

PGT Workshop at CSIR-CBRI, Roorkee

CSIR-Central Building Research Institute, Roorkee organized a **workshop for the postgraduate teachers** of Kendriya Vidyalaya Sangathan on **December 26, 2018**, under the **Jigyasa Programme**. The scientists of CSIR-CBRI, Roorkee presented **lectures** in their area of expertise and informed about the **latest technologies** developed by CSIR & CBRI. **Dr. N. Gopalakrishnan, Director CSIR-CBRI** welcomed the teachers and encouraged them to adopt a scientific approach towards life and to inculcate a scientific temper in their students.



Dr. L.P. Singh, Principal Scientist presented a lecture on "**Nanotechnology**" and informed about the applications of nanotechnology in buildings, use of nanotechnology to modulate concrete and optimize loading capability in buildings. Dr. Singh informed that research is being carried out to develop affordable, advanced and sustainable technologies to ensure the economic and social development of the country.



While presenting a lecture on "**Inclusion of Storytelling and Humor to Reduce Monotony for the Development of Scientific Temper**", **Dr. Atul Kumar Agarwal**, Senior Principal Scientific and Jigyasa Programme Coordinator explained the teachers that compared to other subjects science is considered monotonous by the students. Therefore, teachers should try to create vibrancy in the classroom by sharing the scientific jokes and humorous incidents inspired from the lives of eminent scientists. For instance, the story of Newton and the apple is exemplified while explaining the context of gravity. Similarly, students can be motivated by citing fun facts from the life of various eminent scientists. He elaborated on the concept to the teachers by introducing them to some interesting facts related to the life of great scientist Sir Isaac Newton. The scientific star Newton was born in the same year the scientific community lost scientist Galileo Galilei. When Newton was young, he was not good at studies. Once a boy in school started a fight with Newton and Newton won the fight. But Newton was not satisfied with the result. He wanted to teach the boy a lesson by excelling in studies too. It was an important life event, as this incident attracted young Newton to studies and he went on to become one of the greatest minds of his time. But, Newton was very secretive during his entire career. He did not tell anyone about his discoveries for nearly 20 years. Newton was second, after Aryabhata, to claim that the Earth does not travel around the Sun in a circle, but in an ellipse. Newton was just 23 years old when he discovered gravity. Newton built the first practical reflecting telescope, which is still used today. It took Isaac Newton as much time to invent calculus as a student would take to learn it. Newton was a source of inspiration for Albert Einstein, who kept a picture of Sir Isaac Newton in his study room. Similarly, Dr. Agarwal shared some interesting facts related to the lives of Albert Einstein, Thomas Alva Edison, Madame Marie Curie etc. with the teachers. He also informed to the teachers about the glorious history, achievements of CSIR as well as CBRI and the various awareness programmes under Jigyasa Programme to inculcate scientific temper in young minds.



The participants visited the **enriched laboratories** of CSIR-CBRI and learnt about the innovative work carried out in the direction of advanced building materials such as rice husk plastic wood, pine needle board, phosphate bonded bricks, bio-concrete block, building block from C&D waste, kota stone tiles, geopolymers concrete blocks etc. and **interacted with the scientists** of the Institute. During the visit to the **Efficiency of Buildings lab**, **Scientist Sh. C.S. Meena** explained the concepts low speed wind tunnel for ventilation and wind pressure distribution in building, standard guarded hot plate apparatus for thermal conductivity, reverberation chamber, dome type of artificial sky for daylight studies, ultrasonic and acoustic emission setup for non-destructive testing of building components etc to the participants. In the **Structural Engineering lab**, the participants learnt about the work done by CBRI in the areas of seismic improvement, retrofitting, design checking, health monitoring, quality assurance and quality audit of structures, distress diagnosis and strengthening of heritage structures etc. In the **Organic Building Materials lab**, **Dr. Rajni Lakhani, Group Leader** informed the participants about various eco-friendly green building materials such as thermal insulation tiles using vermiculite waste, EPS door shutter, Coir-CNSL board, polytile, polycem tiles etc. with the help of product samples. In the **Fire Research lab**, **Sh. R.S. Chimote, Chief Scientist** informed the participants about various technologies developed by CBRI for fire safety in buildings including fire retardant and water repellent canvas, liquid fire extinguishant chemical, fire resistant doors, micro data cabinet, fire retardant coatings for wires, wood/wood based products, etc. During their visit to the **Environment Science & Technology laboratory**, the participants learnt about the work done by CBRI in the areas of waste management, pollution monitoring and control in process industries related to building materials, such as cement, lime, bricks, stone crushers, etc. In the **Rural Technology Park**, the participants saw demonstration models of various rural technologies developed by the Institute including fire retardant non erodible mud plaster thatch roof, low cost latrines, waste water disposal system, prefab brick panel and jack arc panel system etc. The participants also observed the **Technology Gallery** of the Institute.



About **40 physics post graduate teachers** of Kendriya Vidyalaya Sangathan from **Dehradun, Jammu, Lucknow and Jaipur** regions along with **Principal Sh. Vipin Tyagi** participated in the programme.

