



## **STREAM** ecosystem

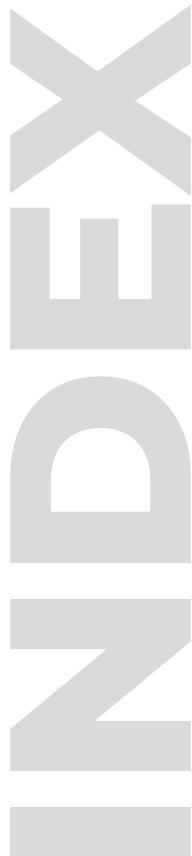
### **PROJECT REPORT** **2023-24**

# **EXECUTIVE SUMMARY**

The STREAM ecosystem project, a collaborative effort by Cochin University of Science and Technology (CUSAT) and Samagra Shiksha Kerala (SSK), stands as a landmark initiative in Indian education. It bridges the gap between higher and public education sectors, fostering a unique environment for students to develop scientific problem-solving skills and embrace innovation in the face of global challenges.

This groundbreaking project goes beyond traditional education models. It aims to cultivate open, collaborative communities where diverse stakeholders come together to co-create solutions. By empowering individuals and communities to learn, innovate, and tackle challenges collectively, the STREAM ecosystem project has the potential to serve as a beacon for national education reform and transform the educational landscape in India.

Piloted in Alappuzha district in 2022, the project has since expanded to Ernakulam, Palakkad, and Kannur districts, demonstrating its scalability and potential for broader impact. This report delves deeper into the project's success, challenges, and future aspirations, offering valuable insights into this pioneering learning model.



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It is not the strongest of the species that survives, nor the most intelligent, but the one most responsive to change

Charles Darwin





# Introduction

Rapid global changes driven by economic, social, environmental, and technological factors necessitate new skills and mindsets from young people. Traditional education, focused on mere information acquisition, is no longer sufficient. Today, fostering critical thinking, the ability to learn independently, and the capacity to question and interpret information effectively are crucial.

The COVID-19 pandemic exposed vulnerabilities in existing systems but also sparked a collective effort to find innovative learning approaches, fuelling the movement to "reimagine education."

A key realization is emerging: society has a collective responsibility to empower individuals through lifelong learning. This requires moving beyond traditional, top-down models and embracing collaborative, community-based approaches.

One promising approach is the concept of learning ecosystems. This model recognizes the critical role of various actors beyond schools, such as families, industries, community organizations, and local governments. Expanding our vision of "where, when, and from whom" children learn fosters more effective systems that prepare them for fulfilling lives.

The STREAM Ecosystem project, implemented in Kerala as part of the STARS scheme, exemplifies these principles.



# What is a Learning Ecosystem?

A learning ecosystem is a collaborative network that brings together people, resources, and technologies beyond traditional education institutions. It fosters community-driven learning through shared knowledge and experiences.

**Think of it as a web of streamlined knowledge.**

# **Kerala's Case: A Compelling Candidate for Reform**

Kerala's unique cultural emphasis on education has yielded impressive results like high literacy rates, strong gender inclusivity, low dropout rates, and robust infrastructure compared to other Indian states. However, the state acknowledges the need for further progress to reach international standards. Kerala's strong engagement with educational initiatives combined with its existing strengths make it a compelling candidate to become a model for national and potentially even global educational reform.

The STREAM ecosystem project, with its focus on fostering a holistic learning environment, aligns perfectly with Kerala's aspirations. It holds the potential to further elevate the state's education system and act as a crucial catalyst for transforming public educational institutions into future centers of excellence.



# STREAM ECOSYSTEM

The STREAM ecosystem project, implemented in Kerala general education sector by **Samagra Shiksha Kerala** (SSK) in collaboration with **Cochin University of Science and Technology** (CUSAT), stands out as a pioneering initiative in India. This first-of-its-kind project fosters collaboration between higher and public education sectors, empowering the next generation to tackle global challenges scientifically, and cultivate a culture of innovation.

The project aims to foster open, collaborative, and self-reliant communities through diverse stakeholder co-creation. It will empower individuals and communities to learn, innovate, and solve problems together. By serving as a guiding star for national education reforms, the STREAM ecosystem project has the potential to transform the educational landscape in India.

The project initially piloted in Alappuzha district in 2022-23 and subsequently expanded to three additional districts: Ernakulam, Palakkad, and Kannur.

# KEY FEATURES

## **STREAM Hubs**

Innovative lab infrastructure in each block resource center (BRC) acts as a regional centre for research and prototyping.

## **Innovative Curriculum**

STREAM learning model integrates evidence-based methods and practices including Project-Based Learning, gamification, and technology-enhanced learning.

## **Digital Platform**

Dedicated web portal for individuals and partners to share, enhance, and collaborate on learning and innovation efforts.

## **Credentialing System**

Augments the existing assessment system with an innovative approach, supporting lifelong learning and fostering 21st-century skills.

## **Seamless Learning**

Connects and ensures continuity between in-school and out-of-school learning experiences.

## **Diverse Stakeholders**

Knowledge providers come from various backgrounds, enriching learning opportunities for all types of learners.

## **Holistic Development**

Embrace holistic practices ensuring overall growth and development of individuals as well as communities.

## VISION

To establish open, collaborative, and self-sustaining communities, co-created by a diverse range of stakeholders. It will empower individuals and communities to continuously learn, innovate, and discover solutions through collective knowledge sharing and local problem-solving.



## MISSION

To empower all learners to pursue personalized learning journeys throughout their lives, connected to their social lives, communities, interests, and career aspirations in the state of Kerala.





## GOALS

To provide measurable targets and actionable initiatives to guide the execution of the STREAM ecosystem project we developed specific goals that address various aspects crucial for the project's success.

### GOAL-1

Ensure Digital Equity and Accessibility

### GOAL-2

Cultivate Innovative Learning experiences

### GOAL-3

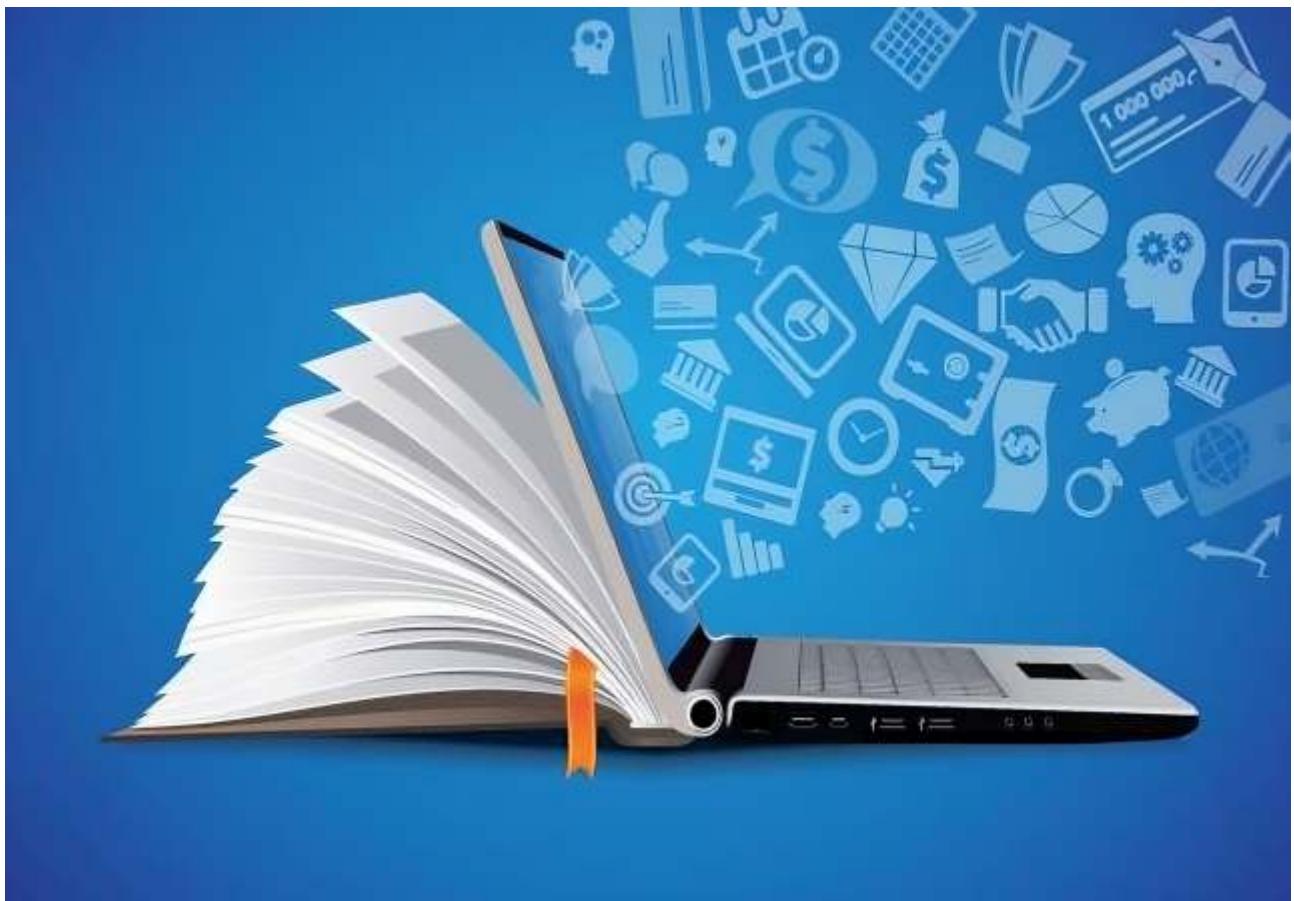
Bridging Formal and Informal Learning

### GOAL-4

Foster Lifelong Learning Culture

### GOAL-5

Integrate Sustainable Development Goals



## Goal-1

### Digital Equity and Accessibility

Ensure equitable access to new-age learning technologies and facilities for all learners, especially those from underprivileged communities.

- ◆ Create lab infrastructure facilities in schools in Kerala that equipped with modern equipments and technologies.
- ◆ Create programs that connect learners from all backgrounds to these facilities.
- ◆ Training and support for educators and learners to utilize the facilities effectively.

## Goal2

### Cultivate Innovative Learning Experiences

Implement research-backed, innovative learning experiences in schools and communities.

- ◆ Piloting and evaluating various innovative learning models.
- ◆ Collaborating with researchers and universities to develop and implement evidence-based practices.
- ◆ Sharing best practices and lessons learned with educators and the broader community.

1 NO  
POVERTY



6 CLEAN WATER  
AND SANITATION



11 SUSTAINABLE CITIES  
AND COMMUNITIES

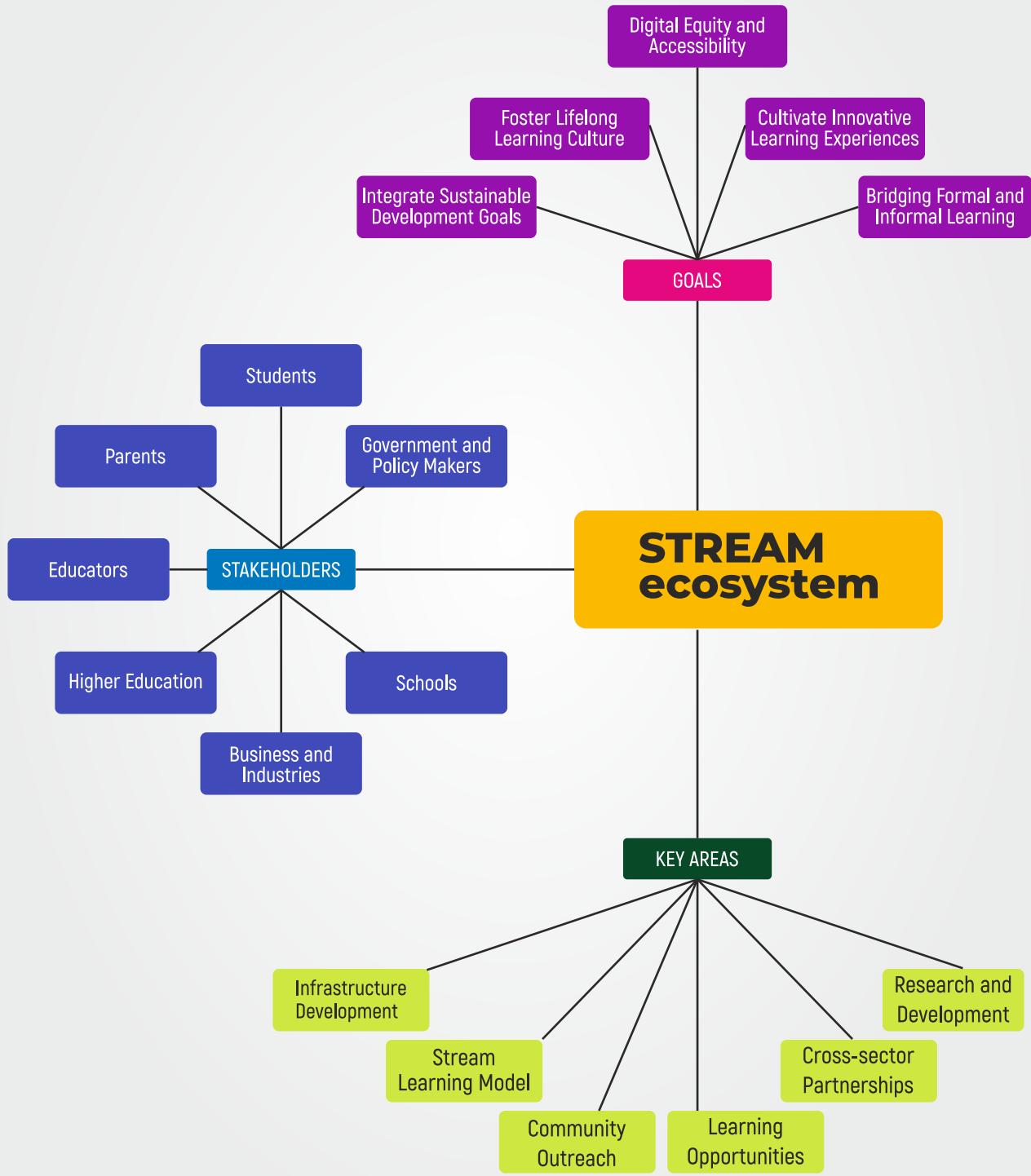


16 PEACE AND  
JUSTICE



Goal 3	Goal 4
	Foster Lifelong Learning Culture
<b>Bridging Formal and Informal Learning</b> <p>Create a seamless continuum between formal and informal learning experiences for learners.</p> <ul style="list-style-type: none"> <li>◆ Recognizing and valuing informal learning journey through portfolio assessments.</li> <li>◆ Collaborate with community centers and businesses to offer accredited workshops and skill development programs.</li> <li>◆ Creating a centralized platform showcasing diverse learning options and facilitating connections with providers</li> </ul> 	<b>Integrate Sustainable Development Goals</b> <p>Foster innovations that address Sustainable Development Goals through education.</p> <ul style="list-style-type: none"> <li>◆ Integrate sustainability themes into learning materials and pedagogical approaches.</li> <li>◆ Partner with organizations working on SDGs to offer real-world learning experiences.</li> <li>◆ Develop innovative solutions to address local sustainability challenges through collaborative research and development.</li> </ul>

# OVERVIEW



**54** Hubs

**5.5 Lakh +**  
Students

**23K+**  
Teachers

**100+**  
Interns

**50+**  
Workshops

**800 +**  
Projects

**100 +**  
Community  
Stakeholders

**5000 +**  
Interdisciplinary  
Learning Kits

**500 +**  
Educators  
Trained

**40 +**  
Digital  
Resources

**50 +** Facilitator  
Development Programs

## KEY STATISTICS

# KEY AREAS

For creating a successful dynamic ecosystem that fulfills the needs of its learners,

we focus on

- INFRASTRUCTURE**
- STREAM LEARNING KIT**
- COMMUNITY OUTREACH**
- LEARNING OPPORTUNITIES**
- CROSS-SECTOR PARTNERSHIPS**
- RESEARCH AND DEVELOPMENT**

# INFRASTRUCTURE DEVELOPMENT

Infrastructure development plays a major role in the success of the STREAM ecosystem project, encompassing both physical and digital aspects.

## Physical Infrastructure

### STREAM Hubs

- ◆ A modern integrated testing and prototyping lab facility, is established in each district's BRCs serves a shared space for multiple schools.
- ◆ STREAM hubs provide an environment for students to engage in inquiry-based problem-solving projects that address real-world challenges.
- ◆ It is fully equipped with tools and materials such as construction tools, electronics & robotics supplies, art & crafts supplies, and digital fabrication tools.

**54 STREAM Hubs**

**400+ tools and equipment**

**30+ Student Capacity**





A small school in Alappuzha, GHS Thekkekara, faced difficulties setting up a STREAM Hub due to limited space and frequent floods. But here's a story that warms the heart!

There weren't enough rooms for building Stream Hub at the school. So the school thought about using a LKG classroom. But a concerned LKG student bravely spoke up, worried about losing his own space.

Instead of ignoring him, we listened! We talked to him about the lab, explaining how it would help older students learn cool new things. The student, understanding this could benefit everyone, agreed to share his classroom.

To show our appreciation, we promised him and his classmates new furniture. This story exemplifies the challenges faced by schools like GHS Thekkekara, but also the power of inclusive communication and collaboration in finding solutions.

# INFRASTRUCTURE DEVELOPMENT

## Digital Infrastructure STREAM Ecosystem Platform

A comprehensive learning management system designed to improve the accessibility and management of resources through a standalone portal. It aims to enhance learner convenience, flexibility, resource access, learning personalization, collaboration opportunities, and communication channels.

### Monitoring

#### Project Based Learning

Utilizes various tools and features to track and assess student engagement, progress and outcome.

### Digital

#### Portfolio

Every learner and mentor would have a lifelong digital portfolio where they can showcase their work, achievements and reflections.

### E-Learning Platform

The portal also serves as an e-learning platform which offers a wide range of hybrid courses, promoting personalised learning experience.

### Outreach

#### Management System

Facilitates the management of community outreach programs and events through portal

### Efficient Resource Utilization

Optimize the use of educational resources by providing tools and insights that help administrators make informed decisions for resource allocation and management

### Enhanced Collaboration

Encourage collaboration among users at different levels through the platform, facilitating communication and cooperation for improved educational outcomes

# STREAM LEARNING MODEL

The **STREAM** learning model is designed to implement the goals set forth by the STREAM ecosystem project. It is a unique approach to education that uses real-world social issues as the foundation for learning activities. Students take on the mission of finding a solution to the social problem, which drives their learning journey.

**5000+ STREAM Learning Kit**

**50+ Hands on Learning hours for 6000+ Students**

**Upgraded 160+ teachers to facilitators**

The model leverages innovative pedagogies and practices like Project Based Learning, Gamification, etc. providing hands-on learning experiences where students can apply their acquired skills to solve authentic problems, solidifying their understanding, and preparing them for real-world application.

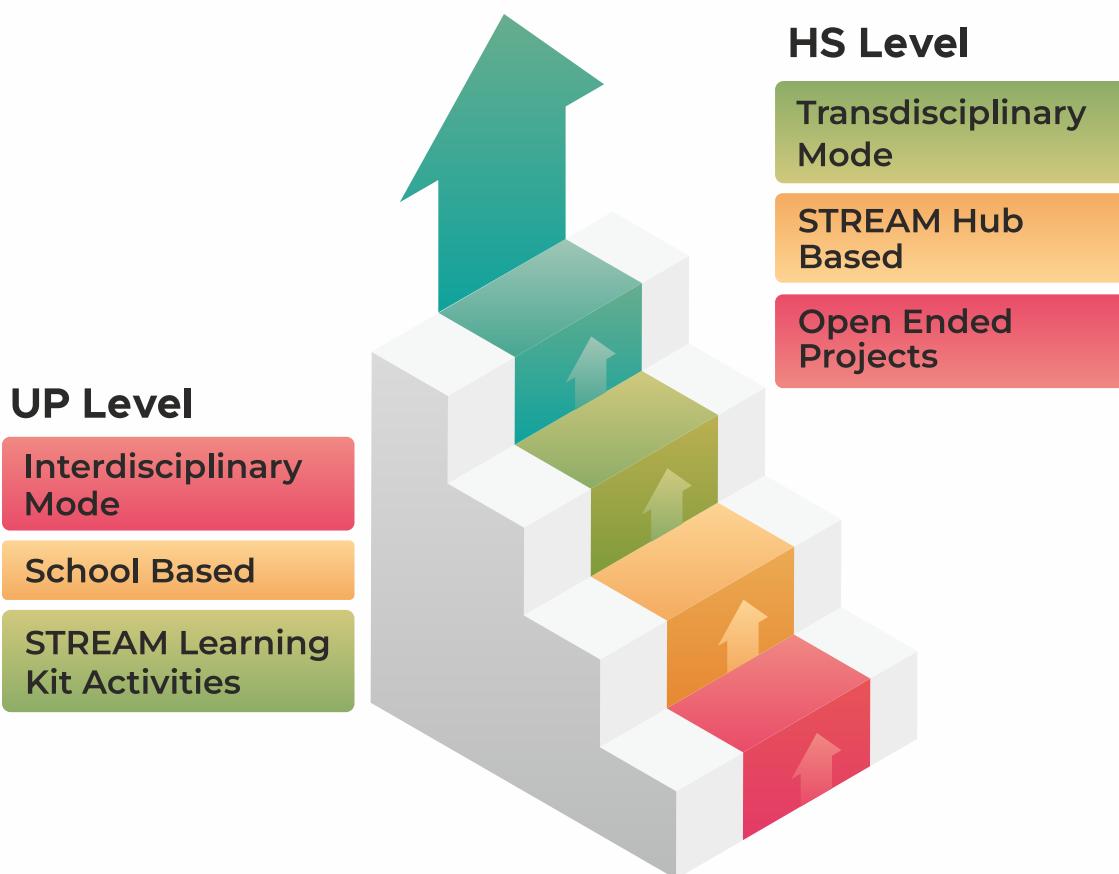


# CHARACTERISTICS

- ◆ **Two-level Approach**
- ◆ **STREAM Learning Kit**
- ◆ **Innovative Assessments**
- ◆ **Facilitator Development Program**

## Two-level Approach

The first level involves learning activities based on real-world problems and embedded within the current curriculum mainly for UP students. The second level utilizes the expertise of mentors to guide research and project-based learning mainly for HS students at STREAM Hubs.



# STREAM LEARNING MODEL

## STREAM Learning Kit

Harnessing the power of the STREAM model, the Stream Learning Kit empowers both teachers and students. It is a comprehensive package: a handbook containing project objectives, learning approaches and instructions on how to use the kit, set of modules that contains detailed description about learning activities, interactive workbooks for students, presentation slides to enliven the learning environment, stickers to encourage life skills, and other ancillary materials.



# Innovative Assessments

## Key points

### Formative Model

Unlike traditional summative assessment, it focuses on ongoing feedback to guide continuous improvement.

### Multiple Methods

Integrates self-assessment, peer assessment, and facilitator observation with rubrics for a comprehensive evaluation.

### Gamification

Uses elements like stickers to make assessments engaging and interactive for students.

### Self- directed Learning

Encourages students to take responsibility for their learning journey through continuous feedback and self-reflection.

### Skill Development

Prioritizes developing and enhancing skills, rather than just measuring scores, and preparing students for the future.

Our assessment framework consists of 15 skills distributed under 6 domains.

## Domains & Skills

COMMUNICATION	CREATIVITY	LIFE LONG LEARNING	INFORMATION SYNTHESIS	HIGHER ORDER THINKING
<ul style="list-style-type: none"> <li>Written communication and comprehension</li> <li>Oral communication and presentation</li> <li>Collaboration</li> </ul>	<ul style="list-style-type: none"> <li>Creativity</li> <li>Innovation</li> <li>Curiosity</li> </ul>	<ul style="list-style-type: none"> <li>Self-directed learning</li> <li>Initiative</li> <li>Self monitoring</li> </ul>	<ul style="list-style-type: none"> <li>Accessing information</li> <li>Analyzing information</li> <li>Media literacy</li> </ul>	<ul style="list-style-type: none"> <li>Critical thinking</li> <li>Analytical thinking</li> <li>Problem solving</li> </ul>
<b>DIGITAL LITERACY</b>				

# STREAM LEARNING MODEL

## Facilitator Development Program

Equipping educators

### Program goals

- Equip educators with the skills necessary to address students' needs in the twenty-first century.
- Emphasize acquiring proficiency in utilizing technology to tailor instruction for students, including integrating digital resources into lessons, making use of educational apps, and effectively integrating technology with content and pedagogy to meet specific learning needs.
- Equip educators to use a range of assessment strategies to evaluate student performance.
- Prepare educators to view themselves as facilitators capable of aiding students in cultivating critical thinking, problem-solving abilities, and an innovative outlook.





To equip educators with the skills to facilitate module activities, we conducted two-day residential workshops for educators in four districts and featured a series of sessions aimed at introducing the STREAM learning kit and enhancing their skills and knowledge. The workshops were attended by a total of over 200 educators. The effectiveness of the workshops was assessed using feedback forms which gave valuable insights regarding areas for improvement.

To provide further support and clarification, online meetings were organized which allowed educators to ask questions, seek additional information, and discuss any challenges they were facing in implementing the strategies learned during the workshops. Additionally, more than 40 follow-up meetings were held to support educators in the implementation process. These professional development programs tried to equip educators with the knowledge, skills, and confidence to integrate 21st-century skills and technology tools into their teaching practices.



“

### A success story from GHSS Kidangara

Implementing the STREAM program wasn't just about doing assignments; it was a whole adventure for our students and us teachers too! We learned, solved problems, and even got closer to our community.

One activity challenged us to find new ways to farm. We faced some difficulties, like not having enough water or having leftover concrete from the old school building. But guess what? Our students surprised us all! They came up with a clever "string irrigation" system, proving they're creative and can overcome challenges. It was a learning experience for everyone, even us teachers!

Another activity tested their skills and how well they could adapt – a community cooking session with a focus on healthy eating and being eco-friendly. They totally nailed it! But the real highlight was the ongoing community engagement program built into the module. We organized a traditional food festival that showcased not just amazing food but also our cultural heritage. What made it even more special is that half the money raised went to charity, showing how much our students care about their community.

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**NISHA,**  
Teacher, GHSS Kidangara

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At the heart of the STREAM ecosystem lies a fundamental commitment to inclusivity and accessibility. The project recognizes that every learner possesses unique strengths, interests, and aspirations. This section delves into the diverse learning opportunities offered by the STREAM Ecosystem, ensuring that every learner feels empowered to pursue their potential.

## LEARNING OPPORTUNITIES



STREAM Fest goes beyond traditional science fairs, fostering a dynamic learning experience where students tackle real-world problems through project-based and inquiry-based learning. This approach cultivates critical thinking, communication, and collaboration skills, essential for success as tomorrow's innovators. The journey is enriched by the diverse support network within the STREAM Ecosystem, where mentors and coordinators offer guidance and contribute to students' growth.

## The whole process has three stages.

### 1 Idea Generation

In this stage, students can choose to explore project ideas independently or participate in collaborative workshops. Regardless of their chosen path, all teams will receive extensive guidance and submit their proposals through the STREAM web portal.

### 2 Idea Execution

Throughout the execution phase, mentors, coordinators, and peers provide ongoing support and feedback through various channels. This collaborative environment fosters learning and project refinement. By implementing this structured approach, the execution phase empowers students to translate their ideas into impactful solutions while acquiring valuable skills and knowledge.

### 3 Presentation and upgradation

STREAM Fest goes beyond simply presenting projects. It fosters a culture of learning, collaboration, and growth, equipping students with essential skills and offering them the platform and resources to shine. The dedicated digital portfolio further empowers students by showcasing their achievements and supporting their future endeavors.



## LEARNING OPPORTUNITIES



SciKnoTech, the STREAM hub orientation program, empowers students and teachers to tackle social issues through hands-on learning and practical application.

The program aims to:

- Familiarize students with the equipment and facilities in the Hub.
- Develop and enhance basic technical skills in students and teachers.
- Address and solve local issues.

## SciKnoTech workshops

- Started on 1st week of September 2023 in Alappuzha district.
- It was held as two one-day workshops in all hubs
- Sessions led by trainers from FAB Lab, CUSAT
- The workshop introduced robotics basics to students, they did an electronics prototyping project using Arduino and 3D printers.
- 750+ students participated.
- Online follow-up sessions by experts solidified their understanding.
- Subsequently online follow-up workshop was held in November for 1000+ students, led by professors of CUSAT, on the theme 'Water Crisis'.



# LEARNING OPPORTUNITIES

## LED Clinic

Sciknotech's innovative LED Clinic serves as a successful model for community-driven, sustainable solutions. The hands-on sessions provided valuable practical skills, while simultaneously fostering environmental awareness and responsible e-waste management practices. Students successfully repaired about 1000+ bulbs.

### Benefits:

- Reduced e-waste & promoted responsible disposal.
- Increased technical skills & self-reliance.
- Fostered environmental awareness & action.

### Phase 1

- Held at STREAM Hub of Alappuzha District
- Target audience: BRC trainers
- 50+ BRC trainers received comprehensive electronics training to understand LED bulbs.
- Hands-on soldering and crimping tool training honed dexterity for component handling.
- Trainers repaired LED brought from home, promoting self-reliance and responsibility.
- Witnessing "waste" transformed into functional lights highlighted the program's impact.





## Phase 2

- Held at each BRC, led by the newly trained teachers and trainers themselves
  - Students engaged in hands-on LED making & repair workshops, gaining practical skills.
  - Students successfully repaired ~1000+ bulbs, demonstrating program effectiveness.
  - Informative videos & materials that provided from CUSAT expanded program's reach beyond workshops.



## LEARNING OPPORTUNITIES

# INTERNSHIP

Internships act as a pipeline for discovering promising individuals and molding them into valuable assets. It also helps to identify and develop future talent, fosters innovation, improves productivity, enhances brand image, and contributes to social responsibility. The project provides various internship programs for students with different backgrounds.

“

It is indeed a privilege for us to be part of the STREAM ecosystem project. STREAM, which aims to bring out the best in school students of our state, is a fantastic initiative. As interns, we have been part of this project for the last two and a half months, and it has been a wonderful experience filled with exposure. Alongside the technical assistance, we are delighted that we have been able to contribute to the development of the STREAM project as much as possible. We are eagerly looking forward to and excited about our contribution to making this a great success.

**Aswin S Kumar**- Intern  
MCA Student, Cusat

”

# UPSKILLING COURSES

The upskilling courses follow a hybrid model. It includes online and offline processes. The courses are freely accessible for all learners. It combines the convenience of online content with practical hands-on experience in STREAM Hub, solidifying learning and fostering real-world application. The course curriculum is tailored to equip learners with valuable skills that can enhance their personal and professional lives.

## Hybrid Model

Combines online learning through the STREAM web portal with hands-on sessions at STREAM Hubs.

## Freely Accessible

Open to individuals of all ages on the STREAM Ecosystem web portal.

## Skill Badges

Awarded at three levels (beginner, intermediate, advanced) to recognize specific skill mastery.

## Flexible Learning

Users can access courses at their own pace and revisit them anytime.

## Personalized Journey Tracking

Individuals can monitor their progress within the course platform.

## THE PROPOSED TOPICS FOR COURSES INCLUDES

**3D Printing**

**LED Clinic**

**Astrophotography**

**Microscopy**

**Robotic World**

**AI/ Machine Learning**

**Water Testing**

**Soil Testing**

**VR Development**

**Financial Literacy**

**Internet Security**

**Coding**

# COMMUNITY OUTREACH

Community outreach programs are bridges connecting individuals, organizations, and the communities they serve. These initiatives go beyond mere service delivery, fostering collaboration, understanding, and shared solutions to local challenges. As part of project implementation outreach programs have been conducted such as LED Clinic, and water security programs.

## Water and Soil Testing Labs

STREAM ecosystem establishes a network of Water and Soil Clinics across four districts in Kerala, and offers a comprehensive testing services tailored to each region's unique landscape. Students, teachers, researchers, and local experts play a major role in the testing service.

Kerala faces distinctive water security challenges due to its coastal location and the effects of climate change. Rising sea levels and saltwater intrusion pose threats to freshwater resources, while unpredictable rainfall patterns compound concerns, impacting both drinking water availability and agricultural productivity. Understanding water quality is paramount for monitoring environmental health and biodiversity. To address this, we provide water testing kits at STREAM hubs, enabling testing for parameters such as pH, salinity, hardness, turbidity, and E.coli.etc. The labs surpass mere analysis, offering expert interpretations and actionable recommendations through collaboration with eminent personalities in the field.

In collaboration with Cochin University of Science and Technology (CUSAT), the initiative is actively developing a low-cost water testing kit. This innovation holds immense potential to empower citizens to monitor their water quality and advocate for solutions, fostering community-driven action towards water security.

## Seminars

As part of its community outreach programs, the STREAM ecosystem conducts seminars on various social issues. The main objectives are to create a collective consciousness about the social challenges undermining a community, to propagate real science through experts in respective fields, and to combine disjointed efforts into collective, unified initiatives.

A one-day seminar on "Alappuzha's Water Security" was held in Alappuzha on February 14th, 2024. The seminar focused on three critical topics: "Water - Health and Safety," "Water - Industry and Development," and "Water - Challenges of Global Warming." Water experts, researchers, public servants, students, and teachers actively participated in the event.



# COMMUNITY OUTREACH

## Citizen Science Projects

Citizen science, where everyday people collaborate with scientists, unlocks real-world solutions through data collection, analysis, and knowledge sharing. This global trend empowers individuals to contribute to scientific discovery and build scientific literacy. We are planning to associate with different citizen science groups to provide the experience of collective collaboration of knowledge-making, analysis, and sharing to STREAM web portal users.

Kerala's diverse ecosystems and engaged populace make it ideal for citizen science initiatives, harnessing local knowledge to tackle pressing environmental and social challenges.

### Potential Project Areas:

#### Biodiversity Monitoring:

Track population trends of birds, butterflies, or specific plant species to understand and address environmental changes.

#### Water Quality Monitoring

Analyze water quality in local streams, rivers, and ponds to inform conservation and pollution control measures.

#### Climate Change Impact Assessment

Monitor rising sea levels, changing weather patterns, and their impact on coastal communities and agricultural practices.

#### Disease Surveillance

Participate in mosquito monitoring or bird migration tracking to understand disease transmission patterns.

#### Public Health Research

Contribute to studies on non-communicable diseases or collect data on sanitation and hygiene practices.

#### Night sky survey

Collect data about the darkness of night sky at different regions in Kerala. This can include the data about light pollution also.

# CROSS-SECTOR PARTNERSHIPS

The STREAM ecosystem recognizes that true innovation and sustainable impact require collaboration beyond traditional educational boundaries. By fostering partnerships with diverse stakeholders, the project aims to create a dynamic ecosystem that benefits all participants.

This section explores several key partnerships driving the success of the STREAM ecosystem:

## **Collaborative Learning Module Development**

The project partners with diverse experts from various settings to create engaging learning modules that integrate knowledge across different disciplines.

## **Diverse Mentor Pool**

The project establishes a mentor pool with individuals from different subject areas to provide students with personalized guidance and support during their project work.

## **Industry-Connected Upskilling Courses**

The project collaborates with industrial partners and institutions to create or sponsor upskilling courses, providing students with opportunities to develop job-relevant skills and gain practical experience.

## **Web Portal for Enhanced Communication**

The project develops a web portal to streamline information flow among stakeholders, fostering knowledge sharing, collaboration, and access to resources.

## **Technology Lab Integration**

Inventory management software hosted in the STREAM Ecosystem web portal can be used by the technology lab infrastructure like ATL labs. It promotes resource efficiency and streamlining processes across the educational ecosystem.

# RESEARCH AND DEVELOPMENT

Conducting research before executing an educational intervention improves its efficacy, relevance, and sustainability. It provides insights into best practices and is evidence-based strategies for designing effective educational interventions.

## What's our focus?

### Assessing Impact

Analyzing project impact to ensure alignment with goals and objectives.

### Student Assessment

Developing a comprehensive framework for student evaluation.

### Module Improvement

Updating the module for educator adaptability and relevance.

### Evidence-Based Approach

Researching prior successful educational interventions to inform future decisions.

### Continuous Evaluation

Establishing a system to monitor and improve the intervention over time.

### Adaptability

Designing the intervention for flexibility in diverse contexts and evolving needs.

### Sustainability

Developing a plan for long-term project maintenance and scaling.

### Research & Reflection

Integrating ongoing research and reflection to continuous improvement based on best practices and data-driven insights



# CHALLENGES

As with any innovative project, the STREAM ecosystem faces various challenges. These obstacles, however, also present opportunities for growth and adaptation. By acknowledging and addressing these challenges, the project can ensure its long-term sustainability and impact.

- **High Student-Teacher Ratio:** Large class sizes can make individual attention and catering to diverse student needs difficult for facilitators.
- **Limited Accessibility:** Current learning kits lack materials for students with disabilities, requiring future development of inclusive resources and assistive technologies.
- **Language Barriers:** The project needs to adapt to local and tribal languages to offer broader accessibility. Collaboration with local communities can bridge this gap through content creation and technology tools.
- **Hub Capacity:** Balancing resources, support, and attention for a large number of schools (approximately 50) within a single hub presents a challenge.
- **Unfamiliarity:** The absence of similar models in Indian education might hinder stakeholder buy-in, but also opens doors for innovative solutions.

**01**

HUB Name  
**ALUVA BRC**

LOCATION : **GHSS KONGORPILLY**  
CONNECTING SCHOOLS : **91**

**TOTAL NUMBER OF STUDENTS**

**19468**

Males	<b>9198</b>
Females	<b>10270</b>

**TOTAL NUMBER OF TEACHERS**

**814**

Males	<b>95</b>
Females	<b>719</b>

**02**

HUB Name  
**ANGAMALI BRC**

LOCATION : **GHSS CHENGAMANAD**  
CONNECTING SCHOOLS : **83**

**TOTAL NUMBER OF STUDENTS**

**11878**

Males	<b>6404</b>
Females	<b>5474</b>

**TOTAL NUMBER OF TEACHERS**

**523**

Males	<b>68</b>
Females	<b>455</b>

**03**

HUB Name  
**ERNAKULAM BRC**

LOCATION : **GUPS EDAPALLY**  
CONNECTING SCHOOLS : **84**

**TOTAL NUMBER OF STUDENTS**

**18815**

Males	<b>8416</b>
Females	<b>10399</b>

**TOTAL NUMBER OF TEACHERS**

**770**

Males	<b>83</b>
Females	<b>687</b>

**04**

HUB Name

## KALOORKKAD BRC

LOCATION : PUPS MARUTHOOR

CONNECTING SCHOOLS : 29

### TOTAL NUMBER OF STUDENTS

**3954**

Males	<b>2157</b>
Females	<b>1797</b>

### TOTAL NUMBER OF TEACHERS

**187**

Males	<b>51</b>
Females	<b>136</b>

**05**

HUB Name

## KOLANCHERY BRC

LOCATION : GHSS KADAYIRIPPU

CONNECTING SCHOOLS : 58

### TOTAL NUMBER OF STUDENTS

**10203**

Males	<b>5182</b>
Females	<b>5021</b>

### TOTAL NUMBER OF TEACHERS

**394**

Males	<b>59</b>
Females	<b>335</b>

**06**

HUB Name

## KOOTHATTUKULAM BRC

LOCATION : GVHSS THIRUMARADY

CONNECTING SCHOOLS : 32

### TOTAL NUMBER OF STUDENTS

**2785**

Males	<b>1472</b>
Females	<b>1313</b>

### TOTAL NUMBER OF TEACHERS

**165**

Males	<b>36</b>
Females	<b>129</b>

**07**

HUB Name

## KOTHAMANGALAM BRC

LOCATION : GVHSS PALLARIMANGALAM

CONNECTING SCHOOLS : 94

### TOTAL NUMBER OF STUDENTS

**14707**

Males	<b>7321</b>
Females	<b>7383</b>

### TOTAL NUMBER OF TEACHERS

**814**

Males	<b>83</b>
Females	<b>411</b>

**08**

HUB Name

## MATTANCHERRY BRC

LOCATION : GHSS PUTHENTHODE

CONNECTING SCHOOLS : 65

### TOTAL NUMBER OF STUDENTS

**14417**

Males	<b>6644</b>
Females	<b>7773</b>

### TOTAL NUMBER OF TEACHERS

**606**

Males	<b>58</b>
Females	<b>548</b>

**09**

HUB Name

## MUVATTUPUZHA BRC

LOCATION : GHSS PEZHAKKAPILLY

CONNECTING SCHOOLS : 49

### TOTAL NUMBER OF STUDENTS

**6764**

Males	<b>3162</b>
Females	<b>3602</b>

### TOTAL NUMBER OF TEACHERS

**313**

Males	<b>48</b>
Females	<b>265</b>



**STREAM HUBS**  
ERNAKULAM

**10**

HUB Name

## **NORTH PARAVUR**

LOCATION : **GVHSS KAITHARAM**

CONNECTING SCHOOLS : **71**

### **TOTAL NUMBER OF STUDENTS**

**14591**

Males	<b>7786</b>
Females	<b>6805</b>

### **TOTAL NUMBER OF TEACHERS**

**616**

Males	<b>86</b>
Females	<b>530</b>

**11**

HUB Name

## **PERUMBAVOOR BRC**

LOCATION : **GHSS CHERANALLOR**

CONNECTING SCHOOLS : **40**

### **TOTAL NUMBER OF STUDENTS**

**8797**

Males	<b>4717</b>
Females	<b>4080</b>

### **TOTAL NUMBER OF TEACHERS**

**397**

Males	<b>50</b>
Females	<b>347</b>

**12**

HUB Name

## **PIRAVOM BRC**

LOCATION : **GHS MANEED**

CONNECTING SCHOOLS : **40**

### **TOTAL NUMBER OF STUDENTS**

**2222**

Males	<b>1225</b>
Females	<b>997</b>

### **TOTAL NUMBER OF TEACHERS**

**219**

Males	<b>42</b>
Females	<b>177</b>

**13**

HUB Name

## **THRIPIUNITHURA BRC**

LOCATION : GOVT. SANSKRIT HSS THRIPIUNITHURA

CONNECTING SCHOOLS : 69

### **TOTAL NUMBER OF STUDENTS**

**11759**

Males	<b>6273</b>
Females	<b>5486</b>

### **TOTAL NUMBER OF TEACHERS**

**504**

Males	<b>50</b>
Females	<b>454</b>

**14**

HUB Name

## **VYPIN BRC**

LOCATION : GHS ELAKUNNAPPUZHA

CONNECTING SCHOOLS : 55

### **TOTAL NUMBER OF STUDENTS**

**7902**

Males	<b>4079</b>
Females	<b>3823</b>

### **TOTAL NUMBER OF TEACHERS**

**371**

Males	<b>49</b>
Females	<b>322</b>

**15**

HUB Name

## **KOOVAPPADY BRC**

LOCATION : GHSS AKANAD

CONNECTING SCHOOLS : 29

### **TOTAL NUMBER OF STUDENTS**

**4654**

Males	<b>2456</b>
Females	<b>2198</b>

### **TOTAL NUMBER OF TEACHERS**

**210**

Males	<b>33</b>
Females	<b>177</b>

**16**

HUB Name

## **KANNUR NORTH BRC**

LOCATION : **GHSS CHALA**

CONNECTING SCHOOLS : **102**

### **TOTAL NUMBER OF STUDENTS**

**16146**

Males	<b>8466</b>
Females	<b>7680</b>

### **TOTAL NUMBER OF TEACHERS**

**725**

Males	<b>182</b>
Females	<b>543</b>

**17**

HUB Name

## **KANNUR SOUTH BRC**

LOCATION : **AKGSGHSS PERALASSERY**

CONNECTING SCHOOLS : **84**

### **TOTAL NUMBER OF STUDENTS**

**16146**

Males	<b>8466</b>
Females	<b>7680</b>

### **TOTAL NUMBER OF TEACHERS**

**-**

Males	<b>-</b>
Females	<b>-</b>

**18**

HUB Name

## **THALASSERY SOUTH BRC**

LOCATION : **GGHSS THALASSERY**

CONNECTING SCHOOLS : **75**

### **TOTAL NUMBER OF STUDENTS**

**9504**

Males	<b>4646</b>
Females	<b>4858</b>

### **TOTAL NUMBER OF TEACHERS**

**455**

Males	<b>142</b>
Females	<b>313</b>

**19**

HUB Name

## **THALASSERY NORTH BRC**

LOCATION : **GVHSS KADIRUR**

CONNECTING SCHOOLS : **78**

### **TOTAL NUMBER OF STUDENTS**

**7855**

Males	<b>4113</b>
Females	<b>3742</b>

### **TOTAL NUMBER OF TEACHERS**

**371**

Males	<b>114</b>
Females	<b>257</b>

**20**

HUB Name

## **CHOKLI BRC**

LOCATION : **GUPS PUTHUSSERI**

CONNECTING SCHOOLS : **72**

### **TOTAL NUMBER OF STUDENTS**

**8047**

Males	<b>4279</b>
Females	<b>3768</b>

### **TOTAL NUMBER OF TEACHERS**

**353**

Males	<b>175</b>
Females	<b>178</b>

**21**

HUB Name

## **PANOOR BRC**

LOCATION : **ABDURAHIMAN SMARAKAM UPS**

CONNECTING SCHOOLS : **73**

### **TOTAL NUMBER OF STUDENTS**

**10176**

Males	<b>5346</b>
Females	<b>4830</b>

### **TOTAL NUMBER OF TEACHERS**

**457**

Males	<b>190</b>
Females	<b>267</b>

**22**

HUB Name

## **KUTHUPARAMBA BRC**

LOCATION : **GUPS PALAYATHUVAYAL**

CONNECTING SCHOOLS : **79**

### **TOTAL NUMBER OF STUDENTS**

**9273**

Males	<b>4736</b>
Females	<b>4537</b>

### **TOTAL NUMBER OF TEACHERS**

**365**

Males	<b>113</b>
Females	<b>252</b>

**23**

HUB Name

## **MATTANNUR BRC**

LOCATION : **GVHSS EDAYANNUR**

CONNECTING SCHOOLS : **83**

### **TOTAL NUMBER OF STUDENTS**

**14603**

Males	<b>7441</b>
Females	<b>7162</b>

### **TOTAL NUMBER OF TEACHERS**

**552**

Males	<b>155</b>
Females	<b>397</b>

**24**

HUB Name

## **IRITTY BRC**

LOCATION : **GHSS CHAVASSERY**

CONNECTING SCHOOLS : **99**

### **TOTAL NUMBER OF STUDENTS**

**18661**

Males	<b>9513</b>
Females	<b>9148</b>

### **TOTAL NUMBER OF TEACHERS**

**848**

Males	<b>218</b>
Females	<b>630</b>

**25**

HUB Name

## **TALIPARAMBA NORTH BRC**

LOCATION : **KKNPNGVHSS PARIYARAM**

CONNECTING SCHOOLS : **94**

### **TOTAL NUMBER OF STUDENTS**

**19616**

Males	<b>10103</b>
Females	<b>9513</b>

### **TOTAL NUMBER OF TEACHERS**

**901**

Males	<b>345</b>
Females	<b>719</b>

**26**

HUB Name

## **TALIPARAMBA SOUTH BRC**

LOCATION : **GUPS KADAMBERI**

CONNECTING SCHOOLS : **61**

### **TOTAL NUMBER OF STUDENTS**

**8798**

Males	<b>4430</b>
Females	<b>4368</b>

### **TOTAL NUMBER OF TEACHERS**

**330**

Males	<b>92</b>
Females	<b>238</b>

**27**

HUB Name

## **PAYYANNUR BRC**

LOCATION : **MVMKVNSGHSS MATHIL**

CONNECTING SCHOOLS : **90**

### **TOTAL NUMBER OF STUDENTS**

**17402**

Males	<b>8533</b>
Females	<b>8869</b>

### **TOTAL NUMBER OF TEACHERS**

**721**

Males	<b>205</b>
Females	<b>516</b>

**28**

HUB Name

## **PAPPINISSERI BRC**

LOCATION : **GHSS AZHIKKODE**

CONNECTING SCHOOLS : **91**

### **TOTAL NUMBER OF STUDENTS**

**11800**

Males	<b>6026</b>
Females	<b>5774</b>

### **TOTAL NUMBER OF TEACHERS**

**504**

Males	<b>118</b>
Females	<b>386</b>

**29**

HUB Name

## **MADAYI BRC**

LOCATION : **GBVHSS MADAYI**

CONNECTING SCHOOLS : **88**

### **TOTAL NUMBER OF STUDENTS**

**13713**

Males	<b>7357</b>
Females	<b>6356</b>

### **TOTAL NUMBER OF TEACHERS**

**843**

Males	<b>184</b>
Females	<b>659</b>

**30**

HUB Name

## **IRIKKUR BRC**

LOCATION : **GHSS CHUZHALI**

CONNECTING SCHOOLS : **88**

### **TOTAL NUMBER OF STUDENTS**

**13680**

Males	<b>6925</b>
Females	<b>6755</b>

### **TOTAL NUMBER OF TEACHERS**

**599**

Males	<b>192</b>
Females	<b>407</b>

**31**

HUB Name

## **THALAVADY BRC**

LOCATION : KK KUMARAPILLAI SMARAKA GHS KARUMADY

CONNECTING SCHOOLS : 41

### **TOTAL NUMBER OF STUDENTS**

**3634**

Males	<b>1898</b>
Females	<b>1736</b>

### **TOTAL NUMBER OF TEACHERS**

**289**

Males	<b>69</b>
Females	<b>220</b>

**32**

HUB Name

## **THURAVUR BRC**

LOCATION : SCUGVHSS PATTANAKKAD

CONNECTING SCHOOLS : 65

### **TOTAL NUMBER OF STUDENTS**

**14328**

Males	<b>7641</b>
Females	<b>6687</b>

### **TOTAL NUMBER OF TEACHERS**

**597**

Males	<b>114</b>
Females	<b>483</b>

**33**

HUB Name

## **VELIYANADU BRC**

LOCATION : GHSS KIDANGARA

CONNECTING SCHOOLS : 31

### **TOTAL NUMBER OF STUDENTS**

**1230**

Males	<b>657</b>
Females	<b>573</b>

### **TOTAL NUMBER OF TEACHERS**

**83**

Males	<b>17</b>
Females	<b>66</b>

**34**

HUB Name

## **MONCOMPU BRC**

LOCATION : **GHS THEKKEKARA**

CONNECTING SCHOOLS : **38**

### **TOTAL NUMBER OF STUDENTS**

**3181**

Males	<b>1305</b>
Females	<b>1876</b>

### **TOTAL NUMBER OF TEACHERS**

**208**

Males	<b>43</b>
Females	<b>165</b>

**35**

HUB Name

## **MAVELIKKARA BRC**

LOCATION : **GVHSS CHUNAKKARA**

CONNECTING SCHOOLS : **108**

### **TOTAL NUMBER OF STUDENTS**

**11283**

Males	<b>5839</b>
Females	<b>5364</b>

### **TOTAL NUMBER OF TEACHERS**

**574**

Males	<b>98</b>
Females	<b>476</b>

**36**

HUB Name

## **KAYAMKULAM BRC**

LOCATION : **GHSS RAMAPURAM**

CONNECTING SCHOOLS : **91**

### **TOTAL NUMBER OF STUDENTS**

**16534**

Males	<b>8163</b>
Females	<b>8371</b>

### **TOTAL NUMBER OF TEACHERS**

**750**

Males	<b>158</b>
Females	<b>592</b>

**37**

HUB Name

## **HARIPAD BRC**

LOCATION : **GBHSS HARIPAD**

CONNECTING SCHOOLS : **58**

### **TOTAL NUMBER OF STUDENTS**

**8114**

Males	<b>3701</b>
Females	<b>4413</b>

### **TOTAL NUMBER OF TEACHERS**

**385**

Males	<b>66</b>
Females	<b>319</b>

**38**

HUB Name

## **CHERTHALA BRC**

LOCATION : **GHS POLLETAI**

CONNECTING SCHOOLS : **81**

### **TOTAL NUMBER OF STUDENTS**

**19877**

Males	<b>9999</b>
Females	<b>9878</b>

### **TOTAL NUMBER OF TEACHERS**

**823**

Males	<b>165</b>
Females	<b>658</b>

**39**

HUB Name

## **CHENGANNUR BRC**

LOCATION : **GHSS PULIYUR**

CONNECTING SCHOOLS : **88**

### **TOTAL NUMBER OF STUDENTS**

**8260**

Males	<b>4107</b>
Females	<b>4153</b>

### **TOTAL NUMBER OF TEACHERS**

**453**

Males	<b>90</b>
Females	<b>363</b>

**40**

HUB Name

## **AMBALAPPUZHA BRC**

LOCATION : **GHSS VALIYAZHEEKAL**

CONNECTING SCHOOLS : **59**

### **TOTAL NUMBER OF STUDENTS**

**9050**

Males	<b>4784</b>
Females	<b>4266</b>

### **TOTAL NUMBER OF TEACHERS**

**439**

Males	<b>71</b>
Females	<b>368</b>

**41**

HUB Name

## **ALAPPUZHA BRC**

LOCATION : **GVHSS ARYAD**

CONNECTING SCHOOLS : **59**

### **TOTAL NUMBER OF STUDENTS**

**4823**

Males	<b>2362</b>
Females	<b>2461</b>

### **TOTAL NUMBER OF TEACHERS**

**330**

Males	<b>59</b>
Females	<b>271</b>

**42**

HUB Name

## **THRITHALA BRC**

LOCATION : **GGHSS KALLADATHUR**

CONNECTING SCHOOLS : **91**

### **TOTAL NUMBER OF STUDENTS**

**18169**

Males	<b>9193</b>
Females	<b>8976</b>

### **TOTAL NUMBER OF TEACHERS**

**699**

Males	<b>330</b>
Females	<b>369</b>

**43**

HUB Name

## **SHORNUR BRC**

LOCATION : **GHSS MARAYAMANGALAM**

CONNECTING SCHOOLS : **71**

### **TOTAL NUMBER OF STUDENTS**

**13293**

Males	<b>6730</b>
Females	<b>6563</b>

### **TOTAL NUMBER OF TEACHERS**

**498**

Males	<b>132</b>
Females	<b>366</b>

**44**

HUB Name

## **PATTAMBI BRC**

LOCATION : **GHSS PATTAMBI**

CONNECTING SCHOOLS : **103**

### **TOTAL NUMBER OF STUDENTS**

**19653**

Males	<b>10073</b>
Females	<b>9580</b>

### **TOTAL NUMBER OF TEACHERS**

**706**

Males	<b>221</b>
Females	<b>485</b>

**45**

HUB Name

## **PARALI BRC**

LOCATION : **GVHSS PATHIRIPLA**

CONNECTING SCHOOLS : **91**

### **TOTAL NUMBER OF STUDENTS**

**10707**

Males	<b>5581</b>
Females	<b>5126</b>

### **TOTAL NUMBER OF TEACHERS**

**421**

Males	<b>83</b>
Females	<b>338</b>

**46**

HUB Name  
**PALAKKAD BRC**

LOCATION : **GHSS BIGBAZAR**  
CONNECTING SCHOOLS : **91**

**TOTAL NUMBER OF STUDENTS**

**15595**

Males	<b>7747</b>
Females	<b>7848</b>

**TOTAL NUMBER OF TEACHERS**

**627**

Males	<b>113</b>
Females	<b>514</b>

**47**

HUB Name  
**OTTAPALAM BRC**

LOCATION : **GHS KADAMBUR**  
CONNECTING SCHOOLS : **83**

**TOTAL NUMBER OF STUDENTS**

**16070**

Males	<b>8108</b>
Females	<b>7962</b>

**TOTAL NUMBER OF TEACHERS**

**582**

Males	<b>136</b>
Females	<b>446</b>

**48**

HUB Name  
**MANNARKKAD BRC**

LOCATION : **GHSS POTTASSERY**  
CONNECTING SCHOOLS : **95**

**TOTAL NUMBER OF STUDENTS**

**31628**

Males	<b>15967</b>
Females	<b>15661</b>

**TOTAL NUMBER OF TEACHERS**

**1123**

Males	<b>367</b>
Females	<b>756</b>

**49**

HUB Name

## **KUZHALMANNAM BRC**

LOCATION : **GHSS PERINGOTTUKURISSI**

CONNECTING SCHOOLS : **53**

### **TOTAL NUMBER OF STUDENTS**

**10941**

Males	<b>5673</b>
Females	<b>5268</b>

### **TOTAL NUMBER OF TEACHERS**

**424**

Males	<b>78</b>
Females	<b>346</b>

**50**

HUB Name

## **KOLLENGODE BRC**

LOCATION : **GHSS KODUVAYOOR**

CONNECTING SCHOOLS : **91**

### **TOTAL NUMBER OF STUDENTS**

**9245**

Males	<b>4208</b>
Females	<b>5037</b>

### **TOTAL NUMBER OF TEACHERS**

**449**

Males	<b>70</b>
Females	<b>379</b>

**51**

HUB Name

## **CHITTUR BRC**

LOCATION : **GHSS CHITTUR**

CONNECTING SCHOOLS : **85**

### **TOTAL NUMBER OF STUDENTS**

**17955**

Males	<b>9126</b>
Females	<b>8829</b>

### **TOTAL NUMBER OF TEACHERS**

**662**

Males	<b>133</b>
Females	<b>529</b>

**52**

HUB Name

## **CHERPULASSERRY BRC**

LOCATION : **GVHSS CHERPULASSERRY**

CONNECTING SCHOOLS : **74**

### **TOTAL NUMBER OF STUDENTS**

**14707**

Males	<b>7443</b>
Females	<b>7264</b>

### **TOTAL NUMBER OF TEACHERS**

**565**

Males	<b>149</b>
Females	<b>416</b>

**53**

HUB Name

## **ALATHUR BRC**

LOCATION : **GGHSS ALATHUR**

CONNECTING SCHOOLS : **93**

### **TOTAL NUMBER OF STUDENTS**

**20207**

Males	<b>10413</b>
Females	<b>9794</b>

### **TOTAL NUMBER OF TEACHERS**

**764**

Males	<b>151</b>
Females	<b>613</b>

**54**

HUB Name

## **AGALI BRC**

LOCATION : **GOVT TRIBAL HS SHOLAYUR**

CONNECTING SCHOOLS : **26**

### **TOTAL NUMBER OF STUDENTS**

**1837**

Males	<b>976</b>
Females	<b>861</b>

### **TOTAL NUMBER OF TEACHERS**

**170**

Males	<b>112</b>
Females	<b>58</b>





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**PROJECT REPORT  
2023-24**



**Cochin University of  
Science and Technology**