

Executive Summary



Project Title

Teacher Training for Atal Tinkering Labs-Niti Aayog



Project Locations

PAN India



Programme Duration

20 December 2019 to 19 December 2024



Implementation Agency



SRF
FOUNDATION

Financial Assistance



₹11.55 Crore

Activities

- **Atal Tinkering Labs (ATL)**

120 **240** **35,000**

ATLs

teachers

students

spread across six States: Uttar Pradesh, Karnataka, West Bengal, Tamil Nadu,

- **Atal Community Innovation Centres (ACIC)**

14 **44** **50**

ACIC's

fellows

CEOs & Directors

spread across PAN India (9 states & 1 Union Territory).

- **TinkerCoding Phase II**

18,000 **30**

students

schools spread across 5 Locations - **Gurgaon (Haryana), Pune (Maharashtra), Trichy (Tamil Nadu), Salem (Tamil Nadu) and Hyderabad (Telangana).**

InnoSTEAM/ATL Labs

Key Findings

Lab Engagement & Access

96.30%

of students agreed that the lab is functional and accessible when required.

- Students reported using the lab **an average of 15 days per month**, with most spending regular hours on lab activities.

77.78%

confirmed that equipment such as Arduino, robotics kits, and 3D printers are working properly.

Teacher Support & Participation

100%

of students stated that teachers encourage regular lab participation.

70.37%

reported participating in lab activities beyond school hours.

93.33%

of teachers confirmed they can independently guide students in developing prototypes.

Teachers Training Participations

60%

of respondents are **Subject Teachers**

20%

serve as **ATL In-charge**

20%

as **InnoSTEAM Coordinators**

On average, teachers reported **4-20 years of teaching experience** and **1-4 years of experience handling ATL/InnoSTEAM labs**.

46.7%

attended both **InnoSTEAM Lab Programme and ATL Teacher Training**

33.3%

attended only **ATL Teacher Training**

20%

attended the **InnoSTEAM Lab Programme**

Skill Development Among Students

92.59%

of students reported improvement in **problem-solving skills** after this programme.

77.78%

said now they can **design and test prototypes independently**

66.67%

gained understanding of **basic electronics and coding concepts**.

96.30%

observed improvement in **teamwork skills**

88.89%

felt more confident presenting their ideas.

Prototype Development & Innovation

81.48% of students worked on **at least one prototype in the previous year**

out of which

70.37% stated their prototype addressed a **real-life problem**.

- Teachers reported that **60% of schools developed more than 10 prototypes annually**, while **13.33% each indicated 0-2, 3-5, and 6-10 prototypes developed per year by the students**.

Exposure & Learning Opportunities

48.15%

of students participated in **competitions or exhibitions**

44.44%

of students agree that **they interacted with mentors/ industry experts.**

59.26%

said exposure visits improved their understanding of **careers in technology.**

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exposure visits were conducted engaging **more than 100+ ATL schools**, providing hands-on learning and exposure to advanced science and technology domains.

Interest in STEM & Future Aspirations

74.07%

of students expressed interest in pursuing STEM or entrepreneurship in the future.

100%

reported that the lab increased their interest in science and technology.

Satisfaction with Lab Environment

96.30%

of students are **satisfied with the lab facilities.**

100%

stated the lab environment **motivates them to innovate**

100%

of students would recommend the lab to other students.

Teacher Capacity Building

46.7%

of teachers attended **4-7 days of training**

20%

attended **1-3 days**

13.3%

attended **8-12 days**

20%

attended **more than 12 days** under the project

- Training covered multiple technologies, including **3D Printing (73.33%), Robotics (73.33%), Coding/AI (60.00%), Design Thinking (53.33%), IoT & Sensors (46.67%), Arduino (40.00%), and Raspberry Pi (6.67%).** days of training
- **80% of teachers** rated the training quality as good or excellent.
- Teacher confidence in handling technology increased from **60% (pre-training)** to **93.33% (post-training).**
- **86.67%–93.33% of teachers** reported integrating **21st-century skills and design thinking approaches** in teaching.

Student Skill Improvement (Teacher Observation)

Teachers observed improvement in



53.33%

creativity



40%

teamwork



53.33%

confidence



46.67%

digital literacy

Institutional Support & Sustainability

93.33%

of teachers reported **strong school management support** for lab activities.

100%

stated that the lab is integrated into the **School Improvement Plan (SIP)**

80%

believe the lab can continue functioning effectively, through funding and technical support (26.67% each) where leadership and student innovation are the remaining key dependencies (6.67% and 40.00%).

Recognition & Achievements

- Findings show that, on an average 50-150 students participated in competition. Several students received **1-3 awards or certificates, with one student reporting a 3rd position recognition in competitions.**
- Awards were received for activities such as **project presentations, school exhibitions, Arduino/technology projects, and environmental or social awareness initiatives.**

Key Learnings/Limitations

Equipment Issues

The primary survey finding reveals that students, in some cases, found non-functional laptops, missing tools, uncharged batteries, non-functional motors, and lack of small solar panels, affecting prototype development.

Limited Lab Time

Students spend 2-3 hours/week or 45 minutes/day in the lab, which is below the target. This impacted hands-on learning and project completion to some extent. Teachers also cited internet issues limiting lab usage.

Maintenance & Infrastructure

The primary survey finding reveals that teachers sometimes noted equipment malfunctions, delayed servicing, and limited consumables as major hurdles in smooth lab operation.

** It is pertinent to mention here that the responsibility of maintaining/ setting up the ATL lab was more of NITI Aayog than SRF or Capgemini. The vendors for all the lab components were selected by NITI Aayog through their GEM portal.

Recommendations

1

Enhance Resources & Tools:

Provide fully functional laptops, internet, batteries, motors, small solar panels, Smart Boards, 3D printers, and advanced prototyping kits.

2

Increase Lab Time & Structured Classes

Incorporate full-period ATL/InnoSTEAM sessions in the weekly timetable instead of short 45-minute slots, with at least one dedicated ATR session per week.

3

Maintenance

Ensure regular maintenance of equipment and by skilled professionals for uninterrupted hands-on learning.

Atal Community Innovation Centre (ACIC)

Key Findings

- **Capacity Building**
100% of participants reported improved technical skills, with 90% of them showing increased social awareness and high confidence to take innovations to market.
- **Robust Infrastructure & Mentorship**
From sample, 100% satisfaction with lab facilities and 90% positive feedback on mentorship enabled effective prototype and business model development.
- **Engagement & Entrepreneurial Growth**
Fellows actively used labs (**16.4 hours/week**) that enhanced confidence, communication skills, and venture readiness.
- **Innovation Outcomes**
Development of community-driven solutions such as **plastic recycling models and universal wheelchair prototypes and other market ready products**.
- **Inclusive Economic Impact**
Women-led enterprises generated ₹10–12 lakh annually, supporting local livelihoods and entrepreneurship.
- **Mentor support** was highly rated by the sample fellows, with participants highlighting strong guidance, access to equipment, and effective support in transforming ideas into practical products.

Key Learnings/Limitations

80% of sample beneficiaries stated, limited connections with investors and industry experts.

Sample beneficiaries highlighted the need for more focused training sessions and faced challenges related to travel and accessibility to the centre.

Recommendations

- 1 | Facilitate stronger connections with investors and industry experts through networking events, partnerships, and mentorship platforms.
- 2 | Increase frequency of focused training sessions and explore solutions such as decentralised centres or travel support to address accessibility challenges.