PROJECT REPORT

# Integrated Technology in Education

# ITE

📍 **Nagaon District, Assam · West Garo Hills District, Meghalaya**

PROGRAMME YEAR

## 2023 — 2024

Supported by **Unifiers Social Ventures** & **Digital Society Foundation**

*Bridging the digital divide across Northeast India*

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DIGITAL SOCIETY FOUNDATION

## 1. Project Background and Context

Technology is a fundamentally transformative lever capable of driving systemic economic, social, political, and educational reforms. With the continuous acceleration of globalization and the ongoing digital revolution, building scalable technology frameworks is essential to ensure marginalized communities are not left behind.

In rural and economically insulated school systems, traditional teaching methods often rely on rote learning, which creates a substantial gap between abstract curriculum concepts and the lived realities of students. Integrating technology into these environments goes beyond simply donating devices — it changes the educational approach to make learning interactive, student-centred, and practically authentic.

To address the quality of education within marginalized communities, the ITE project was launched with the support of Unifiers Social Ventures and Digital Society Foundation. The implementation focused on two highly backward blocks in Northeast India:

- Juria, Dagaon, and Alitangani villages under the Juria Development Block in Nagaon District, Assam
- Rongram, Jengjal, and Asanang villages under the Rongram Development Block in West Garo Hills District, Meghalaya

Both districts face long-term developmental challenges, scoring low on health, income, and educational indices. At the project start, historical field data showed that nearly half of all enrolled children dropped out before finishing the eighth grade. These locations were essentially internet-dark, with students having virtually no prior exposure to computers, internet search, or creative digital software.

## 2. Core Project Objectives and Logframe Blueprint

The ITE project followed a clear logframe designed to bridge the digital divide, modernise local classroom environments, and introduce 21st-century skills to rural adolescents and out-of-school youth. The primary implementation directives included:

- Modernising mainstream school and Madrasa education through active technology-integrated pedagogy, open educational resources, and a student-centred workflow.
- Supporting rural adolescents to achieve age-appropriate learning benchmarks while instilling critical 21st-century habits — critical thinking, troubleshooting, creativity, and self-direction.
- Increasing student interest in daily schooling to reduce high drop-out rates, while offering localised vocational and career awareness tracks.
- Developing proactive digital citizenship by teaching adolescents how to confidently use technology to gather information, construct personal meaning, and solve community problems.
- Deploying low-cost, community-wide wireless network meshes to connect structurally cut-off villages.

| Framework | Operational Objectives & Scope |
|---|---|
| **Project Goals** | Bridge the digital divide, foster active digital citizenship, and systematically improve teaching-learning processes inside mainstream schools and traditional Madrasas. |
| **Project Outcomes** | Enable active student engagement with information technology, integrate digital workflows across communities, and encourage student-led data creation. |
| **Expected Outputs** | Deliver physical computer hardware access and internet links to students, train institutional faculty, and run community digital literacy courses. |
| **Core Activities** | Establish digitally enabled community resource hubs, install center-and-spoke wireless towers, deliver 3-month ITE teacher certifications, and maintain an open web portal. |

## 3. Field Implementation and Infrastructure Outputs

### 3.1 Community ITE Learning Resource Centers

The implementation strategy relied on building community centers to introduce digital literacy to local areas before expanding directly into schools. The project successfully established 2 main Hub Centers and 6 Satellite Centers across the blocks. These spaces functioned as local digital classrooms, drawing in out-of-school adolescents, dropouts, and community members. They also housed specialised book libraries to blend traditional and digital learning tools.

**3,722**
Community Members Certified

**46**
Institutions Connected

**5,648**
Children Trained

### 3.2 Mainstream School and Madrasa Digital Integration

A primary goal of the project was integrating technology directly into mainstream schools and traditional Madrasas. The project aimed to equip 65 learning centers with network access, ultimately connecting 46 distinct institutions, 39 of which were public schools. In terms of student outreach, the programme surpassed its initial logframe target of 6,400 beneficiaries, delivering training to a total of 5,648 children — 3,054 through direct school classes and 2,594 through community-based hub networks.

To ensure the long-term integration of these tools, the project rolled out a 3-month ITE Certification curriculum for local teachers. A total of 75 school and Madrasa teachers completed the training, focusing on lesson planning, digital troubleshooting, and student-centred classroom management.

# 4. Highlighted Digital Literacy and Project Activities

## 4.1 Dual-Channel Delivery Model

The digital literacy programme used a dual-channel approach to maximise impact. First, formal school classes integrated technology directly into the standard curriculum, replacing traditional lecturing with interactive digital lessons. Second, the community hubs provided flexible, adaptive training for out-of-school youth and dropouts, helping them build practical technical skills outside of formal school structures.

## 4.2 Student-Led Content Creation and Software Competencies

The programme moved past basic typing tutorials, focusing instead on creative, student-led content creation. Students built digital projects directly tied to their daily lives and school subjects, showing strong proficiency across several key platforms:

- Presentation Design (MS PowerPoint): Students moved from basic slide creation to building comprehensive projects — independently structuring presentations, integrating localised image searches, and transferring field photographs from mobile devices using Bluetooth protocols.
- Spreadsheet Analytics (MS Excel): Deployed heavily inside the Mathematics curriculum. Students set up data tables, formatted tracking columns, generated visual charts, and applied basic formulas to verify mathematical problems.
- Creative Programming & Media (Scratch, Photo Story, Movie Maker): Students used Scratch to build introductory programming logic and interactive animations. They also utilised Photo Story and Movie Maker to document regional community issues such as child rights and early marriage.

## 4.3 Curricular Integration Across Key Subjects

Digital literacy was built directly into core school subjects, enabling a more interactive and analytical approach to the standard curriculum:

- Mathematics: Utilizing MS Excel, classes focused on data entry, row structuring, and chart creation to help students visualise mathematical relationships directly on screen.
- Natural Sciences: PowerPoint and Photo Story were used to make abstract concepts interactive. Students built detailed project files on topics like Air Pollution, Microorganisms, and Crop Production and Management.
- Social Studies & Community Projects: Class groups utilised internet search engines to gather data on regional issues, creating presentations on topics such as Consumer Rights, the Climate of Assam, Disaster Management, and the impacts of Artificial Floods.

# 5. Pedagogical Outcomes and Learning Artifacts Analysis

## 5.1 Implementation Variations Across Locations

The final analysis showed distinct learning patterns across the two states, driven largely by local language structures and educational context. Students in the West Garo Hills

(Meghalaya) centres showed high levels of presentation confidence, clear language skills, and smooth technical execution. Because the local Garo language utilises the Roman script, these students adapted quickly to standard computer keyboards and English-based search engines.

In contrast, students in Nagaon (Assam) worked primarily in the Assamese script. This linguistic insulation made it more challenging to run precise internet search queries, which narrowed the scope of their digital research.

## 5.2 Software Impact on Subject Mastery

The choice of software tools directly shaped how effectively students mastered different subjects. In Mathematics, the structured layout of MS Excel allowed students to quickly build clear tables and verify complex data. However, because connecting spreadsheet tools to abstract math lessons required significant preparation time, math projects were less common than those in other disciplines.

In Science and Social Studies, students used open-ended tools like PowerPoint and Movie Maker. While this allowed for high creativity, it also required careful guidance — without clear prompts, students occasionally fell back on copying text directly from textbooks rather than building original interpretations.

## 5.3 Progress Across Institutional Frameworks

Mainstream public schools adapted more rapidly to the new digital pedagogy than traditional Madrasas. While Madrasas enrolled a larger total number of children, integrating technology into these environments faced unique local challenges. Many Madrasas operated in open-air classrooms that lacked secure, lockable storage rooms, making it difficult to keep hardware safe and restricting daily student access. Madrasa students often appeared reserved when presenting their work, indicating a need for continued confidence-building activities.

## 5.4 Classroom Observation and Skill Spillover

A key indicator of project success was the positive spillover of 21st-century instructional skills into traditional, non-digital classrooms. Observation logs showed that ITE-certified teachers spontaneously brought interactive techniques into standard 'chalk-and-talk' lessons. In traditional Chemistry and Mathematics classes, trained instructors moved past passive lecturing, actively encouraging student-led dialogue, self-direction, and real-world problem-solving.

## 5.5 Structural Analysis of Student Projects

An analysis of student digital projects revealed a clear performance pattern. Students scored highly on technical execution metrics — such as creating file directories, formatting slide layouts, embedding audio files, and managing device data. However, they scored lower on higher-order analytical metrics, including critical information analysis, data source citation, and original content composition. This gap shows that while basic technical literacy was successfully achieved, helping students develop deep analytical and research skills requires continued educational support.

## 6. Operational Challenges and Strategic Mitigations

### ⚡ Power Grid Failures

Severe electricity outages disrupted classroom learning. Teachers transported laptops home to charge batteries.

### 👥 Staff Turnover

High facilitator turnover due to limited compensation. Each departure required full retraining cycles.

### 🏫 Low School Ownership

Headmasters saw ITE as an external project, keeping digital activities off the official timetable.

### 💰 Budget Constraints

No formal budget for hardware maintenance or network costs post-project left schools financially exposed.

## 7. Strategic Recommendations for Next-Phase Scaling

Drawing from field evidence and operational learnings, the following strategic recommendations are proposed to guide the next phase of ITE programme expansion:

| # | Recommendation | Description |
|---|---|---|
| 🌐 | **Localised Digital Tools** | Include script-specific keyword guides for Assamese-medium schools before deployment. |
| ☀️ | **Solar Backup Solutions** | Equip community learning hubs with solar charging setups or heavy-duty power inverters. |
| 📊 | **Unified Digital Reporting** | Deploy a secure database replacing paper logs; train staff on daily digital data entry. |
| 🤝 | **Monthly Instructor Forums** | Host structured monthly meetings between teachers, tech staff, and hub leaders. |
| 🏆 | **Teacher Recognition** | Work with principals to embed digital activities in official timetables with recognition platforms. |
| 📚 | **Hybrid Training Portals** | Build a digital learning portal with instructional videos so new recruits can self-train. |
| 🔗 | **State Education Alignment** | Form closer partnerships with state education departments and RMSA for sustainable funding. |
| 📈 | **Benchmarked Funding** | Tie future funding phases to measurable targets for local ownership and community engagement. |

## 8. Conclusion

**The ITE project successfully built a strong foundation for digital literacy across marginalized, internet-dark regions in select schools, Madrasas, and out-of-school communities in Assam and Meghalaya.**

The programme surpassed its core outreach goals, deployed a functional last-mile wireless network, and helped thousands of rural students build technical confidence with software platforms. Furthermore, local school teachers successfully brought modern, interactive teaching methods into their standard classrooms.

To maximise long-term impact, future project phases must focus on moving from an externally driven initiative to an independent, locally maintained programme. By establishing reliable power infrastructure, deploying centralised data tracking systems, and forming deeper partnerships with state education departments, the project partners can ensure this digital literacy framework continues to deliver valuable, lasting opportunities for rural communities.

**ITE Project · 2023–2024** | Northeast India · Assam & Meghalaya