IMPACT ASSESSMENT REPORT

Mphasis F1 Foundation's Flagship CSR Initiative: SOS Village for Children

NOVEMBER 2025

CONTENTS

LIST OF FIGURES

LIST OF FIGURES

LIST OF TABLES

EXECUTIVE SUMMARY

About Project

The Mphasis Foundation CSR initiative implemented integrated solar electrification and education sponsorship programming at SOS Children's Village Bhimtal, Uttarakhand. The intervention included installation of a 130KW grid-tie solar system and comprehensive educational support for 168 children across six SOS villages, addressing infrastructure barriers and educational access challenges for vulnerable children.

Methodology

The impact assessment employed mixed-methods evaluation utilizing OECD-DAC criteria and Theory of Change frameworks. Data collection encompassed quantitative surveys (n = 81), focus group discussions, key informant interviews with stakeholders, and document analysis. Systematic qualitative coding and statistical analysis validated intervention effectiveness across relevance, efficiency, effectiveness, impact, and sustainability dimensions.

Key Findings

Solar Electrification Component:

- Achieved exceptional power reliability improvement, reducing evening study time power cuts from 98.3% to 38.3% occurrence
- Enabled universal 24-hour lighting availability, with 93.3% reporting extended evening study capability
- Generated 106,037 units of clean energy, achieving 84.83 metric tons CO2 reduction and 28,571 liters diesel savings
- Enhanced safety and mobility, eliminating wildlife-related movement restrictions and reducing caregiver anxiety
- Demonstrated 88.3% stakeholder confidence in long-term system sustainability over 20-25 year operational lifespan

Education Sponsorship Component:

- Achieved 100% first division results in board examinations, with 81.6% reporting academic performance improvements
- Supported 168 children across six locations, with 60% pursuing graduation or master's programs
- Strengthening bonds between children and stakeholders within the SOS model, with children developing genuine maternal bonds and sibling relationships
- Enhanced environmental consciousness, with 88.3% gaining solar technology understanding

Integrated Programming Benefits:

- Generated multiplicative effects through infrastructure-education synergies
- Created comprehensive child development outcomes

Recommendations

Alumni Network Development: Leverage documented graduate success, including international career achievements, to establish systematic mentorship programs providing career guidance and professional support for current beneficiaries. Create structured alumni engagement frameworks connecting successful graduates with children to enhance aspirational development and career pathway planning.

Maintenance Capacity Strengthening: Address critical knowledge gaps in solar system maintenance through comprehensive training initiatives targeting both staff and beneficiaries. Implement multi-level awareness programs, regular refresher sessions, and visual maintenance guides to ensure optimal long-term system performance and sustainability.

Conclusion

The Mphasis solar electrification and education sponsorship initiative at SOS Bhimtal achieved transformational outcomes: 100% board exam first divisions, 84.83 metric tons CO_2 reduction, and universal 24-hour study lighting. The integrated model successfully combines renewable energy infrastructure with comprehensive child development, validating continued CSR investment in similar residential care institutions.

1.1. BACKGROUND

Energy poverty and educational inequity represent two critical barriers to sustainable development, particularly affecting vulnerable children in resource-constrained settings. Globally, approximately 244 million children remain out of school, with the vast majority from marginalised communities facing compounded disadvantages of inadequate infrastructure, limited educational support, and unreliable access to basic services (UNESCO, 2022). In India, these challenges manifest acutely in remote and under-resourced regions, where learning gaps persist despite policy commitments, and where energy access remains inconsistent, directly impacting quality of life and educational outcomes (ASER Centre, 2023).

The intersection of energy access and education is particularly significant for children in institutional care settings. Reliable electricity is not merely an infrastructural amenity—it is a foundational enabler of quality education, extending study hours, facilitating digital learning, and creating conducive environments for cognitive development. Concurrently, comprehensive educational support systems that integrate formal schooling, remedial assistance, digital literacy, and holistic development are essential for ensuring that vulnerable children can transition into independent, contributing members of society. The integration of sustainable energy infrastructure with targeted educational sponsorship represents an innovative, systems-oriented approach to addressing multiple dimensions of child welfare simultaneously (Örtengren, 2016; UNICEF, 2022).

In Uttarakhand, a hill state characterised by geographic remoteness and infrastructural constraints, children in alternative care settings face distinct vulnerabilities. The region experiences frequent power disruptions, high electricity costs, and limited access to clean energy alternatives—all of which directly compromise learning environments and operational sustainability of care institutions. According to the Annual Status of Education Report, foundational learning outcomes in remote regions of Uttarakhand lag significantly behind national averages, with environmental and infrastructural barriers cited as primary contributing factors (ASER Centre, 2023). Addressing these gaps necessitates innovative solutions that simultaneously improve infrastructure resilience and expand educational opportunities.

Strategic Response: Mphasis F1 Foundation's Integrated CSR Initiative

In response to these interconnected challenges, the Mphasis F1 Foundation—the Corporate Social Responsibility arm of Mphasis Limited—has supported a flagship initiative centred on SOS Children's Village. This intervention uniquely integrates two complementary components: solar electrification and education sponsorship.

The solar electrification component involves the installation of a 130KWp grid-connected solar photovoltaic plant, supplemented by 220 energy-efficient fans, designed to dramatically reduce energy costs, improve the reliability of the electricity supply, and offset environmental impact. With an estimated annual generation of 200,200 kWh and projected cost savings of INR 12-15 lakhs per year, the initiative aims to redirect operational savings toward programmatic investments while improving children's access to consistent lighting, study spaces, and digital learning resources. The environmental co-benefits include offsetting 142 metric tons of CO_2 annually, equivalent to carbon sequestered by 2,342 trees grown for 10 years, contributing to institutional sustainability and climate action commitments.

The education sponsorship component complements this infrastructure investment by providing comprehensive educational support to 168 children across six SOS Children's Villages—Begusarai, Bhimtal, Hojai, Nagapattinam, Thrissur, and Visakhapatnam. The sponsorship framework integrates formal education (school fees, uniforms, books, and examination fees), academic support (tuition and remedial classes), and holistic development programming (digital literacy, sports, career counselling, resilience building, and life skills training). Particular emphasis is placed on digital literacy through structured certification programs (CCIB and CCAB), equipping children with essential 21st-century skills for employment and civic participation

This integrated approach recognises that reliable energy access and educational support are mutually reinforcing, enhancing learning environments and infrastructure use.

1.2. RATIONALE OF THE STUDY

This comprehensive evaluation study is warranted for several compelling reasons aligned with both organizational learning needs and broader development practice contributions:

➤ Accountability and Transparency: As corporate CSR expenditures face increasing scrutiny from stakeholders including shareholders, employees, customers, and regulatory bodies, rigorous impact evaluation demonstrates responsible resource stewardship and validates investment effectiveness.

➤ Evidence-Based Decision Making: Systematic evaluation generates actionable insights informing future programming decisions. Understanding what works, what doesn't, and why enables the Mphasis F1 Foundation to optimize resource allocation, refine intervention strategies, and enhance program design in subsequent initiatives. Evidence from this evaluation can guide scaling decisions and replication in other contexts.

➤ Model Validation and Learning: The project's integrated approach combining infrastructure development with human capital investment represents an innovative model. Evaluation findings contribute to the knowledge base on effective CSR strategies, providing insights into synergies between renewable energy interventions and education programming, optimal implementation approaches for corporate-NGO partnerships, and effective care models.

➤ SDG Alignment and Impact Measurement: The project directly contributes to multiple Sustainable Development Goals including SDG 7 (Affordable and Clean Energy), SDG 4 (Quality Education), SDG 1 (No Poverty), and SDG 10 (Reduced Inequalities). Rigorous evaluation quantifies and documents this contribution, enabling corporate reporting on SDG impacts and demonstrating alignment with global development priorities.

➤ Beneficiary-Centered Assessment: Most fundamentally, evaluation centers children's voices and experiences, examining whether and how the intervention improves their daily lives, educational opportunities, and prospects. This beneficiary-focused approach ensures accountability to primary stakeholders—the children and youth the program serves—rather than solely to funding entities.

1.3. ASSESSMENT OBJECTIVES

To assess the alignment of each project's goals and strategies with the needs, priorities, and lived realities of the target communities.

To assess the alignment of each project's goals and strategies with the needs, priorities, and lived realities of the target communities.

To examine the relationship between resources invested and results achieved: assessing cost-effectiveness, operational timeliness, and adaptability.

To determine the measurable and perceived changes experienced by key stakeholders, including access, learning outcomes, behaviour shifts, and quality of life improvements

To evaluate the likelihood of continued benefits and local ownership beyond the life of the project, including embeddedness in community structures and governance systems.

To capture experiences and feedback from beneficiaries, implementing partners, and local authorities regarding program quality, relevance, and engagement.

To document good practices, innovations, and context-specific adaptations that can inform replication or scale-up.

To provide actionable, evidence-informed suggestions for improving design, delivery, and monitoring of similar CSR initiatives by Mphasis F1 Foundation.

1.4. ASSESSMENT FRAMEWORK

Contemporary evaluation of development and CSR initiatives increasingly employs integrated frameworks that combine Theory of Change (ToC) with OECD-DAC evaluation criteria to provide a comprehensive assessment of intervention merit and worth.

Framework Component	Description	Application in Evaluation
Theory of Change (ToC)	Maps causal pathways from inputs through activities, outputs, outcomes to impacts while identifying assumptions and contextual factors.	Tests how and why change occurred, enabling adaptive management and understanding the logical sequence from interventions to outcomes.
OECD (Relevance)	Assesses whether the intervention addresses the right issues and responds to beneficiary needs and priorities.	Was solar electrification the right solution? Did education sponsorship address critical barriers for children?
OECD (Coherence)	Examines internal consistency and compatibility with other initiatives and policy frameworks.	How do solar and education components complement each other? Does the initiative align with national policies?
OECD (Effectiveness)	Measures extent to which objectives are achieved, including intended and unintended outcomes.	Did solar electrification improve study environments? Did sponsorship improve academic performance and retention?
OECD (Efficiency)	Analyzes relationship between inputs and outputs/outcomes and optimal resource use.	Was implementation completed on time and within budget? Does cost-per-child represent value for money?
OECD (Impact)	Focuses on higher-level effects, transformative changes, and contribution to broader development goals.	What changes occurred in children's achievement and well-being? What contribution to SDG 4 and SDG 7 targets?
OECD (Sustainability)	Evaluates whether benefits continue after funding ends and examines capacity for continued benefit delivery.	Will infrastructure continue functioning post-project? Have maintenance systems been established? Will gains persist?

1.5. ASSESSMENT METHODOLOGY

The study followed a **cross-sectional, mixed-methods design** integrating structured student surveys with qualitative FGDs and KIIs to balance measurement breadth with explanatory depth. Evaluation criteria and analysis were anchored in a Theory of Change approach aligned to OECD-DAC dimensions of relevance, effectiveness, impact, efficiency, equity, and sustainability.

Universe of the study

The universe encompassed children in Grades 5–10 living and studying within **SOS Children's Village, Bhimtal, Uttarakhand** and immediate stakeholders engaged in care and learning processes across both projects. The institutional setting provided a bounded service environment where education support and solar infrastructure were implemented together to influence study continuity, safety, and learning confidence

Data Collection

Primary data were collected on tablets using mWater with validation checks, while qualitative interactions were audio-recorded, transcribed, and anonymised to protect identities and ensure analytic rigour. Enumerators implemented standardised introductions, consent scripts, and neutral probing, and researchers conducted daily debriefs to refine prompts and address emerging issues or instrument clarifications.

Sampling

We adopted a mixed-sampling approach, where **quantitative components employed stratified and random selection** techniques, while **qualitative components utilised purposive sampling** to capture variation in experience, geography, and performance. Student survey totals were split as 27 under Education and 63 under Solar Electrification, reaching an overall sample size of n=90, ensuring adequate coverage across Grades 5–10 within the Village.
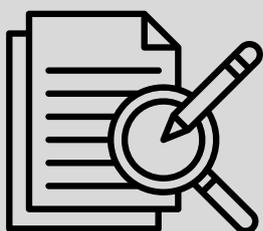
Cross-sectional mixed methods study would be utilised, with random samplling being utilized for **quantitative components and purposive sampling** to capture the qualitative components would be employed during the study.

Sample Size

Sl.	Methodology	Projects	Stakeholder	Research tool	Total sample size
1	Quantitative sample	Educational Scholarship Support	Students (Grades 3–12)	Survey	**21**
2		Solar Electrification	Students (Grades 3–12)	Survey	**60**
3	Qualitative samples	Educational Scholarship Support and Solar Electrification	Mothers/ Caregivers	FGD	**2**
4			NGO Partner	KII	**1**
5			Mother/ Caregiver	KII	**1**
6			Teacher	KII	**1**
7			Technology partner	KII	**1**

Table 01: Sample Plan

Field-level Data Quality Control

Data and Information Flow

Checks and Verifications
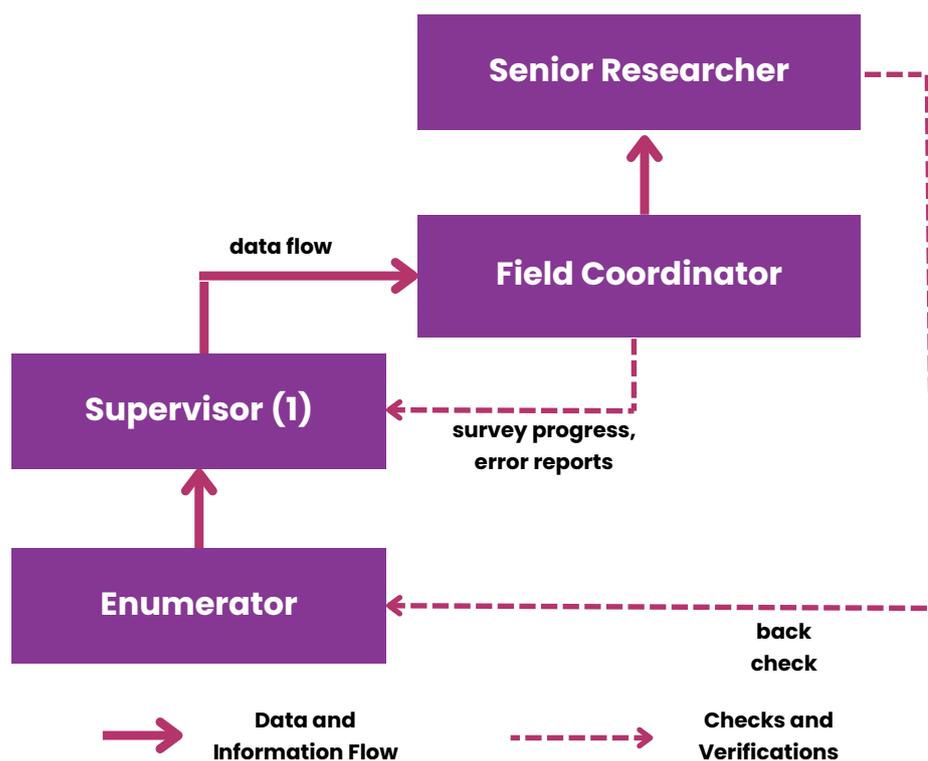
The data collection process followed a structured flow from field-level enumeration to final analysis, ensuring accuracy, consistency, and validation at each stage. Enumerators collected data through structured surveys, which were then monitored in real-time by the Researchers and Project Manager to track survey progress, identify inconsistencies, and flag potential errors.

A multi-layered validation process was implemented, including back checks where supervisors re-administered a subset of surveys to verify responses and detect discrepancies. Automated error reports helped identify anomalies, such as missing values or logical inconsistencies, ensuring high-quality data. Additional quality control measures, such as spot checks and real-time data audits, further strengthened reliability. The final dataset underwent rigorous data cleaning, deduplication, and verification before analysis, ensuring that insights derived were credible, evidence-based, and actionable for informed decision making.

Ethical Consideration

Data collection was conducted with strict adherence to ethical principles to safeguard the rights and welfare of all participants. Verbal informed consent was obtained before participation, with clear communication about the study's purpose, confidentiality, and the voluntary nature of involvement. Special attention was given to vulnerable families to ensure culturally sensitive and respectful engagement throughout the process. Enumerators were trained to avoid asking intrusive or sensitive questions, prioritising participants' comfort and privacy. All procedures are aligned with national and international ethical standards, demonstrating the project's commitment to upholding dignity, trust, and transparency during the impact assessment.

Data Collection Limitation

Student availability was a major constraint. Many of the listed students had already graduated, moved to other schools or colleges, or left to pursue career opportunities. As a result, the actual number of students present during data collection was lower than expected.

CHAPTER 3– FINDINGS
Education Sponsorship

1. Socio-demographic profile of respondents:

The survey covered **21 children** enrolled in the education sponsorship program. The gender distribution was nearly balanced, with a slight predominance of boys: **11 boys (52.4%)** and **10 girls (47.6%)**. This indicates that the sponsorship support is being accessed by both male and female children in roughly equal proportions.

Female 52.4%

Male 47.6%

In terms of age, the respondents ranged from **10 to 17 years, with a mean age of 14.29 years** and a standard deviation of 2.33 years. This pattern reflects a cohort that is predominantly in early to mid-adolescence, corresponding to key transition points in schooling and heightened academic demands.

The children were enrolled across a wide span of school grades, from Class 3 to Class 12. When grouped by schooling stage, 28.6% (n=6) were in primary grades (Classes 3 and 5), 19.0% (n=4) in upper primary (Class 8), 38.1% (n=8) in secondary (Classes 9–10), and 14.3% (n=3) in senior secondary (Classes 11–12).

The distribution shows that the sponsorship program is engaging learners across the full basic and secondary education cycle, with a notable concentration at the secondary level, where board examinations and related academic pressures are typically the highest.
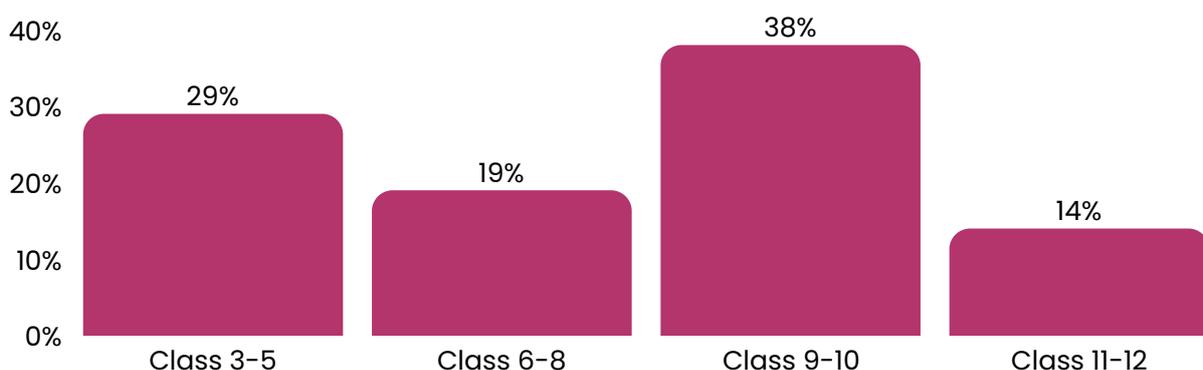
Figure 01: Distribution of respondents across different grades.

2. Relevance and Coherence

2.1 Alignment with village and child needs

The education sponsorship intervention strongly aligned with the needs of highly vulnerable children residing in the SOS village of Bhimtal. Qualitative data showed that the program explicitly targeted "parentless, homeless, and abandoned children" with the stated objective of enabling them to become "independent and contributing members of society."

Key informants also repeatedly emphasised the holistic nature of support, covering educational, health, and future security needs, rather than focusing only on school fees. One teacher described the intervention as supporting "**holistic development for the child overall… related to their health, education… and securing their future.**" These findings confirmed that the design responded to the complex and multi-dimensional needs of children in alternative care.

Quantitative data from the child survey further substantiated this alignment. A large majority of the respondents had been receiving sponsorship for more than three years (61.9%), with a further 33.3% supported for one to three years. Only one child (4.8%) said they had been there for less than a year. This pattern indicated that the intervention was not only reaching the intended group but doing so in a sustained manner across multiple school years, which is particularly relevant for children with long-term care and educational needs.

2.2 Alignment with SOS programming

The sponsorship component demonstrated a high level of coherence with the existing SOS family-based care model. Qualitative data indicated "perfect integration" with SOS's approach and consistent implementation across villages.

Narratives from teachers, mothers, and staff showed that the program strengthened, the core SOS concept of family-like care.

1–3 years
33.3%

More than 3 years
61.9%

Less than 1 year
4.8%
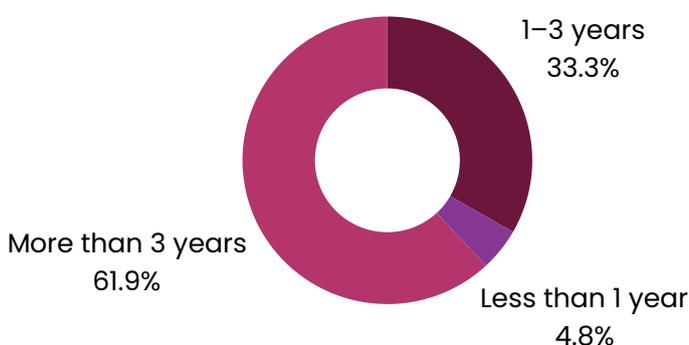
Figure 02: Duration of education sponsorship received by the respondents

A caregiver noted that when all the children in the house called one woman "Maa" (mother), they **"felt a bond, a family, like siblings**." Another long-serving mother underlined this coherence by stating that she and her peers never considered themselves "caregivers" but saw themselves as mothers with full maternal responsibility.

At the program level, **educational sponsorship was also described by staff as "the most important helping tool for the developmental process,"** signalling that it fit squarely within SOS India's long-term strategy and institutional practice.

> *The concept of the SOS village here is like the mother and children concept.*
>
> *~Teacher, KII*

The sponsorship funding—approximately Rs. 30 lakhs for 126 children—was thus embedded within an existing system of family-based care and educational support, rather than operating as a stand-alone or parallel scheme.

2.3 Integration of solar and sponsorship interventions

Evidence from the data shows that the solar energy interventions were conceptualised as synergistic rather than additive. It has helped in improving the educational experience of children with extended study hours and more consistent use of time for homework. In practice, the sponsorship covered schooling costs, materials and learning support, while the solar intervention aimed to ensure stable electricity and lighting to make those educational inputs usable in the evenings.

Most children (81.0%) reported spending up to one hour per day on homework at home, with a further 19.0% studying two to three hours daily. At the same time, 90.5% of respondents reported that sponsorship-related supports were "always" provided on time in the last academic year (with only 9.5% reporting "mostly" or "sometimes"). Together, these findings suggested that the material and temporal conditions for learning (including evening study) had become more predictable and supportive. **Thus, the data showed integration of solar and sponsorship interventions was best understood as a coherent package: sponsorship made school participation financially feasible, and solar infrastructure made learning more reliable and less constrained by power cuts, especially in the critical periods before examinations.**

2.4 Relevance for learning, wellbeing and accessibility

The intervention was found to be relevant for improving educational access and broader wellbeing. Quantitative data showed that 100% of surveyed children were enrolled in school at the time of data collection, and 90.5% reported attending regularly in the past month. Only a very small minority (9.5%) reported frequent absence. This confirmed that sponsorship was effectively removing key access barriers, such as fees, uniforms, and materials.

90.5%

Children go to school regularly

In terms of continued access, 57.1% of respondents stated that attending school had become easier since receiving sponsorship, while a further 28.6% observed no negative change. Only a small proportion (14.3%) reported being unsure. Sponsorship also appeared to support broader participation, as **95.2% of children indicated that their involvement in school activities, such as projects and competitions, had increased since the support began.**

95.2%

Our participation in school activities has increased since sponsorship started.

Qualitative data pointed to strong relevance for children's wellbeing and recognition of diverse abilities. The qualitative themes captured how caregivers acknowledged that "some children... have good drawing skills", while others were "good at sports, like football", highlighting an appreciation of multiple forms of talent rather than only academic performance.

The learning process was also described as increasingly joy-based; one mother observed that "today's generation" progressed faster when they studied with enjoyment, indicating that the sponsorship-enabled environment had become more emotionally supportive and conducive to learning.

Taken together, these findings showed that the intervention was relevant not only for getting children into school but also for strengthening their engagement, enjoyment, and psychosocial well-being.

2.5 Beneficiary perception of relevance

Children's own assessments of the program were strongly positive. Qualitative themes on family formation and belonging offered further understanding of how beneficiaries experienced relevance beyond material assistance. The data showed that children expressed happiness and a strong sense of belonging in the village environment. Caregivers observed that children **"were happy coming here",** implying that educational sponsorship operated within **a wider ecology of emotional and social support that children themselves valued.**

Overall, beneficiary perceptions indicated that sponsorship had been both materially and emotionally relevant: it responded to immediate schooling needs while reinforcing children's sense of security, identity, and social connectedness.

- **90.5% of survey respondents reported that the support matched their needs "perfectly".**
- **9.5% stated that it matched their needs "mostly"**
- **No child selected a negative response category**

2.6 Teacher and caregiver confirmation

Teachers and caregivers consistently confirmed the relevance and appropriateness of the sponsorship model. From the caregiver perspective, the intervention provided a comprehensive package: one mother summarised that children **"get a mother, they get a good education, they get care",** capturing the integration of caregiving, schooling, and emotional support within SOS homes. These accounts were further reinforced by institutional actors. NGO staff described educational sponsorship as **"always the most important helping tool"** for the developmental process of children in SOS care.

The coherence between children's, caregivers', and staff perspectives indicated that different stakeholder groups shared a common view of the program's relevance. Qualitative data showed alignment and satisfaction with sponsorship support, though some children reported only marginal improvements in school attendance, suggesting areas for improvement.

3. Effectiveness

3.1 School enrolment, attendance, and days missed

As established in the earlier sections, all children were enrolled in school. The effectiveness analysis added a clearer picture of how attendance patterns changed over time. Before receiving sponsorship, 38.1% of children reported difficulty attending school due to financial reasons, while 33.3% reported that they did not, and 28.6% were unsure. Post-enrolment in the program, the quantitative data on the number of days missed indicated that children were more regular at school. Data showed 42.9% of children reported missing no days per month at all, and a further 47.6% reported missing only 1–3 days per month. Only one child each (4.8% in both cases) reported missing 4–7 days or more than seven days in the previous month. The pattern suggested **that extended absence had become exceptional and that the sponsorship intervention had contributed to stabilising regular presence at school.**

Number of school days missed in the previous month
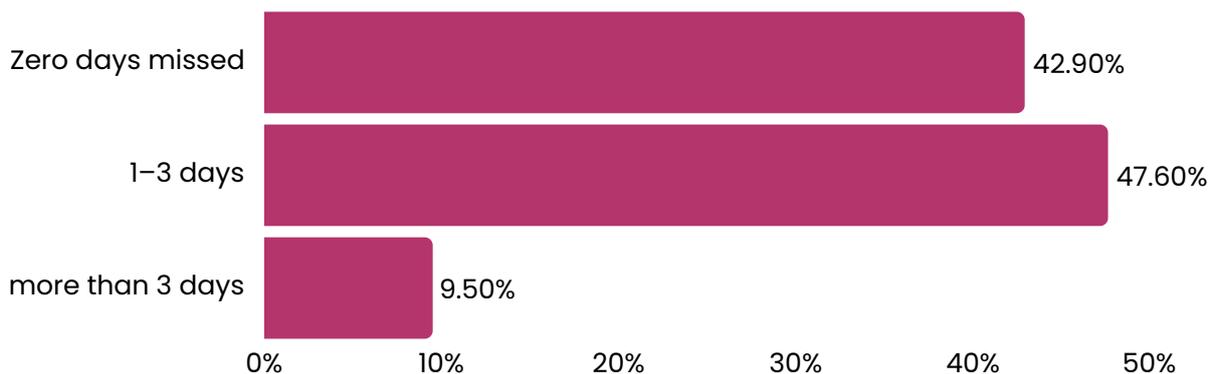
Figure.03 : Distribution of number of days missed by respondents in the previous month.

3.2 Reduction in barriers: fees and material support
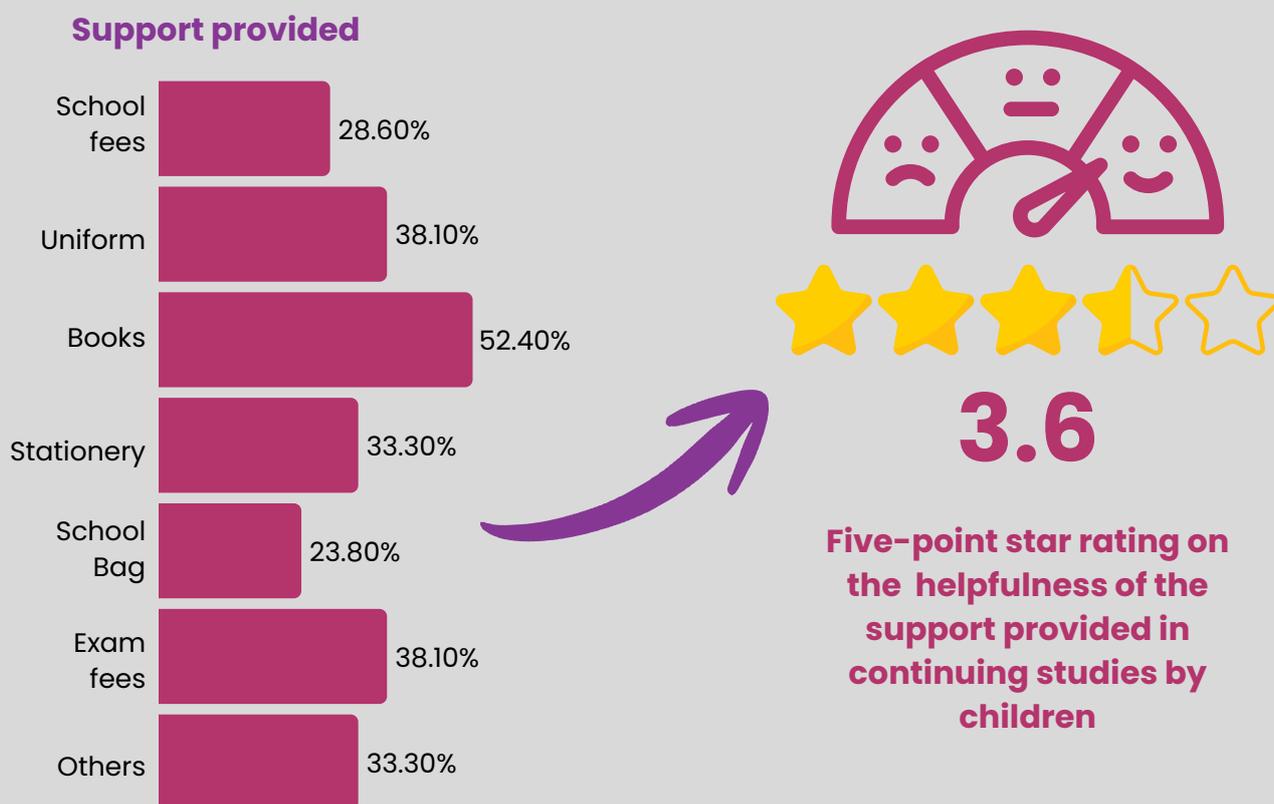
The quantitative data showed that children experienced the sponsorship as a concrete package of cost-covering support.

Types of Support:

52.4% of respondents mentioned books

28.6% of respondents mentioned school fees

38.1% of respondents mentioned books

23.8% of respondents mentioned books

33.3% of respondents mentioned books

33.3% of respondents mentioned books

Children's assessment of the usefulness of this support was also strongly positive. On a five-point scale of helpfulness for continuing their studies, **71.4% rated the sponsorship 4 or 5 (with 52.4% choosing 4 and 19.0% choosing 5).** Only one child (4.8%) rated the support at the lowest point on the scale. This distribution reinforced the qualitative coding of barrier removal and comprehensive material and fee support as a high-intensity feature of the intervention.

The mean rating for helpfulness was 3.6 on a five-point scale, suggesting that children generally viewed the support positively, while there remained scope for further strengthening its perceived value. **Given the relatively small sample size, this average should be interpreted with caution and as indicative of broadly satisfactory support that could be enhanced rather than as evidence of dissatisfaction.**

Support provided

Category	Value
School fees	28.60%
Uniform	38.10%
Books	52.40%
Stationery	33.30%
School Bag	23.80%
Exam fees	38.10%
Others	33.30%

3.6

Five-point star rating on the helpfulness of the support provided in continuing studies by children

Figure.04: Support provided for the children
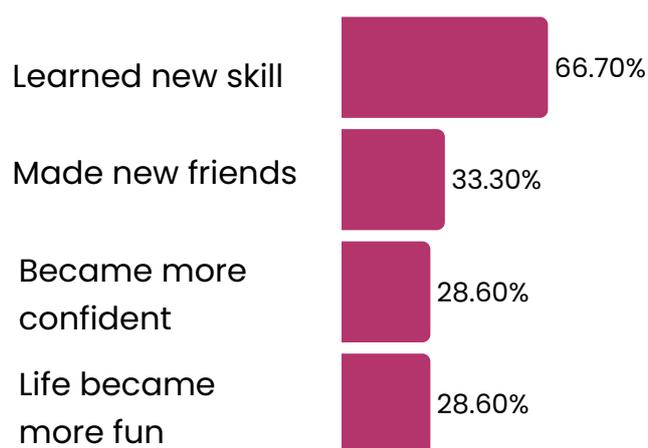
3.3 Participation in remedial lessons, digital access, and activity clubs

Quantitative evidence on Mphasis-supported activities complemented the qualitative Theory of Change (ToC), which framed "digital literacy, CCIB (Certificate Course in IT for Beginners), CCAB"(Certificate Course in Active Basic IT) and other non-formal inputs as key outputs of the sponsorship-plus model.

In terms of activity participation:

- **28.6%** of children reported taking part in **sports** activities supported by Mphasis.
- **14.3%** had participated in **career counselling,** and **14.3%** were in **art, music, or dance.**
- A smaller group, **4.8%,** reported participation in **IT/digital literacy sessions.**
- 42.9% indicated that they had not participated in any of these Mphasis activities.

These patterns showed that participation in structured activities was not universal, but for those who engaged, the activities contributed to social integration, confidence-building, and enjoyment, in line with the program's broader focus on holistic development. Although the survey did not separately quantify remedial lessons, the qualitative data documentation categorised "formal, non-formal and informal education" as core components of the sponsorship package and explicitly linked remedial and digital learning opportunities to the objective of skills and competency development.

Figure   05: Perceived benefits from program

Learned new skill — 66.70%
Made new friends — 33.30%
Became more confident — 28.60%
Life became more fun — 28.60%

3.4 Caregiver and teacher support patterns

Adult support around children's learning emerged as a central mechanism of effectiveness. **Survey data showed that 71.4% of children reported "always" receiving encouragement from SOS teachers and other staff to study, and a further 19.0% reported such encouragement "sometimes"; only 9.5% reported that this occurred rarely.**

Homework support was similarly intensive. In response to the question on help with homework from mothers, caregivers, teachers, or tutors, **81.0% of children reported receiving help daily, and the remaining 19.0% reported receiving help sometimes; no respondent selected "rarely/never".**

When asked whether they felt supported by SOS teachers and staff in their education, **90.5% of respondents answered that they "always" felt supported**. Qualitative accounts illustrated how this support operated in practice. One caregiver described peer-assisted learning driven by adult facilitation:

This quote exemplified the peer-collaborative dynamic documented in the qualitative data, where experienced caregivers intentionally structured environments in which children could assess and reinforce each other's understanding rather than relying solely on one-way teaching.

> "
> *Then, they (children) learn from each other. For example, what I understand, I check*
>
> *~Focused Group Discussion, Mother*

3.5 Use of study time, academic performance, and homework hours

While details on daily homework time have been reported earlier, the effectiveness data clarified how children perceived changes in their learning outcomes. In relation to their overall school performance since receiving sponsorship, 52.4% of children stated that it had "improved a lot", and a further 38.1% reported that it had "improved somewhat".

Confidence in the main school subjects was also high. On a five-point confidence scale, 61.9% of respondents rated themselves at the top two levels (4=confident or 5=very confident). These self-perceptions were consistent with reported examination outcomes. In the most recent exam:

- **57.1%** of children reported an **average score between 60% and 79%.**
- **9.5%** reported **scoring above 80%.**
- **28.6%** were clustered in the **40–59% score band.**

While no respondent reported average scores below 40%, only one child (4.8%) was unsure of their marks.

Roughly **two-thirds of the sample were performing at or above 60%, with a smaller high-performing group above 80%,** and no evidence of widespread low attainment.

3.6 Participation in learning activities and recognition

Beyond formal attendance, the program appeared effective in strengthening children's engagement with learning. 90.5% reported that friends or teachers had praised them for their studies, indicating that academic effort and progress were being positively reinforced within the social environment. 52.4% rated their pride in their progress at the second-
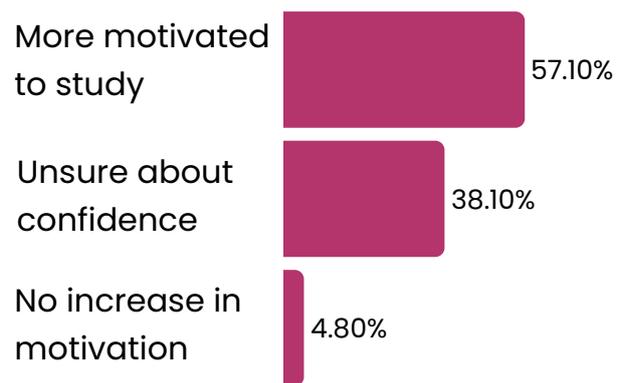
Figure 06: Confidence from the program

highest point on the scale (4 out of 5), with a further 38.1% at intermediate levels. 95.2% of children reported feeling confident about their future, with no respondent selecting a negative response.

95.2% Feel happy and confident about their future

3.7 Parental/caregiver experiences and teacher observations

Teacher and caregiver perspectives reinforced the quantitative evidence of improved engagement and confidence. Stakeholders consistently described shifts in children's communicative behaviour and willingness to participate. One facilitator noted that:

> *Before, they (children) hesitated to speak and couldn't express their thoughts. Now, they speak openly.*
>
> *~Focus Group Discussion, Parent*

This testimony aligned with the high reported levels of confidence in subjects, increased motivation to study and frequent praise from peers and teachers, indicating that effectiveness was visible not only in test scores but also in classroom participation and social-emotional growth.

4. Impact

4.1 Academic improvement

The program generated clear academic impacts that went beyond short-term enrolment and attendance. Building on the achievement and progression patterns described in earlier sections, children also perceived that their academic trajectories had strengthened in ways that were meaningful for their futures. When asked directly whether **the sponsorship had prepared them better for future jobs or higher studies, 95.2% of respondents answered "yes"**, while only 4.8% were unsure, and none responded negatively. **This self-assessment indicated that children experienced the academic gains from sponsorship not only as improved marks in the present but also as enhanced readiness for subsequent educational and employment opportunities.**

4.2 Higher motivation and enjoyment of school

The data suggested that **the program had shifted the nature of children's engagement with school from obligation-driven attendance towards more intrinsically motivated learning.** Previous sections showed that children reported greater enjoyment of school and a stronger motivation to study following their participation in the program. In the impact analysis, these changes were interpreted as important intermediate outcomes: heightened enjoyment and motivation were understood by caregivers and staff as mechanisms through which sponsorship translated into sustained effort, persistence through difficulties, and willingness to participate in additional learning opportunities.

4.3 Confidence in subjects and class participation

The impact of sponsorship on confidence was evident both in children's own ratings and in stakeholder observations of classroom and group behaviour. Data on behavioural and communication changes documented a pattern of positive transformations, **with children becoming more confident when expressing ideas, asking questions, and engaging with peers.**

Art and creative activities emerged as an important channel for building academic and non-academic confidence. This broadened the basis for participation, allowing children to approach classroom learning from a position of greater self-belief.

4.4 Social-emotional and life skills growth

Beyond academic gains, the intervention had substantial social-emotional effects. **The qualitative data on the impact showed authentic family formation and natural sibling relationships and highlighting that children experienced SOS homes as genuine family environments rather than as purely institutional spaces.**

These relationships provided everyday opportunities to learn empathy, cooperation, conflict resolution, and shared responsibility—core life skills that complemented formal academic learning. The stable presence of long-serving SOS mothers further reinforced socio-emotional development.

Such continuity enables children to form secure attachments and internalise lasting norms around education, work, and mutual support. When combined, these patterns demonstrated that the program's influence extended beyond academic achievements. It also **supported the development of resilience, self-worth, and relational skills—capacities that are likely to influence how children navigate adolescence and adulthood.**

4.5 Child self-ratings of future readiness and aspirations

Children's own accounts of their futures provided a powerful lens through which to view the impact. In addition to their earlier ratings of confidence and motivation, the data captured how they envisaged their educational and occupational pathways.

When asked what they planned to do after finishing Class 10, 81.0% of respondents stated that they intended to continue to Class 11/12, 4.8% planned to join a vocational training course, and 14.3% were unsure; none reported plans to leave education for immediate work. In effect, **four out of five children saw themselves continuing in formal schooling.**
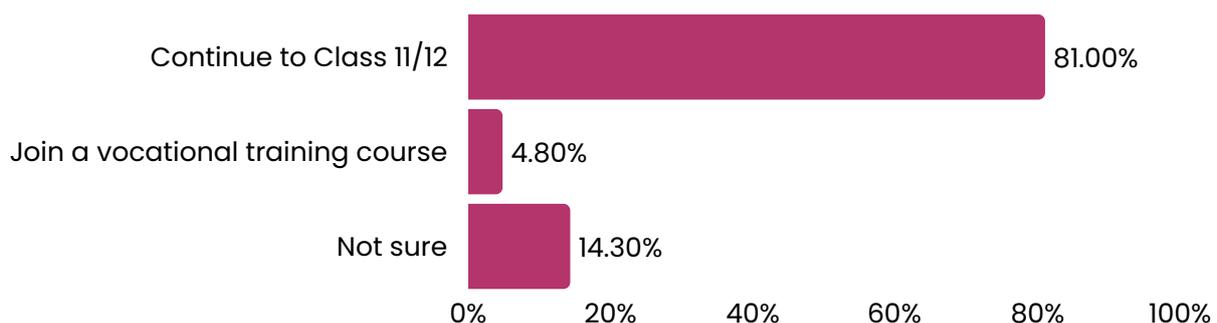
Figure 07: Distribution of respondents' aspirations post completion of class 10th

Aspirations were similarly future-oriented and oriented towards skilled professions. When asked to state what they would like to become in the future, 28.6% named "doctor", 14.3% "engineer", 9.5% "police", 4.8% "teacher", 4.8% "artist", and 38.1% selected an "other" category that included a diversity of professional ambitions, including army officers, cricketers, entrepreneurs and Chartered Accountants (CAs). These distributions suggested that **children envisioned careers requiring continued education and specialised training and that they regarded current sponsorship support as a stepping stone towards such trajectories.**

Combined with the finding that 95.2% felt the sponsorship had prepared them better for future jobs or higher studies, these self-ratings underscored the perceived impact of the program on children's longer-term life chances.

4.8%
Artist

14.3%
Engineer

28.6%
Doctor

4.8%
Teacher

9.5%
Police

38.1%
Others

Army officers, Cricketers, Entrepreneurs and CA
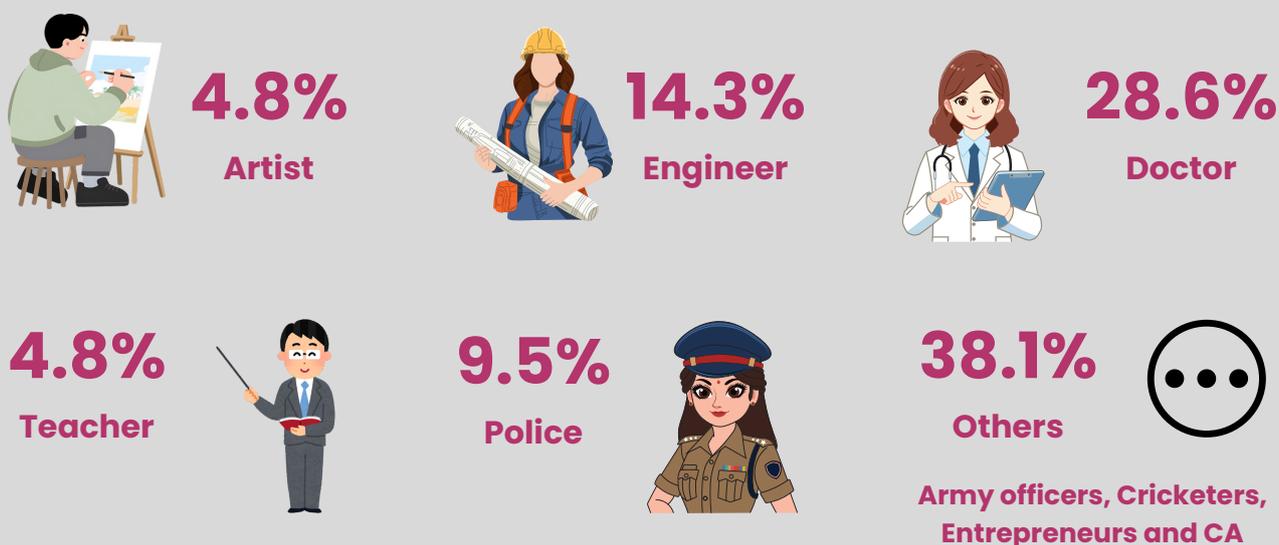
Student stories and case examples:
The combination of survey data and qualitative narratives allowed the reconstruction of plausible "impact pathways" for individual students. A typical pathway began with a child entering SOS care after severe early adversity, benefiting from sponsorship that removed financial barriers to schooling and provided consistent material support, and then gradually accumulating academic achievements and confidence through remedial classes, co-curricular activities, and strong caregiver–teacher backing. Over time, such support translated into concrete milestones: successful completion of key examinations, continuation into higher secondary education, and, in some cases, transition into professional courses or employment.

5. Efficiency

5.1 Timeliness of scholarship support

The efficiency analysis revealed a largely timely and predictable delivery of scholarships and associated educational supports. Children overwhelmingly reported receiving supports on time during the last academic year, as previously reported.

Caretakers strongly corroborated this pattern with qualitative evidence, describing a well-established routine that planned and delivered sponsorship-funded items in accordance with school calendars. One SOS mother summarised this by noting that **"everything is fixed and provided on time"**, underscoring that, from the household perspective, delays in fees, uniforms or books were the exception rather than the norm.

Children's own reflections on what worked well in the program further highlighted timeliness as a valued feature. When asked to identify one aspect of sponsorship they particularly appreciated, 38.1% of respondents selected "getting books and uniforms on time." This endorsement of punctuality—alongside other valued elements, such as extra classes and activities—suggested that **timely delivery was achieved administratively and recognised by beneficiaries as central to the program's effectiveness.**

5.2 Responsiveness to challenges (delays, disruptions)

The program demonstrated a notable capacity to respond to disruptions or delays when they occurred. In situations where there were changes in sponsorship—for example, timing issues or other implementation challenges—**66.7% of children reported that the program "helped a lot" to adjust, and another 14.3% indicated that it "helped somewhat". 81.0% perceived a change in support following such disruptions.**

These distributions suggested that, for around four out of five respondents, corrective measures were visible and meaningful: children noticed that staff intervened to minimise the negative impact of delays (for instance, by arranging temporary alternatives or speeding up subsequent disbursements). The minority reporting no change highlighted that there remained scope to further standardise adaptive responses, but problems were generally addressed.

5.3 Perceived quality and use of resources

Children's evaluations of the effectiveness of communication and support systems offer crucial insights into their efficiency. In response to the question of whether supports such as books and fees represented a good use of program resources, 33.3% of respondents rated them as "very good," 57.1% as "good," and 9.5% as "okay." All children found them at least "okay." **This distribution indicated that nearly all respondents viewed the allocation and use of sponsorship funds positively, with two-thirds clustering at the high end of perceived value.**

Program Satisfaction Scales

😊 😊   **4.8% Very Satisfied**

😊   **33.3% felt Satisfied**

😐   **47.6% felt Neutral**

☹️   **9.5% felt dissatisfied**

☹️ ☹️   **4.8% felt Very dissatisfied**

From an efficiency perspective, the results indicated that most beneficiaries experienced the combination of processes, communication, and service delivery as acceptable or better, with clear room for incremental improvement.

Children's responses about what worked particularly well shed further light on specific features of the support system. When invited to name one aspect they appreciated most, 47.6% cited "extra classes helped learning", and 47.6% noted that "activities like sports made school fun", alongside the 38.1% who highlighted the timely provision of books and uniforms. Smaller proportions pointed to caregiver encouragement (4.8%) and "other" elements (19.0%). **This pattern suggested that children valued not only punctual delivery of inputs but also the broader ecosystem of academic and co-curricular support in which these inputs were embedded.**

Image 1: Hermann Gmeiner School Park

6. Sustainability

6.1 Local capacity (staff and technical support)

Sustainability of the sponsorship model was closely linked to the institutional capacity of SOS staff to provide ongoing academic support and maintain conducive learning environments. Quantitative data showed that all respondents (100.0%) reported receiving extra tuition or remedial classes supported by SOS. **This universal coverage suggested that remedial support had not been a short-term feature but had been embedded as a routine, institutionally provided service, reflecting strong local capacity for sustained academic accompaniment.**

The learning environment at home also appeared largely sustainable. 95.2% of children reported having a suitable place at home (quiet and well-lit) to study, while only 4.8% indicated that they did not. This indicated that, in almost all cases, SOS family homes had been organised in ways that allowed regular study, which is essential for maintaining long-term educational progress.

6.2 Beneficiary belief in long-term support value

Beneficiaries' confidence in the appropriateness and reliability of support formed another pillar of sustainability. When asked whether the sponsorship provided the right kind of help that matched what they needed most for school, 100.0% of respondents answered "yes". This unanimous endorsement went beyond general satisfaction: it suggested that children experienced the type of support as correctly targeted to their primary educational needs, reinforcing trust in the program's relevance over time.

6.3 Continuation of educational progress and aspirations

Sustainability also depended on whether the program supported children in maintaining educational momentum and in aspiring to further learning. Earlier sections showed that a large majority planned to continue in formal education and aimed for skilled professions.

In sustainability terms, this indicated a virtuous cycle: sponsorship had already established a solid baseline of educational progress, and children were actively seeking enhancements (academic, informational, and

technological) that would allow them to keep advancing. Their articulated demand for career guidance and digital access particularly underscored a forward-looking orientation towards higher education and labour-market readiness.

6.4 Family/community influence and ownership of learning norms

Sustainability was reinforced by the extent to which positive learning norms had been internalised within the SOS family/community environment. Enjoyment of school and confidence in participation—both critical for long-term continuity—were strongly reflected in the remaining quantitative indicators. In response to the question "How much do you enjoy going to school now?" 47.6% of children chose the highest option (5 = "a lot"), and a further 33.3% selected 4. Smaller proportions selected 3 (4.8%) or 2 (14.3%), and none chose "not at all". Thus, more than four in five respondents positioned themselves at the upper end of the enjoyment scale. Such high levels of enjoyment are important for sustainability because they suggest that attending school has become a positively valued part of everyday life, rather than a burden imposed from outside.
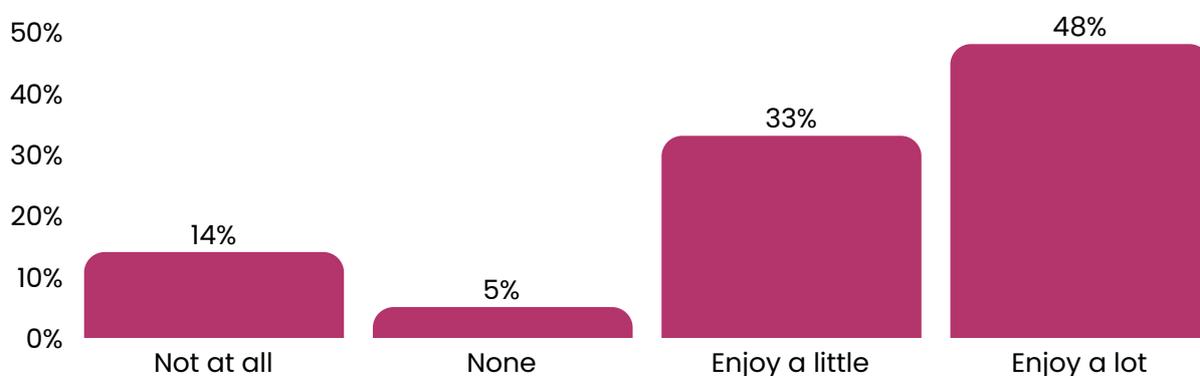
Figure 08: Enjoyment in going to school

Theory of Change (ToC)

IMPACT

- Educational Achievement:
- Higher Education Success:
- Employment Readiness:
- Creating joy-based learning
- Intergenerational Success:
- Evolution of better parenting

IMPACT
100 %
Children achieving first division results in board examinations

60%
Children pursuing graduation or master's programs

OUTCOMES

- **Academic Performance Improvement:** Enhanced grades, examination results, and yearly promotion rates
- **Higher Education Participation:** Increased enrollment in post-secondary education and vocational training
- **Digital Competency, Behavioural and Social Development:** Functional technology skills and certification achievement
- **Educational Continuity:** Sustained engagement in learning and reduced dropout rates

OUTPUTS

- **Educational Material Access:** Complete provision of required learning materials and resources
- **Skill Certification Achievement:** Digital literacy certificates (CCIB/CCAB) for eligible youth
- **Academic Support and Career Guidance Delivery:** Regular tuition and remedial classes for children requiring additional support

INPUTS

- **Financial Sponsorship:** Comprehensive funding covering school fees, educational materials, uniforms, and examination costs.
- **Educational Materials:** Complete provision of books, stationery, school bags, uniforms, and learning resources.
- **Digital Literacy Investment:** CCIB and CCAB certification programs for technology skill development.
- **Infrastructure Support:** Tuition classes, remedial education, and career counselling services.
- **Strategic Partnerships:** Collaboration between Mphasis F1 Foundation, SOS Children's Villages, and educational institutions

THEORY OF CHANGE

- Input Pathway

The education sponsorship component demonstrated robust input foundation through comprehensive financial and programmatic support allocation. **The Mphasis Foundation had provided INR 1,30,00,000 total grant funding, with approximately Rs. 30 lakhs specifically allocated for education sponsorship of 126 children across six SOS villages.** This financial input had enabled comprehensive educational support covering formal schooling, vocational training, and holistic development programming.

- Activity Stage Implementation

The activity stage had demonstrated exceptional effectiveness in comprehensive support delivery across formal, non-formal, and informal education components. Implementation encompassed systematic provision of educational materials, with caregivers confirming that "when a child arrives, their school admission is done, uniform, copies, books—everything" (Parents 2, FGD 1). **This comprehensive material support had eliminated financial barriers to educational access.**

Holistic development activities had achieved successful integration within the SOS family-based care model. Professional educator testimony validated program alignment: "The concept of SOS here is like the mother and children concept" (Teacher, KII). The activity implementation had created conditions where educational support was enhanced rather than disrupted existing care relationships and family formation processes.

- Output Achievement Validation

The output stage had demonstrated universal achievement of enrollment and support provision objectives. Quantitative data confirmed 100% school enrollment of sponsored children, with institutional outcomes indicating that "right now we have around 79 children in higher education, and out of them, about 60% of the children are in graduation or master's programs" (Implementation Team, KII). **The output validation encompassed comprehensive educational material provision, with systematic delivery of uniforms, books, fees, and learning resources, creating stable educational foundations for all sponsored children.**
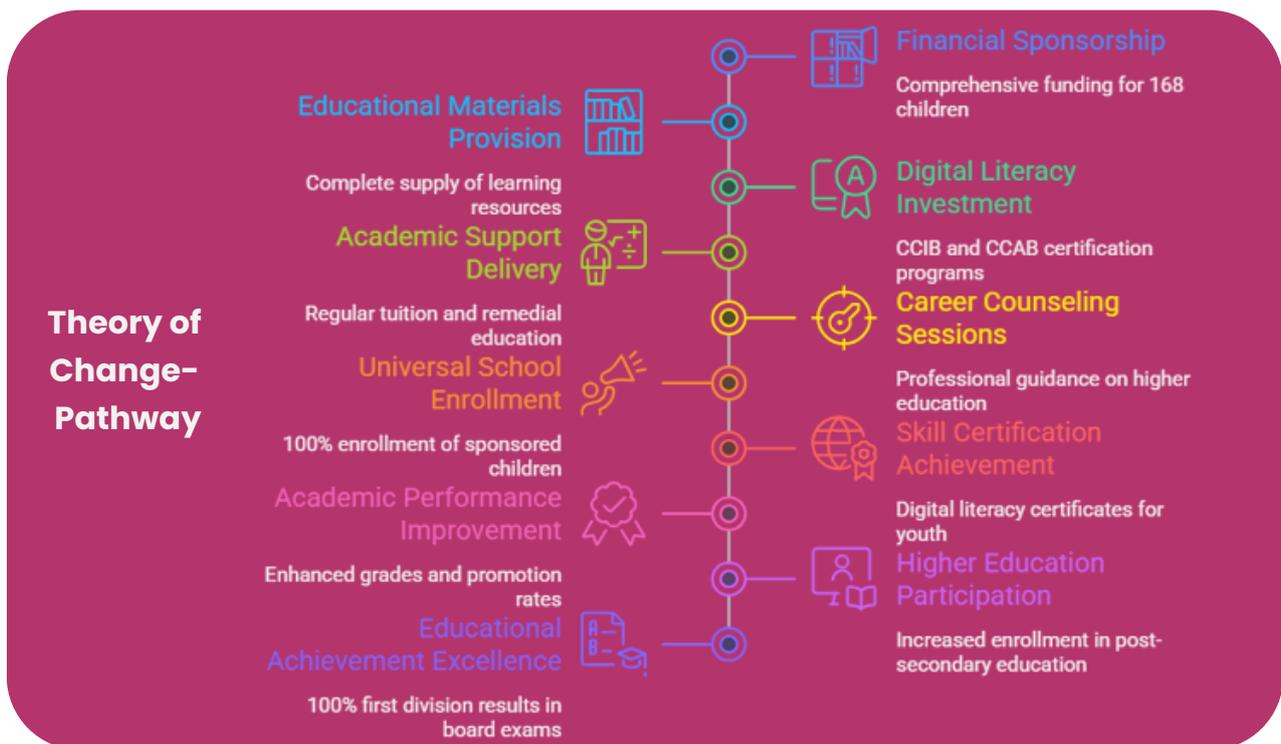
- Outcome Stage Transformation

Outcome validation had confirmed successful translation of educational inputs and activities into measurable behavioral and academic improvements. **Academic performance outcomes demonstrated exceptional achievement, with institutional data revealing "last year 100% of the children in board classes got first division" (Implementation Team, KII).** This outcome represented a significant advancement beyond baseline educational expectations.

Behavioral transformation outcomes had achieved remarkable success in confidence development and communication enhancement. These behavioral outcomes had created foundations for continued educational engagement and social development.

- Impact Stage Achievement

Impact validation demonstrated profound life transformation achievements extending far beyond immediate educational objectives. Long-term career success outcomes provided robust evidence of intervention effectiveness, with institutional caregivers documenting international professional achievements. The impact stage had validated improved family bonds as a critical pathway through which educational support translated into life transformation. Stakeholder testimony confirmed that children had developed genuine family bonds: "They get a mother, they get a good education, they get care" (Parent 3, FGD 1).

Theory of Change- Pathway

Educational Materials Provision
Complete supply of learning resources

Academic Support Delivery
Regular tuition and remedial education

Universal School Enrollment
100% enrollment of sponsored children

Academic Performance Improvement
Enhanced grades and promotion rates

Educational Achievement Excellence
100% first division results in board exams

Financial Sponsorship
Comprehensive funding for 168 children

Digital Literacy Investment
CCIB and CCAB certification programs

Career Counseling Sessions
Professional guidance on higher education

Skill Certification Achievement
Digital literacy certificates for youth

Higher Education Participation
Increased enrollment in post-secondary education

Solar Electrification

1. Socio-demographic profile of respondents:

The survey encompassed 60 children participating in the solar electrification assessment at SOS Children's Village Bhimtal. The **gender distribution demonstrated a notable skew toward female participants, with 42 girls (70%) and 18 boys (30%).** This distribution indicates comprehensive female participation in the evaluation process.

Female 70%

Male 30%

Regarding age demographics, r**espondents ranged from 8 to 18 years, with a mean age of 13.73 years.** This age profile represents children primarily in late childhood through mid-adolescence.

The educational distribution reveals participation across the complete spectrum of basic and secondary education, from **Class 3 through Class 12. When categorized by educational stages, the sample included 23.3% (n=14) in Class 10, representing the largest single grade cohort, followed by 21.7% (n=13) in Class 5, and 15% (n=9) in Class 8.** The remaining participants were distributed across Classes 3-4, 6-7, 9, 11, and 12, with representation ranging from 1.7% to 11.7% per grade level.

This educational distribution demonstrates that the solar electrification benefits reach learners across all academic stages, with notable concentration in Classes 5, 8, and 10—grades that typically correspond to heightened academic demands, board and critical educational transition points.
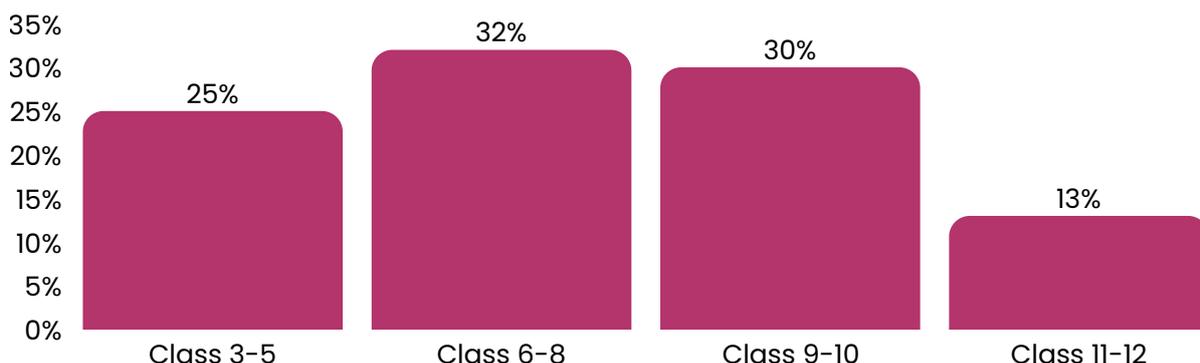
Figure 09: Distribution of respondents across different grades- Solar electrification

2.1. RELEVANCE OF SOLAR ELECTRIFICATION

The solar electrification component of the Mphasis Foundation's CSR initiative at SOS Children's Village Bhimtal demonstrates exceptional relevance across multiple dimensions of need assessment and contextual appropriateness. **Quantitative data analysis reveals overwhelming stakeholder validation, with 96.7% of respondents confirming that the solar project either "fits SOS goals well" (85%) or "mostly" aligns with organisational objectives (11.7%).** This high level of consensus is particularly significant given that 73.3% of respondents possess over three years of institutional experience, providing a robust foundation for informed assessment.

ADDRESSING CRITICAL INFRASTRUCTURE NEEDS

- Power Reliability as an Educational Barrier

The solar electrification intervention directly addressed one of the fundamental infrastructure barriers that significantly impeded educational outcomes at SOS Bhimtal. Qualitative evidence revealed that frequent power outages constituted a systemic challenge to children's learning environment and study routines. As documented by parent 1, mentioned during focus group discussions, "Before, the power used to go out a lot. Now, it's almost negligible."

The geographic context amplifies the relevance of this intervention, as mountain regions experience disproportionately higher rates of electrical grid instability. The hill station location of Bhimtal, while providing a conducive environment for child development, presented unique infrastructural challenges that the solar installation directly mitigated.

> "
> *Since this is a hilly area, power outages are frequent here. Now this acts more like an inverter and helps us*
>
> **—Parent 1, FGD**

- Safety and Security Considerations

Beyond educational infrastructure, the solar electrification addressed previously unidentified but critically important safety concerns. Qualitative data analysis revealed an **emergent theme of enhanced physical security, particularly regarding nocturnal wildlife encounters.** A parent from Focus Group Discussion 2 had articulated this concern: "at night, there is fear of animals...We have light all around." This demonstrated that the intervention's relevance extended beyond its primary educational objectives to encompass child safety and caregiver peace of mind.

ALIGNMENT WITH EDUCATIONAL PROGRAMMING

The solar electrification demonstrated direct relevance to core educational objectives through its impact on learning environments. **As observed by a teacher, "children all do self-study in their homes...they are able to do self-study well in their rooms at home." This shift from communal to individualized study spaces** represented a fundamental improvement in pedagogical conditions that directly supported diverse learning styles and preferences.

Quantitative validation supported this qualitative finding, with 86.7% of respondents confirming that reliable electricity had helped them "benefit more from education sponsorship" to a significant degree, while an additional 13.3% reported moderate benefits. This near-universal positive response (100% combined positive responses) demonstrated clear alignment between infrastructure improvements and educational programming effectiveness.
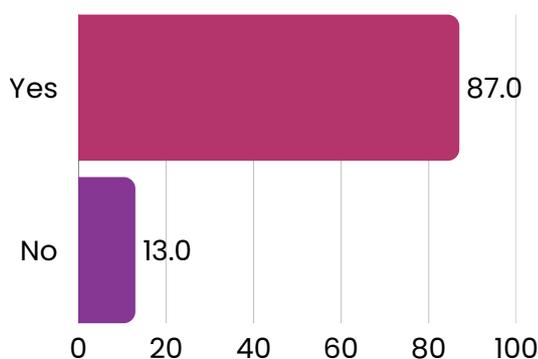
Figure 10: Solar electrification has helped to benefit more from the education sponsorship program.
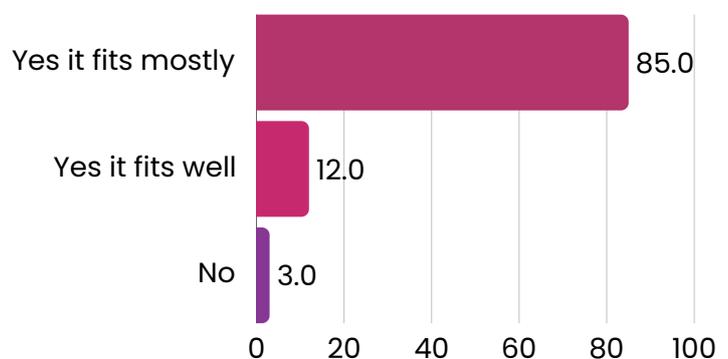
Figure 11: Solar project matches what your village needed for better education and daily life

Particularly regarding nocturnal wildlife encounters. A caretaker during the interview articulated this concern: "At night, there is fear of animals... We have light all around." Thus demonstrating that the intervention's relevance extends beyond its primary educational objectives to encompass child safety and caregivers' peace of mind.

CONTEXTUAL APPROPRIATENESS AND CREDIBILITY

The solar technology demonstrated exceptional contextual appropriateness for the Uttarakhand hill station environment. The region's favorable solar irradiance patterns and climatic conditions created optimal photovoltaic energy generation potential, while the mountainous terrain—despite contributing to grid instability—simultaneously provided strategic advantages for renewable energy implementation.

Assessment credibility was significantly enhanced by respondents' substantial institutional experience. With 73.3% of participants possessing over three years of facility experience and 88.3% having more than one year of institutional familiarity, relevance validation emerged from informed, experiential assessment rather than superficial observation. High stakeholder satisfaction levels and consistent confirmation of need-alignment indicated that solar electrification had achieved both immediate operational utility and sustained institutional value, validating the intervention's contextual appropriateness and strategic alignment with organizational objectives and environmental conditions.


Image 2: College Campus

2.1. EFFECTIVENESS

Power Reliability and Grid Stability Improvements

- Reduction in Power Outages During Study Hours

The intervention had achieved substantial improvements in power reliability during critical evening study periods. Pre-intervention data had indicated that 98.3% of respondents experienced power cuts during study time either daily (25%) or frequently (3-5 times weekly at 28.3%), with an additional 45% experiencing intermittent disruptions. Post-intervention analysis revealed a fundamental transformation: 38.3% reported no power cuts during study time, while 56.7% experienced only occasional disruptions (1-2 times weekly).
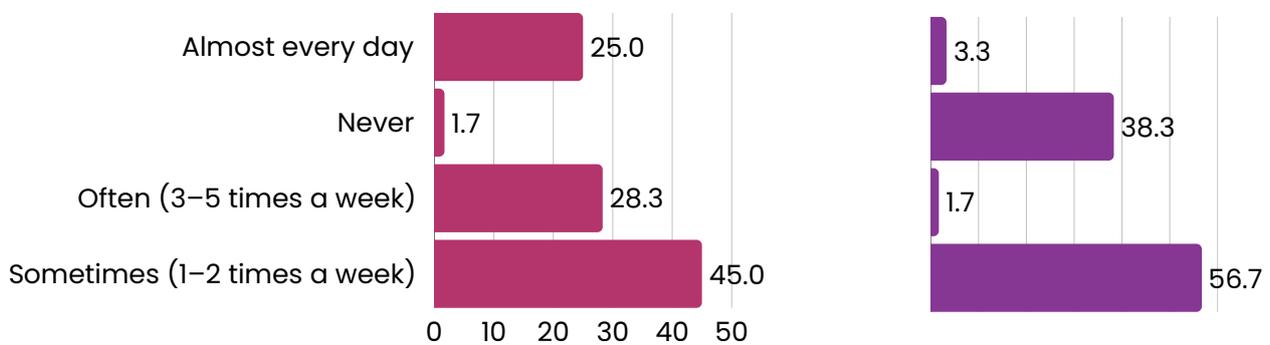
Figure 12: Frequency of power cut: Pre-intervention data

Post-intervention data

Enhanced System Integration and Performance

The solar installation demonstrated effective integration with existing electrical infrastructure, creating a robust hybrid power system. Stakeholder testimony confirmed successful technical synergy: "Now there is also an inverter" (Parent 1, FGD), indicating that the solar system enhances rather than replaces existing backup power solutions.

This was further validated by stakeholder satisfaction with system performance. Quantitative data revealed that 75% of respondents agreed or strongly agreed that "solar panels have made electricity% more reliable at home/village," with only 3.4% expressing disagreement. This high level of satisfaction indicated effective technical implementation and operational performance.
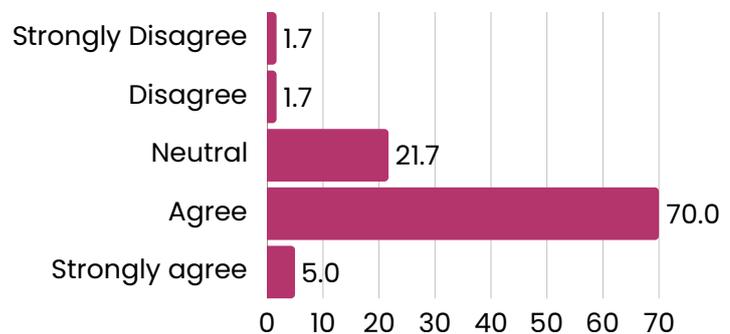
Figure 13: The solar panels have made electricity more reliable at home/village

EDUCATIONAL ENVIRONMENT AND LEARNING OUTCOMES

- Extended Study Time Availability

The intervention had achieved remarkable effectiveness in extending daily study time availability. Pre-intervention conditions had severely constrained educational activities, with 51.7% of respondents having only 1-2 hours of daily lighting for study purposes and 15% having three or fewer hours available. **Post-intervention data revealed that almost all the stakeholders mentioned universal access to 24-hour lighting availability, representing a complete transformation of educational infrastructure conditions.**
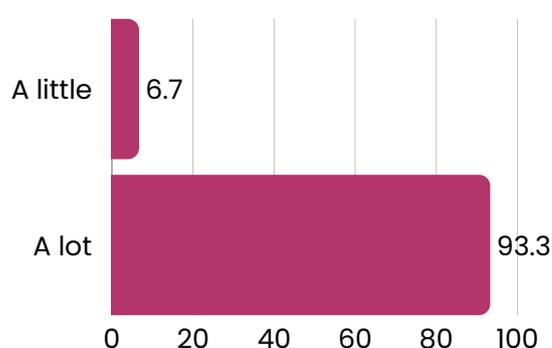
This infrastructure improvement had translated directly into behavioral changes in study patterns. Quantitative data indicated that 93.3% of respondents confirmed that better electricity had helped them "study longer in the evening" to a significant degree, with an additional 6.7% reporting moderate improvements. Qualitative testimony supported these findings: "their study timing has increased up to 11 or 12 o'clock" (Nandini Goswami, FGD_1), indicating substantial extensions in evening study periods.

- Learning Environment Enhancement

The intervention proved highly effective in improving learning environment quality beyond temporal extensions. Professional educator observations confirmed fundamental changes in study patterns: **"Before, children used to come to the community hall to study...Now, children all do self-study in their homes" (Teacher, KII).** This shift from communal to individualised study environments represented a qualitative improvement.

Extended reliable lighting effectively supports expanded evening educational programming. Children can now "improve their self-study. They can study late into the night" (Teacher, KII), enabling flexible scheduling that accommodates both formal educational requirements and individual learning preferences. This creates opportunities for remedial

Figure 14: Better electricity helped you study longer in the evening

instruction, homework completion, and enrichment activities previously constrained by infrastructure limitations.

SAFETY AND SECURITY OUTCOMES

- Physical Security Enhancement

The intervention had achieved significant effectiveness in addressing previously unidentified safety concerns related to evening and nighttime activities. Qualitative analysis revealed that reliable lighting had eliminated wildlife-related safety concerns that had constrained children's movement and activities. As documented by caregivers: "At night, there is fear of animals...We have light all around" (Parent 3, FGD 2). This safety improvement represented an important unintended positive consequence of the intervention.

- Enhanced Freedom of Movement

The lighting improvements effectively eliminated movement restrictions that had previously constrained evening activities. Caregiver testimony confirmed this benefit: "When we go outside, we don't face any problems" (Parent 3, FGD 1). This enhanced mobility supports broader child development objectives by enabling participation in evening educational and recreational activities without safety concerns.

2.3. EFFICIENCY

IMPLEMENTATION QUALITY AND PROJECT MANAGEMENT

- Installation Process Efficiency

The solar installation had demonstrated exceptional efficiency in project execution with minimal disruption to the residential care environment. Quantitative data revealed that 70% of respondents had characterized the installation process as "very well organized," with an additional 26.7% rating it as acceptable. Only 3.3% of respondents had been unable to assess the process, indicating widespread awareness and positive reception of implementation activities.
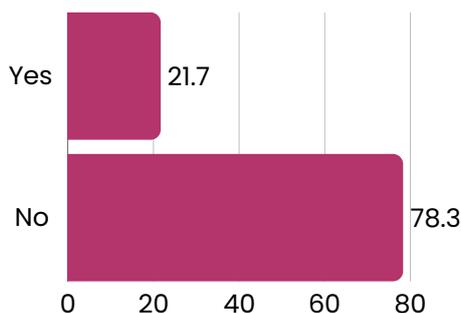
Figure 15: Maintenance of Solar panels was well followed up on
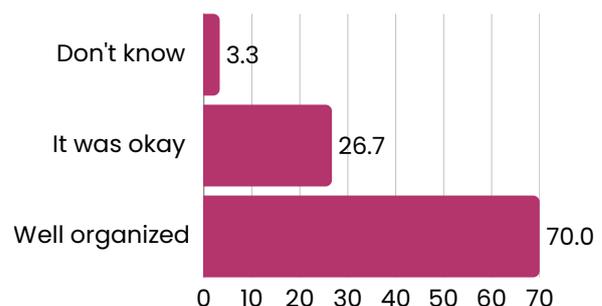
Figure 16: Installation of the solar panels well-organised,

– Resource Optimization and Material Management

The intervention achieved high efficiency in resource utilization, with 73.3% of respondents confirming optimal use of time and materials. This resource optimization efficiency extended beyond initial implementation to encompass ongoing operational benefits. Administrative leadership confirmed that the intervention enabled strategic resource reallocation: "the cost saving we get, we can invest that in other ways for other welfare work" (Implementation Team, KII).

– Problem Resolution and Adaptive Management

The implementation had demonstrated exceptional efficiency in challenge management, with 78.3% of respondents reporting no problems during the installation process. This high success rate indicated effective advance planning, appropriate technology selection, and competent execution. **For the 21.7% who had experienced implementation challenges, 100% confirmed rapid and effective problem resolution, suggesting robust contingency planning and responsive technical support.**

The efficiency of problem resolution proved particularly important in the hill station context, where weather conditions and terrain challenges could complicate technical installations. The absence of reported unresolved issues indicated that the implementation team had effectively anticipated and managed contextual challenges while maintaining project timelines and quality standards.

COST-EFFECTIVENESS AND VALUE CREATION

– Financial Efficiency and Return on Investment

The solar installation had demonstrated exceptional cost-effectiveness through significant operational cost reductions that enabled resource optimization. Stakeholder testimony confirmed that even modest savings generated substantial institutional benefits: "Even if we save ₹20-30 out of ₹100, if even that much is saved, it's a huge benefit to our NGO" (Parent 3, FGD_2).

The financial efficiency extended beyond direct electricity cost savings to encompass broader operational efficiencies. Reduced dependency on backup power systems, decreased need for alternative lighting solutions, and elimination of disruption-related costs contributed to comprehensive financial efficiency that supported expanded educational programming.

- Capacity Building and Training Efficiency

The intervention had included efficient knowledge transfer components designed to ensure sustainable operation and maintenance. Technical partner testimony confirmed that training had been provided on essential maintenance procedures: "we mentioned about how the panels should be kept clean" (On-ground partner, KII). **The training had led to improved implementation efficiency by addressing sustainability requirements during the installation phase rather than requiring separate capacity building interventions.**

> *It has made it safer...at night, there is fear of animals. The convenience is so much that we have light now*
>
> **— Caregiver 2, FGD 2**

- Operational Efficiency Improvements

Post-installation efficiency gains were evidenced by infrastructure improvements observed by 91.7% of respondents, who had noted better or more efficient operation of fans and lighting systems. This finding suggested that the intervention not only addressed primary power reliability objectives but also enhanced the efficiency of existing electrical systems through improved power quality and stability.

The intervention also created ongoing efficiency gains through reduced dependence on expensive backup power systems, decreased maintenance requirements for electrical equipment operating under stable power conditions, and elimination of disruption-related costs associated with frequent power outages.
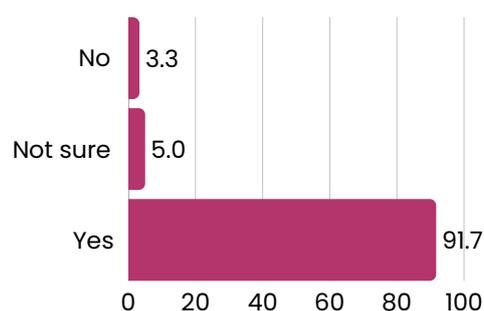
Figure 17: Electrical appliances function better after solar panel installation

No — 3.3
Not sure — 5.0
Yes — 91.7

2.3. IMPACT

STUDY ROUTINE AND BEHAVIORAL IMPACT

- Academic disruption elimination and study routine transformation

Pre-intervention conditions had significantly impacted homework completion, with 46.7% of children experiencing power-cut related disruptions to academic tasks (20% frequently, 26.7% occasionally). Post-intervention improvements in power reliability directly addressed these academic barriers, enabling more consistent homework completion and academic task management. **The elimination of power-related study disruptions represented a critical pathway through which infrastructure improvements translated into educational outcomes, supporting both immediate performance and development of academic discipline contributing to long-term success.**

The intervention had generated substantial impact on daily study routines, with 85% of beneficiaries reporting positive changes (35% significant improvement, 50% major transformation). Only 5% reported no change in study routines. This behavioral impact indicated that infrastructure improvements enabled fundamental shifts in how children approached and organized their educational activities.

Qualitative evidence supported these findings, with caregivers noting substantial extensions in study time availability: "their study timing has increased up to 11 or 12 o'clock" (Parent 1, FGD 1). The ability to maintain consistent study routines regardless of grid power availability represented a significant improvement in educational stability and predictability.
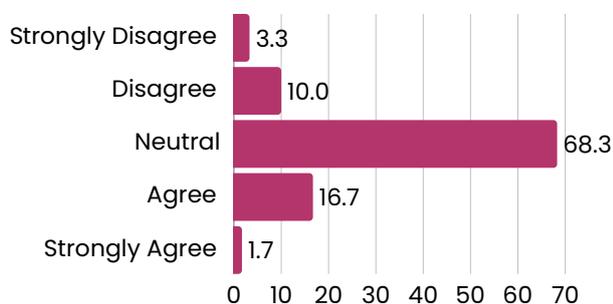
Figure 18: The ability to focus on your homework improved after solar power installation
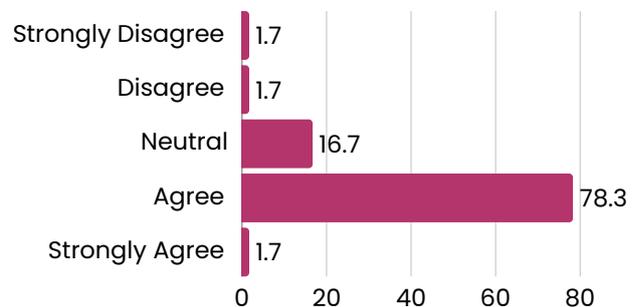
Figure 19: Electrical appliances function better after solar panel installation

- Technology Integration and Digital Learning

While technology integration had not been a primary intervention objective, the solar installation had enabled enhanced access to digital learning resources. Although 15% of respondents never used electronic devices for schoolwork, 71.7% used computers or tablets occasionally, with 8.3% using them frequently and 5% using them daily. This finding suggested that reliable power had created foundations for expanded technology integration in educational programming.

- Academic Focus and Performance Enhancement

The intervention had achieved substantial impact on fundamental learning conditions, with 80% of beneficiaries confirming that consistent solar-powered lighting made reading "easier and more comfortable." Only 3.4% expressed disagreement, while 16.7% remained neutral, indicating that improved lighting conditions directly translated into enhanced learning experiences for the vast majority of children.

The solar installation had generated measurable improvements in children's ability to concentrate on academic tasks, with 86.7% of respondents reporting enhanced homework focus (68.3% some improvement, 16.7% significant improvement, 1.7% great improvement). Only 3.3% reported no improvement, representing a direct pathway through which infrastructure improvements translated into educational outcomes.

The intervention demonstrated significant impact on academic performance, with 81.6% of students reporting improvements in school performance (65% some improvement, 13.3% significant improvement, 3.3% great improvement). These improvements aligned with institutional outcomes data confirming that "last year 100% of the children in board classes got first division" (Implementation Team, KII). Professional educator observations corroborated these findings, noting that children could now "improve their self-study. They can study late into the night" (Teacher, KII).
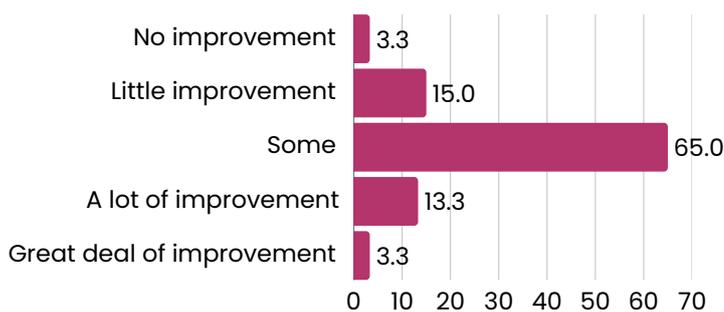
Figure 20: Change in performance in school
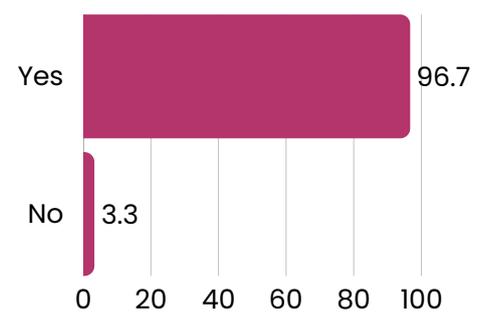
Figure 21: Solar improved living condition

- Science and Technology Knowledge Development

The solar installation had generated significant educational benefits in science and environmental awareness, with 88.3% of children reporting enhanced understanding of solar technology functioning. Teacher testimony confirmed this environmental learning impact: "children can understand that solar power is very beneficial for the future...there is no harm to our natural resources" (Teacher, KII). This environmental consciousness development had created foundations for lifelong sustainability awareness and responsible environmental behavior.

- Confidence and Self-Efficacy Development

The intervention had demonstrated significant impact on children's confidence in their academic capabilities, with 61.7% reporting increased confidence in their studies. An additional 30% reported no change in confidence levels, while 8.3% reported decreased confidence. The positive confidence impact suggested that improved study conditions had enabled children to develop greater self-efficacy and academic self-concept.

Professional observations corroborated these confidence improvements, noting enhanced autonomous learning capabilities: "children all do self-study in their homes...they can do self-study well in their rooms at home" (Teacher, KII). The development of independent study skills and confidence

Figure 22: Solar electrification has improved confidence in studies

represented an important pathway through which infrastructure improvements contributed to long-term educational and personal development.

2.3. SUSTAINABILITY

- Long-term Operational Viability and Stability

The solar installation had demonstrated exceptional technical sustainability prospects, with institutional leadership providing authoritative assessment of system longevity. Administrative director Asheesh Kumar Singh had confirmed: "this is a long-term investment that if this plant runs for around 20-25 years after the investment, it will definitely create a lot of impact." This professional assessment, grounded in technical specifications and warranty arrangements, had provided robust foundation for sustainability planning.

Beneficiary confidence in system sustainability aligned with professional assessments, with 88.3% expressing positive expectations for continued functionality (70% definite, 18.3% probable). Only 11.7% expressed uncertainty about long-term performance, suggesting reliable performance characteristics that supported sustainability expectations.

The technical sustainability foundation had rested on quality equipment selection and professional installation standards. Technical partner validation confirmed adherence to rigorous procurement standards, with the implementation team maintaining "very strict SOP for procurement of all of our components...of the highest quality" (Kartik, Technical Partner). System integration with existing electrical infrastructure had enhanced sustainability by creating redundant capacity that reduced component stress while providing operational flexibility through hybrid solar-grid-inverter approach

> 66 *This is a long-term investment that if this plant runs for around 20-25 years after the investment, it will definitely create a lot of impact."*
>
> **— Parent 2, FGD 2**

- Stakeholder Acceptance and Community Ownership

The intervention demonstrated strong social sustainability through widespread stakeholder acceptance and appreciation. Community-wide acceptance

created social conditions that supported long-term sustainability through stakeholder investment in system protection and optimisation. The universal positive response to system benefits suggested that community members will actively support maintenance and preservation of system functionality.

The intervention generated environmental education benefits that support sustainability through enhanced awareness and appreciation of renewable energy systems. **Professional educators testimony confirmed knowledge development: "children are able to understand that solar power is very beneficial for the future...there is no harm to our natural resources" (Teacher, KII). This environmental consciousness creates informed stakeholders who understand system value and support maintenance requirements.**

- Staff Capacity and Technical Support Systems

The intervention included capacity-building components designed to support long-term sustainability through local maintenance capabilities. Technical partner testimony confirms that training was provided on essential maintenance procedures: "We mentioned about how the panels should be kept clean" (On ground partner, KII). This knowledge transfer approach created foundations for sustainable operation through local capability development.

Ongoing technical support arrangements provided additional sustainability assurance through professional maintenance services and performance monitoring. Remote monitoring capabilities enabled proactive maintenance scheduling and performance optimisation that supported system longevity and efficiency maintenance over extended operational periods.

Theory of Change (ToC)

IMPACT

- Enhanced academic Performance
- Life Skill Development:
- Improved Environmental Consciousness
- Quality of Life Improvement

IMPACT

80% solar electrification improved learning

97% of stakeholders have mentioned better overall living and studying experience

OUTCOMES

- **Extended Study Hours:** Universal 24-hour lighting availability enabling study time extension to 11-12 PM
- **Improved Homework Completion:** 93.3% reporting ability to study longer in evenings with enhanced focus
- **Enhanced Safety & Mobility:** Elimination of wildlife-related movement restrictions and caregiver anxiety
- **Educational Programming Expansion:** Reliable power enabling enhanced evening educational activities

OUTPUTS

- **Reliable 24-Hour Electricity Supply:** Consistent power availability, eliminating previous outage constraints
- **Power Quality Improvement:** Enhanced electrical system efficiency, along with evening study time, power cuts decreased from 98.3% to 38.3% occurrence
- **Energy Cost Reduction and increased Efficiency:** Improved operation of fans, lighting, and electrical equipment

INPUTS

- **Technical Infrastructure:** 130 kW grid-tie solar system installation with 383 crystalline solar modules and professional commissioning
- **Quality Equipment Procurement:** High-grade solar panels, inverters, mounting structures, and monitoring systems following strict procurement standards
- **Capacity Building Investment and system integration support:** Staff training on system maintenance, panel cleaning, and basic troubleshooting procedures
- **Strategic Partnerships:** Collaboration between Mphasis F1 Foundation, SOS Children's Villages, and EHandS Energy technical partners

THEORY OF CHANGE

- Input Pathway

The installation of a 130-kilowatt grid-tie solar system had achieved exceptional stakeholder satisfaction, with 70% rating the process as "very well organised" with minimal operational disruption. **Technical partner validation confirmed adherence to rigorous quality standards, with successful system integration enhancing rather than replacing existing electrical infrastructure capabilities.**

The activity stage had demonstrated partial validation of capacity-building assumptions. While technical partners had provided essential maintenance training—" we mentioned about how the panels should be kept clean" (On-ground Partner, IDI)—quantitative data revealed significant knowledge gaps, with 70% of beneficiaries unaware of maintenance responsibilities. This finding indicated successful training provision but highlighted the need for enhanced awareness initiatives to optimize sustainability outcomes.

- Output to Outcome Transformation

"Output stage validation had demonstrated exceptional achievement of power reliability objectives. The intervention had transformed electrical supply conditions, reducing evening study time power cuts from 98.3% occurrence pre-intervention to 38.3% experiencing no disruptions post-intervention. **Professional educator confirmation supported these quantitative findings: "power cuts that used to happen here have been mostly reduced" (Teacher 1, KII).** Additionally, 91.7% of stakeholders had observed improved electrical system efficiency, validating theoretical assumptions regarding both quantity and quality improvements in power supply.

Outcome validation confirmed successful translation of reliable power into extended educational opportunities. The intervention had achieved universal 24-hour lighting availability compared to 51.7% having only 1-2 hours pre-intervention, with 93.3% confirming enabled extended evening study time. Qualitative evidence provided specific validation: "Their study timing has increased up to 11 or 12 o'clock" (Student 3, FGD 1). Furthermore, the intervention had catalyzed fundamental pedagogical shifts from communal to individualized study environments, with professional educators confirming that "children all do self-study in their homes" (Teacher 1, KII)

- Impact Validation and Educational Outcomes

Impact stage validation had demonstrated substantial achievement of ultimate educational objectives. Study routine improvements were reported by 85% of beneficiaries, while 80% confirmed that solar lighting made reading "easier and more comfortable." The intervention's educational impact extended to measurable academic outcomes, with 81.6% reporting school performance improvements and 86.7% confirming enhanced homework focus capabilities.

The convergence of individual performance improvements with institutional academic achievements—including 100% first division results in board examinations—provided robust validation of theoretical assumptions linking infrastructure investment to educational success. Professional educator testimony confirmed comprehensive learning environment transformation: "they can improve their self-study. They can study late into the night" (Teacher 1, KII).

The causal pathway had demonstrated clear linkages from technical inputs through capacity building activities to reliable power outputs, extended study time outcomes, and improved learning environment impacts. Critical success factors included quality technical implementation, system integration effectiveness, and alignment with institutional educational objectives. The primary optimization opportunity involved enhanced maintenance awareness initiatives to strengthen sustainability foundations while building upon demonstrated intervention success.

Theory of Change- Pathway

- Professional Technical Implementation — Technicians installing equipment
- System Integration with Existing Infrastructure — Seamless integration with grid
- Staff Training on Maintenance — Training local team
- Knowledge Transfer to Local Team — Empowering local expertise
- Reduced Power Cuts (98.3% → 38.3%) — Significant decrease in outages

- 130KW Grid-Tie Solar System Installation — Solar panels on rooftops
- Quality Equipment Procurement — High-quality solar components
- Technical Installation & Commissioning — System setup and testing
- System Testing & Optimization — Ensuring peak performance
- Reliable 24-Hour Electricity Supply — Continuous power availability

Environmental Impact

- Total Projected Outcome

The 130KWp grid-connected solar system was designed to deliver substantial annual environmental benefits. With expected annual generation capacity of 200,200 kWh, the system was projected to achieve:

- **Annual CO2 Reduction:** 142 metric tons annually
- **Carbon Sequestration Equivalent:** Environmental impact equivalent to carbon sequestered by 2,342 trees grown for 10 years
- **Fossil Fuel Avoidance:** 63,522 liters of diesel savings and 71,202 kg of coal combustion avoidance annually
- **Long-term Impact:** 25 years of assured clean energy supply

- Current Performance Validation

a. Environmental Performance Summary:
System Generated: 106,037 units to date
CO2 Reduction Achieved: 84.83 metric tons
Diesel Savings: 28,571 liters
Coal Avoidance: 42.41 metric tons
Operational data validated the environmental effectiveness of the intervention. Current performance demonstrated substantial progress toward annual environmental targets, with tangible displacement of fossil fuel consumption through renewable energy adoption.

b. **Sustainable Development Goals Alignment:** The environmental benefits had aligned directly with **United Nations Sustainable Development Goals, particularly SDG 7 (Affordable and Clean Energy) and SDG 11 (Climate Action and Mitigation).** The intervention demonstrated practical implementation of climate change mitigation strategies while simultaneously achieving social development objectives, creating multiplicative impacts that advanced both climate and social objectives.

c. **Environmental Education and Awareness Development**

The solar installation generated significant environmental education outcomes among beneficiaries. Quantitative data revealed that 88.3% of children had gained enhanced understanding of solar technology functioning, creating foundations for environmental consciousness and sustainable behavior development. This educational dimension amplified environmental benefits by creating informed advocates for sustainable technology adoption.

d. **Resource Conservation and Circular Benefits**

The environmental impact had encompassed broader resource conservation benefits through reduced strain on conventional energy infrastructure and decreased fossil fuel demand. Cost savings generated through renewable energy adoption enabled resource reallocation for additional environmental and social programming, creating circular benefits that amplified initial environmental investments.

Conclusion

The solar electrification intervention had established robust environmental performance foundations that delivered immediate emission reductions while creating conditions for sustained environmental benefits and enhanced environmental consciousness among beneficiaries. The convergence of direct environmental impact through renewable energy generation with educational outcomes promoting environmental awareness created comprehensive environmental benefits extending beyond quantifiable emission reductions to encompass transformational changes in environmental understanding and behavior.

Recommendation

Based on a comprehensive analysis of the Mphasis solar electrification and education sponsorship program implementation and outcomes, the following strategic recommendations emerged to enhance intervention effectiveness, sustainability, and replicability:

- Solar Electrification: Maintenance Capacity Strengthening: Critical knowledge gaps regarding maintenance responsibilities require systematic addressing through comprehensive awareness and capacity-building initiatives. Enhanced training programs should target both staff and beneficiaries, creating multi-level understanding of system stewardship requirements. Regular refresher training sessions and visual maintenance guides should be implemented to optimize long-term system performance and sustainability.

- Education Sponsorship Component Recommendations

a. Target remedial support to learning levels, not only availability: Since 100% of children reported receiving SOS-supported remedial/tuition classes, yet a sizeable group still clustered in the mid-performance band (40–59% in recent exams), the program may consider using simple learning assessments to tailor extra support by subject and level rather than offering homogeneous tuition.

b. Alumni Network Development: The documented success of graduates achieving international careers and professional excellence presents opportunities for alumni engagement and mentorship programming. Systematic alumni networks should be established to provide career guidance, professional mentorship, and ongoing support for current beneficiaries. Graduate success stories should be documented and utilized for program advocacy and beneficiary motivation.

c. Formalise a structured career guidance pathway from Class 8 onwards: With 81% of children planning to continue to Classes 11–12 and many aspiring to skilled careers (doctor, engineer, police, teacher, CA, entrepreneur), the program may wish to introduce an age-banded guidance package (career talks, aptitude inputs, subject-choice counselling) so that aspirations are matched with realistic academic and vocational pathways.

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