



AGASTYA INTERNATIONAL FOUNDATION



ARTICLE FOR KNOWLEDGE PARTNER MEET AT GULBARGA





Agastya: Improving Critical Thinking and Leadership Skills

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Summery

What makes a nation prosperous?

A key driver of prosperity is innovation and Productivity. An innovation and invention are products of creativity and the foundation of creativity is curiosity. So, if India has to be prosperous nation, we have to work make it first as curious nation. The good news is research shows that 98% of children between the age of 2 and 4 ask questions. Unfortunately, as they go through the school system by the time of middle school, it's been found that only 50% of the children ask questions. Not more than 10% of the children graduating from the school are asking or interesting in asking question. At present the school system starts with question mark and ends with full stop. And that works against the whole model of building innovation, creativity, productivity and prosperity. Why this happens in easy the way we learn at school, I tell you listen. How to reverse the decline in curiosity? Agastya started not by saying that this was the answer to the problem of transforming education. Instead, we asked series of questions, what makes somebody creative, a great problem solver? Is it possible that you can learn to become creative and if you can, how would you make that happen at scale? And Agastya found out one of the ways of doing it by “**sparking curiosity, nurture creativity and instill confidence and caring** in economically disadvantaged children and Government school teachers by bringing imaginative and innovative hands-on STEAM education and design thinking through experiential, project-based and peer-to-peer learning at schools, towns and villages across India”. Agastya runs one of the world largest hands-on science education programs in the World.



Agastya follows 3 A's **Ah, Aha and Haha** method in the learning process.



Aah!

Aha!



Ha-Ha!






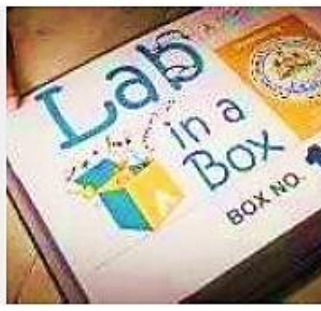


When you see something new, you go Ah. Ah is very important because you did not expect to see what you saw; you wonder what happened? How could this happen? In the Ah your mind is awakened, curiosity is stimulated. That is the foundation of enquiry and learning. The second thing is, once you experience the Ah you began to wonder naturally how did this



happen? Why did it happen? In process of this you start investigating and find answers for your questions.

This leads to the experience of Aha effect. The Aha effect is creative enforce. The third thing is Ha Ha effect. Ha Ha element is learning with fun in whatever you do and the joy of learning. So Ah, Aha and Ha Ha are really the secrete code to learning to become more innovative, to become a great problem solver and eventually to contribute to the prosperity of the nation.

Agastya Methods: Agastya aims to transform the thinking of underprivileged children and teachers through the following methods. Agastya program at 21 states of India

Creativity Campus, Gudivanka, AP 172 Acre Facility 600 Students Visits Daily		Mobile Science Lab 150+ Mobile Vans	
Science Centers 90+ Diverse Locations		Operation Vasanth 400+ Night School	
Lab on a Bike 100+ Lab on a Bike		Lab in a Box 100+ Govt. Schools	
Young Instructor Leader Program 12,000+ Leaders Per Year		Teacher Training Programs 3,00,000+ Teachers Trained till Date	

How we do it?

Agastya created hundreds of counterintuitive science experiments over the last two decades and Agastya began to disseminate these models and experiments through an innovative channels like science center, mobile science labs, lab on a bike, design thinking labs, young instructor leader program, I mobile lab, Operation Vasanta and teachers training program.

Science center: Nestled in urban and semi-urban areas, our science centers are the nucleus of innovation and interactive science learning for nearby schools. The instructor augments the syllabus taught in schools through science models and encourage children to develop their own low-cost experiments to understand and retain the concept better. Apart from children and teachers, the science center also a large number of visitors from every field throughout the year to get the experience of Ah, Aha and Ha Ha experience.



Mobile science labs: Agastya believes that knowledge needs to be accessible to everyone. So if children cannot come to Agastya, we go to them instead. A prime example of this belief is the Mobile Science Lab that takes innovation to new levels by reaching knowledge to children who have no access to hands-on learning. The Mobile Science Labs are vans that carry Science models and experiments and traverse long distances to reach students at under-resourced schools. Two knowledgeable, enthusiastic Agastya Instructors accompany each van to explain the science and functionality of the models.



The Mobile Science Labs expose rural children to a scientific way of thinking while kindling their curiosity. They learn scientific concepts in a hands-on manner by exploring, experimenting, and experiencing. By bringing science to life, the Mobile Labs make understanding abstract concepts easy to grasp. An added advantage is that the Mobile Science Labs are actively engaging with adult community members by showcasing everyday concepts of ecology, biology, physics, and chemistry through working models.



Lab-on- a bike: Agastya's commitment towards hands-on education for all was challenged when the most remote regions in India could not be accessed by our Mobile Science Labs. The solution was yet another innovation that combined the compactness, portability, and adaptability of Lab-in-a-Box (LIB) with the mobility of a motorbike, driven by one of Agastya's Instructors.

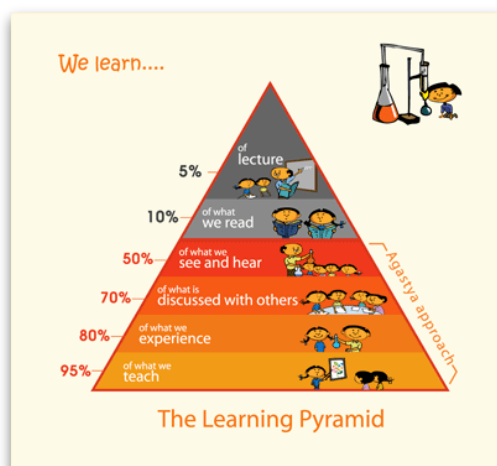


The bikes are equipped with a laptop and portable internet connection, with access to language-neutral science videos, quizzes, and more. The Lab-in-a-Box contains simple hands-on experiments that teach scientific concepts in an easy and engaging manner. The Math Lab-on-a-Bike does the impossible by driving away the fear of Mathematics while the Electronics Lab-on-a-Bike takes innovation to the next level by providing students with the know-how of modern electronics in an increasingly digitized world.

Design thinking labs (Innovation hub): At Agastya, we believe that innovation and progress go hand in hand. Mini Innovation Hubs, which have been launched in major cities across the country, are extensions of the Innovation Hub in the Campus Creativity Lab. These interactive hubs offer experiential learning opportunities for children, help them develop a design thinking mindset, an inquisitive perspective, and enhance their problem-solving skills.



Young instructor leader program: The Young Instructor Leader Program (YIL) is a crucial building block of Agastya. This program redefines the traditional relationship between teachers and students, as well as among the students themselves, through peer-to-peer learning. The students are not limited to being on the receiving end but also get to help their peers and this offers them a more interactive environment. In the process of peer-to-peer teaching, it is easier for the students to grasp and retain concepts when they learn from their fellow students, and the YILs get an opportunity to enhance their communication skills and their concepts are revised. Not only do our YILs get a chance to learn through peer-to-peer teaching and science experiments, but also get the exposure of community visits, Science Fairs, meeting influential people in the field of science and much more!



I mobile lab: Through our digital initiatives, we are bridging the digital divide in schools and integrating





technology into education. Agastya's I Mobile program addresses the lack of science and computer labs and focuses on integrated learning by creating a link between science, technology and existing school curriculum. The result has been an improvement in children's literacy levels in domains like science, digital competency, language and numeracy. They identify opportunities where technology and science skills they have learnt can be leveraged to improve their everyday life, both in and out of school.

Operation Vasanta: Poverty has been a dominant issue in India and the surest way out of poverty is education. However, due to a lack of education opportunities in the rural parts of India, high drop-out rates have been registered. Once they leave school behind it becomes difficult to get back on track and re-establish their academic base. We took this problem as a challenge and looked for ways to enable these children to resume learning.



The solution was rather simple. We decided to start centres in villages that operated at night. This way, children did not have to decide between working to meet their needs and studying to better their future. The program was initially aimed at dropouts but has since evolved into one that involves and educates members of entire communities.

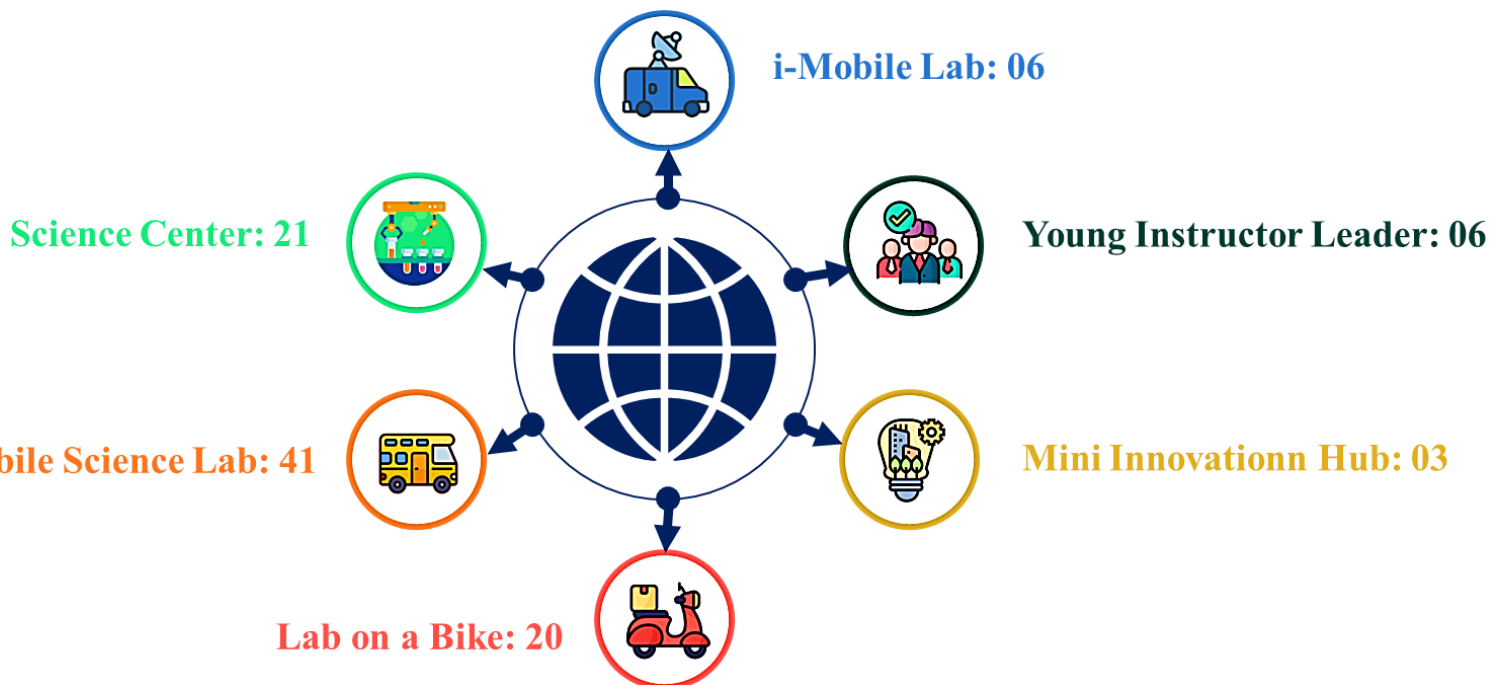
Teacher's training program: Early on in our journey, we realised that in order to provide holistic education to children, those providing said education should also be inspired. Acharya Initiative, Agastya's Teacher Training Program, was set up with this aim and has since been instrumental in training thousands of educators. The curriculum is designed in a way that ensures teachers are equipped with tools and techniques to conduct classes using the Constructivist approach ("constructing" knowledge out of experiences) and develop low-cost models and teaching aids. This empowers them to facilitate 'knowledge construction' in children.



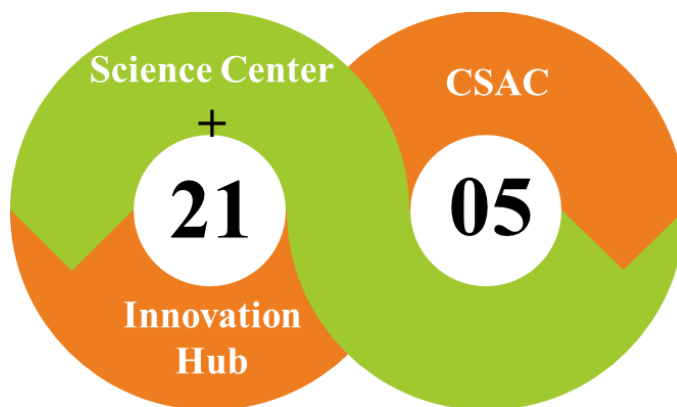


KARNATAKA

THROUGH CSR



THROUGH GOVERNMENT OF KARNATAKA



CSAC (CORE SCIENCE ACTIVITY CENTRE)



Spread across the region of North Karnataka (Yadagir, Bagalkot, Shivamogga, Vijayapura and Bidar), CSACs act as outreach facilities in the areas. The activities and curriculum employed in CSACs are at a more advanced level than a regular science centre. It also boasts jumbo-sized science models on display and has dedicated labs for each subject taught.



GOK SSK AGASTYA CSAC centres are located in five districts of Karnataka. Each CSAC has 2 acres ecology campus with building constructed in 10,000 sq mtr. Each CSAC has Physics lab, innovation hub, chemistry lab, ecology garden, biology lab, computer lab, mathematics lab, YIL lab, library and teachers training room. Each lab is 7000 to 8000 sq ft. With the support from Government of Karnataka and Samagra Shikshana Karnataka we are operating Core science activity centres in 5 districts Hubli, Bijapur, Bidar, Bagalkot and Shivamogga

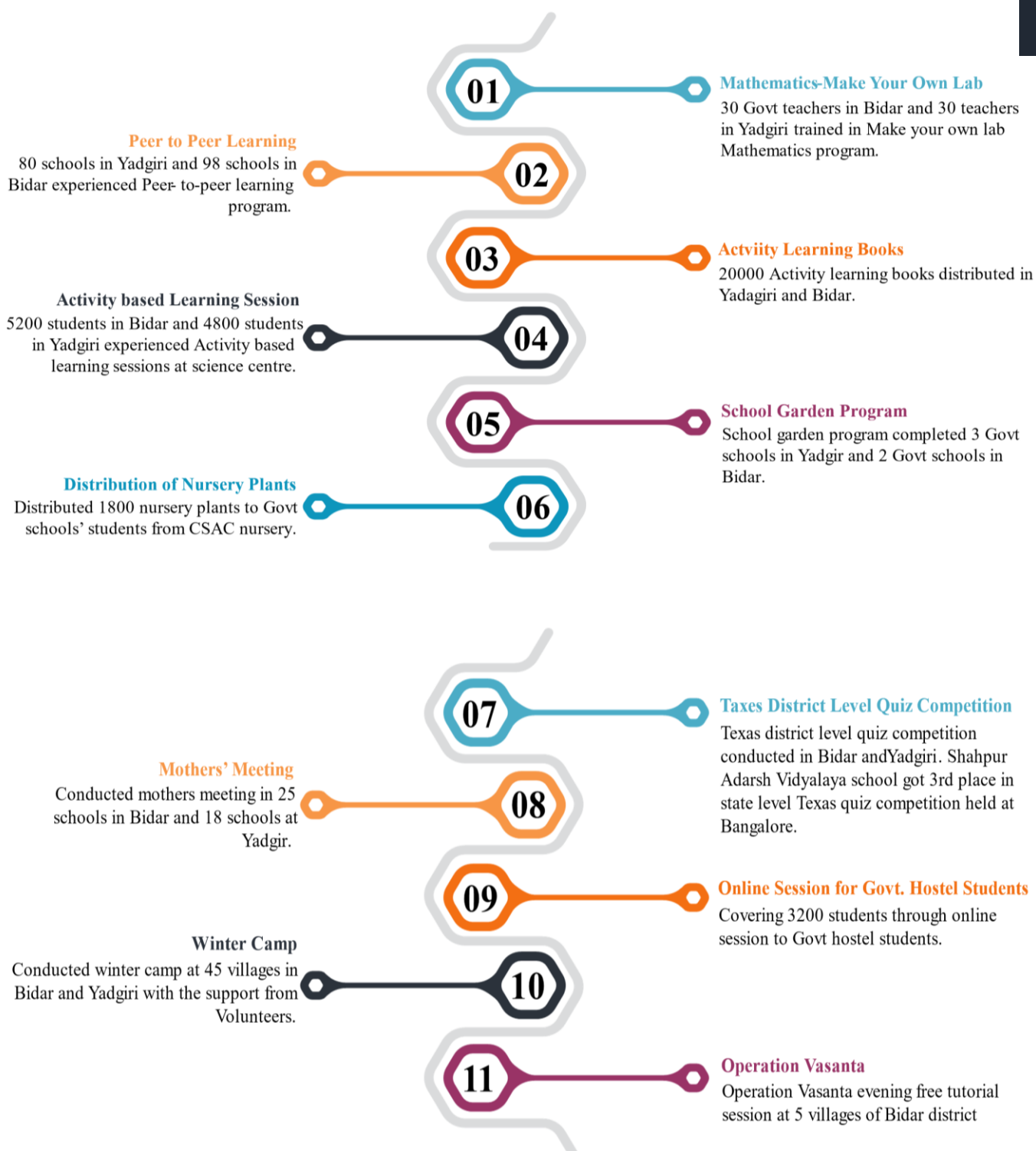
Activities at CSAC

Every day 130 to 150 school students (5th to 10th) visit to centre by bus. Students are divided in to groups and each group consists of 25 to 30 students. Each child will go through 2 sessions (2 hours per session) in science labs. They will learn activities in hands on learning. Each child will have 6 to 8 exposures per year. Visiting teachers will have low-cost model making training at centre. Each child during every visit will through ecology campus to learn ecology activities. From CSAC centres we are covering 35000 unique students.

Apart from this we conduct teachers training program, science fair, young instructor leader program, design thinking, young entrepreneurship program, ecology activities, students scientist meet, summer camp and SSLC lab activities.



BIDAR and YADGIR 2022-23





21 MINI INNOVATION SCIENCE CENTERS IN KALYANA KARNATAKA REGION

At Mini Innovation Science Centres, hands-on learning science sessions will be conducted in the schools by the instructor of the science centre using a model covering wide range of topics in science for class 5 to 9. Science centres will additionally conduct science fair, young instructor training and teachers training program. Agastya instructors build on Childrens innate curiosity through models made easily available, reusable materials. Mini innovation hub will setup in the Govt school with the objective to practice and disseminate a unique pedagogy of innovation among the underprivileged children and teachers of Kalyana Karnataka region. The space is expected to facilitate open interactions and discussions around Innovative solution based on STEM subjects leading to addressing the social challenges. Children will be given exposure to an 8-day curriculum, through which they will be taken through the Innovation process. From Mini Innovation centers we are covering 18700 unique students across Kalyana Karnataka region.




KARNATAKA REPORT – 2022-23

Impact study

ASSESSMENT METHODOLOGY

- Pre-test is done at the beginning of the year with minimum exposure levels (0-1)
- Post-test done at the end of the year or on the last session of Agastya for the year with maximum exposure level 7 to 8.
- Simple multiple-choice questionnaires are created where the responses are mapped to either of the four parameters (awareness, curiosity, confidence, and science knowledge).
- Hard copy of the questionnaire is given to students to collect their responses. (during both Pre and Post)
- Data collection and scoring sheet is designed to automatically generate scores for each student on all the four parameters based on responses marked by the students in the questionnaire.

PROJECT # 1		
Schools	Program Covers	Sample Selection
School # 1	Class 6A, 6B, 6C, 7A, 7B, 7C, 8A, 8B, 8C	Class 6A, 6B
School # 2	Class 6A, 6B, 7A, 7B, 7C, 8A, 8B	Class 6A, 6B
School # 3	Class 6A, 6B, 8A, 8B	
School # 4	Class 6A, 7A, 7B, 8A, 8B	Class 6A
School # 5	Class 6A, 6B, 8A, 8B	Class 6A
School # 6	Class 6A, 6B, 7A, 7B	Class 6A
School # 7	Class 6A, 6B, 7A, 7B, 7C, 8A, 8B	

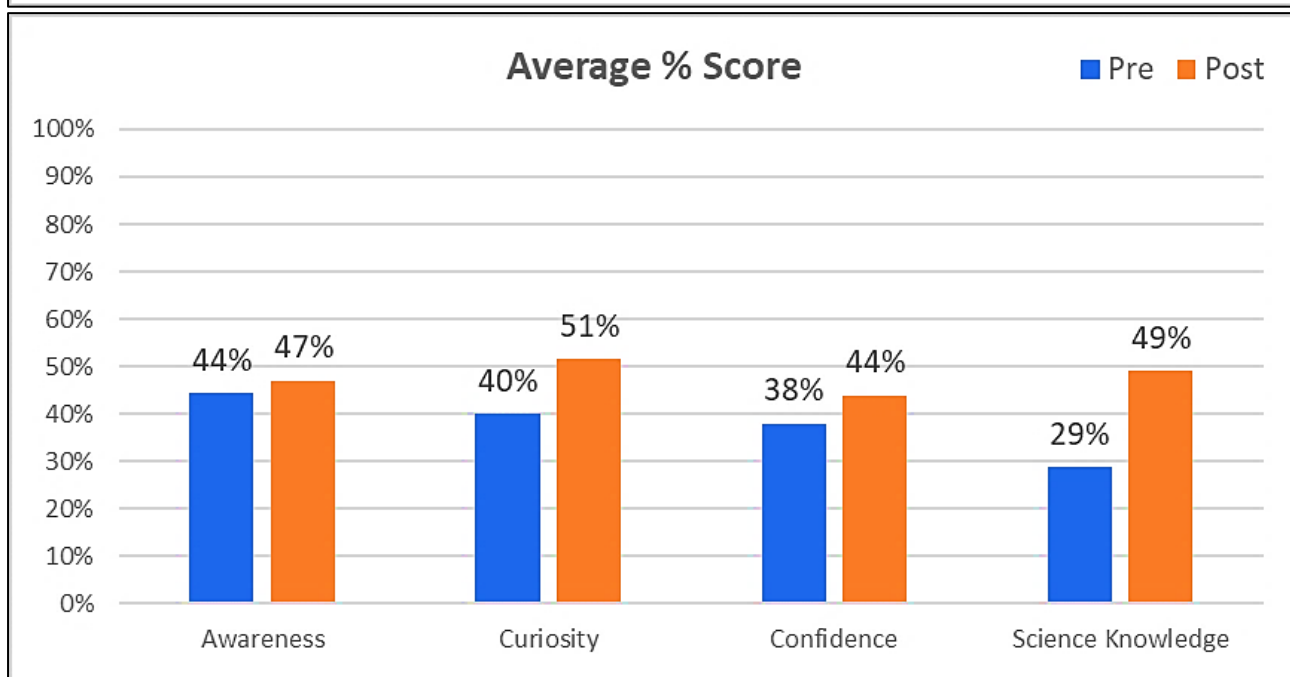
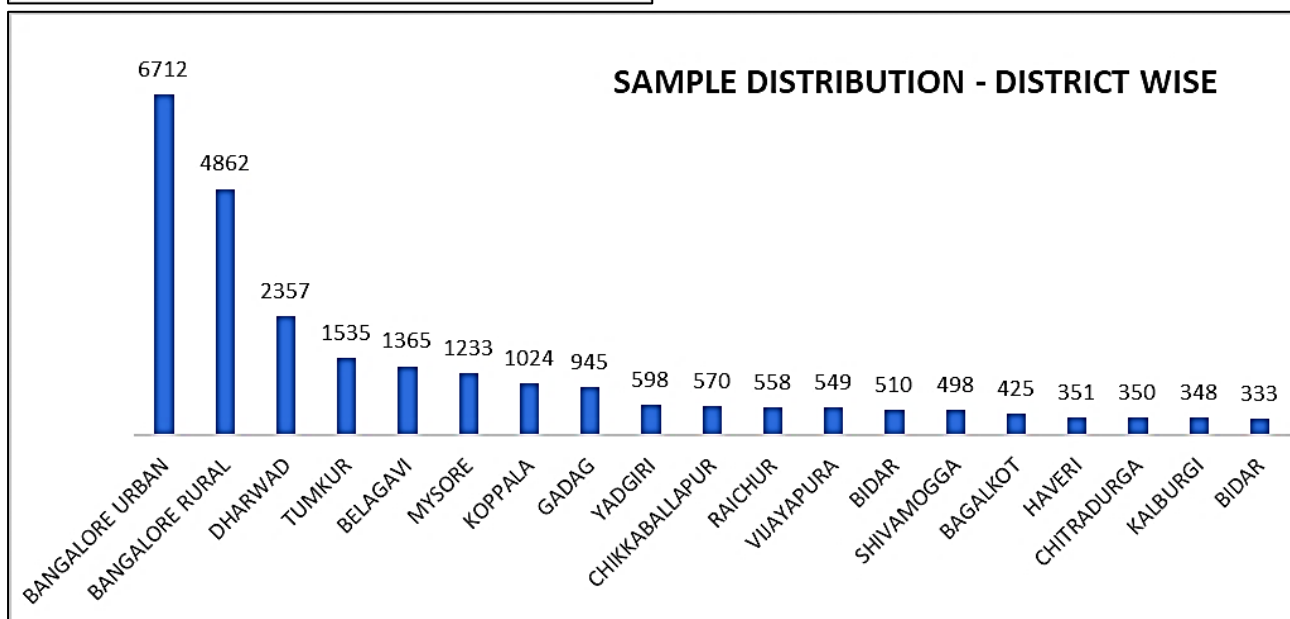
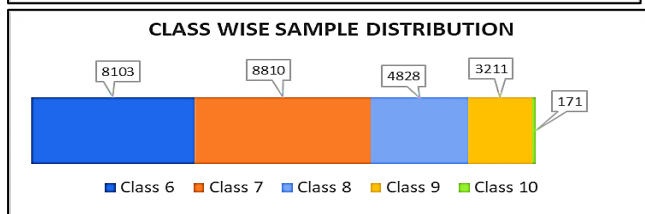
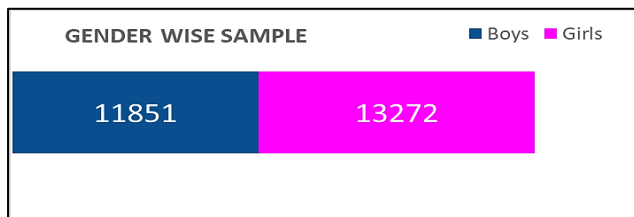


Random Sampling

- Statistically Significant
- Based on Unique students covered in the project
- 95% Confidence Level
- 4% Margin of Error

ASSESSMENT PARAMETERS

- **Awareness** - Knowledge of alternative experiential methods of learning and teaching science.
- **Curiosity** - Behavior characterized by exploration, investigation, observation, and a desire to learn more about new, incongruous, or unknown elements.
- **Confidence** - The ability to stand up and speak their mind, to develop a consciousness of their own ability and to demonstrate the same.
- **Subject Knowledge** - Understanding of the concepts & application of the same.





Awareness – Absolute improvement is **3%**, Improvement over baseline is **6%**

Curiosity - Absolute improvement is **12%**, Improvement over baseline is **29%**

Confidence - Absolute improvement is **6%**, Improvement over baseline is **16%**

Science Knowledge - Absolute improvement is **20%**, Improvement over baseline is **70%**

Agastya has the potential to transform education in India by improving learning outcomes and make learning more meaningful and relevant to the students. This model is being embraced by our partners/donors in a very large way. We believe the way forward for Agastya is very exciting with larger goals and responsibilities in increasing children's learning levels.

Student Stories

Rajeshwari Govindappa Bovi, a class VIII student, is a 13-year-old girl who wants to become a science teacher. Her introduction to Agastya began with a science van, which made approximately 20 trips to her school. She liked the scientific models she saw and visited the Agastya science center in Bidar. Rajeshwari feels Agastya has not only helped her to improve her grasp of science but has also developed her personality. She is more outgoing and confident and can answer questions in class and provide explanations to her classmates.

Mayur Patil, a YIL and class VII student, built a low-cost science laboratory at his school GHPS Aurad. He cleared a room and stocked it with models made from objects he found at school, home, and around the neighborhood. He used the models to explain concepts to more than 60 students at his school. Mayur's sister and friends turn to him when they have a science-related query.

“The lesson we derive out of [the Agastya] experience is that innovative and student friendly solutions are needed to enable scientific learning in the youth, especially those in rural and remote regions of the nations of the world.”

Former President of India, Dr. A.P.J. Abdul Kalam







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