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
Samparc India Foundation

About: STEM Learning Pvt. Ltd:

STEM Learning was conceptualized with an aim to inculcate basic concepts of Science, Technology, Engineering, and Mathematics at the school level, thereby encouraging students' inclination towards science and technology. Models designed by STEM help students identify and experience the actual concepts 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 it. With this vision, STEM has customized 80 models based on 130+ concepts of Science and Math's 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 societies.

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 chance to experience and explore science in a practical and easy way.

STEM's models are approved by ***8 SCERT***- *Maharashtra, Goa, Chhattisgarh Odessa Nagaland and Jammu & Kashmir, Delhi & West Bengal* for their alignment with the curriculum and the approvals by the SCERT's 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 to the less privileged students

Goal:

- Learning made accessible to all children for aptitude enhancement.

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

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

Immediate Aim: Reach 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 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's education. Science education in India is faced by various practical challenges today. The first and the most basic problem that has persisted and resisted solution since early education, is our inability to ease the fear of difficult subjects such as science and math's and make it simple and fun so as to help retain the knowledge and strengthen the foundation of the child for future.

Science is knowledge about the material, natural world. It is knowledge produced from systematic observation, measurement, experimentation, exploration, and 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, further more mathematics establishes the foundation for calculation is a part of everyday life

However, 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 large percentage of children to comprehend the formulas and equations. These not only limits the learning of students about science & Math's 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 support 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 corporate to actively participate in developing science and technology centers across India.

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

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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's education that makes learning simpler and accessible. It is a catalytic channel that is interactive, engaging & fun way of learning technique aimed to raise awareness grasp the information & strengthen 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 table top working models with 37 back-drops and manuals in regional language to provide hands-on experience for learning/teaching Science and Mathematics for Class 5 to 10.

- For all students from standard 5 to10.
- 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's 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 minimum of 350-400 Sq. ft. or suitable size along with 17 tables/platform with 13 pieces of plywood 100 Running feet (8ftx1.5ft) for MiniScience 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 (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 in white colour & mounting of 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 from the school authority(Principal)after successful installation and handing over of the materials/documents etc.

First Teachers Training Program (TTP)	1st Teacherstrainingprogramisundertakenwithin2-3 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 to the TTP. The Training consists of the following: 1) Orientation of Models 2) Usage as per the Concepts. 3) Mapped document of model with 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, it can be demonstrated inclass for concept clarity. 7) Identify and prioritize issues to be dealt with by teachers. 8) Setup Goals for Best Practice Documentation. 9) Inform about 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 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 to the TTP. The Training Consists of the following: ● Engagement of Teachers about 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 it accordingly.
Utilization Checkof MSC	After completion of both the Teachers 'Training Program, WhatsApp group is created between teachers and our own trainers to periodically check the utilization of the models Footages of teachers using the models is to be posted regularly on the WhatsApp broadcast group. ● Random Visits to School in order to check usability of the models. ● Every fortnight, a check is done to gain insights about 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 in accordance with 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 teachers 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 is: 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 supporting this activity:** ● Pictures of repaired model ● Pictures of replaced model ● Signed report of 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

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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 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 about various conditions, needs and its intervention for school.	• to understand problem & need by gathering information on the status quo of the school	• Preparing baseline question tool • Visit by PIA to conduct baseline survey on student and teachers • Identify 1 room for MSC installation • Baseline report created with analysis	1st quarter	
MSC installation	• MSC installation in 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 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 transport from warehouse
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 simpler way • Benefits & takeaway of MSC will be highlighted • Question – answer 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 practical-based approach for sustainable knowledge	• TTP will be scheduled • TTP with PPT will be conducted • Feedback & suggestion from teachers • TTP report created for documentation	1st quarter	• **Risk:** Absentees • **Mitigation:** Constant update of MSC benefit will be communicated.
MSC-Maintenance	• PIA along with MSC technical person, free	• Continuous and Maximum	• Quality check of MSC by Team technician	3rd quarter	

	maintenance drive is conducted. • Aim: Learning shouldn't stop, student can use MSC independently	utilization of MSC for sustainable use	• Repair and place if needed • Maintenance report created • MSC model utilization register maintained		
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 theory 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 & enhancement of teacher's skills • Teachers empowered with innovative teaching aids to explain concepts with each • Benefits & takeaway of MSC will be highlighted • Training to refresh best usage of MSC for maximum utilization	• Learning and using innovative teaching aids for quality teaching and 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 & suggestion 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 new skills 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 interview. • Quantitative data analysis	4th quarter	
Client Visit to MSC established school	• Coordinate and arrange visit to 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	

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Mini Science Centre:

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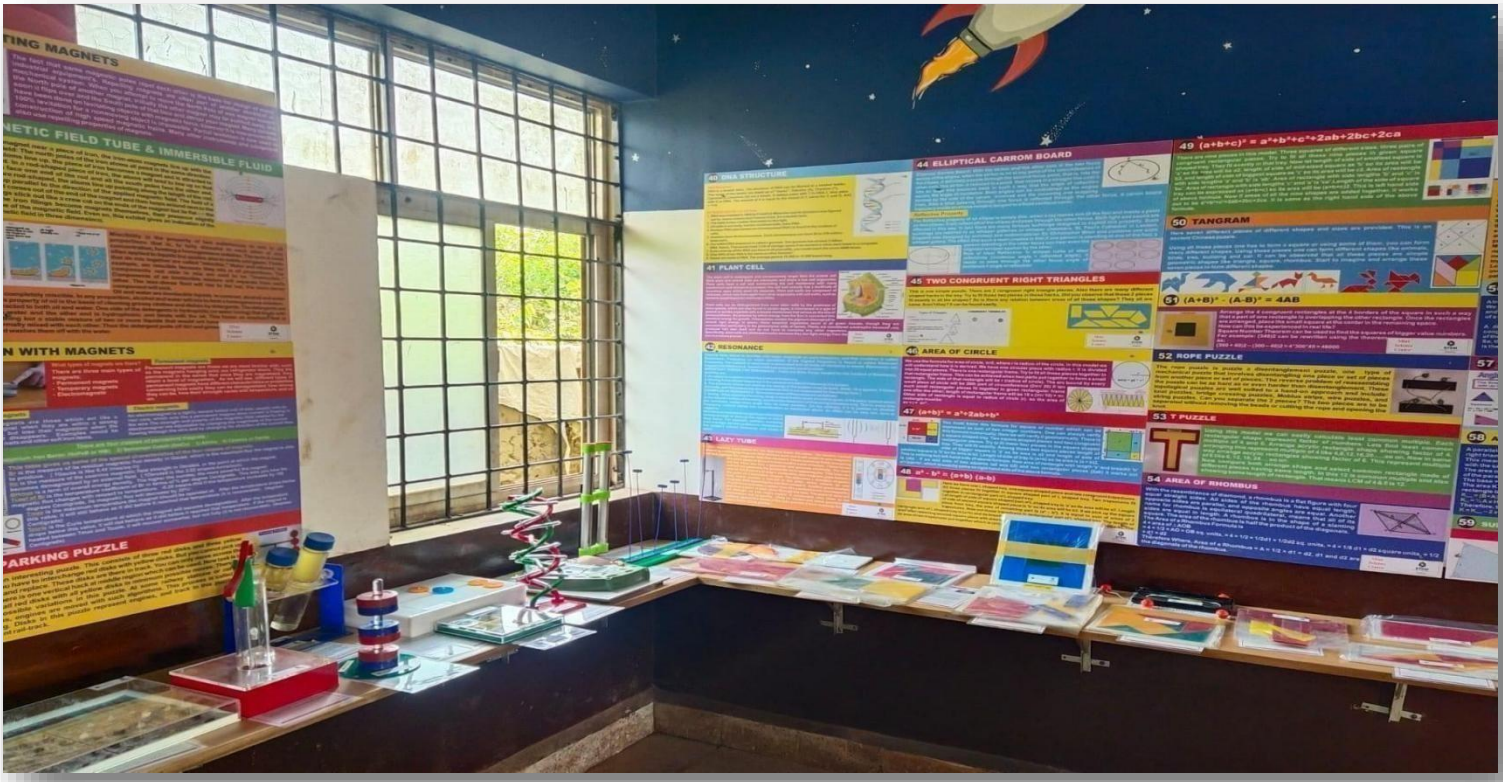

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Some of Our MSC Models:

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

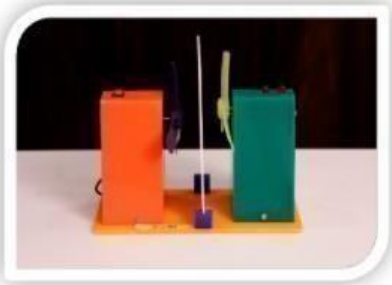
Floating Magnets

Pythagoras

Pin Screen

Conductors-and-insulators

Wheel-and-axel

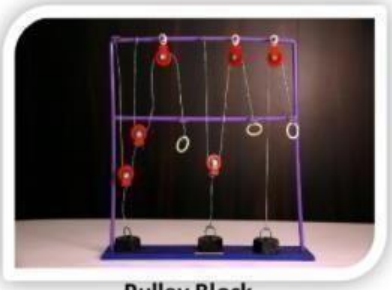


Windmill

Elliptical Carrom Board

Lever

Tangram



Pulley Block

Area of Rhombus

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Centrifuge-Puzzle

Electric Bell

Fun with Magnets

Gyroscope

Total Internal Reflection

Law of Inertia

Outcomes/Result expected:

- Improvement of aptitude of the students in regards of 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 in a practical manner.
- Improve teaching pedagogy by use of models in conducting the science and math's class through better engagement of teachers in teaching.
- Strengthening of concepts of Science and Mathematics.

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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 country. STEM education plays an important role as it pervades every aspect of life.

Our STEM Centre, provides more practical based learning and teaching style of Science and mathematics concept. 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 the new horizons which would eventually benefit the society. The following are the benefits of STEM Centre:

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

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

Encourages Innovation: STEM Centre boost 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 sustain 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 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.	**WEAKNESSS(EXTERNAL FACTOR)** ✓ School withdrawal or no support. Non-Availability for trainingon 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's, experience and donor value addition.	**THREAT (EXTERNAL FACTORS).** ✓ Probable on acceptance of additional responsibility by school administration. Probable delay in taking ownership beyond the project period.

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The Budget is for 1 School for 1 MSC for 1 Year					
SR. NO.	**ITEM**	**DESCRIPTION**	**1 SCHOOL COST**	**NOS OF SCHOOLS**	**TOTAL COST**
1	MINI SCIENCE CENTRE	80 MODELS + 80 USERS PLACARD+ 40 COLOURFUL BACKGROUNDS + 1 SAFETY PLACARD + 1 TEACHERS MANUAL INCLUDES INSTALLATION, DELIVERY & 1st YEARS MAINTENANCE	3,85,000	1	3,85,000
2	TRAINING OF TEACHERS (TTP)	TEACHERS TRAINING PROGRAMME -2 (FRESHER TEACHERS TRAINING PROGRAMME - FTTP & REFRESHERS TEACHERS TRAINING PROGRAMME - RTTP)	47,200	1	47,200
3	MONITORING & EVALUATION	TOTAL - (2 VISITS IN INDIVIDUAL SCHOOLS TO CONDUCT BASELINE & ENDLINE SURVEY)	47,200	1	47,200
4	ANNUAL MAINTENANCE CONTRACT	CLEANING AND SERVICING & IF REPLACEMENT (if any) AMC – APPLICABLE FROM 2ND YEAR ONWARD	47,200	1	0
5	INFRASTRUCTURE	SET UP OF PLATFORMS & ELECTRIC CONNECTIONS & WHITEWASH	53,100	1	53,100
GRAND TOTAL (1+2+3+5)			**5,79,700**	**1**	**5,32,500**

* The entire Budget is inclusive of GST @ 18% only.
* AMC is not charged for first year.
* The above quote is valid for 45 days from the date of Submission.
* If required, inauguration and volunteer engagement are customized and at an 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 location.

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THANK YOU