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Human Capital at Home: Evidence from a Randomized Evaluation in the Philippines

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Abstract

Children spend most of their time at home in their early years, yet efforts to promote human capital at home in many low- and middle-income settings remain limited. The researchers conduct a randomized controlled trial to evaluate an intervention which encourages parents and caregivers to foster human capital accumulation among their children between ages 3 and 5, with a focus on math and phonics skills. Children gain 0.52 and 0.51 standard deviations relative to the control group on math and phonics tests, respectively ($p<0.001$). A year later effects persist, but math gains dissipate to 0.15 ($p=0.06$) and phonics to 0.13 ($p=0.12$). Effects appear to be mediated largely through instructional support by parents and not other parent investment mechanisms, such as more positive parent-child interactions or additional time spent on education at home beyond the intervention. The results show that parents can be effective conduits of educational instruction even in low-resource settings.

I Introduction

Schools are often considered the main institution for delivering education. Yet, children spend most of their time at home and with their parents, especially in their early years. In high-income settings, parents directly support their children's education, but in low-income settings, parental involvement is substantially lower, exacerbating gaps in learning outcomes (Blandin and Herrington 2022; Taubman 1989). Greater parental engagement with their children's education in the early years in low-income settings may be a promising path to realizing untapped human capital.[1]

The role of parents in education is especially critical in light of low learning levels in many low- and middle-income countries (LMICs) (Angrist et al. 2021; Behrman and Birdsall 1983; UNESCO 2018). Three-quarters of children in LMICs fail to obtain basic numeracy skills by Grade 4 (UNICEF 2022a). In South Asia, 78 percent of 10-year-olds are unable to read and understand a simple text (UNICEF 2022b). Additional education provision in the household represents a high-potential margin to complement schools and help close substantial learning gaps.

We present results from a randomized controlled trial in the Philippines to evaluate Family Academy ("FA"), an 8-week program that promotes parental direct engagement in their young child's education via various flashcard games teaching math and phonics. We collected detailed learning outcome data in three waves: a baseline, shortly after program completion, and a year after program completion. The program targets families with children between ages 3 to 5 years old. An in-person coach from the community is trained and then visits households for two 45-minute sessions each week to conduct learning sessions with the child as well as promote positive parenting in general. One of the sessions focuses on math, and the other on phonics. The activities target developing mathematical skills such as recognizing colors, shapes, and number recognition through finger counting, as well as phonics skills such as identifying letters, sounds, and reciting the alphabet through song. The sessions involve parents as active participants, with a 'tell-show-do' approach: the coach first introduces the learning activity, then demonstrates it, and finally invites the parent to lead the activity and offers them feedback.

Learning outcomes improve substantially, by 0.52 to 0.51 standard deviation for basic math and phonics skills (p-value < 0.001 for both) relative to the control group. The marginal cost per child was USD$32.[2] These learning outcome gains in math have some persistence over time, with 0.15 standard deviation impacts over a year after the intervention (p=0.06) and phonics skills improving by 0.13 standard deviation (p=0.12). These effects are considered large in a literature where over half of education interventions have no positive effect (Angrist et al. 2020), and the median effect size is 0.1 standard deviations (Evans and Yuan 2022). Parents are highly engaged in the instruction of their child during the intervention, revealing that parents even in low-literacy settings can effectively engage in education. However, alternative parental behaviors and investments are only marginally affected, such as positive parenting, suggesting that most of the learning gains are realized through

[1] We use the term "parents" broadly as a shortcut for "primary caregivers". Primary caregivers may not be the parents and may be singular not plural.

[2] We include more details on cost-effectiveness analysis in the Conclusion.

the channel of direct parental engagement in instruction.

We contribute to three literatures. First, a large literature establishes early childhood development (ECD) as a highly cost-effective are for investment in education[3], but usually focuses on the earliest years and measures impacts on nascent skill acquisition. We build on this literature, evaluating an intervention which aims to directly improve more advanced cognitive skills, such as early math and phonics skills. We further conduct our evaluation right before primary school to maximize school readiness. A recent report finds that while many ECD programs are effective, if students enter low-quality education systems thereafter, these gains could be short-lived (Global Education Evidence Advisory Panel 2020). Ensuring students learn foundational literacy and numeracy skills and are prepared for primary school could maximize effectiveness in the long-term. Our results support this conjecture, and show that parents can substantially improve basic math and phonics skills, even in a low-resource setting, thus providing essential foundational skills which could increase the returns to primary school instruction. We further contribute evidence of a particularly cost-effective approach, informing scalability of ECD programs in low-resource settings.

We also contribute to a literature on parental investment in education. Growing evidence explores the role of information frictions between parents' knowledge of their child's learning and their corresponding educational investments (Angrist et al. 2022; Bergman 2021; Bergman and Chan 2021; Berlinski et al. 2021; Bettinger et al. 2021; Cortes et al. 2023; Dizon-Ross 2019; York et al. 2019). However, less evidence exists investigating a comprehensive suite of parental engagement mechanisms. We provide new evidence on a wide array of parent investments in their child's education. These mechanisms include: information frictions, positive parenting behavior, parental time spent on direct instruction, and parental involvement in school, among others. Overall, parent instruction (rather than a suite of alternative investments) is the main mechanism for productive parental investment in their child's human capital. This result is somewhat surprising since it is often assumed that parents in low-resource settings with limited education themselves cannot support educational instruction. Our findings showing that parents are effective conduits for learning thus reveals a high-potential, underutilized approach to promoting human capital accumulation.

Third, we contribute to a literature on the role of women in education and the labor market. Evidence suggests there could be a trade-off between involvement of parents in their child's education, especially mothers, and their ability to participate in the labor market (Goldin 2006). While evidence exists on this topic in high-income countries, to date there have been limited data on the trade-off between labor hours and educational involvement in low- and middle-income countries. A recent review finds that many interventions rarely measure impacts of early childhood education interventions on the mother themselves (Evans et al. 2021). We contribute to this literature by directly measuring parent involvement in education for both mothers and fathers, as well as labor market participation, such as time spent at work. Our results show that even as parents spend greater time on their child's education, there is minimal crowdout of labor supply.

[3](Berlinski and Schady 2015; Carneiro et al. 2019; Gertler et al. 2014; Heckman et al. 2013; Ludwig and Miller 2007; Macours et al. 2015; Mayer et al. 2023; McCoy et al. 2017; Wolf et al. 2019; Yoshikawa and Kabay 2015)

II Context, Intervention, and Experimental Design

II.A Context

The Philippines has some of the world's lowest learning levels. In 2018, the Philippines scored last out of 78 countries on the Programme for International Student Assessment (PISA). A recent study shows that less than two percent of students in primary school could do two-digit division, falling well behind grade-level expectations (Angrist et al. 2023). Moreover, most children in the Philippines have limited access to educational instruction. Around 78% of children aged 3-4 years do not attend day care (PSA 2020). In our sample, at baseline just three percent of preschool-aged children answered any phonics questions correctly.[4] In addition, as shown in Table A.1, households in the sample have low literacy levels, with only around 20% of mothers having more than a high school level education.

II.B The Family Academy (FA) Intervention

FA promotes educational engagement between parents and children. International Care Ministries (ICM), an NGO in the Philippines with over 20 years experience, implemented FA. Historically, ICM offers a variety of services in health, livelihood, and education, through pastor-based outreach. ICM offers FA as an addition to its core antipoverty program called Transform, which was implemented in partnership with local Filipino pastors.[5]

Drawing from communities already participating in ICM's Transform program, we first filter on the communities for which across the Transform households (typically about 20-30) there are at least four children between 3–5 years. Within these communities, we select households based on two eligibility criteria. First, households must have at least one child between ages 3-5 years old. Second, if they are below a defined poverty threshold (typically between $2 to $3 per day, substantially below the national poverty line in the Philippines).[6] ICM confirms the poverty level via a household visit and a rubric that considers self-reported household income, household characteristics, and asset ownership.

FA coaches consist of volunteers who are 31 years old on average, predominantly female, and educated (81% have attained a high school degree or more). Prior to the program, coaches receive three days of training from ICM. Each coach works with four to ten households over a four month period, and each community has two to three coaches. These coaches are supervised by an ICM FA coordinator, who is responsible for 30 to 45 coaches and typically works across several provinces. Communities identified for the Transform plus FA program started implementation

[4] As shown in Appendix Table A.1, parents also have fairly low education levels, with just 15-20 percent of guardians receiving more than a high school education. Households were relatively poor: over a third of households make less than 3,000 pesos a month (less than $2 a day). Appendix Table A.3 also shows that more educated parents spend more time on learning with their children.

[5] In the Transform program, the partner pastor was tasked with selecting and engaging households within their community, as well as teaching a curriculum on values taught via a religious Protestant-based pedagogy, while the ICM staff focused on health and livelihoods material (Bryan et al. 2021).

[6] Of note, Family Academy did not take place in non-Transform communities.

between September to November 2021.

ICM designed FA as a family coaching program to offer parents the knowledge and skills to prepare children for kindergarten and primary school. The first week of engagement between the FA coach, parent, and child consists of a pre-coaching assessment, after which there are eight weeks of math and phonics sessions. In each session, the coach engaged the parent in a four-step process. In the first half of each session, the coach taught a game or activity to the parent, often with the child watching or in the general vicinity. In the second half, the parent would teach the game or activity to the child. The coach would affirm the parent and child with positive feedback on the session. Finally, the parent was encouraged to offer positive feedback to the child during their session.

The educational games included math cards, a number chart, and posters of colors and shapes for early mathematics and numeracy development, as well as cards and posters of the alphabet, parts of the body, family members, and foods in the local language to support early literacy and oral language development. The math cards were given to the household during the first session. In most cases, the math and phonics sessions were implemented as two separate sessions each week, so a household typically received 16 total visits (eight math and eight phonics) from the coach over eight weeks. Each session was intended to take 45 minutes. Following the final session, a post-coaching assessment was conducted.

II.C Experimental Design

The study was conducted across six regions in the Philippines: Bacolod, General Santos, Iloilo, Kalibo, Koronadal and Palawan shown in Figure A.1. 188 communities had at least four households with a 3-5-year-old child (for a total of 1609 households). We randomized at the community level: 91 treatment communities (788 households) and 97 control communities (821 households).

The randomization was stratified by branch and base of operations of ICM, to ensure even geographical distribution of treatment communities. Appendix Table A.1 confirms balance at baseline across treatment and control groups on key characteristics, and in particular on baseline learning scores.

III Data

We assess multiple outcomes, including math and phonics skills; parent-child interactions; parent aspirations and beliefs; children's approach to learning; and, parental time use and labor market outcomes.

Baseline household surveys were administered in September 2021 with the primary guardian during the child pre-coaching assessment, which was administered to both treatment and control children. Immediately following the conclusion of the program in December 2021, the first follow-up survey was administered in January and February of 2022. The guardian surveys and the child assessments were designed to be completed at the same time to minimize guardians giving hints or

prompts to their children. An external surveyor completed measures that were based on observing parent-child interactions as well as conducting the parent survey.[7]

Learning Assessment. Four sub-tasks were used to measure preschool children's early literacy and phonics skills. Eight subtasks were used to measure preschool children's early math skills, adapted from Dulay et al.'s (2019) work with the Arcanys Early Learning Foundation.

For phonics, we test alphabet knowledge by asking children to sing or recite the alphabet in either English or Tagalog, the main local language. Children were also tested on their ability to identify letters of the alphabet across 20 letters. A key measure of interest was the child's ability to identify beginning sounds of words. To identify this measure, the child was shown a picture of an object, followed by the assessor speaking the word out loud and asking the child to identify the beginning sound. Another sub-task required children to point to the letter that corresponds to a given sound.

To assess math skills, participants were asked to visually identify as many colors as possible among ten colors. For shape identification, children were asked to similarly identify eight different shapes. To examine children's understanding of counting and early skills in cardinality, participants were asked to count to ten in either English or Tagalog. To measure children's ability to object count, participants were asked to count the number of animals on different cards. Ten such sub-items were assessed in total. To assess the ability to identify numbers, children were presented with a grid with numbers 1-10 in random order, which they were then asked to identify. To understand the child's ability to compare numbers, the child was presented with five sets of two numbers to compare. In each of these sets, the child was asked to identify whether numbers were the same, or which one was greater or lower in magnitude. To examine children's understanding of numerical sequencing and patterns, children were given cards with a missing number in a sequence of consecutive numbers, which the children were then required to identify. The final measure was designed to assess the child's understanding of simple addition. The child was given a simple addition problem on a card and asked by the enumerator to provide the answer. Ten such items were assessed in total for this sub-task. Example test items are included the Supplementary Material.

Parent-Child Interaction Scale. To examine how parents interacted with children during the coaching sessions, enumerators completed the Arnett Caregiver Interaction Scale (Arnett 1989; Colwell et al. 2013) during the pre- and post-coaching sessions. This scale measures the quality of caregiver-child interactions with toddlers and preschoolers. The scale includes 26 items that measure four dimensions of caregiver interactions: sensitivity (e.g., "Listens attentively when children speak to her"), harshness ("Threatens children in trying to control them"), detachment ("Doesn't seem interested in the children's activities"), and permissiveness ("Doesn't reprimand children when they

[7] Appendix Table A.2 shows high response rates of over 60 percent on learning assessment at program completion. These response rates are similar to other educational studies with multiple rounds of follow up (Angrist et al. 2023). We see no statistically significant difference in response rates by treatment group, with p-values of 0.6 and above, increasing confidence that surveys responses are unbiased across treatment groups. Appendix Figure A.2 shows responses across various types and rounds of surveys.

misbehave"). Coaches documented a score between 1-4, with 1 indicating "Not at all true" and 4 indicating "Very much true".

We create two indices to capture parent-child interactions: positive parenting and parent engagement. Table A.4 shows all indicators in the parent-child interaction survey modules. We indicate which indicators are selected by a LASSO regularization regression and create aggregate indices which we use in our main results table in Table 3.

Parent Survey. Multiple parental outcomes were assessed. This included eliciting parental beliefs on their child's learning level (e.g., do they know if their child can count or add). The survey also included parent time use on educational activities, involvement in the child's school, time spent on learning with the child, and hours spent working.

Program Implementation. Implementation data is self-reported by FA coaches after each session and transmitted via weekly reports to ICM. The data includes attendance, time spent in each session and the percentage of the session led by parents vs. coaches. The weekly report also collects data on time spent in debriefing, where feedback was given to the parent on observed parent-child interaction during each session. In total, 45 minutes of instruction were expected per session.

IV Empirical Strategy

We estimate average treatment effects of the Family Academy program for each individual i in household h in community c as follows:

$$Y_{hic} = \alpha + \beta FA_{hic} + \lambda_g + \epsilon_{hic}$$

where FA is a dummy variable for whether a household was in a randomly chosen community expected to receive the FA program, λ_g are strata fixed effects per geography (captured by branch and base of ICM operations), and ϵ_{hic} is our error term. Standard errors are clustered at the community level, the unit of randomization. Within each household, we report outcomes for a primary caregiver (the survey respondent) and the target child (the child in the household within the 3 – 5 year age range).

V Results

V.A Effect on learning outcomes

First, we report results on children's learning outcomes covering two domains: phonics and mathematics. Specifically, we report the percentage of questions answered correctly on average across each domain overall, as well as the percentage of questions answered correctly for each of the domain's subtasks (e.g. letter identification, simple addition). Table 1 presents learning outcomes immediately after the program, as well as from the 1-year follow-up. Additionally, Table 1 summarizes the results for each of the learning domains' subtasks.

The FA program substantially improved children's learning outcomes right after the program. Children in the treatment group see a jump from 38.4 percent correct responses in the control group to 52.3 percent correct in math and from 10.7 percent to 21.1 percent in phonics (Figure 1). These results translate to 0.52 standard deviations (pvalue < 0.001) higher in math and 0.51 standard deviations (p-value < 0.001) higher in phonics (Table 1). These results are large in a literature were half of educational interventions don't work at all (Angrist et al. 2020) and the average intervention typically has a 0.1 standard deviation effect (Evans and Yuan 2022). These effects are also large when directly comparing results with the preprimary education literature, where average effects are around 0.22 standard deviations on literacy and math (Holla et al. 2021).[8] We further observe broad-based learning gains across all sub-tasks on the assessment, with learning gains in addition, counting, shape identification, and more. We similarly observe learning gains across all phonics sub-tasks.

V.A.1 Learning over time

Figure 1 shows the effects on math and phonics domains over time, from baseline through to the first follow-up conducted after the conclusion of the program and then a follow up conducted a year later. Some effects persist even a year later. The impact on math scores a year later is equivalent to 0.15 SD (Table 1). While these effects are lower than effects right after the intervention, as noted earlier, 0.15 SD is a substantial effect size for an educational intervention relative to the literature, achieved at relatively low cost, and we find high statistical significance (p-value=0.061). The impact on phonics is 0.13 SD, but the p-value is 0.12. We further observe persistence in learning gains across a few sub-tasks a year later, although not all. Few education studies include long-term follow-ups and these data reinforce that learning gains can persist over time, even if tempered. This is especially promising since early childhood education program effects could fade out if the quality of the primary school education students progress into is low (Global Education Evidence Advisory Panel 2020; Johnson and Jackson 2019).[9]

[8] Notably, the preprimary interventions in the referenced review were typically full or half day programs, conducted five days a week, for a year or longer. In comparison, Family Academy was designed to include two 45-minute sessions a week, for just eight weeks.

[9] Of note, we observe substantial learning progress in the control group over time. This does not seem to be because of data concerns, such as new surveyors or survey methods (see Table A.6). This might be due to children

V.A.2 Heterogeneity in learning gains

We explore heterogeneity in relation to mothers' education, household income level, and the child's gender. These results are reported in Table 2. We find limited heterogeneity along baseline parent education and income. A plausible reason might be that most households are low resource and low literacy to begin with, such that all households have room to benefit. In addition, since the intervention was conducted at the household in a small group setting and in a concentrated fashion, few children are left behind as they might otherwise be in a large class setting. We find striking heterogeneity by gender with girls experiencing larger and persistent learning gains. One reason might be that in status quo settings, parents often invest less in their daughter's human capital (Dizon-Ross and Jayachandran 2023). Our results reveal girls might thus benefit in particular from additional engagement in education at home.

An important contextual factor that could influence program effectiveness is children's concurrent enrollment in early childhood education opportunities. Figure A.3 explores results depending on whether students are enrolled in other educational opportunities at baseline. The Philippines supports preprimary education by including one year of kindergarten for 5-year-old children as part of the country's compulsory education. Nationwide, in the 2020-2021 School Year, 66% of 5-year-old children were enrolled in kindergarten. In Figure A.3, we illustrate the average percent of questions answered correctly in the math and phonics domains disaggregated by whether children were or were not enrolled in preprimary education at baseline. We find similar effects overall, with slightly larger and more persistent effects for students not enrolled in any form of schooling by the time of the 1-year follow up. This indicates that FA is effective both as a complement to center-based education programs and is especially consequential when operating as a substitute intervention. In addition, we observe that FA enables children not enrolled in any schooling at baseline to catch up to those who were enrolled in some schooling, revealing the potential of concentrated interventions to close educational gaps.

V.B Mechanisms: direct instruction or broader parental investments

Direct and supervised educational instruction. It is often assumed that parents in low resource settings are not able to directly support educational instruction since they are neither trained teachers nor highly educated. However, children spend most of their time with their parents in the early years, and parents could provide a high-potential, underutilized opportunity to enable human capital accumulation. Thus, FA focused on enabling parents to directly support their children's learning at home. The program employed a "tell-show-do" approach where the coaches directly engaged with children but were also trained to coach parents on how to conduct learning activities themselves. Figure 2 plots the amount of instructional time completed per week and who led the instruction: coaches or parents. Notably, around 70 percent of planned time was used for instruction, with little variation across weeks. Also very consistently, the coaches report equal

increasingly enrolling in schooling options in the control group (see Table A.5), or since households are enrolled in the underlying Transform program.

instruction time between themselves and parents, with half of the instruction time led by parents. These findings are promising, in that parents are reported to be actively and consistently engaged in the learning sessions, although parents do not appear to become increasingly involved in leading more of the program over time.

Broader Parental Investments. Multiple parental investments could foster student learning. These mechanisms range from parent involvement in children's school to greater involvement in education in general to parent's beliefs about their students learning level. We collect rich data on parental beliefs and investments to understand parent mechanisms. In terms of parent-child interactions and parent time use, we find minimal differences between treatment and control parents' behaviors or interactions as shown in Table 3.[10] We see only minor improvements in positive parenting behavior, and no additional involvement in educational activities with the child beyond the session itself. While we see an increase in engagement in recreational activity, we find no evidence of additional engagement in the child's schooling.

In terms of parent beliefs, a growing literature finds that parents often overestimate their child's learning level, which can lead to underinvestment in education (Angrist et al. 2022; Bergman 2021). Correcting parents' beliefs either through information or direct interaction in their child's education has been found to foster additional educational investment and promote learning. We find 63 percent of parents overestimate their child's learning in the status quo. We find parents update their beliefs shown in Table 3 in line with directional shifts in actual learning, although these effects are not as large as the actual treatment effects (0.52 and 0.51 sd treatment effect on learning for math and phonics, versus an increase in parental beliefs by only 0.18 and 0.19, respectively). These results reveal that the intervention led parents to overestimate their child's ability less with their beliefs converging to their children's actual math and phonics skills.

Altogether, we find only minimal evidence that broader parental beliefs and investments change. Rather, the most plausible explanation for learning gains appears to be a result of additional direct educational instruction by parents and coaches through FA's structured learning sessions.

V.C Parent outcomes and potential crowdout

There could be concerns that if parents spend additional time on their child's education this might crowd out other activities such as caring for other children, and time spent working. Table 3 shows results on parent outcomes. We find that FA does not take away time from other activities, potentially since it displaces unused or less productive time. Moreover, we do not find that parents reduced the time they spend working as a result of their participation in Family Academy. This holds both for mothers as well as fathers. This minimal crowdout is likely since FA is a highly efficient program, requiring minimal time from parents, while yielding substantial and concentrated benefits. This reveals the potential to engage parents further in educational instruction, without requiring parents, in particular mothers, to shortchange their labour hours.

[10] Table A.4 includes effects across each indicator in addition to the summary indices reported in Table 3.

VI Conclusion

We learn that a program that provides simple instructional material and training to parents to work with their children on math and phonics can foster human capital accumulation for children cost-effectively. Most early childhood programs are relatively expensive. The FA program is cheap in comparison. The marginal cost of the program was USD$32. In the long-run, the costs of implementing FA may decrease since some of the fixed cost of identifying and training mentors can be lowered as the process is repeated in subsequent years for additional households. The long-term marginal cost is estimated to be about USD$22 per child, holding all else equal.

Our cost and effectiveness estimates are interpreted in a context where the program was not implemented as a stand-alone program, but rather as an add-on to another program (the cost of the full Transform and FA program is about USD$110 per household), which might be one reason it is particularly cost-effective. This add-on feature has two implications for the cost-effectiveness analysis: First, the underlying Transform program may have built trust that led to higher participation rates by parents than would have been observed without the Transform program. Second, the Transform program also lowered the cost of identifying mentors both logistically but also via a trust mechanism, i.e., making prospective mentors more likely to engage. If Family Academy were to be setup as a brand new program without building on other programming the costs would likely be higher. An additional reason the program is cost-effective is that it does not require substantial infrastructure investment. Many early childhood programs involve building centers or some type of infrastructure as well as procuring multifaceted program materials. By using cheap materials and focusing largely on pedagogy and child-parent interactions, the program keeps costs down.

This evaluation took place in the Philippines, where learning levels are low and poverty rates are high, revealing that parents even in low-resource settings can play a crucial role in their child's human capital accumulation. While broader parental investments change only marginally, direct and supervised parental instruction increases substantially. Our results show that with targeted interventions parents can be effective conduits of educational instruction. Future research could explore additional margins to close remaining learning gaps[11], such as higher dosage interventions, and approaches to increase parental engagement in education beyond structured sessions, such as promoting reading at home, among others.

[11] While students demonstrate large learning gains, learning gaps remain. For example, even though children in the treatment group were able to successfully identify 60% more letters than children in the control group, they were still only able to identify five of the of the 20 letters presented to them. That there is still so much room for growth is potentially explained by the initial low learning levels, and could also be due to the short duration of the program. This could suggest the potential to increase the duration of the program.

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VII Main Figures and Tables

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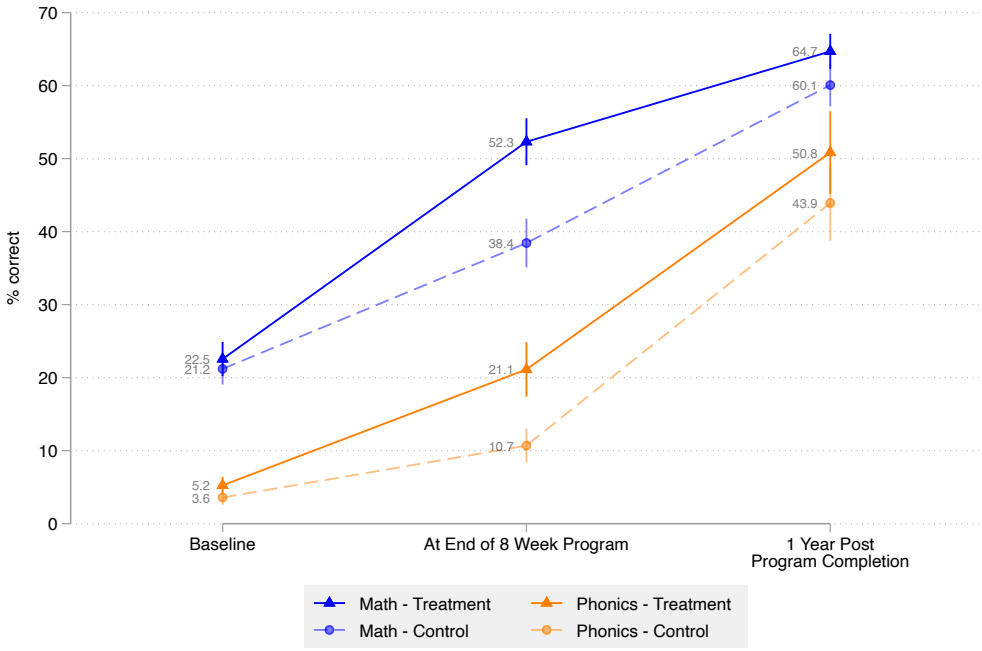
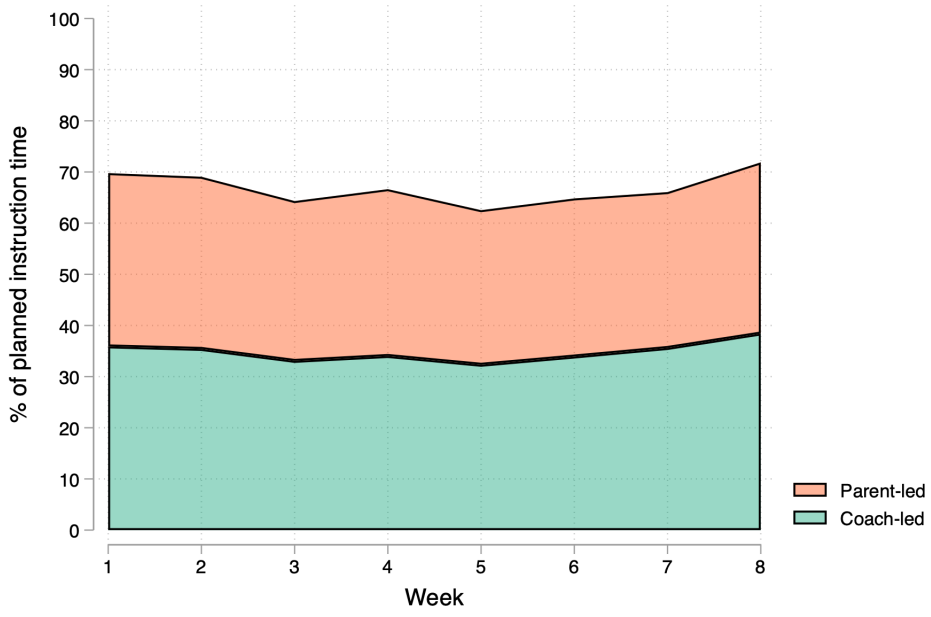
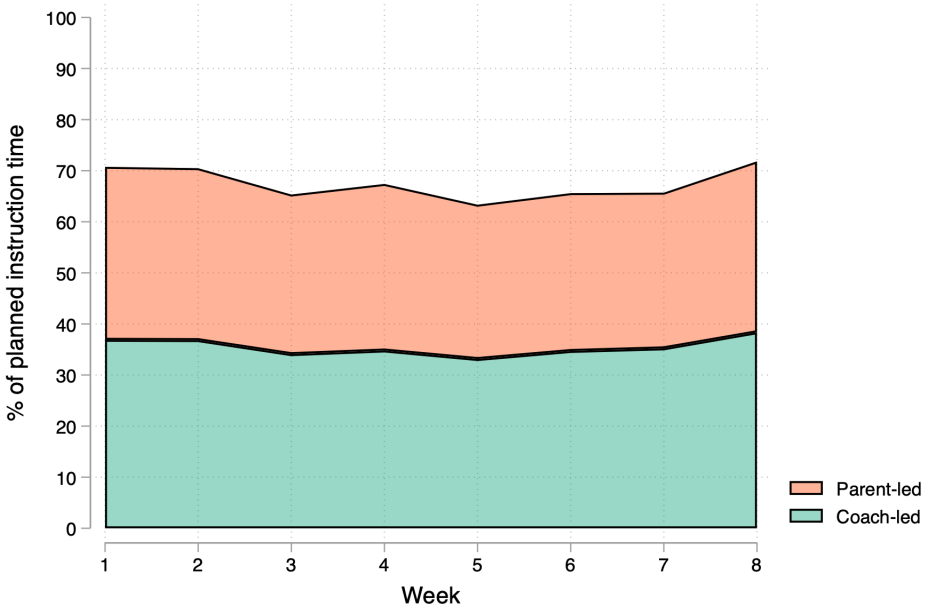


Figure 1: Learning over time

Note: This figure displays mean estimates of learning scores over time across treatment and control groups for Math and Phonics tests, along with 90% confidence intervals. Robust standard errors are clustered at the community level.



(a) Math



(b) Phonics

Figure 2: Parent and Coach Direct Educational Instruction

Note: This figure shows parent-led and coach-led session time as self-reported by the coach in weekly reports, in terms of % of total planned session time. In total there were eight 45-minute sessions of math and eight 45-minute sessions of phonics planned, with one session of each every week.

Table 1: Impact of Family Academy Program on Child Learning Outcomes

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	At Program Completion				1 Year Post Program Completion			
	Treatment	s.e/p-val	Control Mean/S.D	N	Treatment	s.e/p-val	Control Mean/S.D	N
Math (SD)	0.52***	(0.08)	0.00	987	0.15*	(0.08)	0.00	894
		[0.00]	{1.00}			[0.06]	{1.00}	
Math Components								
Add	0.20***	(0.03)	0.32	984	0.04	(0.04)	0.65	894
		[0.00]	{0.43}			[0.26]	{0.43}	
Shape	0.18***	(0.03)	0.54	985	0.05**	(0.02)	0.70	894
		[0.00]	{0.35}			[0.03]	{0.30}	
Count	0.19***	(0.03)	0.55	984	0.05*	(0.03)	0.77	894
		[0.00]	{0.42}			[0.08]	{0.35}	
Color	0.15***	(0.03)	0.57	986	0.03	(0.02)	0.79	894
		[0.00]	{0.40}			[0.24]	{0.31}	
Identify	0.20***	(0.03)	0.36	983	0.05*	(0.03)	0.69	894
		[0.00]	{0.41}			[0.06]	{0.39}	
Comparison	0.15***	(0.03)	0.47	983	0.03	(0.03)	0.57	894
		[0.00]	{0.43}			[0.42]	{0.34}	
Missing	0.16***	(0.03)	0.42	983	0.06**	(0.03)	0.66	894
		[0.00]	{0.43}			[0.03]	{0.40}	
Recite	0.14***	(0.04)	0.39	983	0.02	(0.02)	0.89	894
		[0.00]	{0.42}			[0.38]	{0.29}	
Phonics (SD)	0.51***	(0.10)	0.00	987	0.13	(0.09)	0.00	894
		[0.00]	{1.00}			[0.12]	{1.00}	
Phonics Components								
Identify	0.13***	(0.03)	0.17	983	0.03	(0.03)	0.52	894
		[0.00]	{0.32}			[0.32]	{0.41}	
Beginning Sound	0.14***	(0.03)	0.08	983	0.05	(0.04)	0.41	894
		[0.00]	{0.24}			[0.20]	{0.43}	
Point to sound	0.11***	(0.02)	0.08	983	0.08**	(0.04)	0.39	894
		[0.00]	{0.23}			[0.03]	{0.42}	
Recite	0.13***	(0.04)	0.29	984	–0.02	(0.04)	0.58	894
		[0.00]	{0.46}			[0.69]	{0.49}	

Note: * p < 0.1; ** p < 0.05; *** p < 0.01. This table reports the impact of the program on average scores in the math and phonics tests, expressed in standard deviations relative to the control group, along with their respective component subtasks. The subtasks for Math include simple addition (10 items), shape identification (8 items), counting (10 items), color identification (10 items), number identification (10 items), number comparison (10 items), missing number identification (10 questions) and number recitation (1 item). The subtasks for Phonics include letter identification (20 items), beginning sound identification (20 items), point to sound identification (20 items) and alphabet recitation (1 item). Robust standard errors are clustered at the community level and each specification controls for randomization strata fixed effects. Coefficients from an OLS regression are included in column (1) and (5), standard errors in parentheses in column (2) and (6) and p-values in brackets in column (2) and (6). Control means are included in column (3) and (7) and standard deviations for the control group are included in squiggly brackets in column (3) and (7).

Table 2: Learning Outcomes: Heterogeneity by Baseline Measures

	At Program Completion		1 Year Post Program Completion	
	(1) Math (SD)	(2) Phonics (SD)	(3) Math (SD)	(4) Phonics (SD)
Panel A: HTE by mother's education				
Treatment	0.516***	0.445***	0.192*	0.157
	(0.097)	(0.112)	(0.099)	(0.103)
	[0.000]	[0.000]	[0.054]	[0.130]
Senior High School or above	0.158	0.206*	0.221**	0.162*
	(0.111)	(0.105)	(0.108)	(0.092)
	[0.158]	[0.051]	[0.042]	[0.079]
Treatment × Senior High School or above	0.060	0.122	-0.104	0.034
	(0.157)	(0.178)	(0.136)	(0.130)
	[0.701]	[0.494]	[0.445]	[0.793]
Observations	782	782	729	729
Control Mean	0.00	0.00	0.00	0.00
Panel B: HTE by child gender				
Treatment	0.613***	0.571***	0.081	-0.025
	(0.100)	(0.129)	(0.097)	(0.100)
	[0.000]	[0.000]	[0.402]	[0.802]
Female	0.053	0.017	-0.032	-0.084
	(0.073)	(0.084)	(0.093)	(0.079)
	[0.472]	[0.840]	[0.731]	[0.294]
Treatment × Female	-0.167	-0.083	0.145	0.297***
	(0.116)	(0.147)	(0.118)	(0.110)
	[0.151]	[0.572]	[0.221]	[0.008]
Observations	978	978	885	885
Control Mean	0.00	0.00	0.00	0.00
Panel C: HTE by household income				
Treatment	0.524***	0.512***	0.134	0.147
	(0.114)	(0.136)	(0.114)	(0.118)
	[0.000]	[0.000]	[0.242]	[0.216]
Above Median Income	-0.045	0.063	0.097	0.031
	(0.100)	(0.106)	(0.101)	(0.104)
	[0.651]	[0.556]	[0.340]	[0.765]
Treatment × Above Median Income	0.097	0.015	0.002	0.006
	(0.142)	(0.178)	(0.140)	(0.154)
	[0.495]	[0.931]	[0.991]	[0.971]
Observations	763	763	712	712
Control Mean	0.00	0.00	0.00	0.00

Note: * p < 0.1; ** p < 0.05; *** p < 0.01. This table presents the heterogeneous treatment effects of the program on math and phonics test scores, expressed in standard deviations relative to the control group, by various baseline measures. Panel (A) includes a dummy for mother's education ('Senior High School or above') and its interaction with treatment. Panel (B) includes a dummy for child gender (Female=1) and its interaction with treatment. Panel (C) includes a dummy for household income above the median and its interaction with treatment. Income refers to total household income in the previous month. Each specification controls for strata fixed effects and robust standard errors are clustered at the community level.

Table 3: Impact of Family Academy Program on Parent Outcomes

	(1)	(2)	(3)	(4)	(5)	(6)
	At Program Completion			1 Year Post Program Completion		
Measure	Treatment Difference	s.e/p-val	Control Mean/S.D	Treatment Difference	s.e/p-val	Control Mean/S.D
A. Parent estimate of child's..						
Math Level (SD)	0.18**	(0.07)	0.00	0.04	(0.08)	0.00
		[0.01]	{1.00}		[0.60]	{1.00}
Phonics Level (SD)	0.19**	(0.07)	0.00	0.06	(0.08)	0.00
		[0.01]	{1.00}		[0.45]	{1.00}
B. Parent overestimates child's knowledge of						
Numbers	–0.12***	(0.04)	0.63	–0.03	(0.04)	0.42
		[0.00]	{0.48}		[0.47]	{0.49}
Letters	–0.02	(0.04)	0.64	0.00	(0.04)	0.43
		[0.57]	{0.48}		[0.94]	{0.50}
C: Parent Involvement in..						
Educational Activity	–0.05	(0.05)	0.62	–0.01	(0.00)	1.00
		[0.27]	{0.49}		[0.14]	{0.00}
Schooling	0.02	(0.01)	0.92	0.00	(0.01)	0.95
		[0.22]	{0.15}		[0.91]	{0.13}
D: Parent-Child Interaction						
Parent Engagement Index	0.01	(0.01)	0.77	–0.01	(0.02)	0.78
		[0.44]	{0.15}		[0.41]	{0.16}
Positive Parenting Index	0.03**	(0.01)	0.38	–0.02	(0.02)	0.44
		[0.05]	{0.13}		[0.43]	{0.18}
E: Parent Time Use						
Labour hours of Mother	2.24	(8.07)	55.32	8.17	(6.14)	40.83
		[0.78]	{107.95}		[0.18]	{83.36}
Labour hours of Father	–4.20	(7.55)	138.83	–9.72	(6.91)	126.93
		[0.58]	{101.12}		[0.16]	{98.31}
Recreational activity with child	0.77***	0.29	2.95	–0.18	0.17	2.64
		[0.01]	(2.65)		[0.28]	(2.54)
Learning activity with the child	–0.04	(0.11)	1.06	–0.19**	(0.09)	1.67
		[0.72]	{1.34}		[0.05]	{1.25}
Time spent in care of other child	0.19	(0.12)	0.93	–0.05	(0.10)	1.00
		[0.11]	{1.75}		[0.62]	{1.37}

Note: * p < 0.1; ** p < 0.05; *** p < 0.01. Panel (A) shows parent estimates of their child's level in identifying numbers (for Math) or letters (for Phonics), in standard deviations relative to the control group. Panel (B) shows a dummy variable coded as 1 if the parent's estimate of their child's ability to identify numbers and letters exceeds the child's actual level, and 0 if otherwise. Panel (C) shows indices for educational activity and schooling based on parent involvement in their child's education in general, and in school. Panel (D) shows indices constructed by lasso regularization from a comprehensive set of related measures (as detailed in Table A.4). Panel (E) shows total hours spent on income-generating activities over the last month, and hours per day dedicated to recreational and learning activities as well as childcare for non-program children. The sample size ranges from 983 to 987 for the learning measures and 827 to 863 for the parent survey measures at program completion, and from 894 for the learning measures to 863 to 892 for the parent survey measures at the 1-year follow-up. Robust standard errors are clustered at the community level and each specification controls for randomization strata fixed effects. Coefficients from an OLS regression are included in column (1) and (4), standard errors in parentheses in column (2) and (5) and p-values in brackets in column (2) and (5). Control means are included in column (3) and (6) and standard deviations for the control group are included in squiggly brackets in column (3) and (6).

Appendix

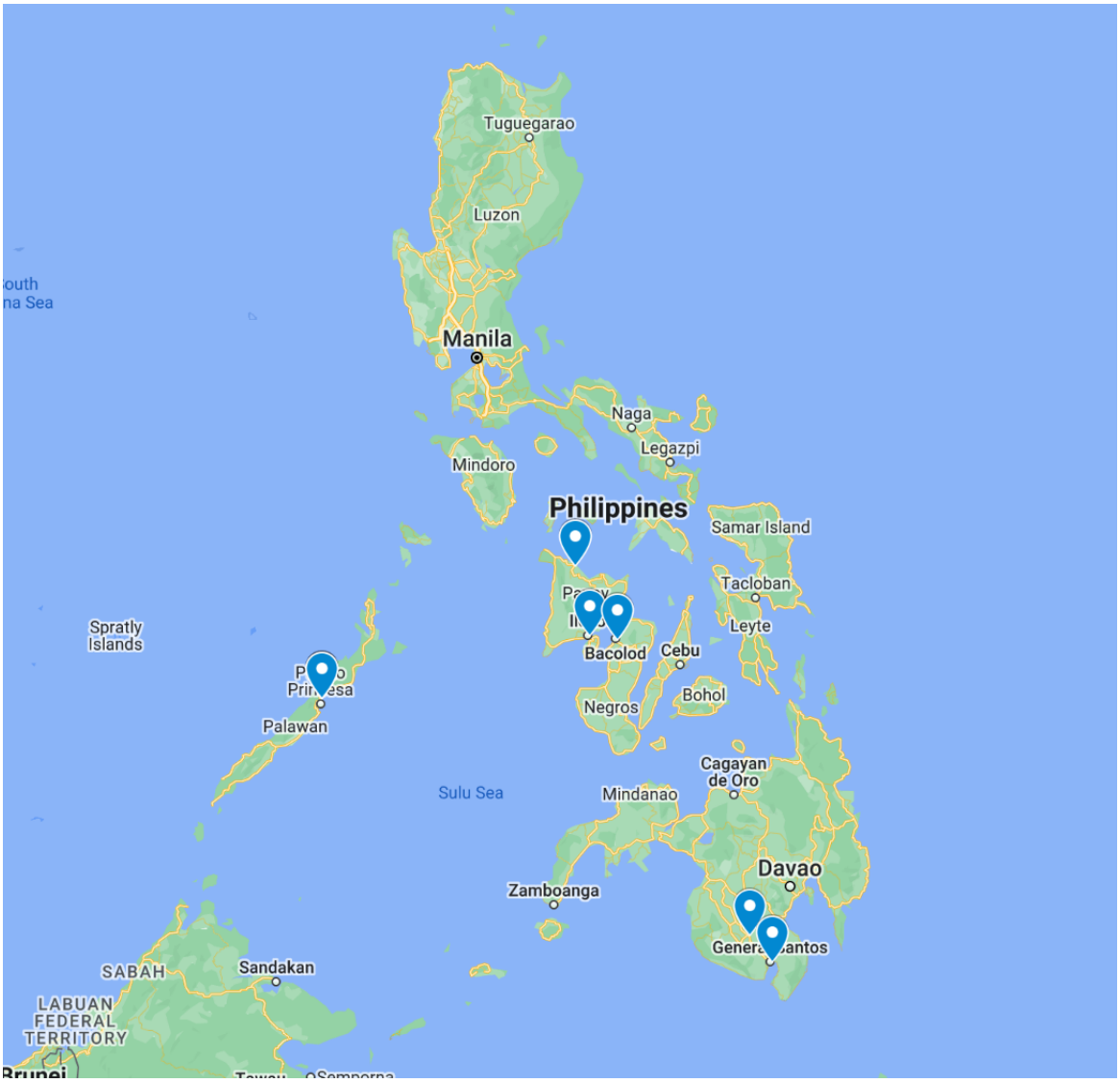


Figure A.1: Family Academy Study Sites

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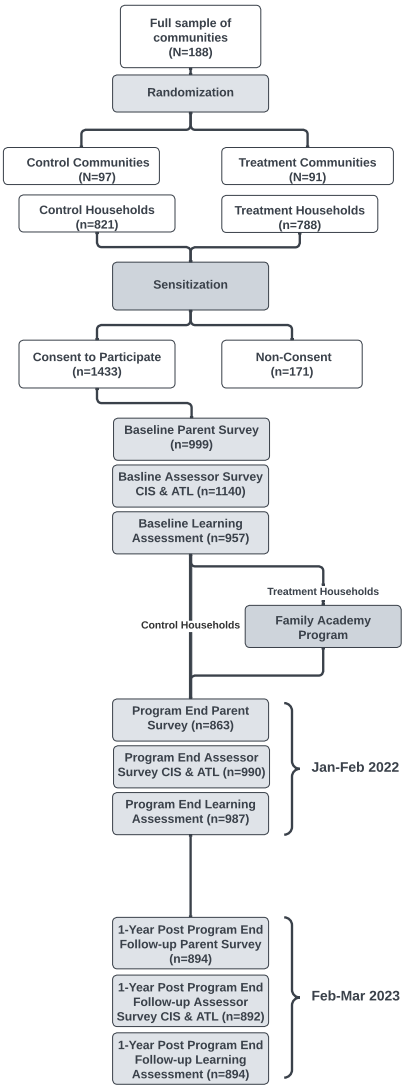
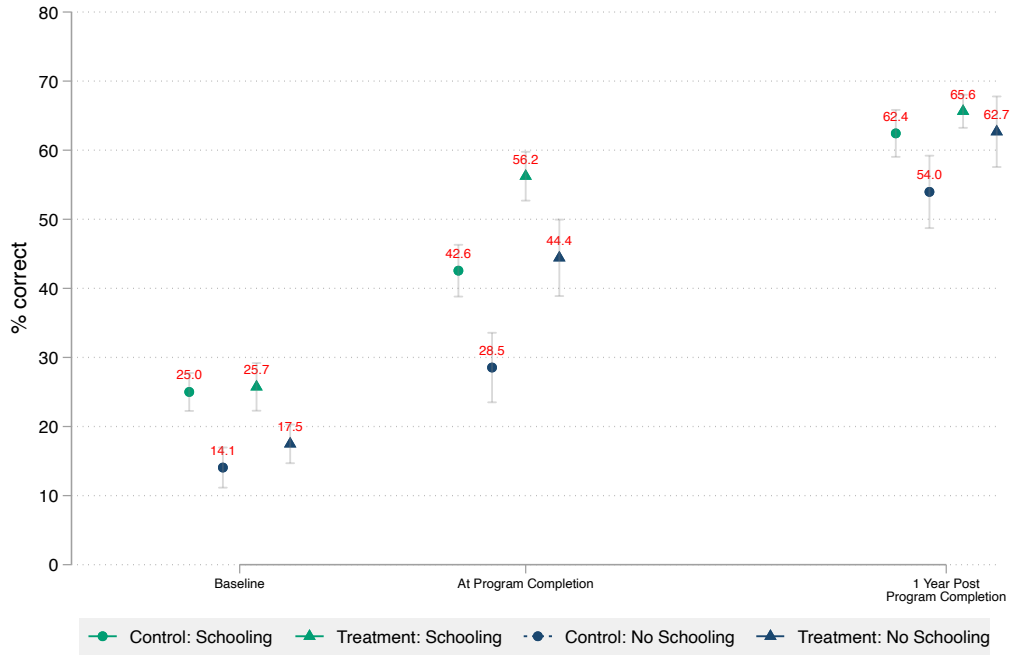
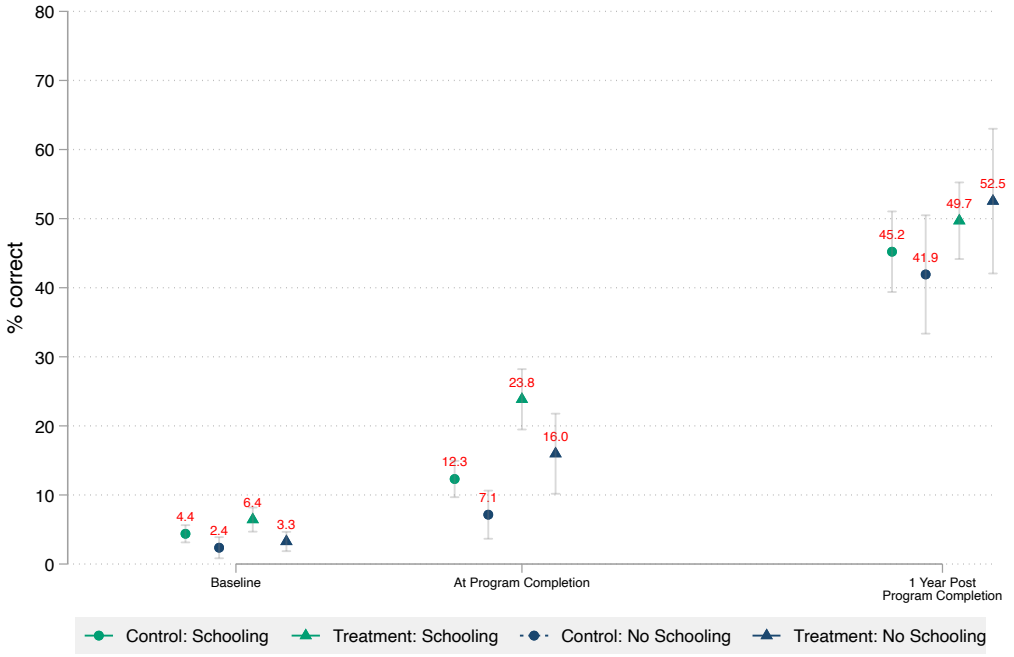


Figure A.2: Family Academy Sample

Note: This figure illustrates the sample sizes of participants in each survey type and wave. The evaluation included three main waves: baseline, after program completion, and a follow-up survey a year after. The evaluation had three main survey types: (1) Parent Survey (PS) (2) Assessor Survey (AS) and (3) Learning Assessment (LA). The PS assessed various characteristics of the parents, including demographic, educational, and income information, as well as parent beliefs on schooling and perceptions of the current learning level. The AS collected outcomes on parent-child interactions (CIS) and the child's approach towards learning (ATL), as observed during a typical learning session. The LA assessed learning outcomes and included a math and phonics test.



(a) Math



(b) Phonics

Figure A.3: Learning scores over time (by enrollment at baseline)

Note: This figure displays mean learning scores for (a) Math and (b) Phonics over time, along with 90% confidence intervals, separated by whether the students were enrolled in any form of schooling (including pre-school or kindergarten). Robust standard errors are clustered at the community level. The 'after program completion' learning assessment immediately followed the eight week learning program and the follow-up learning assessment took place 1 year following the endline.

Table A.1: Balance Table

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Sample at Baseline				Sample at Program End			Sample 1-Year Follow-Up		
Measure	Full	Treat.	Control	p-val	Treat.	Control	p-val	Treat.	Control	p-val
A. Baseline learning										
Average Score	0.131	0.139	0.124	0.241	0.146	0.135	0.438	0.147	0.134	0.380
	(0.006)	(0.010)	(0.008)		(0.010)	(0.010)		(0.011)	(0.010)	
B. Employment of Mother										
Unemployed	3.448	4.545	2.326	0.312	4.545	3.008	0.552	4.895	3.175	0.533
	(1.105)	(1.667)	(1.423)		(1.821)	(1.829)		(1.972)	(1.929)	
Self employed	35.920	38.636	33.140	0.280	37.013	33.835	0.576	34.965	33.333	0.779
	(2.539)	(3.435)	(3.748)		(3.645)	(4.350)		(3.835)	(4.366)	
Wage worker	60.632	56.818	64.535	0.137	58.442	63.158	0.413	60.140	63.492	0.565
	(2.604)	(3.530)	(3.780)		(3.707)	(4.406)		(3.794)	(4.425)	
C. Employment of Father										
Unemployed	0.248	0.000	0.487	0.151	0.000	0.602	0.152	0.000	0.635	0.151
	(0.174)	(0.000)	(0.338)		(0.000)	(0.419)		(0.000)	(0.441)	
Self employed	19.455	18.182	20.681	0.482	18.885	21.988	0.436	18.121	22.222	0.318
	(1.780)	(2.459)	(2.569)		(2.767)	(2.859)		(2.866)	(2.933)	
Wage worker	80.297	81.818	78.832	0.399	81.115	77.410	0.351	81.879	77.143	0.247
	(1.773)	(2.459)	(2.546)		(2.767)	(2.844)		(2.866)	(2.915)	
D. Mother's Education										
Primary school or below	25.026	22.314	27.766	0.145	21.465	26.425	0.220	20.219	27.273	0.086*
	(1.876)	(2.694)	(2.580)		(2.810)	(2.906)		(2.766)	(3.011)	
High school	55.659	56.405	54.906	0.654	56.061	55.699	0.921	56.831	54.545	0.547
	(1.668)	(2.342)	(2.389)		(2.514)	(2.650)		(2.625)	(2.742)	
College or Vocational	19.315	21.281	17.328	0.176	22.475	17.876	0.135	22.951	18.182	0.121
	(1.469)	(2.381)	(1.679)		(2.474)	(1.822)		(2.487)	(1.789)	

Note: * p < 0.1; ** p < 0.05; *** p < 0.01. Robust standard errors clustered at the community level. This table reports balance on baseline measures for the sample under study at each survey wave. Column (1) reports mean estimates of the entire sample at baseline. No education or primary includes parents with no formal education and parents with only pre-school or primary school education. High school includes any level of high school education. College or vocational includes either partial or complete completion of college or vocational training.

Table A.2: Attrition

	Baseline	At Program Completion			1-year Follow-up		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Participated in Study	Learning Assessment	Parent Survey	Assessor Survey	Learning Assessment	Parent Survey	Assessor Survey
Treatment	-0.002	0.002	0.010	0.017	0.015	0.015	0.013
	(0.026)	(0.034)	(0.033)	(0.034)	(0.035)	(0.035)	(0.035)
	[0.939]	[0.964]	[0.769]	[0.613]	[0.658]	[0.658]	[0.712]
Observations	1609	1609	1609	1609	1609	1609	1609
Control Mean	0.89	0.61	0.53	0.62	0.55	0.55	0.55

Note: * p < 0.1; ** p < 0.05; *** p < 0.01. Standard errors in parentheses; p-values in square brackets. Treatment is a dummy variable indicating random assignment into the program. Robust standard errors are clustered at the community level. Column (1) shows parent consent to participate in the program. Columns (2) to (4) and (5) to (7) represent participation in learning assessments and surveys at the endline and follow-up, respectively.

Table A.3: Total household caregivers' time spent with child by socioeconomic status

	Learning activities (mins. per day)	
	(1) Mean	(2) SD
Panel A: Mother's Education		
Primary School or below	99.68	79.61
High School	105.82	91.15
College or Vocational	122.83	137.15
Panel B: Father's Education		
Primary School or below	102.29	81.52
High School	101.10	85.01
College or Vocational	140.95	164.32
Panel C: Income		
Less than 3000	101.89	77.70
3000-6000	110.89	116.17
6000-9000	116.22	110.98
More than 9000	101.85	93.39
Panel D: Mother's Employment		
Self employed	119.24	145.40
Wage worker	122.74	99.75
Panel E: Father's Employment		
Self employed	113.09	88.23
Wage worker	104.45	100.97

Note: The table shows descriptive statistics of time spent in learning activities with child stratified by various socio-economic indicators. Time spent in learning with child refers to the time that caretaker(s) spend on a typical day engaging in learning activities with the child, as reported in the program end parent survey, and is measured in minutes per day. This time includes all caregivers in the household and is not calculated per parent or caregiver.

Table A.4: Measures of Parent Child-Interaction and Selected Indices

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	At Program Completion				1 Year Post Program Completion			
	Treatment	s.e/p-val	Control Mean/S.D	N	Treatment	s.e/p-val	Control Mean/S.D	N
⊕ Selected by LASSO regularization								
Positive Parenting Index	0.03**	(0.01)	0.38	989	–0.02	(0.02)	0.44	892
		[0.05]	{0.13}			[0.43]	{0.18}	
⊕Exercises too much control	0.15*	(0.09)	1.63	1007	–0.05	(0.11)	1.86	892
		[0.07]	{0.80}			[0.66]	{0.98}	
Expects children to self-control	0.23*	(0.13)	2.60	994	0.01	(0.09)	3.02	892
		[0.08]	{1.00}			[0.89]	{0.89}	
Fails to supervise	–0.01	(0.09)	1.57	996	–0.18*	(0.10)	1.74	892
		[0.95]	{0.85}			[0.06]	{0.92}	
Finds fault easily	0.20**	(0.09)	1.67	1000	0.00	(0.12)	1.86	892
		[0.04]	{0.97}			[0.99]	{0.91}	
High value on obedience	0.05	(0.08)	3.14	1010	–0.08	(0.08)	3.22	892
		[0.50]	{0.82}			[0.28]	{0.78}	
⊕Low interaction with child	0.08	(0.13)	1.87	1003	–0.30**	(0.13)	2.11	892
		[0.56]	{1.10}			[0.02]	{1.08}	
⊕Prohibits children	0.23***	(0.09)	1.59	996	0.04	(0.12)	1.84	892
		[0.01]	{0.77}			[0.73]	{0.94}	
Punishes without explanation	–0.03	(0.09)	1.51	1001	–0.05	(0.09)	1.48	892
		[0.75]	{0.86}			[0.62]	{0.78}	
⊕Reprimands Strongly	0.05	(0.10)	1.63	1004	–0.11	(0.10)	1.70	892
		[0.63]	{0.95}			[0.29]	{0.93}	
Seems critical of children	0.06	(0.08)	1.57	1010	–0.07	(0.11)	1.79	892
		[0.44]	{0.85}			[0.50]	{0.93}	
⊕Seems distant	0.16*	(0.09)	1.45	1009	–0.16	(0.11)	1.87	892
		[0.07]	{0.78}			[0.15]	{0.98}	
⊕Speaks with irritation	0.11	(0.07)	1.40	1007	–0.04	(0.09)	1.51	892
		[0.14]	{0.72}			[0.64]	{0.77}	
⊕Threatens children	0.00	(0.09)	1.65	1005	–0.06	(0.10)	1.70	892
		[0.98]	{0.92}			[0.57]	{0.87}	
Uninterested	0.05	(0.09)	1.54	996	–0.02	(0.12)	1.79	892
		[0.53]	{0.84}			[0.89]	{0.92}	
⊕Unnecessarily harsh	0.11	(0.08)	1.28	992	–0.13	(0.10)	1.66	892
		[0.16]	{0.61}			[0.19]	{0.91}	
Parent Engagment Index	0.01	(0.01)	0.77	990	–0.01	(0.02)	0.78	892
		[0.44]	{0.15}			[0.41]	{0.16}	
⊕Encourages children to try new things	0.01	(0.08)	3.22	1006	–0.06	(0.08)	3.22	892
		[0.89]	{0.90}			[0.42]	{0.84}	
⊕Enthusiastic about Children	0.01	(0.09)	3.10	1004	–0.02	(0.07)	3.22	892
		[0.90]	{0.91}			[0.76]	{0.85}	
Good communication with child	0.03	(0.12)	3.08	1001	0.00	(0.07)	3.22	892
		[0.81]	{0.99}			[0.98]	{0.86}	
⊕Individual Attention	0.12	(0.09)	3.05	1002	–0.13	(0.08)	3.22	892
		[0.19]	{0.96}			[0.11]	{0.82}	
⊕Listens attentively	0.05	(0.07)	3.33	1010	–0.05	(0.07)	3.28	892
		[0.49]	{0.78}			[0.44]	{0.74}	
⊕Explains rules when misbehaving	0.01	(0.10)	2.96	1006	–0.05	(0.10)	2.93	892
		[0.92]	{0.85}			[0.60]	{0.95}	
⊕Seems to enjoy the children	–0.04	(0.06)	3.27	1007	–0.05	(0.07)	3.26	892
		[0.53]	{0.71}			[0.48]	{0.80}	
⊕Sits at level	0.16*	(0.09)	2.80	994	0.01	(0.09)	2.87	892
		[0.10]	{0.95}			[0.88]	{0.97}	

Note: * p < 0.1; ** p < 0.05; *** p < 0.01. Robust standard errors are clustered at the community level. Randomization strata fixed effects included. Positive Parenting Index and Parent Engagement Index are constructed by averaging LASSO selected measures from a bucket of measures relating to positive parenting behaviors and parent engagement with child behaviors respectively. The indices are used in Table 3 to identify impacts on educational investments and parent-child relationship. Coefficients from an OLS regression are reported in columns (1) and (5). Standard errors in parentheses in columns (2) and (6) and p-values in brackets in columns (2) and (6). Control means are included in columns (3) and (7) and standard deviations for the control group are reported in squiggly brackets in columns (3) and (7).

Table A.5: Impact on school enrollment

	School Enrollment at		
	(1) Baseline	(2) At Program Completion	(3) 1-year Follow-Up
Treatment	0.002	0.045	-0.009
	(0.035)	(0.034)	(0.019)
	[0.943]	[0.194]	[0.621]
Observations	999	863	894
Control Mean	0.81	0.81	0.96

Note: * p < 0.1; ** p < 0.05; *** p < 0.01. Standard errors in parentheses; p-values in square brackets. Robust standard errors are clustered at the community level. Randomization strata fixed effects included. This table reports the impact of the treatment on parent reported school enrollment (including pre-school or kindergarten) of the child at various survey waves.

Table A.6: Heterogeneity by Assessor Change on Learning Outcomes at the 1-Year Follow-up

	(1) Math (SD)	(2) Phonics (SD)
Treatment	0.231	0.374*
	(0.199)	(0.199)
	[0.246]	[0.062]
New assessor	0.173	0.044
	(0.154)	(0.133)
	[0.264]	[0.742]
Treatment x New assessor	-0.102	-0.274
	(0.223)	(0.229)
	[0.649]	[0.233]
Observations	894	894
Control Mean	0.00	0.00

Note: * p< 0.1; ** p < 0.05; *** p < 0.01. This table reports heterogeneous treatment effects on Math and Phonics test scores, expressed in terms of standard deviations relative to control, based on whether the assessor conducting the learning assessment at the 1-year follow-up survey differs from the assessor who conducted the learning assessment at program completion. In some cases, multiple assessors were reported as assigned to one child, in that case, the first assessor is selected. Both regressions include a dummy variable that takes the value 1 if the assessor who measured learning outcomes changed since the last survey, and the interaction of the treatment with this dummy variable. Standard errors are in parentheses, and p-values are in square brackets. Robust standard errors are clustered at the community level and each specification controls for strata fixed effects.

Supplementary Material

A. Family Academy Learning Assessment

Appendix

Assessment Materials

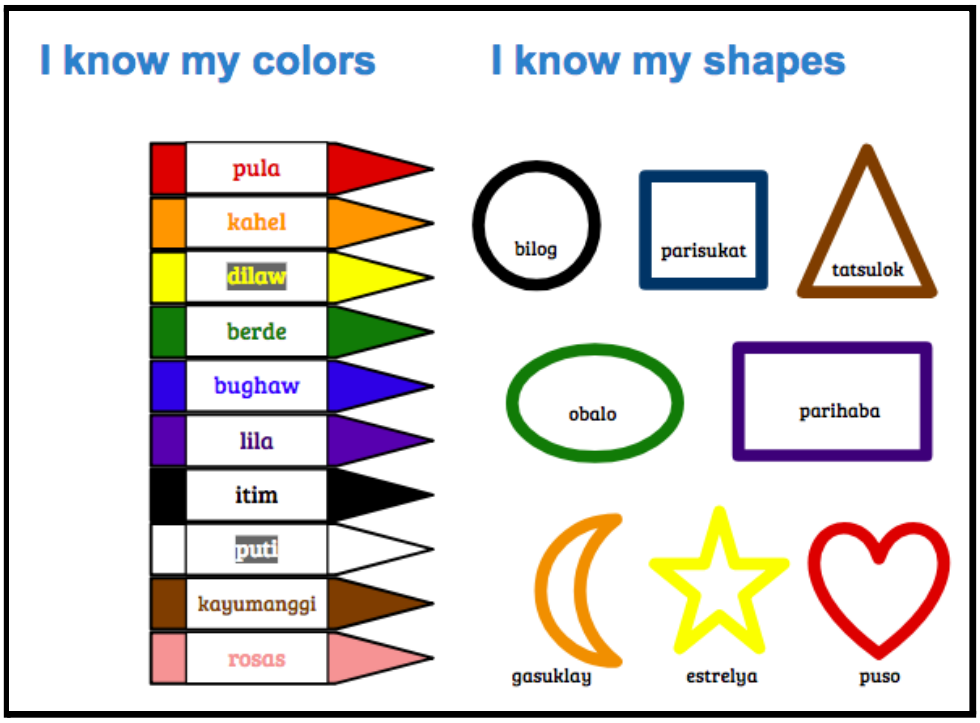
Remember:

- Do not give any hint whether child gets the answer right or wrong; keep calm and follow the instructions until **child completes the activity**, or until **child refuses to participate.**
- Do not give the correct answer.

Math

Colors: (10 points) Use the Color Poster. Ask "What color is this?"

Shapes: (8 points) Use the Shape Poster. Ask "What shape is this?



Rote Counting (10 points) - **"LET'S COUNT"**

Ask child to count to ten.

- If child counts to less than ten, **write last number** the child counted to correctly on score sheet.
- If child counted to ten, write **10** on score sheet
- If child counted beyond ten, write **10+** on score sheet

Object Counting (10 points) - **HOW MANY?**

- **USE RED CARDS** - Show the **pictures**, not the number.
- Mix up the order of the cards. (Do not show the cards in order).
- Pick one card and say (example - no. 2):
  "These are cows. Can you count them?"
  When they finish counting ask: **"How many cows?"**
  Go through all 10 cards to complete the activity or until child refuses to participate.
- Write down the total correct answers on the score sheet.

1 horse	**2** cows	**3** pigs	**4** sheep	**5** dogs
6 cats	**7** ducks	**8** rabbits	**9** chicken	**10** mice

Number Identification (10 points) **- "WHAT NUMBER IS THIS?"**

NO NEED FOR CARDS

Show this page to the child. Point to each numeral and say, **"What number is this?"**
Go through each item complete the activity or until child refuses to participate.
Write the answer on the score sheet.

2	5	4	1	3
6	10	8	7	9

Number Comparison (10 points)

ARE THEY THE SAME? WHICH IS MORE? LESS?

For each pair, say each statement and question in each box. Tell the child, **"You can use your fingers." For example, for 2 _ 9. "Show me 2 fingers."** Then, say, **"Now, show me 9 fingers."** Do not help them count. Just give the instructions to use their fingers. Then proceed with the questions (for 2__9, they are, **"Are they the same?"** and **"Which is less?"**)
Go through each question to complete activity or until child refuses to answer. Write total score on score sheet.

2_9	10_4	5_5	1_8	8_6
• These are 2 and 9. • Are they the same? (1 pt) • Which is less? (1 pt)	• These are 10 and 4. • Are they the same? (1 pt) • Which is more? (1 pt)	• These are 5 and 5. • Are they the same? (2 pts)	• These are 1 and 8. • Are they the same? (1 pt) • Which is more? (1 pt)	• These are 8 and 6. • Are they the same? (1 pt) • Which is less? (1 pt)

Missing Number (10 points) – **WHAT IS MISSING? WHAT COMES AFTER…**

Read each question. Tap on the line where number is missing. Go through each item to complete activity ot until child refuses to answer.

Example **Let's count** (point and say) **4, 5, 6, __** (tap on the line after 6) **what comes after 6?**

Let's count: **1, 2, 3, _** What comes **after** 3?	Let's count: **3, 4, _, 6** What is **missing**?
Let's count: **2, 3, 4, _** What comes **after** 4?	Let's count: **5, 6, 7, _** What comes **after** 7?
Let's count: **_, 7, 8, 9** What is **missing**?	Let's count: **3, _, 5, 6** What comes **before** 5?
Let's count: **4, _, 6, 7** What is **missing**?	Let's count: **7, 8, 9, _** What comes **after** 9?
Let's count: **1, _, 3, 4** What comes **before** 3?	Let's count: **6, _, 8, 9** What is **missing**?

Simple Addition (10 points) - "___ **PLUS** ____ **EQUALS"**

Ask each question.

Example:

- **4 plus 3 equals…**
- If a child does not give any answer, do not help him or her. Move to the next item to finish activity or until child stops participating.

2+1 =	**3+2 =**
4+3 =	**5+4 =**
5+3 =	**6+2 =**
9+1 =	**6+3 =**
7+2 =	**8+2 =**

Phonics

ABAKADA (10 points)

Rote singing/recitation of alphabet

Have the child sing or recite the alphabet. Give the child freedom to sing in English or Filipino.

Score as follows:

Mastered - 10 points - child recites or sings the alphabet clearly, without help (no hints or prompts from coach, mom, or friends), without starting over, and without pausing.

Achieved - 8 points - child completes the alphabet with very little help (e.g. child stops, and when you say the next letter continues until the end), or had started over before completing the song/recitation.

Developing - 6 points - child recites the alphabet with much more help (e.g. you needed to assist more than once, but mixes up the order of letters or skips letters) but recites until the end, “t,u,w,y”/ ”w,x,y,z”

Emerging - 4 points - child recites the alphabet but (1) completes it only after much assistance, or (2) does not complete singing or reciting.

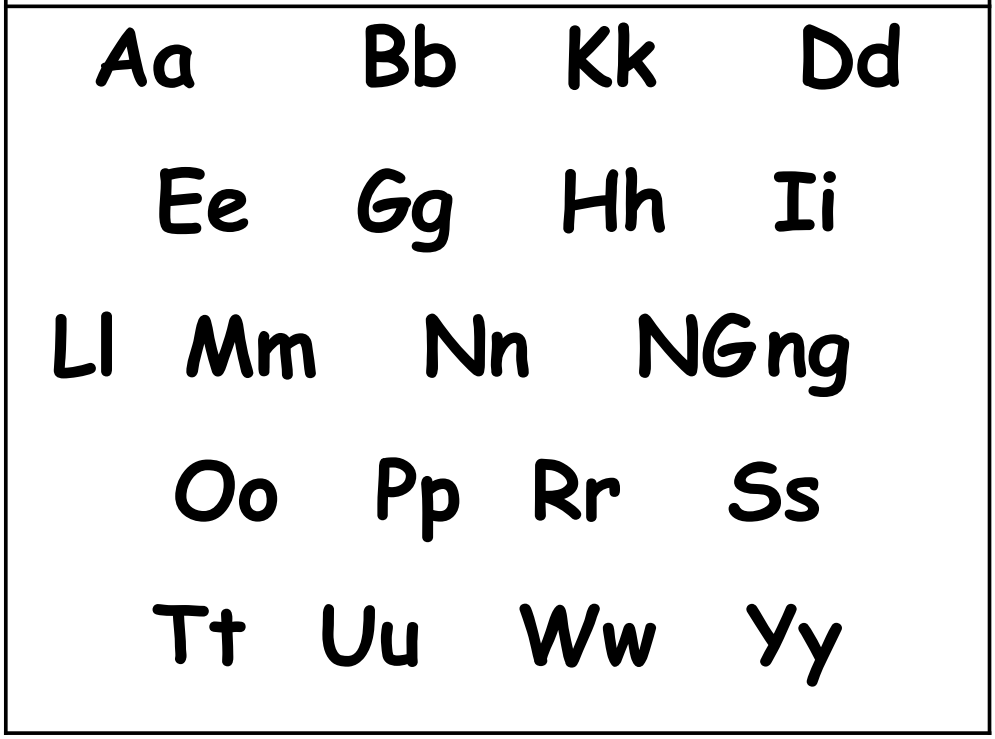
Not Developed - 0 point **-** child did not recite alphabet at all

WHAT LETTER IS THIS? (Name the letter) (20 points)
Point and say: What letter is this/what is the name of this letter (e.g. “ma”...”a”, “ta”, “sa”...etc) **Give one point for every correct answer.**
Suggestion: Go through the entire alphabet, and subtract the number of mistakes.

Stop the assessment only if the child looks tired or uncomfortable because he/she does not know the answer or is distracted in any way.

Point to each letter following the order below:

m, a, t, s, i / n, g, u, h, p / l, o, k, e, d / r, b, w, y, ng



Beginning Sound (20 points) **"What is the beginning sound of…"**

Practice before you begin: Give three examples before you begin. Example:

- Point to a body part. Ex: This is my nose. Nose begins with the sound /n/.
- Look for a familiar object. Ex: This is a cup. Cup begins with the sound /c/.
- Give the child a turn. Pick any object. Ex: "This is a table." Table begins with what sound? /t/ If the child is wrong, give correct answer and ask the child to repeat the sound /t/. Proceed with the assessment.

Assessment:

- Point to picture. **"This is a mango. Mango begins with what sound?"**
- Give 1 point for each correct answer. Proceed from left to right, top to bottom.
- When the child makes a mistake, just go on; do not give the correct answer.
- Go through each item to complete the activity or until child refuses to participate.

				
				
5				2
		8		

Point to the sound.. (20 points)

- Show this page to the child.
- Say, “Point to the sound…” following this order: /m/,/a/,/t/,/s/,/i/, /n/,/g/,/u/,/h,/p/, /l/,/o/,/k/,/e/,/d/, /r/,/b/,/w/,/y/,/ng/
- Give the child one point for each correct answer.
- Go through all letters to complete the activity or until child refuses to participate.

a	b	k	d	e
g	h	i	l	m
n	ng	o	p	r
s	t	u	w	y