

LABORATORY SETUP COMPLETION REPORT

Establishment of STEM Laboratories in Seven Schools of Anand, Gujarat

Implemented in collaboration with

CHARUSAT Rural Education Development Programme (CREDP)
Charotar University of Science and Technology (CHARUSAT)
and GyanPro

Implementation Period	June - July 2026
Laboratory Installation	27th July to 31st July 2026
Teacher Training & Inauguration	30th July 2026
Venue for Training	Auditorium, RPCP Building, CHARUSAT

1. Executive Summary

The STEM Laboratory Development Programme was undertaken as a collaborative educational initiative between the **CHARUSAT Rural Education Development Programme (CREDP)**, **CHARUSAT** and **GyanPro** with the objective of strengthening experiential Science and Mathematics education in selected schools in Gujarat.

The project was made possible through the generous support of **Dr. Manoj C. Desai, USA**, whose contribution enabled the establishment of STEM laboratories across the seven selected schools. His commitment to supporting education and creating meaningful learning opportunities for students formed the foundation for this initiative.

The programme evolved from a structured process comprising school identification, baseline assessment, infrastructure review, laboratory planning, equipment mapping, procurement, dispatch, installation, teacher capacity building, and final handover.

A pre-implementation assessment of the participating schools highlighted significant variation in existing STEM infrastructure and utilisation. While a few schools already demonstrated relatively strong STEM readiness, several required substantial strengthening of laboratory equipment, practical learning resources, and structured laboratory utilisation. The assessment therefore recommended targeted investment in laboratory modernisation and greater use of experiential learning approaches.

The implementation subsequently provided selected schools with comprehensive Composite Science and Mathematics Laboratory resources, supported by curriculum-linked equipment, laboratory apparatus, consumables, mathematical manipulatives, charts, demonstration resources and teacher orientation.

The approved laboratory package comprised a Composite Science Lab covering Physics, Chemistry and Biology and a Composite Mathematics Lab covering Arithmetic, Algebra and Geometry, together with digital/manual learning support and teacher training.

The physical installation programme was undertaken between 27th and 31st July 2026, followed by a centralised Teachers' Training Programme and STEM Lab Inauguration at CHARUSAT on 30th July 2026. The inauguration and training initiative was organised by CREDP-CHARUSAT in collaboration with GyanPro under the theme of empowering schools through experiential Science and Mathematics education.

The programme is expected to enable schools to move beyond textbook-only instruction and create structured opportunities for students to observe, experiment,, measure, question, investigate and apply scientific and mathematical concepts through hands-on learning.

2. Project at a Glance

Particular	Details
Project	STEM Laboratory Development Programme
Geography	Gujarat
Number of Schools	7
Implementation Partners	CREDP – CHARUSAT and GyanPro
Laboratory Types	Composite Science Lab + Mathematics Lab
Science Coverage	Physics, Chemistry and Biology
Mathematics Coverage	Arithmetic, Number System, Algebra, Geometry, Mensuration, Data Handling, Probability, Graphing and Measurement
Pre-Implementation Assessment	June 2026
Equipment Dispatch	17 July 2026
Equipment Receipt Window	Up to 25 July 2026
Installation	27–31 July 2026
Teacher Training	30 July 2026
Training Venue	Auditorium, RPCP Building, CHARUSAT
Technical Implementation	GyanPro
Programme Coordination	CREDP & GyanPro

3. Background and Need for the Intervention

Science and Mathematics are best understood when students have opportunities to connect theory with observation and practical experience. A laboratory therefore needs to function not merely as a room containing equipment but as an active extension of classroom teaching.

Prior to implementation, a detailed assessment was undertaken across the participating schools to examine:

- Existing Science and Mathematics infrastructure;
- Availability and adequacy of laboratory equipment;
- Room readiness and furniture;
- Laboratory utilisation;
- Safety systems;
- Availability of practical and project-based learning opportunities; and
- Potential for future STEM integration.

The baseline assessment identified that equipment availability and utilisation varied considerably between schools. Several institutions required improvement in practical science apparatus, measuring equipment and structured utilisation of STEM facilities.

The pre-project assessment visits were undertaken in June 2026 with participation from CREDP and GyanPro experts. The visits included discussions with school leadership and teachers, inspection of proposed laboratory rooms, furniture audits, layout validation and infrastructure verification.

4. Objectives of the Programme

The programme was designed to:

1. Establish functional and accessible Science and Mathematics learning environments in the selected schools.
2. Provide students with opportunities for hands-on experimentation and activity-based learning.
3. Strengthen conceptual understanding in Physics, Chemistry, Biology and Mathematics.
4. Enable teachers to demonstrate curriculum concepts using physical models, apparatus and manipulatives.
5. Improve utilisation of laboratory spaces through structured lesson-linked activities.
6. Build teacher confidence in conducting practical activities safely and effectively.
7. Promote scientific temper, observation, enquiry, experimentation, measurement and problem-solving.
8. Encourage Mathematics learning through visual, tactile and activity-based models.

9. Create a sustainable laboratory ecosystem through proper organisation, inventory control, storage and maintenance.
10. Develop a platform that can progressively support STEM projects, exhibitions, science clubs and interdisciplinary learning.

5. Implementation Partners

5.1 CHARUSAT Rural Education Development Programme – CREDP

CREDP played a key role in school identification, stakeholder coordination, school engagement, facilitation of infrastructure readiness, and organisation of the central teacher training and inauguration programme.

5.2 CHARUSAT

CHARUSAT provided institutional and academic support to the initiative and hosted the teacher-training and inauguration programme.

5.3 GyanPro

GyanPro was responsible for the technical components of the programme, including:

- Laboratory planning
- Equipment selection and curriculum alignment
- Laboratory layouts and readiness requirements
- Procurement and packing
- Dispatch coordination
- School-wise installation
- Equipment organisation
- Technical verification
- Teacher orientation and hands-on training; and
- Guidance on utilisation and maintenance.

The proposed complete laboratory support framework also included floor planning, laboratory setup and branding, component guidance, class plans/curriculum resources, tutorials and teacher orientation.

6. Participating Schools

The final implementation schedule covered the following seven schools:

Sl. No.	School	Location	Laboratory Setup
1	Swaminarayan Vidhyapeeth	Karamsad	27 July 2026
2	V.K. Patel High School	Petli	28 July 2026
3	B.A. Patel High School	Changa	28 July 2026
4	D.N. High School	Anand	28 July 2026
5	Shri Surajmalji High School	Patdi	29 July 2026
6	D.Z. Patel High School	Anand	29–30 July 2026
7	AB High School Ramol	Ramol	31 July 2026

7. Laboratory Equipment Delivered

The project provided two broad categories of laboratory resources at each participating school.

7.1 Composite Science Laboratory

The Science Laboratory package covered Physics, Chemistry and Biology and was designed around practical and demonstrative learning.

The approved proposal describes the Composite Science Laboratory as containing 250+ items covering Physics, Chemistry and Biology.

The delivered inventory included equipment such as:

- Human brain model;
- Human ear model;
- Human eye model;
- Digestive system;
- Excretory system;
- Respiratory system;
- Teeth model;
- Heart model;
- Human skeleton;
- Torso model;
- Biological specimens;

- Compound microscopes;
- Dissection equipment;
- Prepared slides and microscopy resources.

The detailed equipment schedule confirms models and specimens covering human anatomy and biology together with microscopes and dissection resources.

Major Chemistry equipment:

- test tubes and racks;
- beakers;
- conical flasks;
- measuring cylinders;
- funnels;
- glass rods;
- spatulas;
- thermometers;
- tripod stands;
- laboratory clamps;
- indicators;
- salts;
- acids and reagents;
- filtration and measurement materials.

Major Physics Equipment:

- optical bench;
- simple pendulum apparatus;
- prisms and lenses;
- magnets and compass;
- solar-energy resources;
- spring balance;
- pinhole camera;
- tuning fork;
- resistance box;
- Faraday experiment apparatus;
- Ohm's Law apparatus;
- electrolysis apparatus;
- resonance apparatus;
- pulley and inclined-plane apparatus.

These resources allow teachers to demonstrate topics relating to light, electricity, magnetism, sound, mechanics, energy, and measurement.

7.2. Mathematics Laboratory Equipment

The Mathematics Laboratory was designed to make abstract concepts visible and manipulable.

The approved proposal describes the Mathematics Laboratory as a 200+ item package covering Arithmetic, Algebra and Geometry.

The detailed Mathematics inventory was organised into the following concept areas:

Number System & Arithmetic

- Designer Fraction
- Fraction Wheel
- Fraction Square
- Place Value Abacus
- Number Plates
- Skip Counting Board
- Decimal Abacus
- Decimal Plate
- Dummy Coins
- Cuisenaire Kit
- Number Mat

Algebra

- Algebra Tiles
- Algebra Kit
- Identity Kit
- Cubes of Algebra
- Integer Tiles
- Numerical Balance
- Power of 2 Model

Geometry

- Geometry Kits
- Geoboards
- Circular and Isometric Geoboards
- Folding Geo Shapes
- Pattern Blocks
- Tangrams
- Attribute Blocks
- Stencils

The proposal inventory provides these resources as part of the Gujarat curriculum-linked Mathematics Lab package.

Mensuration & 3D

- 3D Solid Sets
- Cube and Sphere combination
- Cone and Cylinder volume models
- Tetrahedron
- Mensuration Kit

Data Handling & Probability

- Data Board
- Counters
- Dice
- Cards
- Mean/Median Kit

Graphing & Coordinates

- Graph Sheets
- Coordinate Board
- Large Graph Chart
- Linear Equation Kit

Trigonometry & Measurement

- Trigonometry Board
- Clinometer
- Sextant
- Metric Wheel
- Measuring Tools

Display Resources

- Charts
- Display Stand
- Storage Stand
- Portraits of Mathematicians

8. Pre-Implementation and Logistics Process

The implementation was undertaken through a phased approach.

Phase 1 – Assessment

A joint school assessment was undertaken in June 2026. Discussions were held with heads of institutions and Science/Mathematics teachers, and the proposed rooms and furniture were reviewed.

Phase 2 – Infrastructure Follow-up

29 June 2026

Schools were contacted to verify the progress of infrastructure preparation following the earlier assessment. Laboratory layouts and implementation requirements were communicated.

7 July 2026

Follow-up was undertaken with the selected schools to review infrastructure and furniture readiness.

15 July 2026

Schools were requested to ensure that:

- laboratory rooms were available;
- required furniture was ready;
- electrical points were functional;
- storage arrangements were completed;
- laboratory spaces were cleared; and
- other basic infrastructure was ready for installation.

Phase 3 – Dispatch and Receipt

17 July 2026: Equipment dispatch commenced from GyanPro.

17–25 July 2026: Equipment was transported to Gujarat.

By 25 July 2026: Materials were scheduled for receipt at the participating schools.

School-specific documentation was used for equipment verification. For example, the Swaminarayan Vidhyapeeth delivery challan records the individual Science and Mathematics items and contains item-wise receipt-check columns.

Phase 4 – Technical Installation

GyanPro's technical implementation team arrived in Ahmedabad on 27 July 2026 and commenced the school-wise installation programme.

9. Day-wise Laboratory Installation

27 July 2026 – Karamsad

The technical team arrived in Ahmedabad in the morning and proceeded to Swaminarayan Vidhyapeeth, Karamsad.

Installation included:

- Verification of delivered boxes;
- Unpacking and item segregation;
- Science and Mathematics inventory verification;
- Subject-wise arrangement;
- Positioning of models and equipment;
- Organisation of glassware and apparatus;
- Math model organisation;
- Chart/display arrangement; and
- Final laboratory review.

Installation Window: Approximately 11:30 AM–3:00 PM.

28 July 2026 – Petli, Changa and Anand

Three school installations were scheduled during the day.

V.K. Patel High School, Petli

Time: Approximately 9:30 AM–11:30 AM

B.A. Patel High School, Changa

Time: Approximately 12:30 PM–2:30 PM

D.N. High School, Anand

Time: Approximately 3:30 PM–5:30 PM

The multi-school implementation involved coordinated material verification, equipment organisation, placement of Science and Mathematics resources and completion checks at each site.

29 July 2026 – Patdi, Anand and CHARUSAT

Installation activities continued at:

Shri Surajmalji High School, Patdi

Approximate Time: 10:00 AM–11:00 AM

D.Z. Patel High School, Anand

Installation activities were carried out as part of the planned school setup.

CHARUSAT University

Approximately 4:00 PM–6:30 PM

Representative laboratory equipment and training materials were set up at CHARUSAT in preparation for the Teachers' Training Programme scheduled for the following day.

The expert and training team also arrived in Ahmedabad on 29 July.

Lab Setup Gallery



10. Teacher Training and Inauguration – 30 July 2026

The STEM Laboratory Programme for seven schools in Gujarat was formally inaugurated on 30th July 2026 at CHARUSAT University, Changa, marking the successful culmination of the laboratory implementation initiative undertaken jointly by CHARUSAT Rural Education Development Programme (CREDP) and GyanPro Educational Innovation Pvt. Ltd.

The STEM Laboratory initiative was supported through the generous donation of **Dr. Manoj C. Desai, USA**. His contribution played a pivotal role in translating the vision of strengthening experiential Science and Mathematics education into a tangible programme benefiting schools, teachers and students across Gujarat.

The laboratories were formally inaugurated by **Shri Surendra Patel, President, CHARUSAT**, fondly known as “**Surendra Kaka**,” along with Shri Vipul Patel, President, CHRF; Dr. Atul Patel, Provost, CHARUSAT; and Dr. Binit Patel, Registrar, CHARUSAT.

A distinctive highlight of the programme was the manner in which the inauguration was conducted. Instead of the conventional lighting of a ceremonial lamp, the STEM Lab initiative was inaugurated through a scientific experiment. This symbolic approach strongly reflected the purpose of the project—encouraging curiosity, experimentation, scientific temper and experiential learning among students and teachers.

The ceremony was graced by senior representatives and experts including Shri H. T. Patel, Member of the Governing Body, CHARUSAT; Dr. Surendra Kulkarni, eminent scientist and educationist; Dr. Supreeth Kittenkere, CEO, GyanPro; Dr. Dilip Gosai, Executive Officer, CREDP; Ms. Krithika Ashok, Co-Founder, GyanPro; Mr. Vasuki Shenoy; and Mr. Vikas Tiwari, among others.

The inauguration represented more than the opening of physical laboratory spaces. It marked the beginning of a collaborative effort to provide students with greater access to hands-on Science and Mathematics education, allowing them to learn concepts through experimentation, observation, measurement and exploration.

The seven laboratories were established at Shri Surajmalji High School, Patdi; D.N. High School, Anand; Swaminarayan Vidhyapeeth, Karamsad; V.K. Patel High School, Petli; B.A. Patel High School, Changa; A.B. Patel High School, Ramol; and D.Z. Patel High School, Anand.

Glimpses of STEM Lab Inauguration



Shri Surendra Patel (Surendra Kaka), President, CHARUSAT, inaugurating the STEM Laboratory Programme through a scientific experiment at CHARUSAT University on 30 July 2026—symbolising the programme's commitment to experiential learning and scientific thinking.



Teacher Training Following the Inauguration

The inauguration was followed by a day-long hands-on Teacher Training Programme designed to ensure that the newly established laboratories would be actively integrated into classroom teaching. According to the published coverage, 32 Science and Mathematics teachers representing 7 schools from Anand, Kheda and surrounding areas participated in the programme. Teachers received practical guidance from the GyanPro team on the use of laboratory equipment and activity-based approaches, and certificates were presented to participants on completion of the training.

Programme Schedule

Time	Activity
9:30 AM – 11:15 AM	Teacher Training – Session I
11:30 AM – 12:30 PM	STEM Lab Inauguration Programme
12:30 PM – 1:30 PM	Lunch
1:30 PM – 4:30 PM	Teacher Training – Session II
End of Programme	High Tea

Training Coverage

The training was designed to move teachers from simply knowing that equipment exists to understanding how and when to use it during teaching.

The programme covered:

- introduction to the laboratory and its objectives;
- understanding the Science and Mathematics equipment categories;
- safe handling of laboratory materials;
- demonstration of selected Science apparatus;
- use of Biology models and specimens;
- demonstration of mathematical manipulatives;
- activity-based concept explanation;
- connecting models to classroom lessons;
- student-group activities;
- observation and questioning techniques;
- inventory and storage practices;
- maintenance of equipment;
- planning laboratory periods; and
- integrating laboratory activities into regular teaching.

Glimpses of STEM Lab Training



11. Completion of Remaining Installations

Following the programme:

30 July 2026

The remaining Science Laboratory installation work at D.Z. Patel High School was completed.

31 July 2026

The final scheduled laboratory setup was undertaken at AB High School, Ramol.

Following completion of the installation programme, the GyanPro implementation team returned to Bengaluru.

12. Implementation Methodology Followed at Each School

A standard implementation procedure was followed as far as practicable:

Step 1 – Room Readiness Verification

Availability of the designated Science and Mathematics rooms, furniture, power supply and storage was checked.

Step 2 – Receipt & Box Verification

Delivered materials were reconciled with school-wise documentation.

Step 3 – Unpacking & Segregation

Items were separated into Physics, Chemistry, Biology, Mathematics, glassware, chemicals, charts and display materials.

Step 4 – Item-wise Verification

Equipment was cross-checked against the delivery/inventory document.

Step 5 – Laboratory Organisation

Equipment was placed according to subject, frequency of use, visibility and safety.

Step 6 – Model & Display Arrangement

Larger demonstration models, charts, Mathematics manipulatives and display resources were positioned for easy teacher access.

Step 7 – Storage Organisation

Smaller items, fragile materials, chemicals and consumables were segregated for controlled storage.

Step 8 – Functional Check

Representative equipment was checked for completeness and functionality.

Step 9 – School Handover

The responsible school representative was briefed regarding inventory, storage and laboratory use.

Step 10 – Teacher Capacity Building

Teachers were centrally oriented to use the resources for activity-based teaching.

13. Programme Outcomes

13.1 Immediate Outputs

The implementation resulted in:

- Science and Mathematics laboratory resources being deployed across seven selected schools;
- Improved availability of practical Science apparatus;
- Availability of mathematical teaching manipulatives;
- Subject-wise organisation of laboratory equipment;
- Improved access to models, charts and demonstration equipment;
- Teacher capacity building;
- Creation of a structured framework for laboratory utilisation; and
- Collaboration between schools, CREDP, CHARUSAT and GyanPro for experiential education.

14. Expected Educational Outcomes

- The intervention is expected to contribute to the following long-term outcomes.
- Improved Conceptual Understanding
- Students will be able to connect theoretical concepts with physical observations and experiments.
- Increased Practical Exposure
- Regular use of the laboratory can increase students' participation in experiments, measurement, observation, and model-based learning.
- Greater Student Engagement
- Hands-on activities can make Science and Mathematics more interactive and accessible to different learner profiles.
- Development of Scientific Temper
- The laboratory environment encourages students to ask questions, form hypotheses, observe results, and draw evidence-based conclusions.
- Improved Mathematical Visualization

- Manipulatives can help students understand abstract ideas in fractions, algebra, geometry, mensuration, graphs and data through concrete representations.
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- Improved Teacher Confidence
- Orientation and continued use of the resources are expected to make teachers more comfortable conducting practical demonstrations and student activities.
- Collaborative Learning
- Many of the laboratory activities can be performed in small groups, supporting teamwork and communication.
- Greater Laboratory Utilisation
- The baseline had identified inconsistent practical, project-based and inquiry-led utilisation across participating schools. Structured equipment deployment and teacher training are intended to improve this utilisation over time.

Foundation for Future STEM Programmes

The facilities can subsequently support:

- Science clubs;
- Mathematics clubs;
- inter-school competitions;
- innovation challenges;
- science exhibitions;
- project-based learning;
- STEM workshops; and
- advanced technology programmes.

15. Sustainability and Recommended Utilisation Plan

The impact of the laboratories will depend primarily on regular use, not merely on equipment availability.

The following practices are recommended:

1. Prepare a weekly Science and Mathematics laboratory timetable.
2. Map at least one practical/activity to every relevant chapter.
3. Maintain separate equipment and consumables registers.
4. Nominate a Science Lab Coordinator and Mathematics Lab Coordinator.
5. Maintain breakage and consumables registers.
6. Store chemicals and fragile equipment securely.
7. Conduct quarterly inventory verification.
8. Display laboratory rules and safety instructions.
9. Encourage teachers to conduct student-group activities rather than demonstration-only sessions.
10. Conduct at least one annual Science/Mathematics exhibition.

11. Document laboratory utilisation through photographs and activity records.
12. Undertake periodic refresher training for teachers.
13. Replenish consumables periodically.
14. Review student learning and teacher utilisation annually.

16. Suggested Monitoring Indicators

For meaningful impact tracking, the following indicators may be reviewed over the academic year:

Indicator	Suggested Measurement
Lab utilisation	No. of periods/month
Student exposure	No. of students using lab/month
Practical activities	No. conducted by grade/subject
Teacher participation	No. of teachers actively using lab
Equipment utilisation	High/Medium/Low-use equipment
Student projects	No. of projects created
Science/Math exhibitions	No. conducted annually
Consumable replenishment	Quarterly review
Equipment condition	Quarterly inventory audit
Teacher feedback	Six-monthly
Student engagement	Observation/feedback
Learning outcomes	Baseline vs. periodic assessment

17. Challenges and Implementation Learning

The programme involved coordinating laboratory installations across multiple schools and locations within a tightly planned implementation schedule. While the overall programme was completed successfully, the field implementation presented several operational challenges.

Key challenges included:

- Unfavourable weather conditions, which affected travel, movement of materials and the pace of installation at certain locations.
- Ensuring that laboratory rooms, furniture, electrical points and storage facilities were ready before the technical team's arrival.
- Coordinating the receipt, unloading and verification of a large quantity of Science and Mathematics laboratory equipment at each school.
- Managing travel between Patdi, Petli, Changa, Karamsad and Anand while maintaining the planned installation sequence.
- Verifying and arranging a large number of individual laboratory apparatus, models, glassware, chemicals, teaching aids and mathematical manipulatives.
- Completing multiple school installations within the same day while maintaining proper inventory verification and setup standards.
- Simultaneously preparing demonstration equipment and materials for the central Teacher Training and Inauguration Programme at CHARUSAT.
- At a few schools, the laboratory setup had to be completed in stages due to weather and on-site conditions, requiring the technical team to revisit or continue the remaining installation work subsequently.

Despite these challenges, close coordination between CREDP, CHARUSAT, the respective school managements and the GyanPro implementation team helped ensure that the laboratory installations were completed successfully.

One of the key learnings from the programme was the importance of maintaining flexibility in field schedules. Regular pre-installation follow-ups, school-wise inventory documentation, readiness checks and continuous coordination enabled the team to adapt to weather-related and site-specific challenges without compromising the overall quality of the laboratory setup.

18. Conclusion

The Science and Mathematics Laboratory Development Programme represents an important step towards strengthening practical and experiential education in the participating schools.

Through the combined efforts of CREDP, CHARUSAT, the participating schools and GyanPro, the intervention addressed not only the availability of laboratory equipment but also the need for organised implementation, teacher capacity building and sustained laboratory utilisation.

The laboratories now provide an opportunity for students to experience Science and Mathematics as subjects that can be observed, handled, tested, measured and explored, rather than learned only from textbooks.

The long-term success of the programme will depend on regular teacher engagement, integration of laboratory activities with classroom teaching, appropriate maintenance and continued monitoring of utilisation and student outcomes.

The programme also establishes a foundation for a larger collaborative STEM ecosystem involving schools, higher education institutions, educators and scientific experts.

19. Acknowledgement

GyanPro expresses its appreciation to:

- Dr. Manoj C. Desai, USA, whose support enabled the establishment of STEM laboratories across seven schools in Gujarat.
- CHARUSAT Rural Education Development Programme – CREDP
- CHAROTAR University of Science and Technology – CHARUSAT
- The management and leadership of all participating schools
- Participating Science and Mathematics teachers
- School coordinators and support staff
- Experts and trainers associated with the programme; and
- All stakeholders who contributed to the successful implementation of the laboratories.