statistically relevant. Therefore, the ANOVA table above is the result of the OLS regression without cluster standard errors because the numbers are actually the same.