Implementing Partner:

STEM Learning– “A Social Enterprise”

STEM

Building Brains.....Beyond Books.....

Mini Science Centre

Teacher Training Program

Science Competition (NSP)

DIY– Mode l Making

Budget for Establishing STEM Mini Science Centre under Union Bank of India Corporate Social Responsibility (CSR) initiatives

PURPOSE OF GRANT/ FINANCIAL ASSISTANCE:

To establish Mini Science Centres (MSC) across schools in India under the Corporate Social Responsibility (CSR) initiative. The aim is to enhance students' understanding of Science, Technology, Engineering, and Mathematics (STEM) by providing hands-on learning experiences, thereby nurturing scientific aptitude and reducing the fear associated with complex subjects like science and mathematics.

About: STEM Learning Pvt. Ltd:

STEM Learning was conceptualized to inculcate basic concepts of Science, Technology, Engineering, and Mathematics at the school level, thereby encouraging the inclination of students/learners towards science and technology. Models designed by STEM help students identify and experience the actual concepts that they learn from textbooks making it more practical in approach.

STEM believes that school education can't be only visual or audio, but it is important for the children to practically feel the products and experience them. With this vision, STEM has customized 80 models based on 130+ concepts of Science and Maths for better learning and understanding of the concepts. STEM believes in adding more models for improved learning of students, especially for those from less privileged sections of society.

STEM through its MSC has benefitted over 1 million students with 10000+ teachers in 2500 + schools across 26 states in India. In addition to this, STEM learning also has a niche in installing 30 big science centers in different talukas of Maharashtra under the Manna Visas Mission Project of the Maharashtra Government. These science centers have trained more than one laky student who otherwise would have never got a chance to experience and explore science practically and easily.

STEM's models are approved by ***8 SCERTs***- *Maharashtra, Goa, Chhattisgarh Odessa Nagaland Jammu & Kashmir, Delhi & West Bengal* for their alignment with the curriculum, and the approvals by the SCERTs of Andhra Pradesh, Telangana, and Karnataka are waited for approval.

Mission Statement:

- To enhance students' aptitude towards science & math so that they embrace it and grow with it while relishing the learning process.

Vision Statement:

- To be recognized globally for bringing innovative learning products in School Education and contributing to society by reaching the less privileged students

Goal:

- Learning is made accessible to all children for aptitude enhancement.

1*:* **Immediate Goal:** Reaching to Large population of underprivileged Children in Pan-India

2: **Aim:** Ensuring equal opportunities for learning and development of all underprivileged Children.3*:*

Immediate Aim: Reaching 2000 schools in the academic year 2021-22.

4*:* **Objective:** Empowerment/Enhancement of aptitude of children.

Specific Objectives:

To ignite scientific interest in children so that:

- Question intelligently.
- Learn through discovery & Innovation.
- Connect scientific knowledge to their world
- All of these are expected to strengthen scientific temper in children, thus laying the foundation for a flourishing career in Science & Mathematics

Strategic areas of Focus:

- Providing quality teaching aids to improve teaching methods for students from lesser privileged sections of society.
- Enhancing a positive attitude, learning capacity, and skills of students.
- Providing a platform where students and teachers can volunteer for customized engagement programs/events.
- Creating partnerships and collaborating with various stakeholders to ensure the sustainability of the project.

Background and Project Need:

The education system in India is undergoing a transformational process with special emphasis on Science and Math education. Science education in India is faced with various practical challenges today. The first and the most basic problem that has persisted and resisted solutions since early education is our inability to ease the fear of difficult subjects such as science and math and make it simple and fun to help retain the knowledge and strengthen the foundation of the child for the future.

Science is knowledge about the material and natural world. It is knowledge produced from systematic observation, measurement, experimentation, exploration, speculation, and theorization about natural objects, their properties, and their interactions. Whether the topic of forces in Physics or the solubility of substances in water from Chemistry or germination in Biology, the science curriculum directs attention to the material world, to things and processes in it; about which it would like children to learn—to notice, name and think about things based and theories that characterize these disciplinary approaches, furthermore mathematics establishes the foundation for calculation is a part of everyday life

However, a disciplinary approach is essential in learning BUT it is also imperative to ensure that we make the subject interesting as it is a challenge to a large percentage of children to comprehend the formulas and equations. These not only limit the learning of students about science & Math but also lessen the interest of children in these subjects and a fear psychosis is created in their minds for these subjects.

Our Honorable Prime Minister during the 104th Indian Science Congress on 'Science and Technology for National Development, emphasized that the government is committed to supporting the different streams of scientific knowledge from fundamental science to applied science with an emphasis on innovations.

Prime Minister instituted the concept of 'scientific social responsibility'. Underlining the need to inculcate the concept of 'scientific social responsibility (SSR)', akin to corporate social responsibility, PM Shri Narendra Modi put the impetus on corporates to actively participate in developing science and technology centers across India.

We at STEM Learning provide the Mini Science Centre – (MSC) that supports and encourages the students to develop aptitude & skills. Science activities are done to stimulate curiosity, provide practical opportunities to explore a concept in easy ways, and develop appropriate hands-on experience in understanding science and its concepts which is sadly absent today across all our education syllabi. More so inadequate teaching staff in rural, municipal schools which are for underprivileged children adds to the existing challenge in the education system.

STEM Learning MSC Locations:

STEM learning has pan India presence in 28 states of India and have proven our process of Installation, delivery- Teachers Training Program along with Monitoring & Evaluation and Maintenance of MSC.

1. *Maharashtra*
2. *Rajasthan*
3. *Gujarat*
4. *Karnataka*
5. *Himachal Pradesh*
6. *Jammu & Kashmir*
7. *Goa*
8. *Haryana*
9. *Nagaland,*
10. *Kerala*
11. *Tamil Nadu*
12. *Uttar Pradesh*
13. *Jharkhand*
14. *Chhattisgarh*
15. *Madhya Pradesh*
16. *Andhra Pradesh*
17. *Delhi*
18. *Telangana*
19. *Bihar*
20. *Uttarakhand*
21. *Punjab*
22. *Odisha*
23. *Assam*
24. *Sikkim*
25. *Meghalaya*
26. *Manipur*
27. *West Bengal*
28. *Ladakh*

STEM

Building Brains.....Beyond Books.....

Reforming Education

STEM Centre

STEM Centre :

- Clearing fundamentals of science concepts.

– Tinker Workshop:

- Out of the box and conceptualizing a solution for a digital world.

– Digital DIY Model Making:

- A platform that ignites the spirit of competition among peers and enhancing their creativity and innovation beyond books

– NSP :

- A platform that ignites the spirit of competition among peers, enhancing their knowledge & innovation beyond books

Project Summary Statement:

Mini Science Centre:

(MSC) is an educative, innovative, and systemic instrument designed to revolutionize science & math education that makes learning simpler and accessible. It is a catalytic channel that is an interactive, engaging & fun way of learning techniques aimed at raising awareness, grasping information & strengthening the aptitude of children. Furthermore, MSC supports the teachers in teaching with a focus on concepts from science & math's. Mini Science Centre has a range of 80 tabletop working models with 37 back-drops and manuals in regional language to provide hands-on experience for learning/teaching Science and Mathematics for Classes 5 to 10.

- For all students from standard 5 to 10.
- Intentional and standards-based.
- Active, interesting, and relevant to students.
- Reflect current research and practices that are curriculum-based.
- Age-level appropriate.
- Integrate skills from different subjects of Science and Mathematics. Incorporate staff training in science and Math teaching.
- Based on ongoing assessment of student needs and progress.

Mini Science Centre (MSC) Scope of Work

Project Aspect	Expected Deliverables
MSC Infrastructure Arrangement	Infrastructure Arrangements Include: ● 80 tabletop models will be installedintheschooloutofwhich17modelsoperateonelectricity. ● A proper room of a minimum of 350-400 Sq. ft. or a suitable size along with 17 tables/platforms with 13 pieces of plywood 100 Running feet (8ftx1.5ft) for the Mini Science Centre should be provided in the school. ● 17 electrical connections in the room should be provided in the school. ● Providing the Backdrops (Language in which it is to be printed should be conveyed beforehand). ● Providing the user manual and training manual (The language in which it is to be printed should be conveyed beforehand).
Installation of MSC (80 MODELS + 80 USERS PLACARD + 37 COLOURFUL BACKGROUNDS+ 1 SAFETY PLACARD+1 TEACHERS MANUAL)	Installation generally starts within 3 weeks from school closure/signing MOU and is completed within 2 days at the school premises. The MSC classroom is painted white color & mounting of the plywood is done along with fitting electrical supply points. **Deliverables:** 80 Models + 80 Users Placard + 37 colorful backgrounds + safety placard + 1 teachers manual The Installation team takes pictures of the room both pre & post-installation and a letter is signed by the school authority (Principal)after successful installation and handing over of the materials/documents etc.

First Teachers Training Program (TTP)	1st Teachers training program is undertaken within 2-3 weeks from the installation. 1st Virtual TTP to be conducted in 2nd year To set the training day and location, the trainer's team contacts the principal teacher at the school. Reconfirmation is requested from the principal and teachers 72 hours before TTP. The Training consists of the following: 1) Orientation of Models 2) Usage as per the Concepts. 3) Mapped documents of the model with the curriculum. 4) Established topics and their usage as per the timetable. 5) Explaining the follow-up process for any queries through Phone calls and WhatsApp support group formation. 6) Updating the MSC Register, as the models are plug-and-play, can be demonstrated in class for concept clarity. 7) Identify and prioritize issues to be dealt with by teachers. 8) Setup Goals for Best Practice Documentation. 9) Inform about the Monitoring & Evaluation visit and process. **The Documents Supporting This Activity Are:** a. Call sheet b. WhatsApp Group Snapshot. c. Goal set document for output. d. Teachers Attendance Sheet Training. e. Pictures and Videos (if possible)
Refresher Teachers Training Program (RTTP)–Conducted Individually for each school.	Typically, the RTTP is conducted for four months following the first TTP. 2nd Virtual TTP to be conducted in 3rd year The trainer's staff contacts the principal and teachers of the school to schedule the training day and location. Reconfirmation is requested from the principal and teachers 72 hours before TTP. The Training Consists of the following: ● Engagement of Teachers in the Usage of Models. ● Identifying Models with Frequent Usage. ● Frequency of models being taken to class for explanation of concepts. ● Asking the teachers regarding any issues faced during accessing the models and solving them accordingly.
Utilization Check of MSC	After completion of both the Teachers 'Training Program, a WhatsApp group is created between teachers and our trainers to periodically check the utilization of the model's Footages of teachers using the models are to be posted regularly on the WhatsApp broadcast group. ● Random Visits to School to check the usability of the models. ● Every fortnight, a check is done to gain insights into the frequency of usage of the models. ● MSC registers are frequently looked upon to cross-check the claims made by the teachers about the usage of MSC.
st 1 Monitoring and Evaluation (Baseline Survey)	This allows for the full examination of one's understanding of numerous situations, requirements, and school assistance. It usually takes place 4-5 weeks after the first TTP. Students are given baseline surveys based on the content they are taught by their standards. Our team, the Project Implementation Associate, makes site visits and interviews instructors and students for the baseline survey. The M&E consists of collecting data on: ● No. of students per Class/division. ● Foundational skills for progressive improvement. ● Gender segregation

	The principal and teacher's questionnaire will be qualitative while for the students, it will be quantitative and qualitative with Focused Group Discussion (FGD). The students' quantitative tools will include: 1) Fill in the blanks. 2) Match the columns. 3) Questions and 3 options. 4) Pictorial identifications of models. The documents supporting this activity are: 1) Call sheet. 2) WhatsApp group snapshot. 3) Questionnaires 4) Notes of FDG. 5) Pictures and Videos (if possible). 6) Raw data in Excel. 7) M&E report
Maintenance	The maintenance team visits the school after the 1st M&E visit. (2-3 weeks after 1st M&E visit). **The maintenance will include:** ● Repairing and replacement as and when required ● Re-clean the premises. **The documents support this activity:** ● Pictures of repaired model ● Pictures of replaced model ● Signed report on maintenance from the Principal/Teacher
2nd Monitoring & Evaluation Visit	Generally conducted 6-8 weeks after the maintenance visit. **Qualitative:** Students will be asked about their actual usage in class and MSC as part of FG and IDI (In-depth Interview) lead questions. The second M&E visit follows the same procedure as the first M&E visit. The data will be gathered in the second set of questionnaires, which will be prepared, and the second M&E will be the baseline for the first year.

Timeline of the project:

PO & Contract Confirmation	School Identification/ Need Assessment	Installation	1st-TTP	Monitoring & Evaluation (M & E 1st Visit)	2nd-TTP	AMC/ 1st Follow up	2nd M&E/ Project Completion
1st week	Within 2 -3 weeks from PO.	3 weeks from school identification & closure.	15 to 20 Days from installation	20 to 25 weeks from Installation	15-20 Days from 1st Follow - up	45 days from 1st TTP	35th to 40th week from Installation

Logical Framework Analysis

Input	Output	Outcome	Measurement indicators	Timelines (Quarterly)	Risks Vs Mitigation
School Identification	• Identifying government schools from areas of deficit	• An intervention plan will be created. • Meeting with school principal for formal MSC introduction and benefit for students	• Receiving list of schools from DEO • Visiting government schools • Well-drafted intervention plan introduced to the school • Receive Installation Approval letter from school	1st quarter	• Inter-state and city travel, risk of covid-19 infection • Multiple visits to schools and getting permission
Baseline survey	• A thorough knowledge of various conditions, needs, and interventions for school.	• to understand problems & needs by gathering information on the status quo of the school	• Preparing baseline question tool • Visit by PIA to conduct a baseline survey on student teachers • Identify 1 room for MSC installation • Baseline report created with analysis	1st quarter	
MSC installation	• MSC installation in a room of 80 models with 33 back-drops and manuals in regional language	• To provide hands-on experience for learning/teaching Science and Mathematics for Class 5 through 10. • Maximize Learning experience through a practical approach • Explains 150 + concepts with depth clarity	• Install tables and 80 plugs • Transport 80 models to school • MSC models testing and function check • Inauguration of MSC with Clients, BD and PIA	1st Quarter	• Long-distance travel with MSC models transports from warehouse
STEM Tinker lab Kits	• Tinkering Lab 5 models in the same room with MSC.	• 10 Arduino Program kit (Include Arduino UNO and General Purpose Sensors like IR sensors, LDR sensors, Ultrasonic Sensors, etc.) • 10 Basic Robotics Kit (Includes wheels, chassis, Motor Driver, Arduino Uno, etc.) • 10 sets of Basic Electronic Components (Including resistors, Capacitors,	•		•

		LEDs, etc.) • 1 Teacher Kit (with stationary kits) • 1 Tool Kit (with Soldering & Prototyping Kits) • Backdrops			
Teacher Training Program-TTP	• Call and TTP scheduling by PIA • Training Through PPT of MSC models • Benefits • Best usage • Maximum utilization • Models & concepts it explains in a simpler way • Benefits & takeaway of MSC will be highlighted • Question – answers, and queries will be resolved	• Teachers empowered with innovative teaching aids • Teaching time reduced to 50-60% • Complex concepts taught easily • Active engagement of students in class • Replace rote-based learning to a practical-based approach for sustainable knowledge	• TTP will be scheduled • TTP with PPT will be conducted • Feedback & suggestions from teachers • TTP report created for documentation	1st quarter	• **Risk:** Absentees • **Mitigation:** Constant updates of MSC benefits will be communicated.
MSC-Maintenance	• PIA along with MSC technical person, free maintenance drive is conducted. • Aim: Learning shouldn't stop, students can use MSC independently	• Continuous and Maximum utilization of MSC for sustainable use	• Quality check of MSC by Team technician • Repair and place if needed • Maintenance report created • MSC model utilization register maintained	3rd quarter	
Midline Survey	Survey to understand the impact of MSC on students' and teachers' academic learning and teaching achievement	• By then the impact on students: - explore their talents, apply knowledge to practice, gain essential skills, develop analytical & critical thinking	• Prepare midline M&E questionnaire • PIA will schedule date& time for M&E • M&E conducted with teachers and students • Report of midline report created with analysis		

Refresh Teacher Training Program-RTTP	• Improve & enhancementof teacher's skills • Teachers empowered with innovative teaching aids to explain concepts with each • Benefits & takeawayof MSC will be highlighted • Training to refresh best usage of MSC for maximum utilization	• Learning and using innovative teaching aids for quality teaching and a better understanding of subjects • Reduces stress and completes syllabus on time • Class will be more interactive as students will take keen interest to learn science and math	• RTTP scheduled • RTTP with PPT will be conducted • Feedback & suggestions from teachers • TTP report created for documentation	3nd quarter	
MSC - Monitoring & Evaluation	• To understand Student's needs and improve for Opportunities & innovative ideas for maximum learning.	• Students will be confident and empowered through newskills gained. • Reduced future academic anxiety. • Opportunities to explore one's potential Peer-to-peer learning and support	• Google form for M&E • Qualitative feedback through interviews. • Quantitative data analysis	4th quarter	
Client Visit to MSC established school	• Coordinate and arrange a visit to the client's CSR-funded school	• The client will witness themselves the impact created through MSC installation • Transformation in skills knowledge and self-confidence	• Annual Report • Annual PPT • Videos of impact and students' achievement –Client wise & School wise	1rd and 4th quarter	

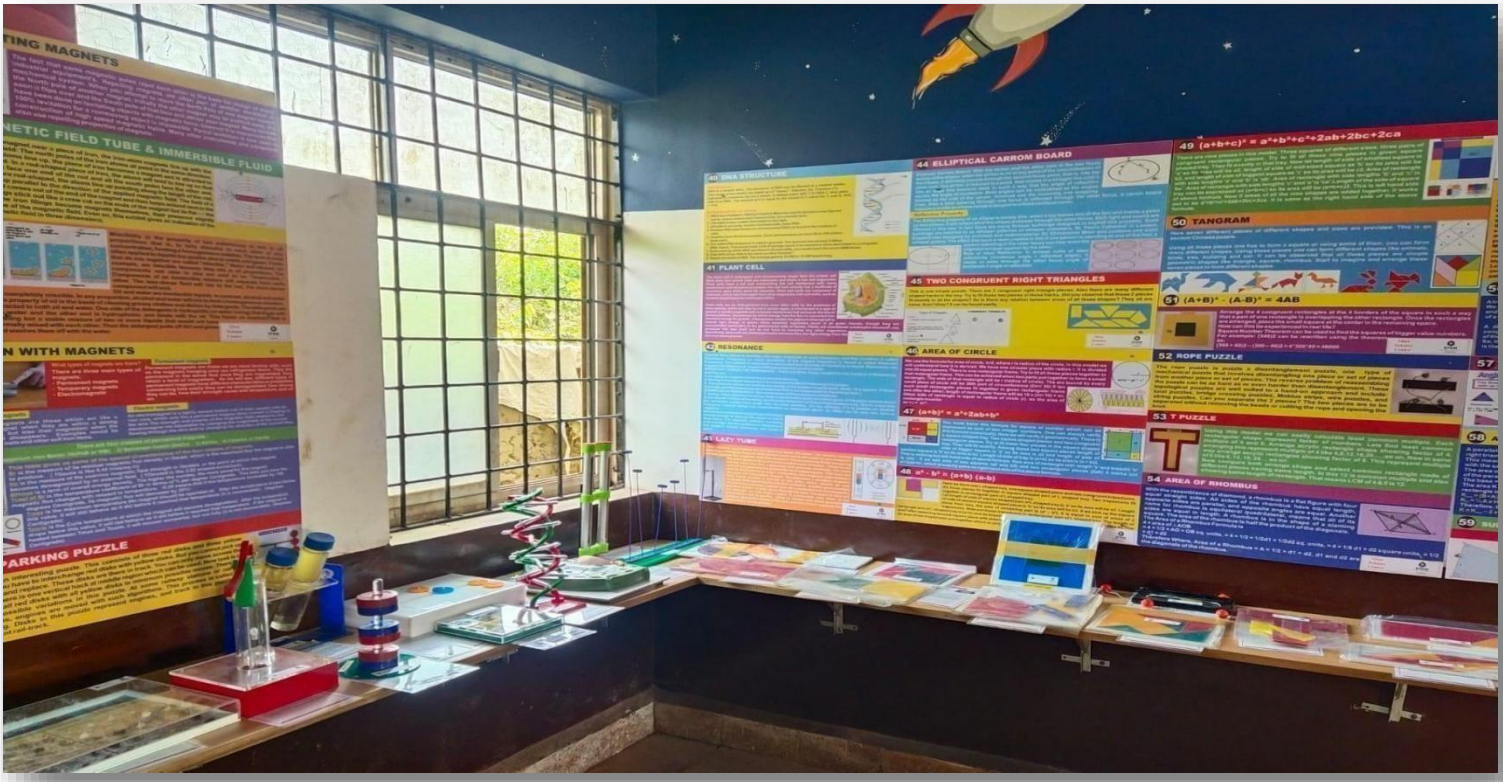
STEM

Building Brains.....Beyond Books.....

Mini Science Centre:

STEM

Building Brains.....Beyond Books.....



STEM
Building Brains.....Beyond Books.....

Some of Our MSC Models:

$(a+b)^2=a^2+2ab+b^2$

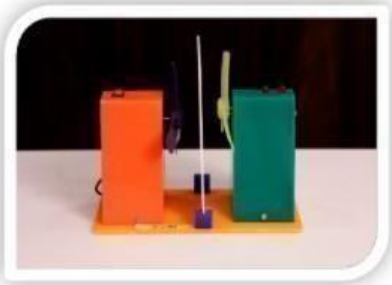
Floating Magnets

Pythagoras

Pin Screen

Conductors-and-insulators

Wheel-and-axel

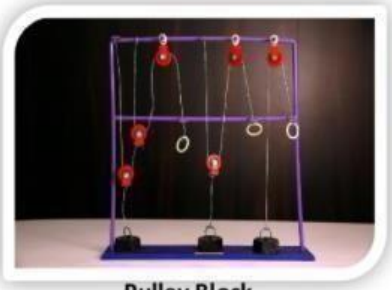


Windmill

Elliptical Carrom Board

Lever

Tangram



Pulley Block

Area of Rhombus

STEM

Building Brains.....Beyond Books.....

Centrifuge-Puzzle

Electric Bell

Fun with Magnets

Gyroscope

Total Internal Reflection

Law of Inertia

Outcomes/Result expected:

- Improvement of aptitude of the students regarding science and mathematics.
- Development of inquisitiveness, critical thinking, problem-solving skills, and creativity of students.
- Enhancing the skills of teachers by training them to teach practically.
- Improve teaching pedagogy by using models in conducting the science and math classes through better engagement of teachers in teaching.
- Strengthening of concepts of Science and Mathematics.

.

Project Location & Support Request: PAN India.

Conclusion:

As the famous saying goes, "It is greater to work to educate a child, in the true and large sense of the world than to rule a state." The real empowerment of a country lies in the hands of the children. There cannot be any weapon bigger than education to empower a country. STEM education plays an important role as it pervades every aspect of life.

Our STEM Centre provides more practical-based learning and teaching styles of Science and mathematics concepts. This would equip the students with better clarity on the application of difficult concepts of science and mathematics in their syllabus. The clarity of concepts would enable the students to think critically, analyze, and explore new horizons which would eventually benefit society. The following are the benefits of the STEM Centre:

Capacity Building of Teachers: MSC enables teachers to explain all the Mathematics, Physics, and Science concepts in a more effective manner. It saves the teaching time by 50% which means an increase in productivity of the teachers in school.

Improves the scientific temperament of students: Instead of reading from books and listening to teachers, MSCs Plug& Play models involve the students in the teaching process which ignites the students' inquisitiveness and also provides better clarity and logic about the theories.

Encourages Innovation: STEM Centre boosts the confidence among the students by educating them with science and mathematics concepts. The new-found scientific temperament in them encourages them to transform their innovative into reality.

Promotes Creativity: Creativity cannot be sustained without science. Whether it is an engineer or an architect, they have to be well-versed with science and mathematics theories to create a sustainable design. The knowledge of STEM will all other creative to use the material and space effectively.

SWOT Analysis:

STRENGTHS(Internal factors) ✓ Timely setup of MSC. ✓ 80 Models & backdrops aligned with the curriculum. ✓ Structured TTP. ✓ Planned Follow-up M&E Process. ✓ WhatsApp Group for better connectivity & response. ✓ Vibrant Volunteer engagement programs.	**WEAKNESS(Internal factors)** ✓ Probable delay in delivery in models for MSC.
STRENGTHS (EXTERNAL FACTORS) ✓ Only structured program that has been certified by 7 SCERTS aligning with educational curriculum. ✓ Trust of more than 150 donors. ✓ Successfully implemented Program Pan India in 24 states in more than 2000schools.	**WEAKNESS(EXTERNAL FACTOR)** ✓ School withdrawal or no support. Non-Availability for training on scheduled dates.
OPPORTUNITY (INTERNAL FACTORS). ✓ Constantly upgrading its process and offerings. ✓ Constant development of new modules.	**THREAT (INTERNAL FACTORS).** ✓ None, as the organization is managed by professionals and overseen daily by its Founder and MD.
OPPORTUNITY (EXTERNAL FACTORS) ✓ To constantly better our TTP and M& by learning, experience, and donor value addition.	**THREAT (EXTERNAL FACTORS).** ✓ Probable on acceptance of additional responsibility by the school administration. Probable delay in taking ownership beyond the project period.

STEM
Building Brains.....Beyond Books.....

Union Bank of India- Mini Science Centre Budget year 2024-25					
S.No	ITEM	DESCRIPTION	Standard Cost for 1 School	NOS OF SCHOOLS 1	Budget Cost for number of schools
1	MINI SCIENCE CENTRE	80 MODELS + 80 USERS PLACARD+ 36 COLOURFUL BACKGROUNDS + 1 SAFETY PLACARD + 1 TEACHERS MANUAL INCLUDES INSTALLATION, DELIVERY	3,65,000	1	3,65,000
		TOTAL	3,65,000		3,65,000
2	STEM Tinker lab Kits	10 Arduino Program kit (Include Arduino UNO and General Purpose Sensors like IR sensors, LDR sensors, Ultrasonic Sensors, etc.) 10 Basic Robotics Kit (Includes wheels, chassis, Motor Driver, Arduino Uno, etc.) 10 sets of Basic Electronic Components (Including resistors, Capacitors, LEDs, etc.) 1 Teacher Kit (with stationery kits) 1 Tool Kit (with Soldering & Prototyping Kits) Backdrops	250424	1	2,50,424
		TOTAL	2,50,424		2,50,424
3	TRAINING OF TEACHERS (TTP)	Fresh & Refresher Teachers Training Program - 2 TTP (1 - FTTP + 1 - RTTP) 1st year.	50,000	1	50,000
		TOTAL	50,000		50,000
4	MONITORING & EVALUATION	Base-Line, End-Line Reports (2 times in 1st year)	50,000	1	50,000
		TOTAL	50,000		50,000
5	ANNUAL MAINTENANCE CONTRACT	Cleaning, Servicing & Repair, if not repairable then replaced as per STEM terms & conditions. AMC - renewable from 2nd year onwards.	50,000	1	0
		TOTAL	50,000		0
6	INFRASTRUCTURE	Set up of PLATFORMS & ELECTRIC Whitewash with putty and STEM LAB Theme art painting 1 - Glass Cupboard	1,10,000	1	1,10,000
		TOTAL	1,10,000		1,10,000
7	LED TV	Android Smart TV with External Camera + Pannel + E-Content	1,50,000	1	1,50,000
		Total	1,50,000		1,50,000
Grand Total (1+2+3+4+6+7)			**9,75,424**	**1**	**9,75,424**

STEM LEARNING PRIVATE LIMITED MUMBAI

* The entire Budget is inclusive of GST @ 18% only.
* The above quote is valid for 45 days from the date of Submission.
* If required, inauguration and volunteer engagement are customized and at additional cost.
* Volunteer engagement, quiz compensation, model designing program, and science lecture are customized and at additional cost.
* Events can be designed post-confirmation of schools, beneficiaries, and locations.
*Payment terms: - 50% at the time of PO and 50% after installation report.

STEM

Building Brains.....Beyond Books.....

STEM LEARNING

THANK YOU