



PROJECT BRIGHTER WORLD LAB ANNUAL REPORT 2019-20





EXECUTIVE SUMMARY

One cannot underestimate the scope of science in today's world. Science is the backbone of human existence. The practical effects of science can be seen in motion everywhere. From path-breaking discoveries in atomic science to discovery of newer vaccines in life science, to technological advancements in the field of communication, transportation, and even weather prediction, science has left no aspect of humans untouched.

With scientific and technological advancement, the school curriculum needs to be adapted to suit the challenging needs of the world. STEM Education or Science, Technology, Engineering, and Mathematics education is gaining momentum and popularity in the schools of the country. It thus becomes very important to cater to the advancement of the world by incorporating the STEM education in the current curriculum of the schools to expose the children belonging to the low socio-economic background to give them an experience of science education in a conducive environment.

It is very important to instill science education at an early age in the children so that the spark and curiosity are encouraged in them. Since this is the phase where the minds are the most curious, giving them exposure at the right time can reap better benefits.

The Government has made considerable efforts at the National and the State level to ensure that science education becomes an important aspect of the curriculum in all the schools and efforts have been made to ensure that a conducive learning environment is created for the same.

The Government grants scholarships sponsor science camps which not only exhibit the various disciplines of science and technology but also impart the necessary training required to teach science and technology in the schools through effective pedagogy.

There is a wide gap between opportunities created in the areas of Science and Technology jobs and the students taking that up as a discipline. The current science curriculum creates followers of science but not innovators of science and over the years STEM education has been trying to motivate students to take up science to foster innovation in the classrooms and their careers.

Schools across the country are working towards creating smart classrooms for their students so that students can explore beyond the textbooks and generate interest in the world of science and technology. The Government is looking to help schools to build necessary infrastructure so that more engaging learning can take place.



There is a huge lack of infrastructure for science education in the low income and mediocre schools due to which the students can seldom realize the potential science and technology has to offer to them. It thus becomes imperative to invest in creating such infrastructures for the children.

Out of the total **1,17,257** secondary schools in the country, **49,278 (42.03%)** schools are having a facility of Science laboratory. Out of **49,278** schools, having a Science laboratory out of the **70.64%** of schools are having adequate Science laboratory.

Out of **56,983** higher secondary schools with secondary stage, **33,999 (59.67%)** are having Science laboratory and out of these schools, **57.14%** are having adequate facilities (NCERT, 2009).

Out of the total **1,17,257** secondary schools in the country, **21,541 (18.37%)** schools are having a facility of Mathematics laboratory and among these schools, only **38.29%** of schools have adequate Mathematics laboratory. **13,766 (24.16%)** schools, out of **56,983** higher secondary schools having a secondary stage, have a Mathematics laboratory. **44.84%** of these schools having a Mathematics laboratory with an adequate facility.

After so many efforts, still, many schools are missing basic infrastructure for promoting science education which does not let the children get an opportunity to study and experience the surreal world of science and technology.



Science education in India is faced with three practical challenges today. The first is the most basic problem that has persisted and resisted a solution since Independence. This is our inability to provide schools with labs and equipment to be used while teaching science.

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 on concepts and theories that characterize these disciplinary approaches.

However, this material world is conspicuously absent in the Indian science classroom and the school.

The science classes are no different from history or geography or language. They are also taught by teachers from textbooks. The textbooks talk about things, experiments, and processes and show pictures.



They often take the route of not only describing the experiment but also telling children what they will observe and what they should conclude-an implicit acceptance by those designing the textbooks that children will not get to do or see the things that are to be learned about.

While textbook learning is more passive, labs can ensure active and interactive learning which can arouse the curiosity of the children towards science education and motivate the children to take up science as a discipline.

Brighter World Lab (BWL) project was a way to reinforce science education in the schools so that children realize that science is beyond textbooks and the world beyond textbooks is real and full of surprises.



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