PRAYOGA™

Research to Transform Learning

Enabling Every Indian Child to Learn Science Experientially

Kriya

What is Kriya?

Reimagine education and classrooms to make every Indian child learn science experientially.

Kriya is an education research project that aims to understand the impact of experiential learning of science on the development of competencies in school students in India.

The project intends to transform schools, empower teachers, and enrich student learning experiences, particularly for segments of society that lack such learning opportunities through a multi-year partnership with schools.

Background

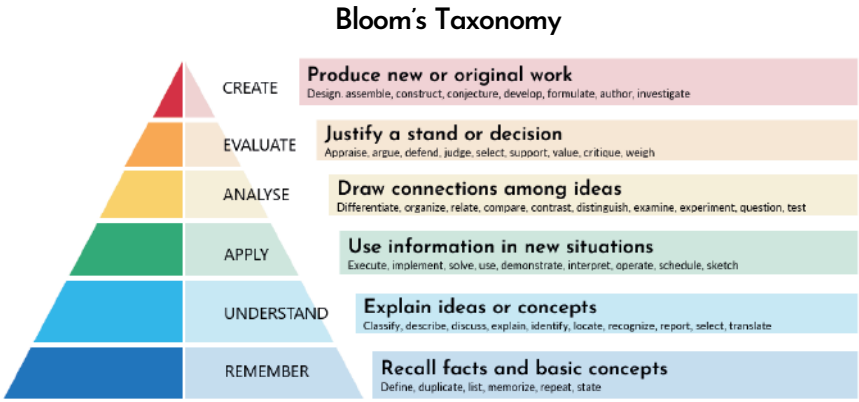
The present curriculum for science in our country over-emphasizes the products of science. It undermines the acquisition and competencies to follow the process of science, which is essential to make scientific conclusions.

Resources and materials to engage in hands-on activities and experiments in science must be made available for students to gain a deeper understanding of scientific concepts.

Aligned to the Indian science curriculum, the Kriya program provides the necessary resources and solutions to broaden the understanding of science for students. Enabling teachers to facilitate learning experiences is equally important for the effective learning of science.

Integrating teacher empowerment, courseware, and lab resources, Kriya will transform schools into mature experiential learning centres. Kriya's science teaching-learning experience for grades 6 - 10 has been developed based on the NCERT syllabus.

The Bloom's Taxonomy classifies different levels of learning and cognitive skills. The first two levels correspond to lower-order thinking, while the rest are termed Higher-Order Thinking Skills (HOTS). A good science curriculum fosters pedagogical interventions that enhance students' higher-order thinking skills.



Kriya integrates these elements into cohesive, layered modules, enabling students to discover scientific concepts independently, taking an interdisciplinary approach to science learning. This multi-year program will work closely with schools, educators and students to transform science learning in the country.

Kriya's Unique Approach

Kriya implements end-to-end experiential learning of science for students of grades 6 to 10. This unique program is one of the largest and most comprehensive experimental studies in teaching and learning in India.

Offering a holistic and integrated approach to learning content, teacher empowerment, lab resources, classroom strategies, evaluation, and school intervention, Kriya's Impact will be sustained beyond the 5-year period.

Research data will provide insights into the learning patterns and capabilities of students in the Indian education system, providing valuable information to shape education policies and implementation strategies across a wide cross-section of schools.

Transforming Schools through Kriya

Kriya contains a comprehensive set of integrated components collectively developed to provide a holistic approach to experiential science learning that covers

- Material Considerations - **Lab Stations**
- Role of the Teacher as a Facilitator - **Teacher Empowerment Program**, and
- Conceptual background to the subjects of science - **Courseware**.

Kriya will hone a wide range of competencies related to comprehension, knowledge retention, creativity of application, and inventive ideation in students. The Program aims to inculcate the scientific process. Kriya is learner-centric, focused on applying knowledge to real-world problems and promoting reflective learning.

Kriya @ School

Prayoga collaborates with three main stakeholders: Management, Principals/HMs, and teachers.

The Teacher Empowerment Program will equip educators with the essential skills and knowledge to align their teaching practices with the goals of the Kriya program.

Prayoga will enhance school infrastructure and facilities for experiential learning, strengthen academic capabilities with content and ongoing teacher development programs, and facilitate a smooth transition to experiential learning.

Academic Coordinators assigned to every school support teachers with academic planning, class preparation, reflective activities, pedagogy, and classroom management.
Senior Academic Coordinators facilitate the supportive functions to implement their programs effectively.

Schools enrolled in the Kriya@Prayoga model benefit from best-in-class learning and research facilities on campus.

Kriya Primary Effort

Kriya's development spanned five years and engaged a multidisciplinary team including researchers in science, experienced science teachers, and pedagogy experts. The project's primary focus was on aligning its pedagogical approach with the curriculum prescribed by the NCERT.

The team conducted thorough pilot studies to refine the materials and methods, ensuring their suitability for the Indian educational context. Additionally, they adapted the solution to meet the diverse needs of schools across the country, creating a comprehensive and tailored approach to science education.

Teacher Empowerment Program

Kriya's Teacher Empowerment Program (TEP) has been structured across 5 years to provide teachers with enhanced pedagogical knowledge, subject competence, resource development capabilities, and effective classroom management skills.

Teachers are the foundation for the transformation envisioned for schools by the Kriya program.

Teachers will become subject matter experts, capable of inspiring and training other teachers.

Intensive residential Workshops

Regular Interactions with Researchers

Online Courses

Teacher Collegium

Teachers are trained with hands-on learning to facilitate experiential learning for their students. Training to handle Lab Stations and utilise courseware is also provided during the TEP Workshops.

Every year, **3 intensive residential workshops** are designed for teachers to

- Deliver content and activities that enhance subject competencies,
- Utilize innovative teaching methodologies and educational technologies,
- Employ new pedagogical trends, and
- Adapt content to experiential learning pedagogy.

A Kriya Teacher's Journey with the

Teacher Empowerment Program

Inquiry-based Learning

This is a learning process driven by questions to help students find answers through actions and prompts, similar to the process of scientific discovery.

Kriya enables teachers to guide students in their inquiries. Teachers direct and encourage students' ideas through verbal instructions.

Kriya's inquiry-based learning aims to develop scientific thinking, critical thinking, and logical thinking in students, going beyond just memorizing information from textbooks.

Lab Stations

Kriya's Lab Stations will provide end-to-end experiential learning for students in grades 6 to 10. Schools part of the Kriya@Prayoga have access to the required materials and facilities on the campus itself.

- Curated for Experiential Learning for every grade
- Materials for Every Child in every session for every experiment.
- Well-organized, safe, and sturdy design
- Lab Safety Manuals and Instruction Manuals in Kannada and English

Experiential Learning

Experiential learning focuses on hands-on experiences to acquire skills and knowledge. Learners reflect on these experiences, cultivating new skills, attitudes, and thinking patterns.

This method shifts from concrete to abstract understanding, prioritizing learner involvement. Through active participation and reflection, it guides learners from practical engagement to conceptual mastery.

Courseware

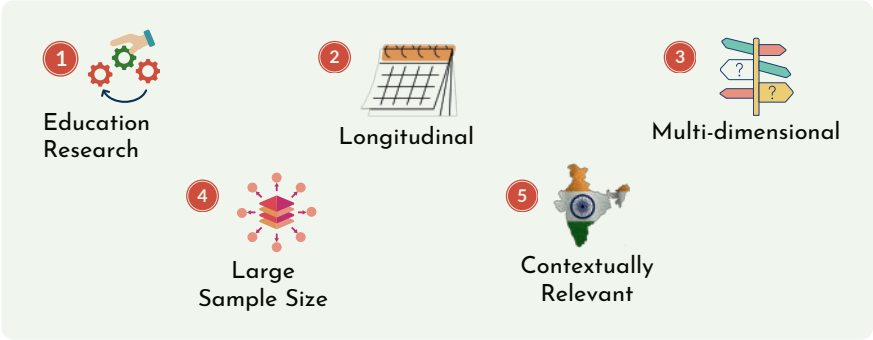
Kriya's courseware has been developed based on the NCERT science curriculum. For both teachers and students, the courseware has been designed to be engaging and comprehensive.

Student courseware includes information, activities, DIY components, visuals, and practice questions, while facilitator copies offer content, teaching strategies, lesson plans, safety instructions, and additional resources for experiential science learning.

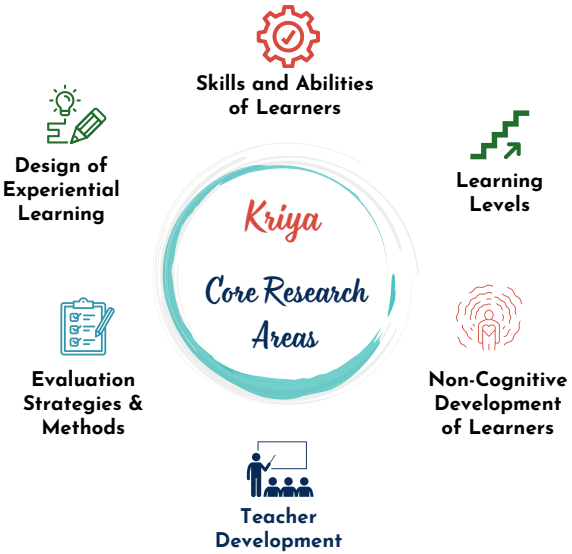
- Rigorous pedagogical ideas curated exclusively for the Indian science curriculum.
- Comprehensive content was created by a research team of science researchers, education researchers, and experienced science teachers.
- Designed to inspire and engage every child.
- Ensures experiential learning of science in every session, enabling learning through a discovery approach.
- Courseware in both Kannada and English

Kriya as an Education Research Project

Kriya's research will seek to understand the impact of experiential, Inquiry-based learning methods on students from a cross-section of schools in India's societal context.



A study of learning behavior, learning outcomes, evaluation methods, teacher participation, and development forms part of the scope of research. The Kriya project has already resulted in a marked difference in the science learning experience, developing higher-order capabilities in students and empowering teachers with abilities to teach science experientially.



Transforming Schools

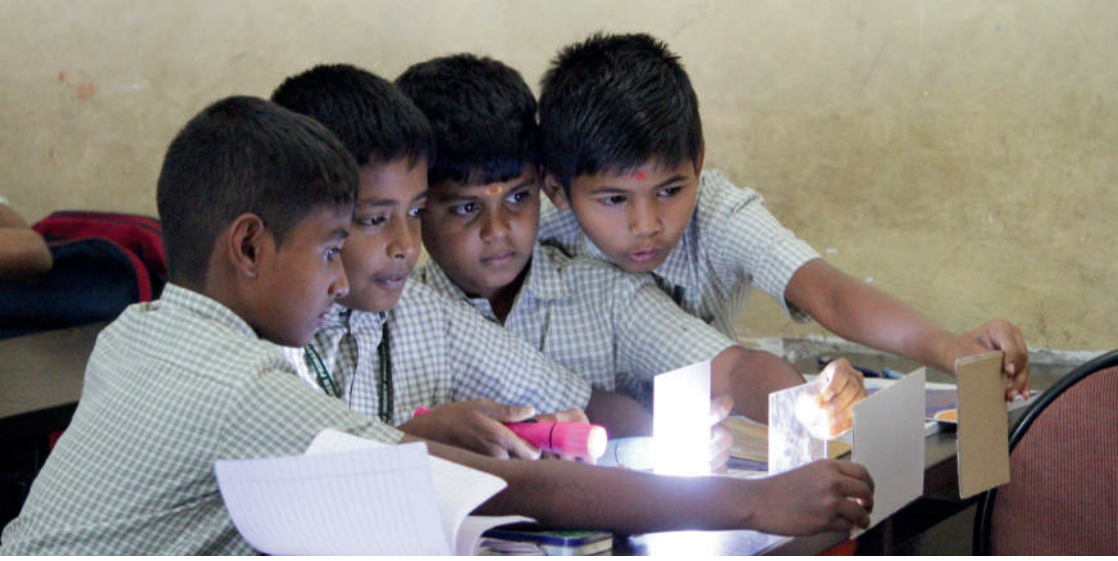
- Schools equipped with lab resources to facilitate experiential learning of science for all its students in the years to come.
- The school will acquire the academic capability and processes to achieve and sustain higher levels of academic excellence in science education.

Empowering Teachers

- Teachers are equipped to deliver high-quality education that meets the demands of a rapidly evolving educational landscape.
- Teachers become subject matter experts, capable of inspiring and training other teachers.
- Teachers evolve into action researchers, capable of developing newer content and pedagogical ideas specific to their contexts.

Enriching Students

- Through the discovery approach, students become active learners, acquire capabilities essential for science learning, cultivating a scientific temper.
- Students inculcate competencies to observe, hypothesise, verify, and draw conclusions through the scientific process, promoting a deeper understanding of scientific concepts.
- Students develop an ability to learn independently, with marked developments in their higher-order thinking skills.



67	210	6756
Schools	Teachers	Students

Prayoga is involved in the academic planning of schools to enable the experiential learning of science in every session, customizing support through periodic assessments. A cross-section of schools in this program ensures the implementation of this unique program in different contexts of learning.

Kriya is enabled at no cost to the partner schools. The intention of Kriya is solely to transform the learning of science.
For more information, contact: **kriya@prayoga.org.in**

Prayoga is a not-for-profit organisation, registered under the Trust Act of India.

35(i) (ii) ✓ 80G ✓ FCRA ✓ CSR ✓

Prayoga is a recognised **Science and Industrial Research Organisation** by the DSIR, **Government of India**

Sy No. 133, Ravugodlu, Bolare Post,
Off Kanakapura Road, Bengaluru South,
Bengaluru – 560 116

http://www.prayoga.org.in

+91 9148983385