

## NET AGASTYA FOUNDATION, KUPPAM

25th September 2023 to 30th September 2023

### Objectives:

- Exposure and knowledge of alternative teaching pedagogies.
- Enabling learning environment for 21st-century skills for students
- Improving teacher motivation and enthusiasm.
- Encourage the teacher's creative and innovative work culture.
- Get exposure to inclusive education practices.

### Day 1

25th September 2023

### Agastya Foundation:

knowledge



- Welcomed by Mr. Manjunath and his team
- Provided with a training kit and jute bag
- Registration and baseline assessment of knowledge

- Introduction to Agastya Foundation's history and vision by Mr. Manjunath
- Dinner at the mess named "Mallika" at 7:30 PM
- Meeting with Ms. Swati Dhonchak and Mr. Hansraj Modi for feedback at 9:00 PM
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## Day 2

26th September 2023



- Hands-on activities for participants, emphasizing the learning process.



- Tangram activity with participants creating various shapes.
- Benefits of experiential learning shared by Sir.



- Feedback on hands-on learning methods collected.

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Interaction with Dr. Ravindranath on Constructive Teaching:



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- Shared life experiences and highlighted the need for constructing .
- Emphasized the importance of applying knowledge practically.
- Encouraged teachers to discuss the chemistry of the kitchen.
- Benefits of constructive learning: concrete learning, joy of learning, and practical knowledge application.
- Shift from fact-based to skill-based learning.
- Constructive approach for preparing 21st-century learners.

Visit to Ramanujan Maths Park:



- Group taken to the park by bus provided by Agastya Foundation.



- Notable park features:
- 3D structures of Platonic solids and a Melancholia magic square explained.
- Fractions slab illustrating division of length into fractions.
- Algebraic Identity  $(a+b)^2$  depicted in the shape of a laughing Buddha.
- 4D cube (Tesseract) explained.
- Explanation of Pythagoras Theorem.
- Power of powers - chess board with Payasam story.
- Ground circle demonstrating  $c/d = \pi$  (22/7) and the infinite nature of  $\pi$ .
- Number line and integers structures making complex concepts understandable.
- Visit to Maths lab with easy-to-use learning materials and models.
- Visit to Physics Lab with working models related to optics and mechanics.
- 3D Imaginary room for creating computer-generated images to aid understanding.
- Mention of the park's ecological and clean environment, courteous staff.
- Conclusion of the day with a return to the guest house at Agastya Foundation

**Day 3, 27th September 2023**

**Morning session**





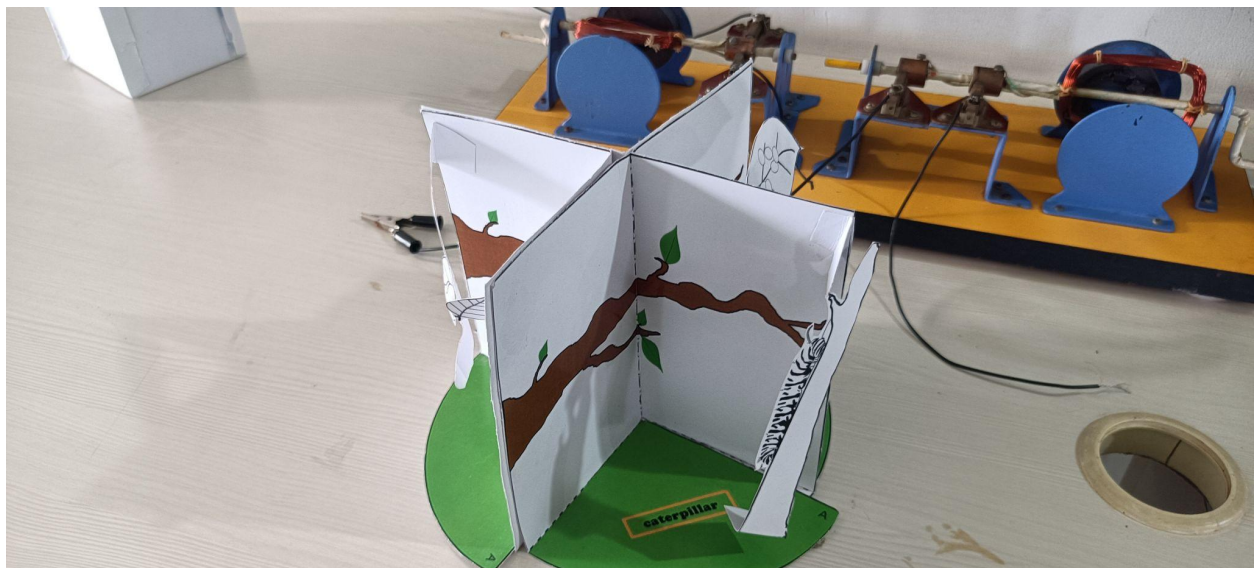
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- Day began with a yoga session led by Mr. Ganesha.
- Participants practiced various yoga asanas and learned unique clapping techniques (butterfly and fish clapping).
- Refreshing herbal tea concluded the morning session.
- Breakfast included Upma and Dal Vada with tea.
- Mr. Venkatesh engaged participants, discussing Learning, Impact, and Change (L.I.C.).
- Participants shared reflections and key takeaways from the previous day.
- A round of applause expressed appreciation for contributions.
- An energizer initiated a culture of asking questions, an essential part of Constructive Learning.
- In depth discussion on Piaget Cognitive Constructivism.
- Viewing and synthesis of the video "Do flower fly" with participants.
- Model Making activities included creating a simple camera and exploring reflections on mirrors to form polygons and find angles.
- Participants received kits and experienced model making.
- Example on constructing knowledge for students was provided during the session.

## Evening Session





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- Mr. Som Sekhar, a Physics lecturer, presented an activity based Physics problem on motion using marbles and sloping surfaces.

- He stressed the importance of constructive pedagogy and the process of learning over the end product.
- Highlighted that knowledge is constructed through experiences and observations, not transferred.
- Emphasized that science is dynamic and influenced by technology and areas of observation.
- Visited the Guru Graha planetarium and watched a 12 minute movie called 'Sizing up space,' providing insights into space activities and celestial bodies like nebulae, meteorites, and asteroids.
- Observed the movement of planets around the Sun through a mechanical setup to scale model.
- Witnessed a specialized arrangement depicting the execution of 'MISSION MARS' either in Earth's orbit or that of a nearby planet.
- Activities were well explained by Agastya volunteers, resulting in a productive and informative afternoon session.

**Day 4 28th September 2023**





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- Today's Workshop aimed to enhance understanding of scientific principles.
- Started with a review of previous sessions' concepts.

Activities included:

1. Model of the human eye to understand its functioning.
  2. Exploration of persistence of vision.
  3. Observing pupil contraction and expansion in varying light.
  4. Crafting lung models for hands-on learning about respiration.
  5. Simulation of ray paths using ray diagrams for optics.
  6. Experiment with double cones to explore the center of gravity.
  7. A game demonstrating the principle of inertia.
  8. Balancing nails to find the center of gravity.
  9. Hands-on experience with mirrors and lenses for understanding light behavior.
- Addressed misconceptions throughout the workshop.
  - Workshop fostered curiosity and provided accurate insights into science.
  - A testament to Agastya Foundation's commitment to science education and outreach.

## Evening session:



- Workshop on Hands-on Teaching with Model Making.
- Participants provided kits for model making on various physics topics.
- Light path in optical objects:
  - Mr. Purushottam demonstrated model making for reflection and refraction of light.
  - Participants created their models.
  - Demonstrated ways to use the models in teaching light chapters.
- Motions (Angular):
  - Model making on motion led by Purshottam.
  - Mr. Manjunath explained using the model in teaching motion and demonstrated an activity on angular motion.
  - Discussed the concept of objects moving straight in a circular path using a syringe.
- Next session: Teaching exploration in the Art Lab.
- Demonstrations of creating sculptures from scrap materials, like ants from old iron, astronaut from pipes and boxes, butterfly with old clothes and iron, and swings using old tires.
- Visit to the Innovation Hub by the National Council of Science Museum (NCSM) under the SPICES scheme of the Ministry of Culture.
- Various innovations presented in the form of models and activities.



- The afternoon session resulted in valuable learnings and knowledge construction.

## **Day 5 29th September 2023**

### **Morning session**

- Warm welcome by Muniraju Sir.
- Review and impact discussion of the previous day's activities related to Learning Impact Change (LIC).
- Introduction with a "banana clap."
- Participants individually prepared a model depicting states of matter (solid, liquid, and gas).
- Continued by Som Shekhar Sir, a physics lecturer.
- Discussion on teaching the second law of motion in a simple way.
- Emphasis on avoiding formulaic teaching.
- Clarification of the 5 Es (Engage, Explore, Explain, Elaborate, Evaluate) in the teaching learning process.
- Importance of the process over the product.
- How to use the 5 Es while teaching Archimedes' Principle for beginners.
- Concept clarity of density through a story.

Demo class by Mr. Purushottam with class 8 students:

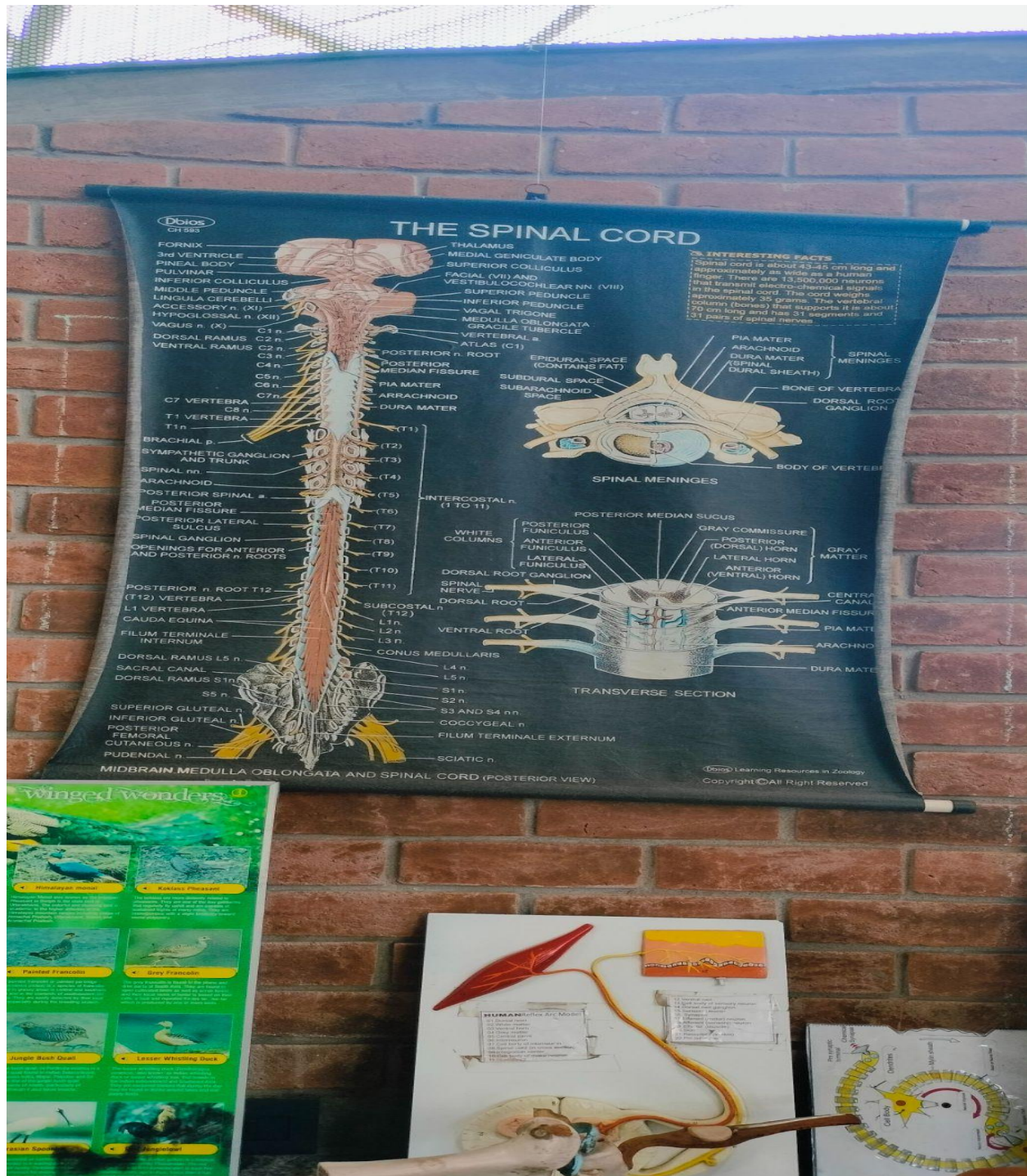
- Topic: Archimedes Principle.
- Material used: A bucket of water, spring balance, beaker, and a solid cube.
- Constructivist approach and application of the 5 Es.
- Class divided into 4 groups with gender neutral choice.
- Students observed and felt the difference in stone weight after dipping it in water.
- Provided worksheets with 5 questions.
- Activity and discussion for each question, encouraging critical thinking.
- Normalization of accepting mistakes.
- Recording responses on sheets.
- Class ended with feedback collection in CDC format.

Impact: Interactive and covered all 5 Es, concluding with fun and takeaways before lunch.

### **Evening**







- Hands on Teaching with Model Making.
- Introduction:
- Started with an energizer by Mrs. Bhuvaneshwari.
- Model making focused on physics concepts like simple circuits, plane mirrors, coupled pendulum, and microscale electrolytic tester.

Participants provided kits for hands on model making in physics.

#### 1. Electrical Circuits Model:



Mrs. Bhuvaneshwari demonstrated techniques for creating electrical circuit models. Participants prepared these models individually.

Demonstrated various ways to use them when teaching electricity, emphasizing constructive pedagogy.

2. Coupled Pendulum:

Model making for demonstrating energy transfer led by Venkatesh Sir.

Instructions for creating the model provided.

Demonstrated how one hanging ball can transfer energy to the second ball, setting it in motion.

3. Electrolytic Tester:

Mr. Venkatesh taught the creation of an electrolytic tester model for studying electrolytic solution conductivity.

The model lights up when dipped in a solution, indicating electrical conduction.

4. Plane Mirrors:

Study of light reflection through plane polished and diffused surfaces.

- Various innovative models and activities related to reflection were explored.
- The afternoon session was successful, resulting in valuable learning and knowledge construction.

## Day 6, 30th September 2023

### Morning Session



- Began with a visit to the chemistry lab, entering through Kekul's Dream gate, adding intrigue and excitement.
- Explored Agastya core principles as the foundation for scientific exploration.



- Delved into a 3D periodic table model, 3D model of hydrocarbons, pH level chart, and a plasma ball.
- These tools aided in organizing and understanding the properties of elements.
- Engaged in cool chemistry experiments, making the subject more engaging and memorable.
- Visited Agastya Muni Temple, providing a moment of reflection or a cultural experience with a spiritual dimension.
- Moved to the BDS lab, gaining insights into the human body, particularly brain parts and their functions.
- Explored various aspects of the human body, offering a unique perspective on biology and anatomy.
- The last session before lunch featured a felicitation ceremony.
- All participants received certificates, and coordinators Swati Mam and Hansraj Modi sir expressed gratitude to the Agastya Foundation Team for their support and contributions.
- The final session concluded with a group photo.
- After that the delegation of DoE officials, Mentor Teacher and SCERT officials proceeded back to Delhi