



# Improving Early Childhood Development and Health with a Community-Run Program in Rural Ghana

As in many other developing countries, children under the age of five in rural parts of Ghana often fail to reach their development potential. This study evaluated the impacts of the Lively Minds program, a low-cost, community-run, play-based preschool learning program, that engaged both teachers and parents on early childhood development.

## Key Findings\*

*At the end of the one-year study:*

- The Lively Minds program increased children's cognition, with significant improvements in emergent-numeracy, executive function, and fine motor skills.
- The effect of the program on the cognitive skills of children from the poorest 20 percent of households was twice as high as that of children from better-off households. There was also a significant improvement in the literacy skills of the disadvantaged children that was not observed for the rest.
- Children's socio-emotional development improved, with the program leading to a reduction in externalizing behavior, including both conduct problems and hyperactive behaviors.
- Notably, the program led to a reduction in acute malnutrition among the participating children and an increase in average mid-upper arm circumference, an indicator of malnutrition.
- The program also increased mothers' parenting knowledge, increased the amount of time they spent on developmentally appropriate activities, and changed their teaching style (i.e. the way they interact with their children in the context of teaching a new task).
- Overall, the findings suggest that the Lively Minds approach is an effective and potentially scalable way to improve children's cognitive and socio-emotional development, health, and school readiness.

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**Partners:** Lively Minds

**Country:** Ghana

**Timeline:** 2017-2018

**Sample:** 2,400 preschool 4-5 year-old children and 2,400 caregivers

## The Challenge

Early childhood years represent a crucial window for development, as it is during these early years that children form the basis for future learning. There is growing evidence that investments in early childhood have high returns, and that missed opportunities to promote early childhood development can lead to lasting deficits in children’s educational attainment and future wellbeing.

In 2007, the Government of Ghana expanded two years of pre-primary “kindergarten” education to be included in the country’s universal basic education. However, many rural schools struggle with a lack of trained teachers, large class sizes, lack of play-based resources, teacher absenteeism, and an emphasis on rote-based teaching.

Additionally, low levels of maternal education may reduce rural parents’ involvement in their children’s education. Maternal education levels are particularly low in the areas where this study took place: As of 2014, the median educational attainment for women was 0 years in the Northern region and 2.9 years in the Upper East region, compared to a national average of 7.2 years<sup>1</sup>. Equipping teachers and mothers with skills and training has the potential to improve the quality of early childhood education, leading to large-scale improvements in child learning and development.

## The Program

The NGO Lively Minds works with the Ghana Education Service (GES) at the district level to train and empower uneducated mothers to run educational play-based activities for all the preschoolers in their community and to provide better care at home. The Lively Minds program, a “hybrid” model that simultaneously targets home and preschool environments through parents, includes the following components:

### **1. District staff engagement and training:**

A series of engagement and sensitization activities are held for Ghana Education Service (GES) district teams to increase their awareness of early childhood development and to gain their buy-in and ownership of the program. District teams are given an ongoing package of capacity-building support to enable them to deliver the program activities described below.

### **2. Teacher training:**

Two kindergarten teachers from each school receive a five and a half-day training course on the importance of education and play, play scheme management, how to use and make

games, and how to train mothers. The head teacher and parent teacher association chair attend part of the training. The training is conducted by Lively Minds staff, supported by the GES district teams.

### **3. Mother training:**

The trained kindergarten teachers then train 30-40 mothers on how to facilitate the play schemes in their community during two two-hour community meetings and eight two-hour participatory workshops. The training is scripted and designed for women who are illiterate and have never been to school. Content includes the importance of education and play, how to make and play games, child-friendly teaching, and how to install simple handwashing devices (tippy-taps) at home. This training is supervised by GES district teams.

### **4. Play schemes:**

Four days a week for one hour, groups of trained mothers come to the kindergarten during school hours to facilitate the play schemes. The children are also divided into groups, and each group participates in the play scheme once a week for one hour. The remaining children play outdoor games facilitated by some of the trained mothers. The mothers each run a play station and teach using discovery-based methods, rather than the rote-based teaching that is common in Ghana's kindergarten classrooms. Children have to wash their hands with soap before participating, with the goal of developing handwashing habits. Children are divided into small groups and rotate around the following five play stations: matching/sorting; numeracy; sizes, colors, and senses; books; and building.

### **5. Group parenting workshops:**

Kindergarten teachers deliver scripted monthly group parenting workshops for the mothers, where they teach simple ways to improve parenting using locally available materials. Topics covered in the workshops include nutrition, hygiene, child rights, play, communication, malaria prevention, financial awareness, self-esteem, and inclusive education.

### **6. Ongoing support and quality control:**

GES officials are tasked to conduct unannounced monitoring visits to each play scheme once a month as part of their normal supervision activities. Lively Minds staff also conduct surprise monitoring visits, and they hold monthly meetings in partnership with GES district teams to track the progress of the play schemes and ensure implementation quality. Once a month, district staff deliver "top-up" training workshops for the kindergarten teachers to refresh their knowledge of the play schemes and to train them to deliver the parenting workshops.

## **The Evaluation**

Researchers evaluated the impact of this community-led play-based learning program on children's cognitive development and health. The research took place in Ghana's Tolon and Bongo districts in schools serving children enrolled in kindergarten, aged 4-5 years approximately.

Researchers randomly assigned 80 schools to either receive the Lively Minds program or to serve as the comparison group, planned to receive the program the following year.

To measure the impact of the program on children's cognitive development, researchers used the International Development and Early Learning Assessment (IDELA) tool, the Strengths and Difficulties Questionnaire (SDQ), and a tasks-based assessment from the Laboratory for Developmental Studies at Harvard University. These assessments test pre-numeracy and pre-literacy skills, socio-emotional and motor development, and self-control. Researchers also measured the program's impact on child health outcomes, school attendance, caregivers' psychological well-being and knowledge of childcare, and parents' investment in their children both inside and outside of school. Students were assessed before the program began, and six and twelve months into the program.

## Results

Overall, the Lively Minds program improved children's cognitive and socio-emotional development and reduced child acute malnutrition.

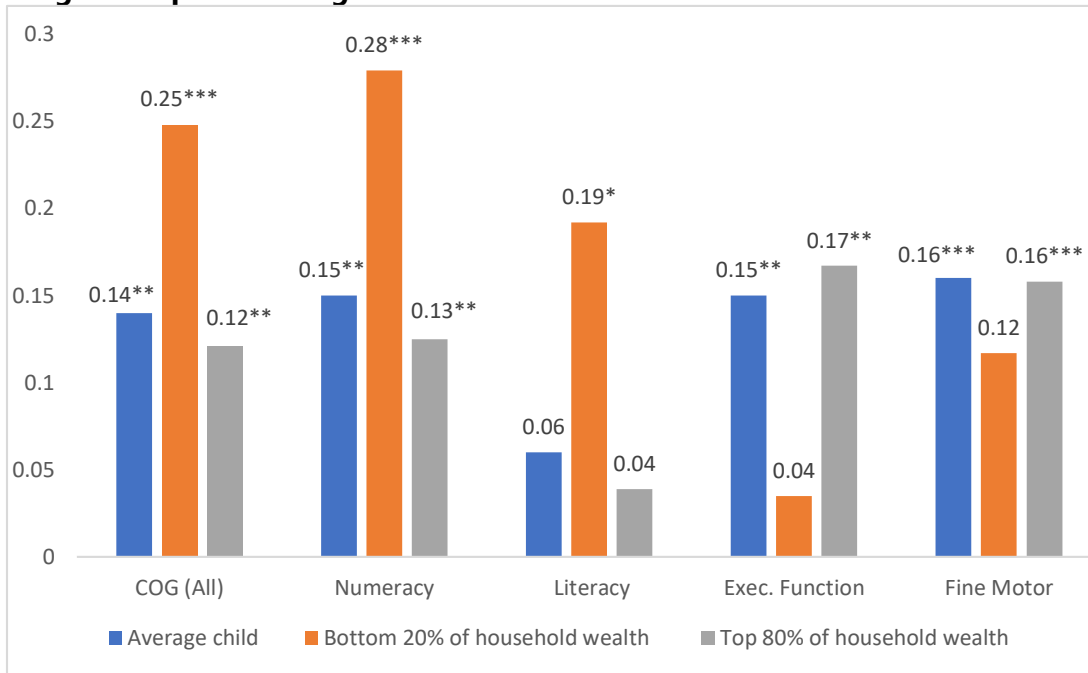
- The program improved children's overall cognition score by 0.14 standard deviations (SDs). A recent overview of results from 242 education experiments suggests that this is within the moderate, close-to-large range of effect sizes.<sup>1</sup> This improvement is driven by significant improvements in emergent numeracy, executive functioning and fine-motor skills. Although cognitive skills improved for all children, benefits were greatest for children from the most socio-economically disadvantaged homes. These children also experienced significant improvements in literacy.
- The program also improved children's socio-emotional development by reducing externalizing behaviors by 0.14 SDs. These behaviors include conduct problems (e.g. lying, cheating, bullying) and hyperactive behaviors (e.g. being fidgety or being unable to concentrate on a task). The effects were driven by impacts on boys who had significantly lower socio-emotional skills than girls at the start of the program.
- Finally, there was a significant reduction on the rate of acute malnutrition among children who participated in the program. Children's mid upper arm circumference (MUAC) increased by 21 mm (or 0.18 SDs) as a result of the program and the rate of acute malnutrition decreased by 7.5 percentage points.

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<sup>1</sup> Kraft, M. 2018. "Interpreting Effect Sizes of Education Interventions". Working Paper. Available on: [https://scholar.harvard.edu/files/mkraft/files/kraft\\_2018\\_interpreting\\_effect\\_sizes.pdf](https://scholar.harvard.edu/files/mkraft/files/kraft_2018_interpreting_effect_sizes.pdf)

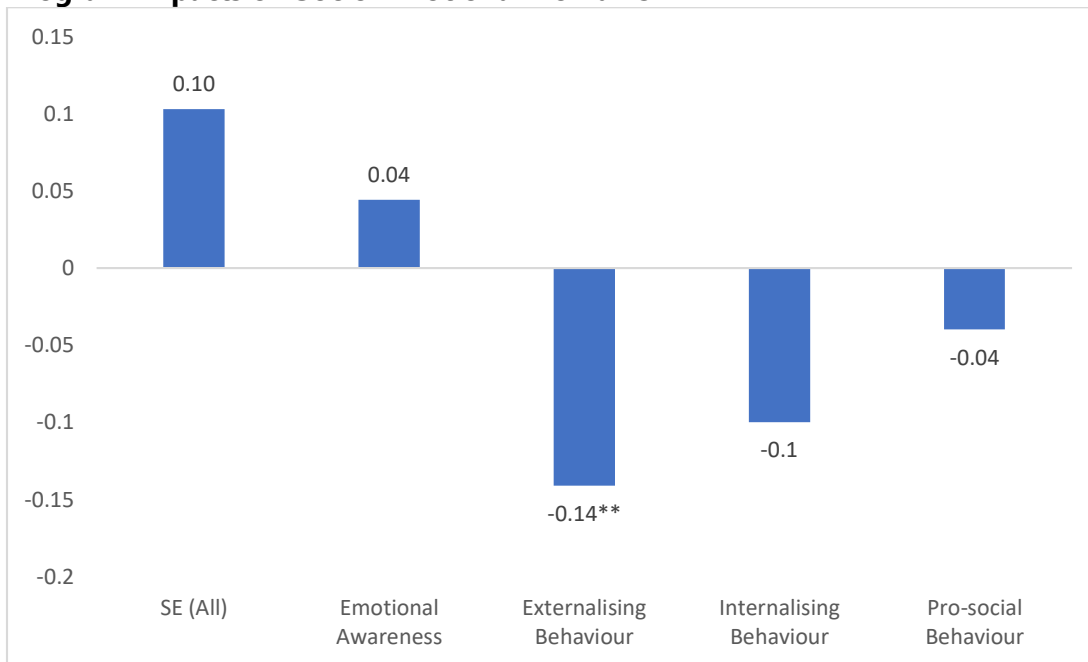
- The program affected the knowledge and practices of participating mothers, improving their general knowledge about child development and preschool quality. It also increased the amount of time parents spent on developmentally appropriate activities with their kids and improved their “teaching style” (i.e., the way they interacted with their children in the context of teaching a new task).
- Analysis suggests that the change in parenting behavior explains about a third of the effect of the program on socio-emotional development. It does not explain any of the effect on cognitive development or health.
- While change in parental behavior appears to be an important pathway for improvements in socio-emotional development, attending a preschool implementing the Lively Minds program is a key pathway for impacts on children’s health and cognitive skills, likely through participation in the play schemes.
- The results highlight both that improvements in the home environment are critical for improving children’s socio-emotional development and that significant gains in children’s cognitive development can be achieved through improvements in preschool quality.

### Program Impacts on Cognitive Domains



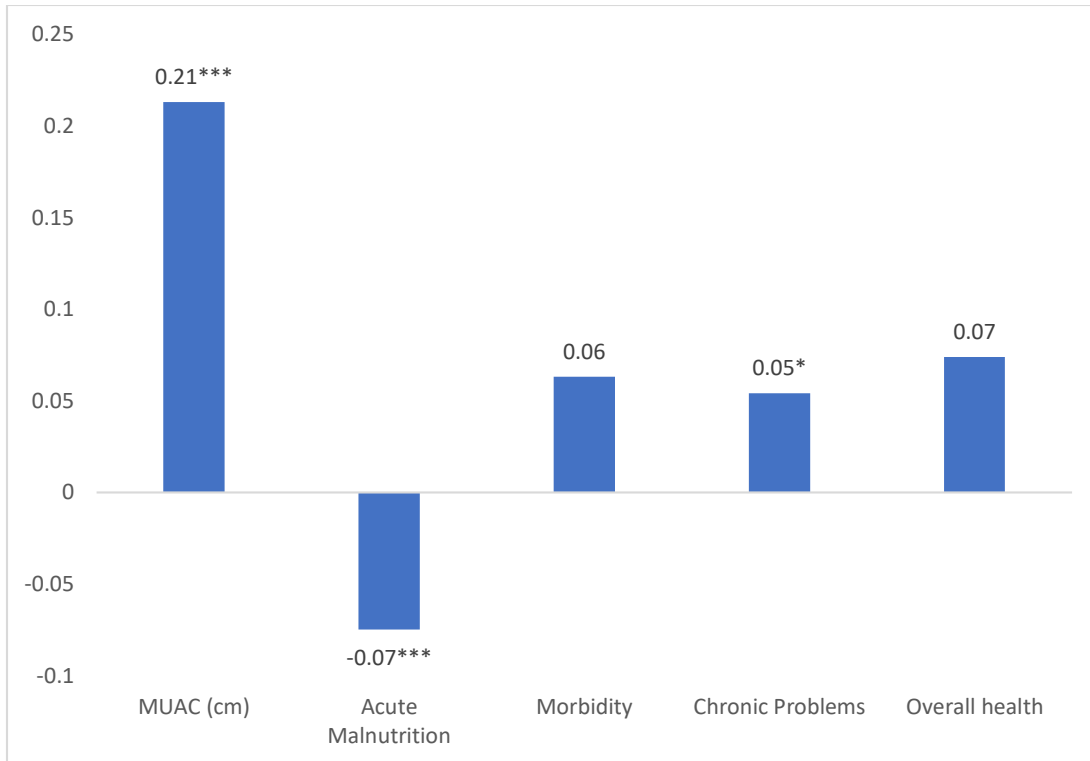
\*, \*\* and \*\*\* report 10%, 5% and 1% levels of statistical significance, respectively.

### Program Impacts on Socio-Emotional Domains



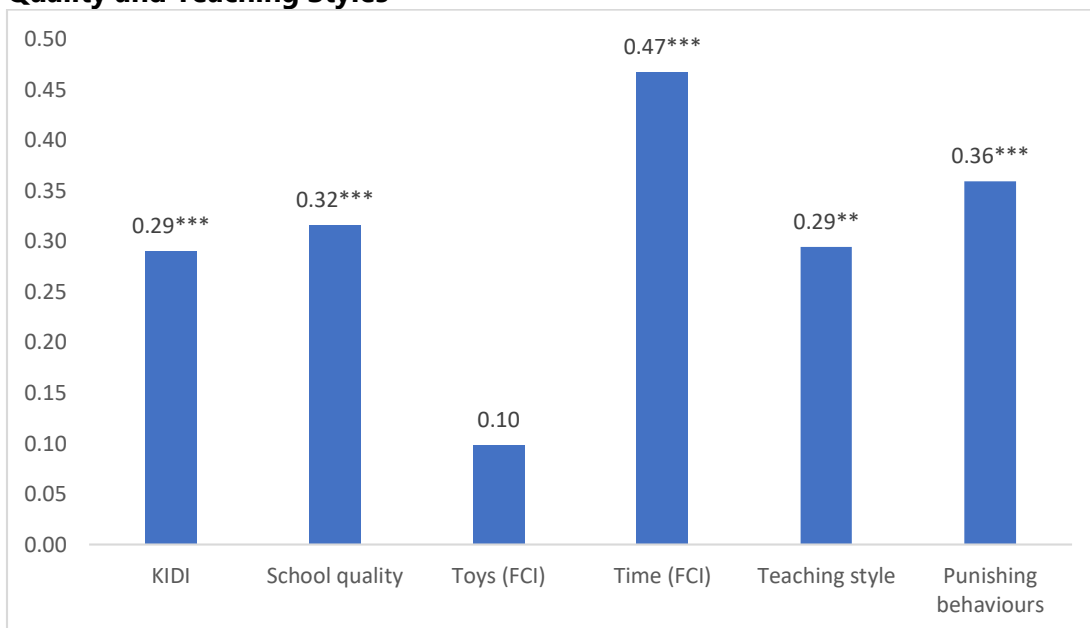
\*, \*\* and \*\*\* report 10%, 5% and 1% levels of statistical significance, respectively.

### Program Impacts on Health



\*, \*\* and \*\*\* report 10%, 5% and 1% levels of statistical significance, respectively.

### Program Impacts on Volunteer Mothers' Knowledge of Child Development, Pre-school Quality and Teaching Styles



\*, \*\* and \*\*\* report 10%, 5% and 1% levels of statistical significance, respectively. KIDI: Knowledge of Infant Development Inventory.

### Cost-Effectiveness:

The Lively Minds program was designed to be affordable and scalable. The average total costs per child and mother in the 40 treatment schools during the evaluation period were approximately US\$37 and \$150 respectively. Overall, the program was **cost-effective in increasing cognitive skills, leading to 1.7-2.5 additional years of schooling per US\$100 spent.**<sup>23</sup>

It is likely the program would be less expensive to implement at scale. According to calculations by *Lively Minds*, the cost per child over a three-year implementation period across 257 schools was US\$19 per child. Whether similar impacts would persist at scale is unclear, however, and would require further evaluation.

## Conclusion

Overall, the findings suggest that the Lively Minds program is an effective and potentially scalable way to improve children's cognitive and socio-emotional development and health, which constitute critical components of school readiness. The positive effects on cognitive development are particularly strong for children living in the most socio-economically deprived households, while the effects within the socio-emotional domain are driven primarily by improvement in the behavior of boys.

Unlike many early childhood education programs, the program was not administered by highly trained professionals, suggesting that it is possible to improve child development in overburdened school systems by involving parents. The evaluation provides novel evidence that "hybrid" programs that simultaneously target the home and preschool environments through parents can be effective at improving child development, as well as knowledge and practices of parents. The findings show that participating parents' knowledge and child-related practices improved significantly as the result of the program and that these changes were an important mechanism for improvements in children's socio-emotional development. On the other hand, all children attending participating preschools experienced improvements in cognitive development and health, irrespective of whether their mothers participated in the program.

One key take-away is that the home environment remains a critical input for the development of preschool-aged children. Policies and programs that target only the preschool environment may be overlooking an important pathway to improving children's school readiness. The results suggest that if, for example, teaching assistants led the play schemes instead of volunteer mothers, the program may continue to have positive impacts on cognitive development and health, but may be less effective in improving socio-emotional skills.



The success of the program also demonstrates that it is possible to implement meaningful improvements in child outcomes through relatively low intensity, low-cost programs implemented using existing government systems. A critical priority was ensuring that the intervention was delivered within existing government systems to facilitate sustainability and pathways to scale. As a growing number of low- and middle-income countries are rolling out universal access to preschool but struggle to ensure adequate quality of education, it also provides an example of a program successfully implemented in a remote, rural setting.

*This Research Project has been carried out as a collaboration between the Institute for Fiscal Studies (IFS) and Innovations for Poverty Action (IPA).*

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<sup>1</sup> Ghana Statistical Service, Ghana Health Service, and ICF International. 2015. "Ghana Demographic and Health Survey 2014." <https://dhsprogram.com/pubs/pdf/fr307/fr307.pdf>

<sup>2</sup> Cost effectiveness analysis (CEA) conducted by IPA according to the methodology found in Dhaliwal, I., Duflo, E., Glennerster, R., and Tulloch, C. 2012. "Comparative Cost-Effectiveness Analysis to Inform Policy in Developing Countries: A General Framework with Applications for Education." Abdul Latif Jameel Poverty Action Lab (J-PAL), MIT. CEA does not include opportunity costs of time spent by mothers or teachers on the Lively Minds program.

<sup>3</sup> Additional years of schooling calculated using methodology found in Evans, David K. and Fei Yuan. 2018. "Equivalent Years of Schooling: A Metric to Communicate Learning Gains in Concrete Terms." World Bank Policy Research Working Paper 8752.