



Mass Communication for Education

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RECOMMENDED

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Ambitious Impact (AIM) exists to increase the number and quality of effective charities improving human and animal well-being worldwide. We strive to achieve this goal through our rigorous research process and our Incubator Program, which connects talented individuals with high-impact ideas.

Our **Charity Entrepreneurship Incubation Program** provides potential entrepreneurs with two months of cost-covered, intensive training designed by founders for founders, along with ongoing support. Our researchers identify evidence-based, high-impact interventions and guide founders in finding co-founders to launch and scale these ideas.

Note to readers: Our research is designed for AIM decision-makers and Charity Entrepreneurship Incubation Program participants. It aims to identify the best ideas for our programs. Consequently, reports on those not recommended for incubation can often be less polished.

For questions about the content of this research, please contact Morgan Fairless at morgan@charityentrepreneurship.com.

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Changelog

December 2025

- Wrote updates to our crucial considerations to reflect our most recent views on the idea.

- Section 1: major changes to the framing of the idea to more narrowly focus on the key claim that parents' misunderstandings or incomplete beliefs can shape educational choices and attainment.
- Section 2: major changes to re-work the theory of change (ToC) utilizing a new [tool](#) and focusing more narrowly on our preferred mechanism of engaging parents.
- Section 3: major changes to focus the review on the causal evidence on information provision, added meta-analysis forest plots and migrated summary tables to the annex. We also discussed additional evidence published since our report came out, or that we had missed initially.
- Section 4: Added reference to an additional interview conducted recently.
- Section 5: minor changes to reflect focus on mobile phones and add for-profit providers as relevant players.
- Section 7: minor changes to include a description of what we envision it will be like to work on this idea, and adjustments to our views on implementation factors based on the narrower ToC.

Using Mass Communication to Improve Learning Outcomes / Summary

Description

A nonprofit organization that leverages mobile messaging to engage parents in their child's education to generate a more supportive learning environment for children. The messaging intervention aims to be a low-cost way to improve both attendance and learning outcomes.

Counterfactual impact

Cost-effectiveness analysis: We modeled an SMS-based intervention targeting grades five and six in South Africa and estimated the number of students it would need to reach to meet AIM's cost-effectiveness bar of \$30 (USD) per income doubling.¹ In our conservative model (assuming a 10% income increase from a one standard deviation (SD) improvement in test scores), the intervention would need to reach approximately 58,000 students per year at scale. In an optimistic model (assuming a 40% income increase from a one standard deviation improvement in test scores), it would need to reach approximately 8,700 students per year at scale. For context, this represents roughly 2.0% (conservative) or 0.3% (optimistic) of South Africa's 10–12-year-old students (see [here](#)).

Scale this charity could reach: Because this intervention primarily relies on SMS or mobile messaging, which are inexpensive per individual reached, we believe its potential scale is comparable to other nonprofits we have incubated, such as [Family Empowerment Media](#) (FEM).

Potential for success

Robustness of evidence: This intervention design has been evaluated many times with generally positive findings—however, it is less studied as a mobile

¹ *Income doubling* refers to the intervention's estimated ability to increase a student's lifetime earnings by an amount equivalent to twice what they would have earned in a single year without the intervention (based on projected career earnings and adjusted for present value). To meet AIM's cost-effectiveness requirements, for every \$30 spent, the intervention should generate additional lifetime earnings equal to at least one extra year of doubled income.

intervention. It is endorsed by the Global Education Evidence Advisory Panel's 2023 Cost-effective Approaches to Improve Global Learning Report ([GEEAP, 2023](#)). More recently, researchers from the Centre for Global Development published a meta-analysis on the effects of providing information on the returns to education to parents and students, finding positive and significant average impacts on school participation and student learning ([Evans & Acosta, 2024](#); see [here](#)).

Theory of Change (ToC): The ToC behind this intervention is that providing persuasive and informative messaging on education can lead to increased caregiver and student engagement, resulting in higher attendance and improved learning outcomes. The specific content and mechanism of a new nonprofit's intervention will depend on contextual factors (see [here](#)).

Neglectedness

Neglectedness: We identified one organization that works in this area as a for-profit focused on tertiary education in Brazil (see [here](#)). Our understanding of the field leads us to believe that this intervention is popular but lacks implementers delivering at scale, mostly remaining as an evaluative pilot or delivered sporadically through government programs.

Geographic assessment: Our geographic assessment suggests that several countries would be strong candidates for an intervention. We are confident that a new nonprofit could identify countries where its work would be additional (see [here](#)).

Relevance

Fit for the CEIP: Our best guess is that this idea fits the typical CEIP participant profile since it does not require specialized expertise, has historically been attractive to participants, and is well-supported by the international education and development community. However, the founding team must be comfortable with an intervention that depends on large-scale implementation for cost-effectiveness and has weak [feedback loops](#).

Other

Expert views: We spoke with Guilherme Lichand, who founded a nonprofit that initially used SMS delivery before pivoting to work in tertiary education, and Guthrie Gray-Lobe, who was involved in one of the studies we rely on for this report. Both experts were generally positive about SMS interventions as part of a wider package of support to education. Other experts we briefly consulted were also generally supportive but expressed reservations about radio delivery (see [here](#)).

Implementation factors: Overall, we see this intervention as similar to others being tested or delivered by past cohorts, including [FEM](#), [No Violence at Home](#), [Learning Alliance](#), [Notify Health](#), and [Suvita](#). We did not identify any major concerns, such as risks of harm or lack of funding. However, our main concern is the challenge of measuring impact. Given that the expected effect on student test scores is likely to be small, any impact evaluation would require a large sample size to detect significant effects. Monitoring intermediate outcomes, such as attendance and drop-out rates, may be more feasible (see [here](#)).

Using Mass Communication to Improve Learning Outcomes / Crucial considerations

What should the ToC for this intervention be?

2025 Update: Our ToC section has been narrowed down to parental engagement, which we think is the most promising avenue in terms of evidence and cost-effectiveness. A new implementation team will need to make considered decisions about the messaging content and level of partnership with schools.

We believe that SMS delivery is both cost-effective—allowing information to be delivered cheaply and at scale—and backed by some evidence of its effectiveness. This makes it the most promising option for founders to explore. We think salience plays a key role in the effectiveness of these messages but suspect there is a significant improvement when messages are personalized. SMS messaging would allow a nonprofit to share general information on the benefits of education and ways to support children's learning without requiring detailed data beyond phone numbers. However, the intervention could still be targeted—for example, by sending messages to students in specific schools or year groups at higher risk of dropping out or facing learning challenges (see discussions of "foot-in-the-door" strategies in our [expert](#) interview).

Is the evidence supporting this intervention robust?

2025 Update: Since publication we have identified more evidence that has generally positive results for the rationale of the intervention. While we still have concerns around social and behavioral change evidence, publication bias and think this intervention still requires careful testing and monitoring and evaluation, we no longer view this as particularly different to other ideas in our incubation portfolio.

Although this intervention is well-studied and supported by key stakeholders, there is significant variation in messaging content and delivery methods, making it difficult to determine the most effective ToC.

Overall, we find the evidence convincing that different types of information, delivered through different media, can influence behavior to improve educational outcomes. However, in line with our previous research on social and behavioral change interventions and mass media efforts, we recognize that these approaches carry some uncertainty and risk. The success of communication-based interventions depends largely on thoughtful design and careful adaptation to ensure relevance and usefulness. Desk research alone can only provide limited insight into an intervention's potential effectiveness in isolation. If we decide to incubate this idea, the founding team should be keenly aware of these uncertainties and the requirement for careful ongoing testing.

At the time of writing, we had limited expert consultations—does this warrant pausing our recommendation?

2025 Update: Since publication, we have continued to engage experts on this topic and added one formal interview to the report. We no longer believe this is a concern for the idea.

We were unfortunately unable to have extensive conversations with experts for this report—we conducted one interview and exchanged some emails with two experts. For most of our ideas, expert consultations are a key step in validating our assumptions and concerns.

Given the strong support for this intervention within the education and development sector, we are not particularly concerned about lack of expert endorsements through our direct conversations. We think conversations with experts would add intervention design nuances to our recommendation, but suspect that the overall recommendation decision will likely not rely on expert inputs as much as it would if it was an untested or unsupported idea.

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1 Background

Ambitious Impact (AIM) exists to increase the number and quality of effective nonprofits working to improve human and animal wellbeing. AIM connects talented individuals with high-impact ideas by providing potential entrepreneurs with intensive training and ongoing support to launch and scale these ideas. Our research team focuses on finding impactful opportunities.²

As part of our 2024 research agenda, we reviewed income- and growth-generating ideas. In that context, we researched using mass communication to improve learning outcomes. This report provides an overview of our findings.

In Q4 2025, we carried out a review of this report and made updates. We decided to do so given feedback from participants in the Charity Entrepreneurship Incubation Program (CEIP). The changelog on [page one](#) details the changes.

1.1 Addressing misunderstandings and incomplete beliefs can shape parents' choices about education

Parental beliefs are one of the most underappreciated drivers of educational inequality in low- and middle-income countries (LMICs). Despite seeing value in education, parents sometimes hold incomplete beliefs and misunderstandings about their child's performance in school. They also often underestimate the the benefits of education and the role they can play in their child's outcomes. These beliefs are often shaped by socio-economic factors, meaning that the children who stand to benefit the most from education are often at a disadvantage (e.g., [Shen et al., 2017](#); [List et al., 2017](#); [Barrera-Orsorio et al., 2021](#); [Dizon-Ross, 2019](#)). In some contexts, schools may face incentives to avoid sharing even minimal information to parents on their child's performance (e.g., [Gray-Lobe et al., 2024](#)).³

² To read more about our approach to selecting intervention ideas for our program, please see Murár (2025).

³ "Recent policy efforts [in Kenya] seek to capitalize on parental engagement by explicitly laying out roles for caregivers as supporters of their children's education (KICD, 2019). However, these efforts have faced challenges, as many caregivers in Kenya view education as the responsibility of teachers, not parents

Parental beliefs can shape important choices, including how much parents invest in education, what schools they choose, how they shape the learning environment in the home, and the level of encouragement they give their children (e.g., [Jensen et al., 2010](#); [Attanasio & Kaufmann, 2014](#); [Barrera-Osorio et al., 2021](#); [Education Endowment Foundation, n.d.](#)).

Given the transformative nature of education, we suspect that cheap ways of reducing informational frictions for parents and correcting misinformation can have a truly outsized effect on children's learning and lives.⁴ To address knowledge and motivation barriers, an organization could partner with schools and other actors to provide parents with information on the long-term value of education, the importance of school choice, their child's performance, and strategies for academic attainment and support.

Proving information has been widely recognized as an effective and low-cost way to increase both the quantity and quality of schooling. In its 2023 report, the World Bank's Global Education Evidence Advisory Panel (GEEAP) recommended providing information on the benefits, costs, and quality of education as a "great buy" (its highest rating), alongside Teaching at the Right Level (TaRL) and structured pedagogy ([GEEAP, 2023](#)).

(Spernes, 2011; Muigai, 2018). Many parents lack time to be engaged, and they may lack the skills to be effective: Among adults aged 25 to 35, 50 percent have completed only a primary school education and 26 percent are unable to read in any language (Kenya National Bureau of Statistics, 2016)." (Gray-Lobe et al., 2024, p. 20)

⁴ We detail our views on the returns and value of education elsewhere ([Cox et al., 2024](#)).

2 Theories of change

This section provides an overview of the theory of change (ToC) for this idea.

We envision an organization that designs and runs an information system for school-parent communication, or for direct-to-parent communication, most likely through SMS or mobile messaging.⁵ The system will provide information and encouragement on how to engage in their child's education, and—when available and appropriate—notify parents of attendance, learning outcomes, and upcoming important schooling events. To be clear, the ToC we present focuses narrowly on parental engagement, other interventions in this space target schools or teachers. While we think these could be cheap additions to an established platform, we do not think these are as promising as parental engagement is.

We think that an organization working in this space should aim to test and demonstrate how to deploy this intervention and hand it over to implementers at scale (government- and private-run schools and school systems).

The ToC has many unresolved aspects, most importantly the content of the messaging and information provided. Given the heterogeneity of evidence and contextual factors, we expect the organization to be in a better position (than AIM) to decide on these matters by carrying out proper localization and contextualization.

⁵ Radio broadcasting could provide a cost-effective alternative to SMS, as it reaches a wide audience at a lower cost per person. Additionally, it would require less collaboration with public stakeholders, since it places a lower demand on collecting child- and school-specific information. That said, this approach lacks the precise targeting that SMS messaging allows.

A potential area for further exploration is the simultaneous use of both SMS and radio to deliver complementary messages in certain contexts. While combining these methods may enhance reach, it also raises concerns about information saturation, where recipients may become less responsive to repeated messaging.

Despite the scalability and cost advantages of radio, SMS/mobile messaging remains the safer and more evidence-supported approach. SMS allows for more precise targeting, ensuring that relevant messages reach the right individuals, which may be key to maximizing impact.

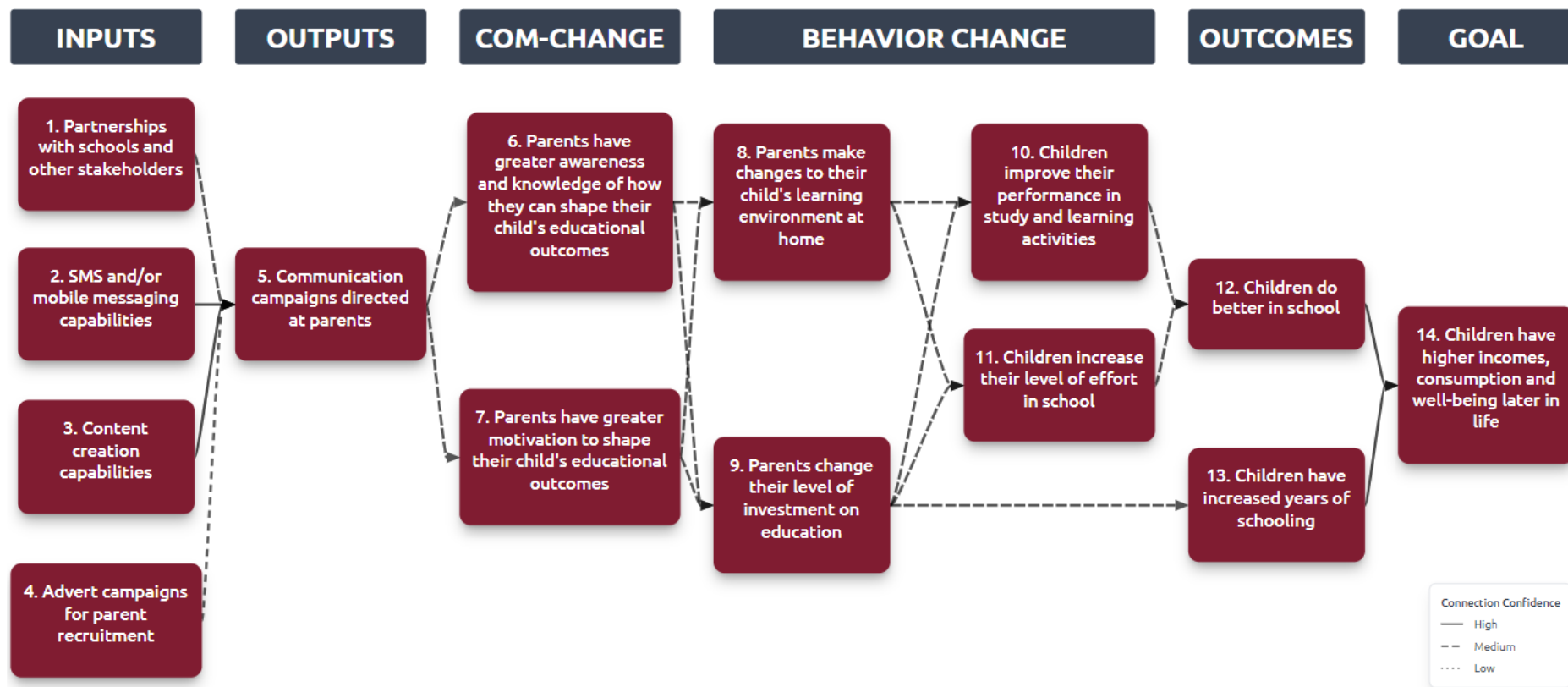


Figure 1: A theory of change for this nonprofit idea (interactive ToC with assumptions laid out [here](#)).

2.1 Assumptions and key factors supporting the ToC

The charity can collect relevant information to disseminate

Among the activities that the charity will carry out, we are most uncertain about how data collection and access will work. The availability of information will be a key factor in determining program design and location.

The organization will have different access and information needs depending on the messaging strategy selected. For instance the organization may need to make considered efforts to gather:

- personalized information (such as the child's performance in tests or attendance)
- school quality information (akin to Ofsted certification reports in the United Kingdom)
- information about the returns to education (such as the prospects of students who achieve good grades, average earnings, etc.)⁶

Naturally, the cheapest and easiest ways of delivering this intervention will involve delivering messages based on readily available data or broad messaging (i.e., the nonprofit would not collect data itself). We think this option is still viable and supported by some indicative evidence.

We are concerned that, in many low-resource settings, the status quo quality and quantity of these kinds information is limited. The organization itself may need to support digitalization in order to deliver the intervention, which may prove difficult or expensive. While accessing this information for a pilot evaluation is typically feasible, obtaining it at scale may be more challenging.

An organization disseminating any child- or school-specific information will need to work with local stakeholders – such as schools, government organizations, and

⁶ For example, calculating the returns to education in different contexts (see papers referenced in [Evans & Acosta \[2024\]](#)), or calculating school value-added ([Allende et al. 2019](#)).

other nonprofits – to access this information. We are fairly confident that a new organization would be offering a valuable service to these stakeholders with minimal additional work required on the provider's side. New nonprofits may face challenges in establishing credibility for large-scale partnerships, though AIM-incubated charities have successfully navigated this in the past.

Information alone can change parent and student behavior

This is the key crux of the ToC. If information alone is not enough to change parent and student behavior, this intervention will fail to deliver on its goals. We discuss the evidence underpinning this assumption in [section 3](#).

Student learning outcomes improve as result of the intervention

This is the main causal claim we investigate in the evidence review ([section 3](#)).

We largely rely on [Lichand et al. \(2022\)](#) and [Berlinksi et al. \(2022\)](#)—in our view, the two most relevant studies on SMS-based interventions—which found that sending weekly SMS messages to parents with information on child behavior and learning led to statistically significant test score improvements of 0.088–0.141 SDs.

A meta-analysis by [Evans and Acosta \(2024\)](#) reviewing interventions providing information on the returns to education to individuals in low- and middle-income countries found a small but positive and borderline significant average effect of information interventions on student learning of 0.05 SDs ($p\text{-value} = 0.05$).

For interventions where **caregivers and schools were given information on school performance, student learning outcomes also improved.** [Andrabi et al., 2017](#) found that providing caregivers and schools with information on child test scores and relative school quality led to an increase in average test scores by 0.11 SDs.

[de Hoyos et al., 2021](#) found that providing diagnostic feedback to schools on standardized test performance led to increased school performance by 0.28–0.38 SDs.

Children receive more years of schooling as a result of the intervention

We are fairly certain that providing information on the benefits, costs, and quality of education leads to increased educational participation. Many studies across different contexts delivering such interventions have demonstrated significant and positive effects on enrolment and attendance.

The meta-analysis of [Evans & Acosta \(2024\)](#) found a small but positive and significant average effect size of providing individuals information on the returns to schooling on schooling participation ("like enrollment at a university and choosing a particular major") of 0.02 SDs (p-value = 0.03).

We believe that an intervention of this sort could target grades where drop-out rates are highest. [Afridi et al. \(2017\)](#) specifically targeted students in grades four and five, recognizing that dropout rates in their study context increased from nearly 1% in grades one to three to 3% and 7% in grades four and five, respectively. We suspect an intervention targeting grades where attendance could drop would have a larger or longer-term effect. We also intuit that caregiver-based interventions may become less effective as students age, enter high school, and exercise more authority over their decision-making.

The findings of Dizon-Ross ([2019](#) & [2021](#)) indicate that increased information about student performance may lead to heterogeneous outcomes in terms of investment in education, depending on socio-economic status (SES). We expand on this finding in [section 3.1](#).

3 Quality of evidence

We generally believe there are returns to education and that these come from a mixture of economic and non-economic gains ([Crawford et al., 2019](#); [GiveWell, 2018](#); [Calvert, 2019](#)). Our views are articulated in greater detail in Cox et al. ([2024](#)). When modeling, we will model both a conservative case (10%) and an optimistic case (40%). We think the conservative case is likely closer to the true returns.

We focused the evidence review on the potential causal effects of fostering students' and (mostly) parents' engagement in education. This includes interventions that provide information on the value of education, motivate parents to support children and build a good learning environment, and inform parents of their child's education (homework, tests, results, etc.).

Our view is that there is promise in these approaches, despite a significantly heterogenous evidence base. Given this heterogeneity, we expect rigorous testing to be necessary to validate results on the ground.

There is relatively strong evidence that providing information on the benefits, costs, and quality of education leads to improved educational attainment. However, studies vary widely in context, message content, and the mechanism of delivery.

Some key actors conducting research on effective education interventions endorse the intervention strategy.

- The intervention was listed as one of three great buys in the Global Education Evidence Advisory Panel's 2023 Cost-effective Approaches to Improve Global Learning Report ([GEEAP, 2023](#)).
- More recently, researchers from the Centre for Global Development published a meta-analysis on the effects of providing information on the returns to education to parents and students, finding positive and significant average impacts on school participation and student learning ([Evans & Acosta, 2024](#)).

- The [Education Endowment Foundation](#) suggests that parental engagement in learning and supporting children has an average impact equivalent to four months of additional schooling. Based on a review of 124 studies, it notes parental engagement programs as well-evidenced to have an effect on learning, but flag uncertainty about the evidence for what practices are best to motivate engagement ([Education Endowment Foundation, n.d.](#)).⁷

3.1 Does engaging students and parents affect learning and participation outcomes?

Parental involvement in schooling is viewed as a common-sense enabler of student success in much of pedagogy—parental aspirations and involvement are associated with student success measures, but the bulk of the evidence is correlational and falls short of establishing a strong causal relationship ([Gorard et al., 2012](#)).

Overall, the picture that emerges from the experimental evidence is one of small effect sizes but high potential cost-effectiveness. Relative to other experimental evidence in international education, fostering student and parent engagement in schooling has smaller effect sizes ([Evans & Yuan, 2022](#)). However, the remarkably low cost and scale of mobile- or software-enabled interventions to increase engagement mean that they are among the most cost-effective in the education in development space—some observers calculating a cost-effectiveness equivalent to generating 12 extra learning-adjusted years of education per USD 100 ([Gray-Lobe et al., 2024](#)).

⁷ We did not review their claims in depth and are unsure about how this was calculated. We largely view their review of the evidence as important for tractability, but are not sure the effect size calculation is of value to us.

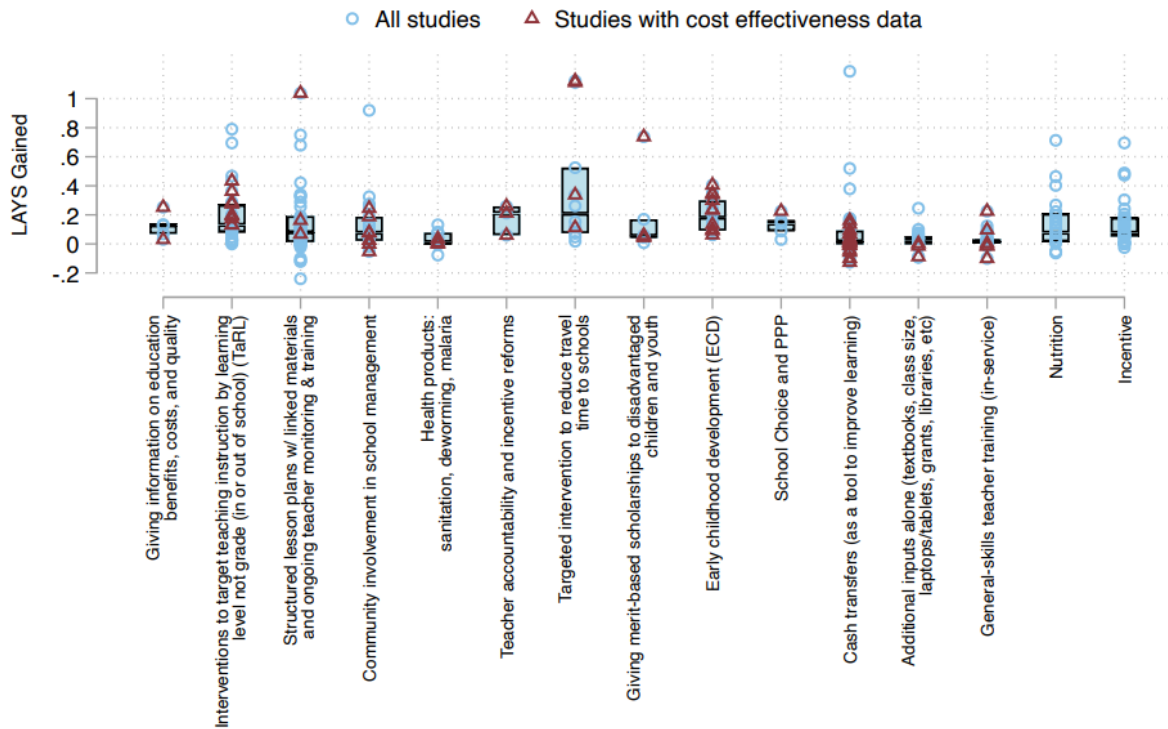


Figure 2: Comparison of average effects across different educational interventions (source: [Angrist et al., 2020, p.20](#))

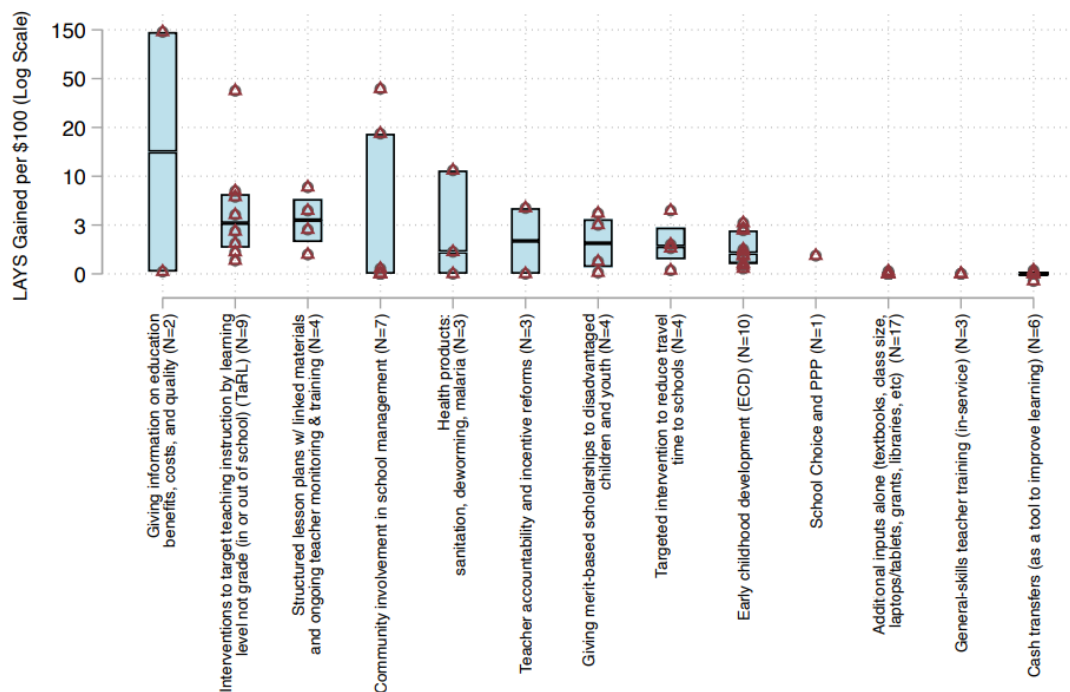


Figure 3: Comparison of learning adjusted years of education gained per USD 100 across different interventions (source: [Angrist et al., 2020, p.17](#))

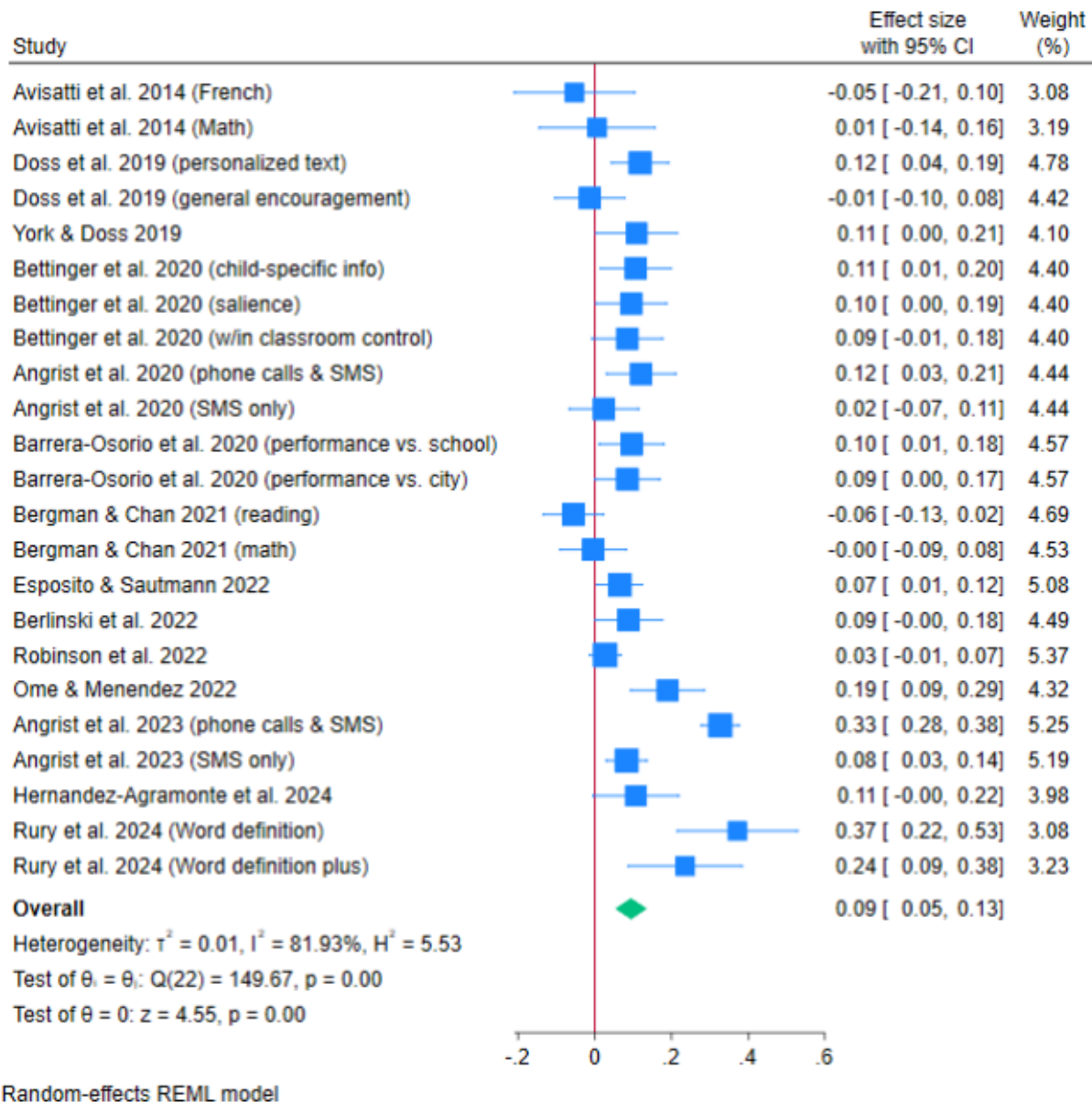


Figure 4: Forest plot for meta-analysis of experimental trials using mobile phones to encourage parents ([Gray-Lobe et al., 2024, p.35](#))

Providing information on the returns to education

Strong evidence supports providing information on the economic and human capital returns to education. High-quality experimental studies have noted short- and medium-term increases in test scores and, to a lesser extent, years of schooling.

A meta-analysis by Evans and Acosta (2024) reviewed 13 experimental or quasi-experimental studies providing information on the returns to education in low- and middle-income country contexts. The interventions in their sample covered students from grade four (primary school) until grade 12 (immediately prior to enrolling in tertiary education). There was significant variation in the delivery mechanisms utilized across interventions. Information content differed across interventions, and many interventions provided information other than just on the returns to education.⁸

The meta-analysis found very small positive and (borderline) significant average impacts on school participation (ES = 0.02^{9}; p-value = 0.03; 95% CI = 0.00 to 0.03; I^2 = 54.20%) and student learning (ES = 0.05^{9**}; p-value = 0.05; 95% CI = 0.00 to 0.11; I^2 = 95.25%).¹⁰**

Evans & Acosta (2024) reference significant variation and suggest that impacts on school participation and learning may be larger for those who initially underestimated returns compared to those who overestimated them. They also suggest that impacts on learning may be greater for comparatively less poor households.

However, they note that their sample was not large enough to determine whether student or recipient type (caregivers vs. students) influenced effect sizes.

⁸ For further information, see "Content: What is provided?" on page 3 (link to page [here](#)). "The medium of dissemination can range from in-person delivery (invited speakers, career counselors, or teachers), to technology-facilitated (phone-calls, text messages, online surveys, or emails), to interventions that use the popular media (radio stations or TV channels), to interventions that use written pamphlets or posters, or combinations of any of these (such as an implementer showing a video and then leading a class discussion). Depending on the choice of medium, information can be delivered in school settings, at home, or virtually." (p.4). See also Evans & Acosta (2024b)

⁹ Effect size (ES) measures the impact of an intervention by quantifying the difference between treatment and control groups in each study. In a meta-analysis, ES is standardized so that results from different studies can be compared on the same scale. An ES of 0.02 means that, on average, interventions increased school participation by 0.02 standard deviations compared to the control group across all studies.

¹⁰ I^2 measures how much of the variation in effect sizes across studies is due to real differences between studies rather than random chance. A lower I^2 (closer to 0%) is generally preferable when trying to generalize results, as it suggests the intervention produces similar effects across the studies included. In contrast, a higher I^2 (closer to 100%) means study results vary widely, often due to differences in interventions, populations, or settings, making generalization more difficult. In this meta-analysis, I^2 was 54.20% for school participation, indicating moderate variation between studies. However, I^2 was 95.25% for student learning, suggesting that the intervention's impact on learning depends heavily on context, making it harder to draw broad conclusions about its effectiveness.

Panel A: Clustered by study

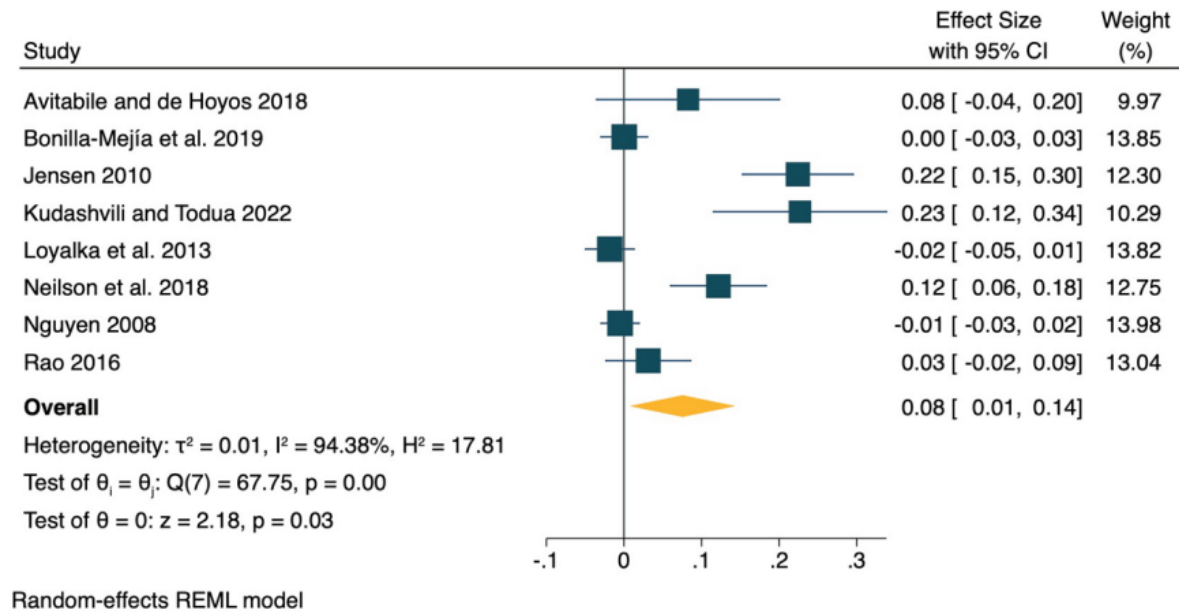


Figure 5: Meta-analysis forest plot on effects on beliefs and perceptions (higher = more accurate; source: [Evans & Acosta, 2024, p.24](#))

Panel A: Clustered by study

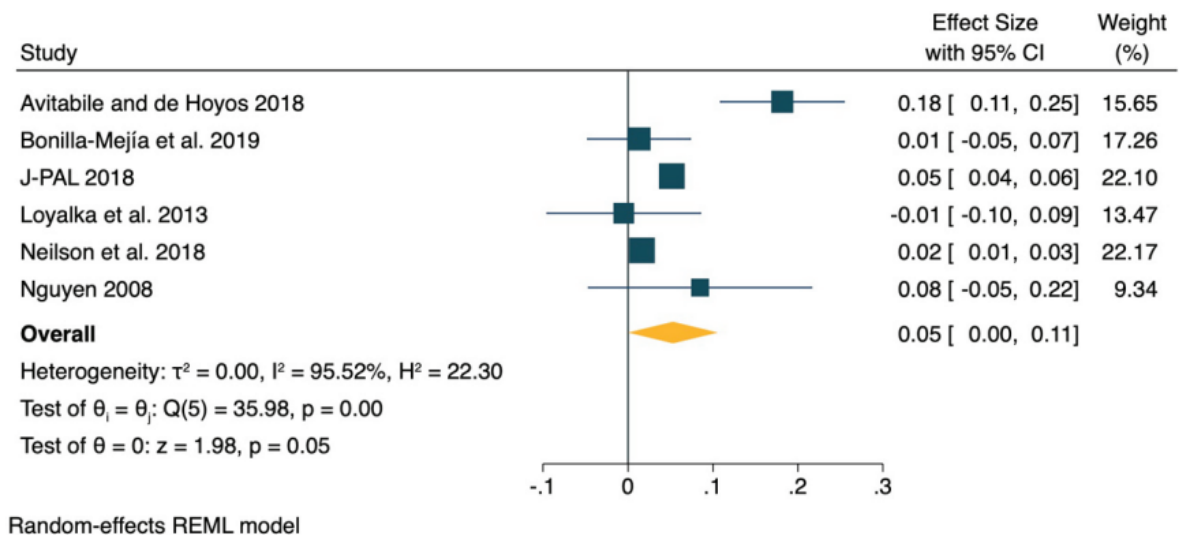


Figure 6: Meta-analysis forest plot on effects on learning outcomes (source: [Evans & Acosta, 2024, p.29](#))

Information about student effort and learning

Moderate to strong evidence supports providing caregivers with information on their child's learning to improve educational attainment. High-quality randomized studies by [Lichand et al. \(2022\)](#), [Berlinksi et al. \(2022\)](#), Bergman and Chan ([2017](#)), and Gray-Lobe et al. ([2024](#)) found positive and significant results of their interventions on test scores (0.07–0.141 SDs) and school participation (1.1–2.9 p.p.). Gray-Lobe et al. ([2024](#)) found increased exit rates from school, which, given high school participation rates in the study location, suggested transfers to other schools among higher-quality students. We also note other smaller studies suggesting similar small but statistically significant effects ([Miller et al., 2017](#); [York & Loeb, 2018](#); [Kraft & Rogers, 2014](#); [Bergman, 2015](#)).

[Lichand et al. \(2022\)](#) randomly assigned ninth-grade students in São Paulo, Brazil, to one of three treatment groups—salience, individual information, or relative information—or to a control group across five subsamples.^{11,12} The intervention included 19,253 students, with 7,817 in control groups, across 934 classes and 287 schools. The authors found that weekly text messages to parents—whether emphasizing child-specific information (updates on the student's own behavior), relative information (comparisons to classmates), or salience (the importance of attendance and homework) had significant positive impacts on student outcomes. These included improvements in attendance (0.021***; 0.022***; 0.021*** p.p.), test scores (0.097**; 0.141**; 0.095** SD), and grade promotion rates (0.029**; 0.017; 0.032*** p.p.).^{13,14}

[Berlinksi et al. \(2022\)](#) found similar, albeit smaller and less significant, results (significant only at the 10% LOS¹⁵), of weekly text messages sent to parents on their child's attendance, grades, and behavior.

This study's main experimental sample included 1,000 children in the last five grades of primary school in seven low-income schools in a metropolitan area in Chile. Test scores increased by 0.088* SDs, and attendance increased by 0.011**

¹¹ The figure in Section 3.2.2 on page 13 serves as a good visual aid of sample size (link to page [here](#)).

¹² Descriptions of each treatment group can be found on pages 10 and 11 (link to page 10 [here](#)).

¹³ p.p. = percentage points.

¹⁴ Results taken from Table 7 on page 56 (link to page [here](#)). *p<0.1, **p<0.05, and ***p<0.01.

¹⁵ LOS = level of significance, the threshold at which results are considered statistically significant.

percentage points, though larger effects were found for students at higher initial risk of grade retention and dropout.

Miller et al. ([2017](#)) experimentally tested sending messages to “parents about dates of upcoming tests, whether homework was submitted on time, and what their children were learning at school.” (p.2) across 36 schools in the UK (n=15,697). Messages were found to have a very small and statistically significant effect on maths and science scores. The study suffered from some differential attrition and missing pre-intervention data, elevating risk of bias.

The findings of Dizon-Ross ([2019](#) & [2021](#)) indicate that **increased information about student performance may lead to heterogeneous outcomes in terms of investment in education, depending on socio-economic status (SES).**

[Dizon-Ross' 2019](#) study in Malawi found that many caregivers had inaccurate beliefs about their children's school performance, and made decisions around how much to invest in their education based on those beliefs. [Dizon-Ross 2021](#) found that caregivers generally invested into more years of schooling and better attendance for higher-performing students, but that how they adjusted spending and attendance differed by SES. Higher-SES caregivers invested more in higher-performing students, whereas lower-SES caregivers invested more in lower-performing students.

However, this was in a low-income setting, unlike the contexts where we would recommend a charity operate (see the [geographic assessment section](#) for more details). We think that founders of this charity should be careful to analyze how parents' response to educational information may differ across socio-economic lines and ability levels, rather than focusing only on average effects.

In total, we identified six papers (two examining the same intervention). We are also aware of two more ongoing experiments with results expected in the future and suggest that founders monitor these closely. Additionally, [Piper and Korda \(2010\)](#) may be of interest to the founding team, though we deprioritized reviewing it due to the complexity of its intervention.

Table A1 in the [annex](#) summarizes the identified papers' results.

Evidence on general information and salience effects

We believe there is positive—but mixed—evidence to support that learning outcomes can be improved by general information that is not child- or school-specific.

[Lichand et al. \(2022\)](#) found that most of the effects of its intervention in Brazil were driven by salience, as messages with only general information improved outcomes by between 0.89 and 1.26 times as much as messages with child-specific information.

As articulated in an earlier section on SMS-delivered interventions, weekly text messages to parents containing only general information improved attendance by 2.1 percentage points (significant at the 1% LOS), test scores by 0.095 SDs (significant at the 5% LOS), and grade promotion rates by 3.2 p.p. (significant at the 1% LOS).

Gray-Lobe et al. (2024) found that non-personalized SMS outreach to parents focused on encouraging a growth mindset towards education led to a 0.07 SD increase in test scores. Their analysis indicated that the act of outreach itself was more important than the content of messages.

Other work conducted in Brazil by Lichand and co-authors ([Lichand et al. 2024](#); [Lichand & Christen 2021](#)) found positive results, with non-personalized motivational messages sent to students reducing learning losses (meaningful but insignificant, noting this study was underpowered) and stemming rises in dropout rates by 26% (significant at the 10% LOS) during the COVID-19 pandemic.

However, results have been less favorable amongst similarly delivered studies in poorer contexts. [Lichand & Wolf \(2023\)](#) found meaningful but statistically non-significant impacts of nudging parents on learning ($d = 0.081$, $p = 0.158$) in rural Côte d'Ivoire (though the study's statistical power was low). [Wolf & Aurino \(2023\)](#) found no average effect on child-caregiver engagement, with some heterogeneity, of nudges sent to Ghanaian caregivers following schools reopening in 2021 (further results on child learning are forthcoming). In partnership with GiveDirectly, [Chibwana et al. \(2023\)](#) found no impacts of SMS-based nudges sent to parents of cash transfer recipients in rural Malawi, though with the findings

deemed inconclusive given substantial spillovers between treatment and control groups.

Many of the studies observed in our research for this report also included general information on caregiver encouragement and the importance of education.

However, this was provided alongside specific information, making the disentanglement of attribution difficult.

Evidence on school and university quality and costs¹⁶

We believe there is moderate to strong evidence that providing information to households on relative school quality can lead to increased educational attainment. However, these effects are highly context-dependent and are most consistent where households are not resource-constrained concerning school choice.

Competition in the market for schooling appears to be important for interventions encouraging schools to increase their quality and for those encouraging parents to enroll their children in higher-quality institutions (e.g., [Gray-Lobe et al., 2024](#)). This makes some intuitive sense given that one would require a certain flexibility of choice to be able to move a child from a worse- to a better-performing school. [Afridi et al. \(2017\)](#) found no significant impacts on students attending public schools, though other papers found significant effects extended to public schools.

Several interventions have targeted parents of children on the cusp of advancement from one level of schooling to another (e.g., from primary to high school). For example, [Allende et al. \(2019\)](#) reported effects for parents who had already enrolled their children in primary school and for parents who had not, finding significant positive results for the latter but not the former.

[Andrabi et al., 2017](#) found that providing caregivers and schools with information on child test scores and relative school quality led to an increase in average test scores by 0.11 SDs.

¹⁶ Note: In this section, we do not include studies from [Evans & Acosta's \(2024\) meta-analysis](#), as they were already covered in an earlier section.

Interventions that provided information to schools alone were less consistent in improving outcomes. [Muralidharan & Sundararaman \(2010\)](#) found no effect of providing feedback to Indian teachers on learning outcomes, and [Afridi et al. \(2017\)](#) found no significant improvements in test scores where Indian schools alone were informed of their relative positions. However, [de Hoyos et al. \(2021\)](#) found large effect sizes (0.28-0.38 SDs) in an intervention that provided diagnostic feedback on student test scores to Argentinian primary schools.

[Allende et al. \(2019\)](#) provided 1,832 caregivers across 133 Chilean preschools with a report card on the quality of local schools and showed them a video emphasizing the returns to schooling and the importance of choosing quality schools for their children.

It found that treated parents shifted their choices toward higher-quality and more costly schools, investing more in their children's education. For students who were not already enrolled in primary schools before the intervention, fourth-grade test (five years after treatment) scores were 0.216** and 0.221*** SDs higher than the control group.

Importantly for our research question, it found that treated families—whose children were not yet enrolled before the intervention—were between 15.9 and 17.2 % less likely to enroll their children in a school detailed on the provided report card (both significant at the 1% LOS). As articulated in the paper:

"The results are consistent with the idea that the more salient feature of the treatment was to increase search and awareness of the importance of school quality and not to focus on specific design features of the report card. If anything, this suggests the video and salience of the choice seemed to be the more likely channels through which the intervention affected choices."

Table A2 in the [annex](#) summarizes paper results.

3.2 Evidence on the effectiveness of mobile phone delivery mechanisms

We believe that reaching people through their mobile phones is likely to be among the most cost-effective delivery mechanisms. Potentially, the organization could also design and test AI-enabled chatbots or tools for the delivery and scaling of the intervention.

Several high-quality and large-scale studies across different geographies have demonstrated feasibility and impact (albeit in small magnitude), including [Lichand et al. \(2022\)](#), [Berlinksi et al. \(2022\)](#), and Gray-Lobe et al. (2024) (the three most applicable studies to our preferred ToC). These studies, among others, found that sending SMS messages to parents with information on child behavior and learning led to statistically significant test score improvements of ~0.07–0.14 SDs.

We think that even minimal personalization probably may affect how receptive and encouraged recipients feel. We identified five additional studies that examined the impact of SMS-delivered, non-personalized information intended to improve educational attainment.

[Lichand and Wolf \(2023\)](#) found meaningful but statistically non-significant impacts (noting the study was underpowered, meaning it had too small a sample size to detect a statistically significant effect) of providing parents with general information/salience on the returns to education (ES = 0.081 SD, $p = 0.158$) in rural Côte d'Ivoire.

[Wolf and Aurino \(2023\)](#) found no average effect on child-caregiver engagement, with some heterogeneity in different groups, of nudges sent to Ghanaian caregivers following the reopening of schools in 2021 (further results on child learning are forthcoming).

[Lichand et al. \(2024\)](#) and [Lichand and Christen \(2021\)](#) found that motivational messages sent to students about the returns to education reduced learning losses (meaningful but insignificant, noting this study was underpowered) and lowered dropout risk by approximately 26% compared to the control group (significant at the 10% LOS) in the State of Goiás, Brazil during the COVID-19 pandemic.

In partnership with GiveDirectly, [Chibwana et al. \(2023\)](#) evaluated SMS-based nudges aimed at improving parental engagement among cash transfer recipients in rural Malawi. The study found no clear effects on parental engagement or school attendance, though the results were inconclusive due to substantial spillovers between the treatment and control groups.

4 Expert views

Guilherme Lichand (GL)

Assistant Professor of Education at Stanford University and co-Director at the Stanford Lemann Center. Advisory board member for Movva (and co-founder).

GL supports implementing SMS interventions to enhance caregiver engagement and child learning but acknowledges that these interventions are unlikely to be transformative and that their effects will likely fade after SMS messages are discontinued.

He believes that SEL and growth mindset messaging that increases the salience of education can be a complement to the ordinary curriculum. Increasing the salience of education can lead parents to engage more in educational choices and support their children.

GL noted that there are challenges in accessing information, but he believes that there is no need for personalization, as his research has shown that the important aspect of the intervention was salience and pushing parents to be engaged. GL noted that SMS did as good a job as audio in his research. Anecdotally, where parents didn't understand the SMS messages, they went to the school to inquire further.

He did note that it is important not to overburden teachers, especially in rural settings where teachers are generally not motivated.

Finally, GL noted that reaching scale has been challenging in resource-constrained contexts. In Côte d'Ivoire, for instance, SMSs turned out to be expensive, and cost became a significant barrier to scale. Despite interest from government, progress has been stuck given logistical constraints (especially in enrolment) and negotiations with telecommunication providers.

Guthrie Gray-Lobe (GGL)

Full conversation notes are available to AIM staff and program participants. In summary, the conversation with GGL lent extra support to the intervention and evidence base, while adding caution around potential for publication bias given

how cheap these types of studies can be to run. GGL thinks that to a much larger experimental study could help settle the evidence base for this intervention. GGL noted that personalization may not be needed to generate good results, potentially distract from the growth mindset the messaging should be trying to instil, and reduce cost-effectiveness.

5 Geographic assessment

5.1 Where existing organizations work

We are aware of one organization, [Movva](#), which supported and may still support interventions similar to those proposed in this report.

Movva

From the [Jacobs Foundation](#) (likely published in 2021):

"[Movva](#) is a global edtech that sends weekly reminders and encouragement messages (also known as 'nudges') directly to caregivers' cell phones to engage them in their children's school life. All content is non-curricular, entirely aimed at bringing children and parents closer together, discouraging child labor and violence against children, and making education top-of-mind, despite the impending pressures of poverty-induced financial worries".

To our knowledge, **Movva has supported interventions across Brazil** ([Lichand et al. 2024](#); [Lichand et al. 2022](#); [Lichand & Christen. 2021](#)), **Côte d'Ivoire** ([Wolf & Lichand. 2023](#)), **Ghana** ([Wolf & Aurino. 2023](#)), **Guatemala**, **Honduras**, and **Malawi** ([Chibwana et al. 2023](#)).

Results from Movva-powered interventions **have been positive in Brazil** (across three papers), **mixed in Côte d'Ivoire**, **ineffectual** (based on preliminary results) **in Ghana**, and **inconclusive** (based on substantial spillovers between treatment and control groups) **in Malawi**.

We believe that Movva operates in Brazil as a commercial provider with a social purpose, serving tertiary education institutions. The above interventions were carried out between 2016 and 2023. Movva currently appears to be exclusively focused on reducing dropout rates in higher education through commercial partnerships with Brazilian universities.

We became aware of Movva—and all papers referencing it except [Lichand et al. \(2022\)](#)—late in our research process and, as a result, have not interviewed any employees.

Other

School Information Management System and Teacher-Parent communication services could already be providing a good service to schools, or may become partners where the organization can work to expand and adapt their services to lower-resource settings. Some organizations that collect student learning data, such as [ASER Centre](#), [Twaweza](#), and [Bridge International Academies](#) (partners in Gray-Lobe et al., 2024) may also be valuable to engage with.

5.2 Geographic assessment

In our [geographic assessment](#), we included indexes and data that provide proxies for the scale, neglectedness, and tractability of the intervention in different countries.

We consider this a rudimentary geographic assessment that provides a rough indication of the most promising countries.

Scale

- **0–14 population:** a proxy for the number of students in a country
- **Expected years of schooling for a child:** capturing the length of schooling a child is expected to receive¹⁷
- **Harmonized Test Score:** a measure of the quality of student learning¹⁸

Neglectedness

- **Gross domestic product (GDP) per capita (PPP-adjusted)**

¹⁷ "Expected years of schooling is the number of years a child of school entrance age is expected to spend at school, or university, including years spent on repetition. It is the sum of the age-specific enrolment ratios for primary, secondary, post-secondary non-tertiary and tertiary education." – [World Bank Group, 2024](#).

¹⁸ "Harmonized test scores from major international student achievement testing programs. They are measured in TIMSS-equivalent units [Trends in International Mathematics and Science Study], where 300 is minimal attainment and 625 is advanced attainment." – [World Bank Group, 2024](#)

Tractability

- **Fragile States Index (2024)**
- **Freedom in the World (2024)**
- **Elite consultation (2024)**
- **Public education spending as a percentage of GDP:** a proxy of a government's expected willingness to partner, and the quality of existing education information available to disseminate
- **Public education spending as a percentage of government spending:** as above
- **Cellphone access:** mobile phone subscriptions per 100 people
- **Mobile phone ownership:** proportion of individuals who own a mobile telephone
- **Teachers per thousand students under 15:** a proxy for the number of schools in a country

Countries were discarded for safety reasons if they were rated as *"Do not travel"* by the Australian Government's [Smartraveller](#).

Together, these indexes generate a weighted average score to assess the potential of target countries. Based on our models, the ten most promising countries are:

Table 3: Most promising countries—weighted factor model for SMS

Country	Score
South Africa	0.639
Ghana	0.503
Morocco	0.471
Philippines	0.456
Brazil	0.417
Argentina	0.393
Nigeria	0.351
Chile	0.350
Côte d'Ivoire	0.333
Indonesia	0.324

Some countries in this list will likely not be viable candidates due to narrower contextual reasons, wider safety concerns, or the desired potential scale.

Founders should also consider the history of interventions and evaluations in that location. For example, [Wolf & Aurino \(2023\)](#) found that an SMS-delivered intervention nudging parents in Ghana to engage more in their children's education was ineffective.

Other considerations

Where interventions are delivering information on school quality, we expect effect sizes to be larger where individuals:

- are considering, or are about to consider, enrolling themselves (e.g., in grades 10-12 for university) or their children (e.g., in the later years of primary school) at an institution,
- have access to a competitive schooling market (i.e., there are many [preferably private] schooling options available to them),
- receive information on relative, not just absolute, school quality, and
- have resources such that they can invest in education for their children.

We also believe that the proposed interventions may be most effective in lower-middle-income countries or in relatively less poor regions of low-income countries. Dizon-Ross ([2019](#) & [2021](#)) found that providing parents in Malawi—a least developed country (LDC) as defined by the World Bank, where annual household income was around \$663—with information on their child's learning led some to reduce their investment in education. In higher-income settings, where households have more resources for education and keeping a child in school instead of working is less of a financial burden, this is likely to be less of an issue. However, in poorer contexts, these negative effects may be mitigated by providing additional information on the returns to education.

Similarly, behavioral nudges delivered via SMS have shown positive results in three studies from Brazil ([Lichand et al., 2024](#); [Lichand et al., 2022](#); [Lichand & Christen, 2021](#))—an upper-middle income country—but have been less effective in

lower-income contexts such as Côte d'Ivoire ([Lichand & Wolf, 2023](#)), Ghana ([Wolf & Aurino, 2023](#)), and Malawi ([Chibwana et al., 2023](#)).

6 Cost-effectiveness analysis

Our initial expectation was that this intervention was very likely to surpass our bar for recommendation. This was based on several factors, most notably extensive cost-effectiveness analyses by reputable organizations and academics. These analyses suggest that information provision is highly cost-effective among educational interventions—more so than structured pedagogy (which we have incubated), in some cases by at least an order of magnitude ([Angrist et al., 2025](#)).

Given the our prior expectations and the fact that the charity's cost-effectiveness is heavily sensitive to how many students an intervention can reach, we have chosen to use a simpler model than is standard for our reports.

We have based this on the design of the intervention in [Berlinski et al. \(2022\)](#).

Our model estimates how many students an SMS-based intervention targeting grades five and six students in South Africa would need to reach to meet AIM's bar for this round of \$30 per income doubling.

In our conservative (optimistic) model—assuming a 10% (40%) increase in income from a one SD increase in test scores—we estimate that we would need to reach approximately 58,000 (8,700) students per year at scale to match AIM's bar. For context, this would be approximately 2.0% (0.3%) of our assumed targetable population of 10–12-year-old South African students.

6.1 Effects

We built a simple [cost-effectiveness model](#) of this intervention.

Our model uses the effect size from [Berlinski et al. \(2022\)](#), which found a 0.088 SD increase in test scores.

To account for replicability and generalizability (as recommended in [Bettle, 2023](#)), we adjusted this estimate by multiplying it by 0.69 (from [Coville & Vivalt, 2017](#)).

Finally, we discounted the effect size based on the ratio of adult female literacy in South Africa (our target country) to that in Chile (the country studied in [Berlinski et al., 2022](#)).

Our conservative (optimistic) model—assuming a 10% (40%) increase in income from a one SD increase in test scores—returns a 0.56% (2.24%) increase in income per student, for 0.01 (0.03) income doubling per student per year.

To account for multiple individuals receiving the benefits of that increased income, this value is multiplied by a factor of two, giving 0.02 (0.06) income doublings per household per year.

Taking the present value of the lifetime benefits of this increase gives a total of 0.32 (1.28) income doublings per student over their lifetime.

6.2 Costs

Fixed costs: At scale, we modeled the charity as having a fixed cost of \$280,000, including an annual maintenance fee of approximately \$1,800 to maintain SMS operations.

Additional upfront costs: We believe that setting up SMS operations will have upfront costs, such as regulatory registration and service fees. We estimated this cost at approximately \$3,500.

We followed the approach used in our 2023 Childhood Vaccination Reminders and Encouragement Report ([Fairless, 2023](#)).

Variable costs: Per message costs were assumed to be \$0.08. This is roughly equivalent to what was assumed in ([Fairless, 2023](#)).

Based on an assumption of sending 60 messages per student per year, this gives an annual variable cost of \$4.54 per student.

6.3 Reasons for errors

Reasons this intervention could be more cost-effective than modeled, all else equal.

- The multiplier used to capture household size could be too conservative.
- The effect size on incomes may be overly discounted by either the replicability adjustment or the literacy adjustment factors.
- We did not model spillover effects on economic growth.
- We did not model non-economic gains (socialization, health outcomes, delayed pregnancy, societal values, etc.).

Reasons this intervention could be less cost-effective than modeled, all else equal.

- The multiplier used to capture household size could be too optimistic.
- We may be optimistic about extrapolating the results of a Chilean study to South Africa, and the effect size may be smaller.
- Individuals may benefit from increased incomes for less years than we modeled.
- We have not modeled costs to South African schools or the government.

7 Implementation

7.1 What does working on this idea look like?

Working on this idea is likely to involve designing an information systems, teacher- and parent-facing software, and communications. Co-founders should be particularly cost-effectiveness-minded, and motivated by making changes to children's enabling environments to empower their educational paths.

Figure 7 notes how we'd characterize this proposed idea along an explore-exploit continuum.¹⁹ Given the heterogeneity of the evidence and need to explore what works, we characterize this idea as explorative. Despite backing from meta-analysis and respected education commentators, we note that the content and manner of distribution vary widely in the body of evidence. Therefore, we expect a team of entrepreneurs to continue to test and iterate. Information systems can be very powerful tools in low-resource settings, especially when cheap, scalable, and tailored to low-tech environments. We think a team that is minded to innovate could potentially discover valuable and cost-effective additions to their services.



Figure 7: Explore-exploit

¹⁹ Our recommendations can be characterized along a spectrum between exploration and exploitation—ideas closer to exploration require more research and design, and involve riskier bets and wider confidence intervals; ideas closer to the exploit side of things usually have narrower confidence intervals and rely more on replication/expansion of well-developed and concrete interventions.

7.2 Key factors

This section summarizes our concerns (or lack thereof) about different aspects of a new charity putting this idea into practice.

Table 4: Implementation concerns

Factor	How concerning is this?
Talent	Low concern
Access to information and stakeholders	Moderate concern
Feedback loops	Moderate-high concern
Funding	Low concern
Neglectedness	Low concern
Execution difficulty/Tractability	Low concern
Complexity of scaling	Low concern
Risk of harm	Low concern

Talent

We do not expect that sourcing talent for this intervention will be a significant challenge for a new organization. We believe many different profiles and backgrounds would be suitable to this intervention, yet the following backgrounds or skills would benefit the co-founding team or early hires:

- Experience working with government stakeholders (e.g., Ministries of Education)
- Experience in marketing or communications strategies, or creative industries
- Experience with education delivery and/or policy
- Monitoring and evaluation, focusing on large data monitoring.

Access

If delivering personalized, or non-general information, the charity working on this intervention will need to work closely with schools and secure buy-in from a country's Ministry of Education. This will be important to the charity's ability to operate successfully and sustainably.

If engaging with governments proves challenging, the charity could initially work with private school networks first and run a pilot in its first year of operations. The findings from this pilot could then be used to persuade governments to partner with the charity and scale up the intervention.

Provided that the charity can contribute funding and pilot results are favorable, it seems feasible to secure the necessary political support. Governments already spend a significant amount on education—around 4% of GDP, with some variation across countries ([Calvert, 2019](#)). We speculate that governments will be interested in improving the quality of education in their countries, so this might not be a particularly hard sell.

We do not anticipate opposition from schools or teachers, as data collection should require minimal effort on their behalf. The intervention could also benefit schools by helping students achieve higher test scores. However, schools may be more resistant to delivering information on school quality, or worried that increased attention to schooling may lead to changes in school choice, as it seems to have occurred in Gray-Lobe et al. (2024).

If delivering general information via SMS, we do not expect access to stakeholders to pose a challenge.

Feedback loops²⁰

We have moderate concerns about a nonprofit's ability to reliably evaluate and communicate its impact. Since the average impact per student on test scores is expected to be small, randomized trials will require large sample sizes to detect significant effects. However, effects on intermediate outcomes, such as attendance and drop-out rates, may be easier to track.

²⁰ By *feedback loops*, we refer to the nonprofit's ability to gather data on the intervention's impact, analyze it effectively, and use that information to refine its approach over time.

Funding

Funding from funders in the AIM network

Founders Pledge has researched the returns to education and identified the following organizations as the most promising this space:

- TaRL Africa: addresses the mismatch between teaching and students' educational levels by teaching to the current education level of the student, rather than to the level set by the curriculum. This can involve grouping students by ability for certain parts of their education, remedial classes for underperforming pupils, or adaptive learning software that adjusts content to each student's level.
 - Founders Pledge's Global Health and Development Fund has given \$25,000 to TaRL Africa ([Founders Pledge, n.d.](#)).
- Iodine Global Network: Iodine deficiency affects approximately 250 million children and even moderate deficiency can reduce IQ by 3–5 points (IGN, n.d.). Salt iodization is a cheap and effective solution to this. Iodine Global Network advocates for national salt iodization programs globally.
- Global Alliance for Improved Nutrition (GAIN): GAIN also works to address iodine deficiency through its universal salt iodization program. This work includes advocacy, equipment provision, training for government officials and salt producers, monitoring, and technical assistance.

FP and similar organizations may be interested in evaluating and potentially recommending this new charity as a giving opportunity within education.

GiveWell has previously researched education in developing countries but has deprioritized further work in this space based on its assessment of the evidence base. It says it may consider individual education interventions in the future, but it seems unlikely that it would fund a new education charity ([GiveWell, 2018](#)).

Open Philanthropy does not seem to have researched education and therefore has not given any funding to education charities.

Broader funding sources

Our assessment of broader funding comes primarily from Founders Pledge's cause area report on education ([Calvert, 2019a](#)):

- The World Bank and other multilateral institutions—\$4 billion annually
- International aid programs, such as USAID and the United Kingdom's Foreign, Commonwealth & Development Office (FCDO, formerly DFID)—\$8 billion annually
- [Mastercard Foundation](#)—interested in funding education interventions, though it seems to be mostly focused on post-secondary education.
- [Global Innovation Fund](#)—has made donations to multiple education organizations, ranging from \$300,000 to \$2.7 million
- [Co-Impact](#)—its "Foundational Fund" provides large, long-term, flexible grants (typically \$5–20 million over a period of five to six years) for organizations working to improve education, health, and economic opportunity in Africa, Asia, and Latin America.

Neglectedness

We are not concerned about neglectedness. While we are aware Movva has supported interventions in this area, we do not know whether they are currently active working in this space or if other organizations are working in it.

Tractability

We do not anticipate significant challenges in delivering this intervention through our proposed ToCs.

Our preferred ToC—delivering information to parents via SMS—is modeled on the intervention design of many published studies. Assuming governments can be convinced of its merits, we see little added difficulty in scaling. We have previously

incubated Suvita, and Notify Health, which have been able to deploy these interventions at increasing scale.

Risk of harm

We have low concerns regarding the risk of harm but note that risks are context dependent.

Dizon-Ross ([Dizon-Ross, 2019](#); [Dizon-Ross, 2021](#)) found parents reduced their investment in their children's education when informed they were performing below average.

In addition, [Evans & Acosta \(2024\)](#) found that parents may also reduce investments in children where they had overestimated the returns to education.

We believe that these concerns are exacerbated in poorer contexts, where the opportunity costs of schooling (e.g., instead of working) are higher.

8 Conclusion

Bridging information gaps has the potential to be one of the most cost-effective ways to improve attendance and learning outcomes, both of which contribute to future earnings and wellbeing. Despite broad support from the international education community, large-scale implementation of this intervention remains relatively neglected. We believe that a team of motivated founders, with a focus on cost-effectiveness and scalability, could drive meaningful impact in this space.

Annex

Table A1: Selected experimental studies on student effort and learning information interventions

Study	Sample	Intervention	Results
Gray-Lobe et al. (2024)	2,183 students in 202 private primary schools administered by Bridge Kenya	<i>"The program delivered two types of content through SMS: some caregivers received general messages designed to encourage parents to adopt a growth mindset—a view that intelligence can be improved with effort, as opposed to being fixed (Dweck, 2006)—while others received personalized information on their child's academic performance, including individual and class scores on midterm and endterm exams, as well as practice questions."</i> (p.1)	"outreach is associated with meaningful improvements in student performance, with students in treatment classrooms scoring 0.07 standard deviations above those in control classrooms." (p.2)
Bergman and Chan (2017)	1,137 households in 22 middle and high schools during the 2015-2016 school year in Kanawha County Schools (KCS), West Virginia	"automated text-message alerts to parents about their child's missed assignments, grades and class absences" (p.1)	"The intervention reduces course failures by 38% and increases class attendance by 17%. Students are more likely to be retained in the district. The positive effects are particularly large for students with below-average GPA and students in high school. There are

Study	Sample	Intervention	Results
			no effects on standardized test scores however. We randomly chose either the mother or the father to receive the alerts, but there were no differential effects across these subgroups. As in previous research, the intervention appears to change parents' beliefs about their child's performance and increases parent monitoring." (p.1)
<u>Bergman (2015)</u>	"A school in a low-income area of Los Angeles (...) 462 students in grades six through eleven" (p.1)	"consisted of emails, text messages and phone calls listing students' missing assignments and grades several times a month over a six-month period" (p.1)	Increased attendance to PTA meetings, reduced non-compliance with homework, and small improvements in maths and science grades.
<u>Kraft and Rogers (2014)</u>	435 summer school program students, offered by a large urban school district in the Northeastern United States	"In order to test both the overall effect of teacher-to-parent communication and the specific effect of different message types, we conducted a blocked randomized trial with multiple treatment arms. We randomly assigned students and their parents to one of three conditions positive information (n=146), improvement information (n=136), or control n blocking on the first class taken by each student"	"We find that weekly teacher-to-parent communication in the form of messages sent to parents from teachers increased the probability a student earned credit for each class they took by 6.5 percentage points. Given a control group passing rate of 84.2 percent, this represents a 41 percent reduction in students failing to earn course credit" (p.4)

Study	Sample	Intervention	Results
		(p.8)	
York and Loeb (2018)	"During the 2013-14 and 2015-16 school years, we conducted randomized controlled trials (RCTs) of the program in San Francisco Unified School District (SFUSD). Between the two years 1,031 parents and guardians agreed to participate in the study, and we randomly selected half to receive the program." (p.2)	"Each week, these parents received three texts about an academic skill or set of skills" (p.2)	"We find strong evidence that parents in the treatment group used the tips and found the program to be helpful. For example, treatment group parents found READY4K! texts to be 0.41 SD more helpful than control group parents ($p < 0.01$) (...) Increases in parental involvement at home and school translated into learning gains for children, as students whose parents received READY4K! texts scored an average of 0.11 SD ($p < 0.05$) higher on a spring early literacy assessment. Children who Page 3 of 53 scored below the median of the baseline skills particularly benefited from the intervention with an increase in literacy skills of 0.31SD ($p < 0.01$)."
Miller et al. (2017)	15,697 key stage 3 and 4 students across 36 schools in the UK.	"text messages being sent to parents using school communications systems, such as Schoolcomms. Texts informed parents about dates of upcoming tests, whether homework was	"Extremely small yet positive effects of the intervention on three of the four outcomes, namely English (ES = 0.034, $p = 0.026$), maths (ES = 0.067, $p < 0.001$) and absenteeism (ES = -0.054, $p = 0.001$)."

Study	Sample	Intervention	Results
		submitted on time, and what their children were learning at school."	
Berry et al. (ongoing)	Eighth (22,359) and 12th-grade (15,945) students in the Dominican Republic who scored in the top 25 percent on the national exams	Salience: a letter congratulating them on their performance Ranking: a letter congratulating them on their exam performance and stating the student's rank in the national percentile Scholarship information: a letter congratulating them on their exam performance, and stating that scholarships are available to students, and that better performance increases the chances of receiving a scholarship Ranking and scholarship information: a letter containing both national ranking and scholarship information	Results forthcoming
Lichand et al. (2022) & J-PAL	19,253 ninth-grade students in São Paulo, Brazil	Weekly SMS messages to parents Child-specific information: child-specific information about attendance, punctuality and homework completion	Results below in order of child-specific information; relative information; salience Student attendance: 2.1***; 2.2***; 2.1*** p.p.

Study	Sample	Intervention	Results
		Relative information: child-specific information about attendance, punctuality and homework completion framed relatively to their classmates' median behavior Salience: highlighting the importance of school attendance, punctuality and homework completion	Test scores: 0.097**; 0.141**; 0.095** SD Grade promotion rates: 2.9**; 1.7; 3.2*** p.p. Additional results forthcoming
Berlinski et al. (2022)	1,000 children in the last five grades of primary school in seven low-income schools in a metropolitan area in Chile	Weekly SMS messages sent to parents on their child's attendance, grades, and behavior	Test scores increased by 0.088* SDs, and attendance increased by 1.1** percentage points
Dizon-Ross (2021) & Dizon-Ross (2019)	2,634 households with students in grades two to six in rural Malawi	Surveyors talked parents through reports showing their children's absolute and relative test performance	Parents invest more years of schooling in children with higher academic ability: Treat x score ES = 0.10* Some students receive higher investments in their education as a result of the intervention and some lower. Information does not decrease the average level of investments, although the results are imprecise.

Study	Sample	Intervention	Results
Andrabi et al. (2017)	56 Pakistani villages	Report cards explained at school meetings reported absolute and relative child test scores , and absolute and relative scores for schools	Test scores increased by 0.11 SDs, private school fees decreased by 17 percent, and primary enrolment increased by 4.5 percent
Afridi et al. (2017)	1,499 grades four and five students in the Ajmer district in Rajasthan, India	Surveyors delivered report cards and discussed them with caregivers—schools were informed that some parents had received report cards. School report cards were handed over to principals—caregivers were informed that schools had received a report card. T1: Caregivers received report cards on their children's absolute and relative (intra-school) performance (P1). T2: Caregivers received report cards on their children's absolute and relative (intra-school) performance (P1), & Schools received report cards on	When information is provided on relative school performance learning outcomes improve significantly more than when information on only intra-school performance is made available to both sides of the market. No treatments had a significant impact in public schools. The absence of any significant improvements in test scores where schools alone are informed of their relative positions is not surprising. Outcomes improved in more competitive markets. Test scores (private schools) T1: 0.122* SD T2: 0.139** SD T3: -0.019 SD

Study	Sample	Intervention	Results
		their absolute performance (S1). T3: Caregivers received report cards on their children's absolute and relative (intra-school) performance (P1), & Schools received report cards on their absolute and relative (inter-school) performance (S1 & 2). T4: Caregivers received report cards on their children's absolute and relative (intra- and inter-school) performance (P1 & 2), & Schools received report cards on their absolute and relative (inter-school) performance (S1 & 2).	T4: 0.101* SD Test scores (private schools) with controls T1: 0.129 SD T2: 0.111 SD T3: -0.020 SD T4: 0.308*** SD

Table A2: Selected studies on school and university quality and costs

Study	Sample	Intervention	Results
Ainsworth et al. (2020)	3,898 students from 194 middle schools in 48 Romanian towns	Flyer explained the ' value-added ' (see p. 8 of paper for definition) of tracks across local schools .	Treated students enroll to attend high schools which gives them a greater chance of passing the

Study	Sample	Intervention	Results
			baccalaureate exam: ATE: 0.56* pp. Low-achieving: 1.43** pp. High-achieving: -0.02 pp.
Allende et al. (2019)	1,832 caregivers across 133 Chilean preschools	Report card on the quality of local schools and showed them a video emphasizing the returns to schooling and the importance of choosing quality schools for their children	Parents shifted children toward higher-quality and more costly schools. Students not already enrolled in primary school before the intervention had test scores 0.216** and 0.221** SD higher five years following the intervention.
de Hoyos et al. (2021)	105 public primary schools in La Rioja Argentina	"Diagnostic feedback" group: standardized tests were administered with results made available to schools via user-friendly reports . "Capacity-building" group: Schools provided with reports & Workshops and school visits.	"Our results suggest that diagnostic feedback may be sufficient to elicit improvements in the management and instruction of public schools " "After two years, diagnostic feedback schools outperformed control schools by .34[***] and .36[***] SD in third grade math and reading, and by .28[**] and .38[***] SD in fifth grade math and reading".
Andrabi et al. (2017)	56 Pakistani villages	Report cards explained at school meetings reported absolute and relative child test scores , and	Test scores increased by 0.11 SDs, private school fees decreased by 17 percent, and primary enrolment

Study	Sample	Intervention	Results
		absolute and relative scores for schools.	increased by 4.5%.
<u>Afridi et al. (2017)</u>	1,499 grades four and five students in the Ajmer district in Rajasthan, India	Surveyors delivered report cards and discussed them with caregivers—schools were informed that some parents had received report cards. School report cards were handed over to principals—caregivers were informed that schools had received a report card. T1: Caregivers received report cards on their children’s absolute and relative (intra-school) performance (P1). T2: Caregivers received report cards on their children’s absolute and relative (intra-school) performance (P1), & Schools received report cards on their absolute performance (S1). T3: Caregivers received report	When information is provided on relative school performance learning outcomes improve significantly more than when information on only intra-school performance is made available to both sides of the market. No treatments had a significant impact in public schools. The absence of any significant improvements in test scores where schools alone are informed of their relative positions is not surprising. Outcomes improved in more competitive markets. Test scores (private schools) T1: 0.122* SD T2: 0.139** SD T3: -0.019 SD T4: 0.101* SD Test scores (private schools) with

Study	Sample	Intervention	Results
		cards on their children's absolute and relative (intra-school) performance (P1), & Schools received report cards on their absolute and relative (inter-school) performance (S1 & 2). T4: Caregivers received report cards on their children's absolute and relative (intra- and inter-school) performance (P1 & 2), & Schools received report cards on their absolute and relative (inter-school) performance (S1 & 2).	controls T1: 0.129 SD T2: 0.111 SD T3: -0.020 SD T4: 0.308*** SD
Muralidharan & Sundararaman (2010)	100 rural primary schools in Andhra Pradesh, India	Diagnostic tests and feedback were provided to teachers, alongside monitoring of classroom processes.	<i>"We find teachers in treatment schools exerting more effort [0.107**] when observed in the classroom but students in these schools do no better on independently-administered tests [0.002] than students in schools that did not receive the program".</i>

References

Afridi, F., Barooah, B., & Somanathan, R. (2017). *Improving Learning Outcomes through Information Provision: Evidence from Indian Villages*.

<https://docs.iza.org/dp10971.pdf>

Ainsworth, R., Dehejia, R., Pop-Eleches, C., & Urquiola, M. (2020). *Information, preferences, and household demand for school value added* (No. 28267; Working Paper Series). National Bureau of Economic Research.

<https://doi.org/10.3386/w28267>

Allende, C., & Gallego, F. (n.d.). *Approximating the equilibrium effects of informed school choice*. Retrieved January 31, 2025, from

<https://christopherneilson.github.io/work/documents/SchoolChoiceInfoExp.pdf>

Attanasio, O. P., & Kaufmann, K. M. (2014). Education choices and returns to schooling: Mothers' and youths' subjective expectations and their role by gender. *Journal of Development Economics*, 109, 203–216.

<https://doi.org/10.1016/j.jdeveco.2014.04.003>

Andrabi, T., Das, J., & Khwaja, A. I. (2017). Report cards: The impact of providing school and child test scores on educational markets. *American Economic Review*, 107(6), 1535–1563. <https://doi.org/10.1257/aer.20140774>

Angrist, N., Evans, D. K., Filmer, D., Glennerster, R., Rogers, H., & Sabarwal, S. (2025). How to improve education outcomes most efficiently? A review of the evidence using a unified metric. *Journal of Development Economics*, 172(103382), 103382. <https://doi.org/10.1016/j.jdeveco.2024.103382>

Barrera-Osorio, F., Gertler, P., Nakajima, N., & Patrinos, H. A. (2021). *Promoting parental involvement in schools: Evidence from two randomized experiments*. Blavatnik School of Government, University of Oxford.

https://doi.org/10.35489/bsg-rise-wp_2021/060

Berlinski, S., Busso, M., Dinkelman, T., & Martínez, C. (2021). *Reducing parent-school information gaps and improving education outcomes: Evidence from high-frequency text messages* (No. 28581; Working Paper Series). National Bureau of Economic Research. <https://doi.org/10.3386/w28581>

Berry, J., De Giorgi, G., Neilson, C., & Otero, S. (n.d.). *Education mismatch and motivational messages*. The Abdul Latif Jameel Poverty Action Lab (J-PAL). Retrieved January 31, 2025, from

<https://www.povertyactionlab.org/evaluation/education-mismatch-and-motivational-messages>

Bergman, P. (2015). Parent-child information frictions and human capital investment: Evidence from a field experiment. *SSRN Electronic Journal*.

<https://doi.org/10.2139/ssrn.2622034>

Bergman, P., & Chan, E. (2017). Leveraging technology to engage parents at scale: Evidence from a randomized controlled trial. *SSRN Electronic Journal*.

<https://doi.org/10.2139/ssrn.2989472>

Bettinger, E., Cunha, N., Lichand, G., & Madeira, R. (2020). Are the effects of informational interventions driven by salience? *SSRN Electronic Journal*.

<https://doi.org/10.2139/ssrn.3644124>

Bettle, R. (2023). *Replicability and generalisability*.

https://docs.google.com/document/d/1eJBsmNG-iRJ-twoHaoztQUmB4pmEHut8_oT3xgtldnl/edit?tab=t.0

Calvert, C. (n.d.). *Cause Area Report: Education*. Retrieved January 31, 2025, from

<https://www.founderspledge.com/downloads/fp-education>

Chibwana, A., Thunde, J., Mwanza, M., & Brailovskaya, V. (2023). *Evaluation of a Parental Engagement Program Endline report on impacts of a parental engagement SMS intervention*. IDInsight.

https://www.idinsight.org/wp-content/uploads/2023/10/GD_Movva-IE-Endline-Report-FINAL.pdf

Coville, A., & Vivalt, E. (2017). How often should we believe positive results?

Assessing the credibility of research findings in development economics. In *BITSS*.

<https://doi.org/10.31222/osf.io/5nsh3>

Cox, V., Murár, F., & Fariless, M. (n.d.). *What are the returns to education?* (p. o).

https://docs.google.com/document/d/18v_i5NLxG5QSQIfNm3ADmcT5qEuJEeY6R4N0Eq9iIN4/edit?tab=t.0

Crawfurd, L., Hares, S., Le Nestour, A., & Rossiter, J. (2019). *Does Education Need a QALY and Is LAYS It?* Center for Global Development.

<https://www.cgdev.org/blog/does-education-need-qaly-and-lays-it>

Dizon-Ross, R. (2019). Parents' beliefs about their children's academic ability: Implications for educational investments. *American Economic Review*, 109(8), 2728–2765.

<https://doi.org/10.1257/aer.20171172>

Dizon-Ross, R. (2021). *Using randomized information shocks to understand how parents' investments depend on their children's ability* *.

https://www.povertyactionlab.org/sites/default/files/research-paper/Using_Randomized.pdf

Education in developing countries. (n.d.). GiveWell. Retrieved January 31, 2025, from <https://www.givewell.org/international/technical/programs/education>

Education Endowment Foundation. (n.d.). *Parental engagement*. Retrieved October 14, 2025, from

<https://educationendowmentfoundation.org.uk/education-evidence/teaching-learning-toolkit/parental-engagement#nav-what-is-it>

Evans, D. K., & Yuan, F. (2022). How big are effect sizes in international education studies? *Educational Evaluation and Policy Analysis*, 44(3), 532–540.

<https://doi.org/10.3102/01623737221079646>

Evans, D., & Acosta, A. M. (2024). *Changing Perceptions of Educational Returns in Low- and Middle-Income Countries: A Meta-Analysis*. Center for Global Development.

<https://www.cgdev.org/publication/changing-perceptions-educational-returns-low-and-middle-income-countries-meta-analysis>

Experimental Evidence on Diagnostic Feedback. (n.d.). *Teaching with the test*. Retrieved January 31, 2025, from

<https://documents1.worldbank.org/curated/en/488751511886071513/pdf/WPS8261.pdf>

Family empowerment media. (n.d.). Retrieved January 31, 2025, from

<https://wwwFOUNDERSpledge.com/research/family-empowerment-media>

Family Empowerment Media: track record, cost-effectiveness, and main uncertainties. (2023, May 16). Rethink Priorities.

<https://rethinkpriorities.org/research-area/family-empowerment-media/>

Finetti, J. (2022). *Mass media Campaign*. Ambitious Impact.

https://3394c0c6-1f1a-4f86-a2db-df07ca1e24b2.filesusr.com/ugd/9475db_8191df3e42444b30b5005a2ae500bd34.pdf

Gorard, S., See, B. H., & Davies, P. (2012). *The impact of attitudes and aspirations on educational attainment and participation*.

https://www.researchgate.net/publication/265288552_The_Impact_of_Attitudes_and

d Aspirations on Educational Attainment and Participation

Gray-Lobe, G., Kremer, M., de Laat, J., Mbonu, O., & Scanlon, C. (2024). *Nudging Parents out the Door: The Impacts of Parental Encouragement on School Choice and Test Scores*.

https://ombonu.github.io/nudging_parents_out_the_door.pdfhttps://ombonu.github.io/nudging_parents_out_the_door.pdfhttps://ombonu.github.io/nudging_parents_out_the_door.pdf

GEEAP. (2023). *2023 Cost-effective approaches to improve global learning*.

<https://thedocs.worldbank.org/en/doc/231d98251cf326922518be0cbe306fdc-0200022023/related/GEEAP-Report-Smart-Buys-2023-final.pdf>

Jensen, R. (2010). The (perceived) returns to education and the demand for schooling*. *The Quarterly Journal of Economics*, 125(2), 515–548.

<https://doi.org/10.1162/qjec.2010.125.2.515>

Kraft, M. A., & Rogers, T. (2014). *The Underutilized Potential of Teacher-to-Parent Communication: Evidence from a Field Experiment*.

https://scholar.harvard.edu/files/mkraft/files/kraft_rogers_teacher-parent_communication_hks_working_paper.pdf

Kremer, M., & de Laat, J. (n.d.). *The impact of personalized SMS messages to parents on student achievement in Kenya*. The Abdul Latif Jameel Poverty Action Lab (J-PAL). Retrieved January 31, 2025, from

<https://www.povertyactionlab.org/evaluation/impact-personalized-sms-messages-parents-student-achievement-kenya>

Lichand, G., & Christen, J. (2020). Behavioral nudges prevent student dropouts in the pandemic. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.3724386>

Lichand, G., Christen, J., & Van Egeraat, E. (2024). Neglecting students' socio-emotional skills magnified learning losses during the pandemic. *Npj Science of Learning*, 9(1), 28. <https://doi.org/10.1038/s41539-024-00235-9>

List, J. A., Pernaudet, J., & Suskind, D. L. (2021). Shifting parental beliefs about child development to foster parental investments and improve school readiness outcomes. *Nature Communications*, 12(1), 5765.

<https://doi.org/10.1038/s41467-021-25964-y>

Miller, S., Davison, J., Yohanis, J., Sloan, S., Gildea, A., & Thurston, A. (2017). *Texting Parents: Evaluation report and executive summary*.

https://d2tic4wvo1iusb.cloudfront.net/production/documents/projects/Texting_Parents.pdf?v=1760358554

Muralidharan, K., & Sundararaman, V. (2010). The impact of diagnostic feedback to teachers on student learning: Experimental evidence from India: Diagnostic feedback to teachers. *Economic Journal (London, England)*, 120(546), F187–F203. <https://doi.org/10.1111/j.1468-0297.2010.02373.x>

Nudges to improve parental engagement and gender disparity in the return to school during COVID-19 in Ghana. (n.d.). Retrieved January 31, 2025, from <https://poverty-action.org/study/nudges-improve-parental-engagement-and-gender-disparity-return-school-during-covid-19-ghana>

Piper, B., & Korda, M. (2010). *EGRA Plus: Liberia*. USAID. https://pdf.usaid.gov/pdf_docs/pdacr618.pdf

Ritchie, H., Samborska, V., Ahuja, N., Ortiz-Ospina, E., & Roser, M. (n.d.). *Global Education*. Our World in Data. Retrieved January 31, 2025, from <https://ourworldindata.org/edu-quality-key-facts>

School enrollment, primary (% net)—Sub-Saharan Africa. (n.d.). World Bank Open Data. Retrieved January 31, 2025, from <https://data.worldbank.org/indicator/SE.PRM.NENR?locations=ZG>

Shen, W., Hannum, E., & Cherng, H.-Y. S. (2025). Adaptive educational expectations: How do parental educational expectations respond to child academic performance in various family contexts? *Social Science Research*, 125, 103097. <https://doi.org/10.1016/j.ssresearch.2024.103097>

United Nations Statistics Division. (n.d.). — *SDG indicators*. Retrieved January 31, 2025, from <https://unstats.un.org/sdgs/report/2019/goal-04/>

York, B., & Loeb, S. (2014). *One step at a time: The effects of an early literacy text messaging program for parents of preschoolers* (No. 20659; Working Paper Series). National Bureau of Economic Research. <https://doi.org/10.3386/w20659>

Wolf, S., & Lichand, G. (2023). Nudging parents and teachers to improve learning and reduce child labor in Cote d'Ivoire. *Npj Science of Learning*, 8(1), 37. <https://doi.org/10.1038/s41539-023-00180-z>

World Bank. (2024). *Expected years of schooling* [Data set]. <https://databank.worldbank.org/metadataglossary/world-development-indicators/series/SE.SCH.LIFE>