

## INCLUSIVE INNOVATIONS

# Improving Learning Outcomes by Bringing Innovation to the Classroom

*Low-cost materials and training support for novel teaching methods at under-resourced schools*

### HIGHLIGHTS

- Teaching kits, exchange networks, model schools, and cloud-based platforms can enhance teaching innovation.
- Products and services are designed to work in resource-constrained settings. They come with detailed lesson plans and support, making them ready to use and easy to apply.
- Models leverage information and communications technology (ICT) and extensive partnership networks and cascade training even to remote areas while keeping operating costs low.



### Summary

Most low-income countries suffer major shortages of well-trained teachers—an enormous problem given the importance of good teachers to student learning. Many of these teachers favor lecturing, rote learning, and repetition rather than the innovative techniques that have been found to improve learning outcomes. Training teachers to use innovative techniques and providing them with easy-to-use learning materials can help address the challenge.

### Development Challenge

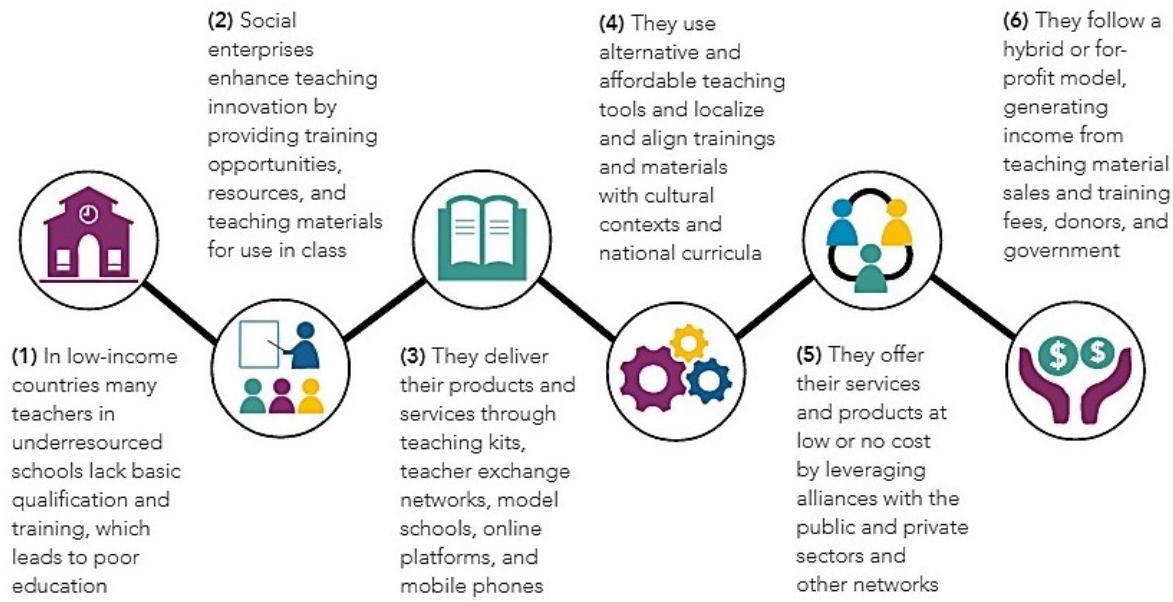
Many teachers in low-income countries lack even basic qualifications and training: In 2013, 22 percent of primary school teachers and 42 percent of secondary school teachers were not trained (World Development Indicators database). These teachers rely primarily on their school experiences as children to develop their teaching practices, which usually involve lecturing, rote learning, and repetition.

The lack of trained teachers presents an enormous challenge, because high-quality teachers are the bedrock of all high-performing education systems and the single most important factor in improving student learning (World Bank 2015). Highly effective teachers increase college enrollment and raise salaries (Chetty, Friedman, and Rockoff 2014). Indeed, just replacing a very low-performing teacher with an average teacher can increase the present value of students' lifetime income by almost USD 250,000 per classroom. Many countries have tried to move toward more innovative, learner-centered methods, but they are limited by low teacher-student ratios, scarce teaching resources, and a lack of professional development opportunities. Ready-to-use and easy-to-apply innovations designed to work in resource-constrained settings can help them improve their teaching.

### Business Model

Non-state actors are enhancing teacher quality by introducing innovative teaching practices in low-income school settings (see Figure 1). They develop innovative teaching concepts in-house or adapt them from internationally renowned approaches. All products and services align with national standards.

**Figure 1. Features of model for improving training and resources for innovation in teaching**



### Components of the Model

Models offer teacher training, professional development resources for teachers and schools, and teaching materials for use in class (see Table 1). Some enterprises develop their own materials. Others source their materials from educational NGOs or involve local teachers in the development and customization of their materials.

**Table 1. Products, services, and revenues of selected enterprises providing innovative educational solutions**

Model/Example/Countries	Products and Services	Revenue Sources
<b>For-profit</b>		
Experifun Learning Solutions (India, the Philippines) 	Tools for experiments and activities in science. Comes with teacher training video, lesson plan user-guide, and workshop.	<ul style="list-style-type: none"> <li>Investors</li> <li>Sale of teaching kit (USD 950 per pack containing 80 products)</li> </ul>
Karadi Path (India) 	Language instruction materials, audio and video books, which use music and background score to create the natural stimuli to teach English. Comes with training and teacher support.	<ul style="list-style-type: none"> <li>Investors</li> <li>Sale of materials and training fees (USD 920 per 120 students in first year; USD 310–390 per renewal per year)</li> </ul>
<b>Non-profit</b>		
Digital Study Hall (Bangladesh, India, Pakistan) 	Videos of best-practice teaching, shared online, for use in teacher training and class.	<ul style="list-style-type: none"> <li>Donor funding</li> </ul>
STIR Education (India, Uganda) 	Low-cost teaching innovations disseminated through teacher exchange networks. Training offered by STIR and partners.	<ul style="list-style-type: none"> <li>Donor funding</li> <li>Government funding</li> </ul>

<b>Hybrid</b>			
BridgeIT (11 countries in Sub-Saharan Africa, Latin America and Caribbean, and South and South East Asia)    	Videos for professional development and teaching in class, delivered through web-enabled mobile phones. Includes training, manuals, and lesson plans.	• Private sector contributions • Government funding • Video downloads (USD 0.65 each in the Philippines [free first year])	
Hands on Tech (South Africa)  	LEGO-based teaching kits for development of math, language, and life skills through creative play. Comes with lesson plans and teacher training.	• Donor funding • Sales = of teaching kits (USD 16–420 for preschool and primary school; robotics sets sell for up to USD 1,200)	
Lamplaimat Pattana School (Thailand)  	In-service training on making teaching student-centered and project-based. School also operates publishing house selling teaching materials.	• Donor funding • Government subsidies (about USD 60,000 a year) • Publishing house sales and training fees (USD 10–50 a day)	
Limited Resource Teacher Training (7 countries - Uganda, Tanzania, Cambodia, Nepal, Nigeria, India, Guyana)   	In-person and video-based training on learner-centered, innovative pedagogical methods.	• Donor funding • Fellowship fees for volunteers (USD 1,700–2,000)	
mAcademy (Nigeria)  	Seven-day professional online development courses, accessible via mobile phones.	• Private sector contributions • Course fees (USD 0.75 per course). Some courses are free.	
Muktangan Schools (India)  	Pre- and in-service training based on child-centered, inclusive education. Additionally, develops teaching materials.	• Donor funding • Training fees (about USD 5 per teacher)	

Note:  = teaching materials  = professional development resources  = teacher training  = ICT-based services

Enterprises disseminate their products and services to teachers and schools in various ways. Hands on Tech sells teaching kits containing teaching materials, manuals, and lesson plans. STIR Education establishes teacher exchange networks. The Lamplaimant Pattanat School runs a model school that serves as a site for in-service teacher training. mAcademy provides Nigerian teachers with professional development courses via mobile phones.

### Cost Factors

Most of the models analyzed follow a hybrid or for-profit model, generating income from teaching material sales (e.g., Exerifun Learning Solutions) and training fees (e.g., Muktangan Schools). Karadi Path, for example, grew its revenues from USD 20,400 to 390,000 in its first three years of operation. However, some models rely strongly on financing from governments and donors to cover their operating costs. STIR Education, while in the process of developing a long-term financing strategy, currently depends fully on external funding to cover the average USD 200 it spends per teacher.

### Revenue Streams

Some models rely fully on contributions, some try to fund themselves exclusively from revenues, and others use a mix of both. Providers of teaching materials and professional development resources are typically for-profit companies. They generate income from selling teaching resources to schools or individual teachers. Training providers are mostly NGOs or public-private partnerships. They typically generate revenue from training fees and donor and government contributions.

## **Financial Viability**

Existing models combine financing from NGOs, the private sector (notably technology partners), social investors, and local governments. BridgeIT sometimes builds on support from the target communities. If government funding and private sector contributions are insufficient to cover rollout costs for the program, communities contribute their own funds.

## **Partnerships**

To market their products and services, models partner with NGOs and local governments. STIR Education builds on partnerships with more than 50 NGOs that support the identification of promising teachers and disseminate the STIR model within their school networks. In Thailand the government invites schools and teachers to participate in training programs provided by the Lamplaimat Pattana School. Several enterprises (the Lamplaimat Pattana School, Karadi Path, and the Muktangan Schools) invite communities and teachers to visit their model schools and observe innovative methods in action. Models also collaborate with NGOs, governments, and research institutes to conduct external analyses of their impact. Microsoft Research, for example, supports Digital Study Hall in conducting experiments to assess the impact of its teaching videos.

## **Implementation: Delivering Value to the Poor**

### **Awareness**

To market their products and services, existing models leverage two main channels: partnering NGOs and local governments. STIR Education, for example, builds on partnerships with over 50 NGOs who support the identification of promising teachers and disseminate the STIR model within their school networks. In the case of Lamplaimat Pattana School, the Thai government invites schools and teachers to participate in training programs. Lamplaimat Pattana School, Karadi Path and Muktangan Schools invite communities and teachers to visit their model schools and observe innovative methods in action.

### **Acceptance**

To gain acceptance, models localize and align trainings and materials with cultural contexts and national curricula. Experifun Learning Solutions designs science kits and teaching manuals in accordance with the Indian State curriculum as well as international curricula. Recognition by local authorities is a further boost to acceptance. Teachers trained by STIR Education and BridgeIT receive officially recognized training certificates. The Lamplaimat Pattana School and the Muktangan Schools have become official teacher training sites. Nearly all models include specific training components on how to implement materials and methods in class. BridgeIT's videos come in a ready-to-use package with detailed lesson plans and teaching manuals. The Lamplaimat Pattana School trains teachers to develop progress indicators for project-based learning that enable the translation of student performance to the conventional grading system. Some models promote solutions that have been developed by teachers themselves, helping ensure applicability and increasing acceptance by teachers. STIR Education and the Digital Study Hall use a bottom-up approach in which teachers provide ideas and videos of their own teaching methods.

### **Accessibility**

To maximize accessibility while keeping distribution costs low, many models leverage web-based technology. Teachers can access training and teaching materials from mAcademy and BridgeIT via data-enabled mobile phones. Digital Study Hall works through a web-cloud that teachers use to upload, stream, and download videos. Limited Resource Teacher Training offers video-based training modules online. To increase the indirect accessibility of their products, STIR Education, the Muktangan Schools, and Hands on Tech have adopted a cascade mechanism. They train teachers, school managers, or school cluster coordinators to train other teachers. The growth of the ICT sector in low-income countries is unlocking the potential of mobile and web-based models. By the end of 2014, mobile phone subscriptions were estimated to exceed USD 6.9 billion, with about 75 percent in low-income countries; mobile broadband penetration reached approximately 27 percent in 2013 and has grown rapidly since then (UNESCO/ITU 2014).

## Affordability

Most models offer their services and products at low or no cost. To be able to do so, they leverage strategic alliances with the public and the private sector for cost-sharing or subsidization. BridgeIT, for example, requires governments and technology partners in the Philippines to each bear about half the costs related to school rollouts. The Thai National Office of Primary Education provides financial support for teacher training workshops provided by the Lamplaimat Pattana School. Models keep operating costs low in several ways. Limited Resource Teacher Training uses volunteer teacher trainers. BridgeIT, mAcademy, and Digital Study Hall, leverage ICT for product delivery. Web-enabled technology has been a key factor for several models to cost-efficiently reach scale, even in remote areas.

## Results and Cost-Effectiveness

### Scale and Reach

The more established models show that achieving large scale is possible. BridgeIT has reached 15,000 teachers over the past 10 years; the Lamplaimat Pattana School trains 40,000 teachers a year.

### Improving Outcomes

*Learning outcomes:* An internal evaluation by Digital Study Hall showed positive effects on English and math performance over a three-month period, with children scoring almost 400 percent higher in English and 300 percent higher in math than peers in a comparison school (Global Solutions Network 2013). At the Lamplaimat Pattana School, students achieved the highest results on primary-level standardized tests across the province's 860 schools in 2010, according to an internal assessment, placing the school in the top 15 percent nationwide. All of the Muktangan Schools' first batch of grade 10 students scored above 74 percent on the Indian Secondary School Certificate exam (Center for Education Innovations n.d.).

*Teacher outcomes:* In Bangladesh the performance of BridgeIT teachers improved by 50 percent on instructional practice criteria, as defined by the International Reading Association's Diagnostic Teaching Model (Pearson Foundation 2014). In an internal assessment of STIR's pilot network, 100 percent of teachers (from 18 schools) reported increased self-efficacy, and 80 percent took on new leadership roles in driving change initiatives within their school, according to an internal study (STIR n.d.)

### Cost-Effectiveness

Rather than provide cutting-edge technology and teaching methods, models such as Limited Resource Teacher Training and STIR Education focus on teaching innovations that are very low cost or free, making them applicable in very resource-scarce environments. Training of trainers is a common feature in many traditional teacher programs. STIR Education, for example, trains NGOs and government institutions to embed the STIR model. The approach has increased the company's reach in a cost-effective way. In addition to its teacher materials, BridgeIT integrates Microsoft Data Gathering software, through which BridgeIT and its partners can send surveys to participating teachers and schools that help monitor the impact of its service at large scale and low cost.

## Scaling Up

### Challenges

Many models generate revenues, but most rely heavily on donor support and government subsidies. Overreliance on a few funders carries a risk of financial insecurity, as political or donor priorities shift. The strong financial involvement of governments can ensure a program's integration into the public education system, however. Given the novelty of their approaches, providers face initial low acceptance or interest. To increase credibility and help reduce barriers to acceptance, many conduct regular assessments of their programs' effectiveness. Enterprises that use ICT face additional challenges. Digital Study Hall and BridgeIT depend on reliable power supply for teachers to show their videos in class. BridgeIT addresses this issue by including solar chargers in its packages. The outreach of mobile-based models such as mAcademy and BridgeIT is limited to teachers and schools with 3G connectivity. To reach unconnected schools, BridgeIT

delivers USB-sticks with preloaded videos and helps communities develop partnerships with connected schools so that they can access new videos.

## Role of Government and Public Policy

Government plays a critical supporting role in education innovating, in a variety of ways:

- *Outreach and promotion.* In South Africa and Uganda, local departments and officers of education help Hands on Tech and Limited Resource Teacher Training identify and select the schools that are most suitable for training.
- *Endorsement and accreditation.* In India and Thailand, the ministries of education have accredited the Muktangan Schools and the Lamplaimat Pattana School as official teacher training programs and sites.
- *Mainstreaming.* In India, the STIR Education model is partly embedded in the public teacher training system. In the Philippines, Bridge IT trains education officers to implement and mainstream the program.
- *Evaluation.* In India, the State Institute of Education in Goa supported Karadi Path by conducting a study on the effectiveness of its methodology in 20 schools.
- *Financing.* In the Philippines, local governments bear about half of the cost BridgeIT incurs per school. In India Experifun Learning Solutions received funding from the Department of Industrial Policy & Promotion.

**Table 2. Selected enterprises providing innovative educational products and services**

Company	Countries	Description
<a href="#">Bridge IT</a>	Bangladesh, Chile, Colombia, Haiti, India, Indonesia, Nigeria, South Africa, Vietnam, Tanzania	Uses mobile phones to deliver professional development materials and educational resources (videos, lesson plans, online network) to teachers. Schools receive a package containing a mobile phone, through which they can download educational content and teacher training material. Package includes a cable, projector, and screen for showing videos in class.
<a href="#">Digital Study Hall</a>	Bangladesh, India, Pakistan	Delivers education to low-income students in slums and rural villages via lectures and lesson plans on DVD. Company tapes India's best teachers as they teach the local state curriculum in their local languages and distributes the DVDs to schools in need.
<a href="#">Experifun Learning Solutions</a>	India, the Philippines	Offers tools for innovative experiments and activities in science to help teachers engage students. Every Experifun product includes user manuals, training videos, and opportunity to participate in lesson-planning workshops.
<a href="#">Hands on Tech</a>	South Africa	Encourages learning through play by providing preschools and primary schools with Lego teaching kits based on LEGO innovation. Resources are embedded in a one-year teacher support program, including training and follow-up visits.
<a href="#">Karadi Path</a>	India	Offers low-cost English language learning solutions for students in rural, semi-urban, and urban areas. Teaching kits contain audio and video books, which use music and background scores to create the natural stimuli to teach English. Products are designed in-house using a methodology based on how children pick up their mother tongue.
<a href="#">Lamplaimat Pattana School</a>	Thailand	Private school in rural Thailand uses alternative pedagogical model and functions as model school and teacher training site. Multiday courses and in-depth workshops (during summer vacations) provide public school teachers and administrators with training to revise their classroom practices and raise their expectations of public education. School also operates a publishing house that publishes alternative curriculum material and educational literature.
<a href="#">Limited Resource Teacher Training</a>	Cambodia, Guyana, India, Nepal, Tanzania, Uganda	Provides month-long training programs delivered by qualified volunteer teachers from the United Kingdom and the United States. Training includes on-site training and online courses.

<a href="#">mAcademy</a>	Nigeria	Provides educational contents and more than 300 courses via mobile phones and data-enabled devices. Courses are available for seven days. After completion, users can download training certificates.
<a href="#">Muktangan Schools</a>	India	Implements alternative teaching methodology in network of community schools. Their Teacher Training Center and Education Resource Center promotes its methodology by developing teaching and learning materials, conducting long-term teacher trainings, and leading workshops. Teacher education program develops skills of local people from marginalized communities, predominantly women.
<a href="#">STIR Education</a>	India, Uganda	Creates networks of promising teachers from low-income schools to exchange and develop innovative practices that can improve learning outcomes and help teachers become innovation leaders within their schools.

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*This series on Inclusive Innovations explores business models that improve the lives of those living in extreme poverty. Editors are Elaine Tinsley and Natalia Agapitova. Researched and developed by Endeavor, with additional contributions by Niharika Hanglem.*

## PROFILE: STIR Education

*Building a bottom-up movement of teacher “change-makers” to improve the quality of education at resource-scarce schools*

### Challenge

On any given day, 27 percent of teachers in Uganda and 25 percent of teachers in India are not at school (Transparency International 2013). When they are in school, they spend only about half of their time teaching. One reason absenteeism is high is that teachers are not respected and therefore often lack motivation. Reducing absenteeism is critical, because teachers are a major determinant of both success in school and students’ subsequent earnings.



### Innovation

STIR (Schools and Teacher Innovating for Results) Education ([www.stireducation.org](http://www.stireducation.org)) seeks to change the image, self-perception, and motivation of teachers by turning them into active shapers of the education system. It creates networks of promising teachers from low-income schools, who exchange innovative practices that can improve students’ learning outcomes.

STIR networks act as “teacher self-help groups” in which teachers meet monthly to discuss teaching problems and develop solutions. STIR promotes small innovations that can be applied at low or no cost, making them applicable and affordable in low-income school settings. Areas of innovation include student learning assessment, parental and community engagement, classroom practice, and English and math. These micro-innovations are available as books and downloads on the STIR website. STIR spends an average of USD 200 for each teacher reached. Each STIR network includes about 40–50 teachers from 15–20 schools.

### Impact

Since its launch in 2012, STIR has trained more than 12,000 teachers across 3,890 schools and reached more than 481,000 children in Uganda and India. An internal assessment of the program in Delhi indicated that 100 percent of the selected teachers (from 18 schools) reported increased motivation and self-efficacy and 80 percent took on new leadership roles within their schools. All participating teachers said the increased opportunities for interschool collaboration had increased their repertoire of effective teaching and school management practices.

### Scaling Up

STIR acts as a connector and amplifier, tapping into and linking existing resources, an approach that has allowed STIR to leverage a base of more than 50 partners and quickly reach large scale. STIR’s model is based on a cascade mechanism, in which it trains other organizations to implement the STIR model and establish teacher networks. Local ownership and implementation increase acceptance in the community and ensure the networks’ usefulness for teachers. Use of a cascade mechanism is also cost-efficient. In India, STIR trains public teacher training coordinators, who then act as multipliers of the model and the micro-innovations.

STIR lacks a revenue model that would allow it to generate enough income to cover operating costs. This lack of revenue makes it difficult to reach STIR’s objective of reaching one million teachers by 2022. To address this challenge, STIR is currently exploring ways to generate revenues through franchise fees, consulting service fees, or government contributions.

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## PROFILE: BridgeIT

*Enhancing teaching quality and resources by providing teachers with ready-to-use lessons via mobile phones*



### Challenge

Information and communication technology (ICT) can improve learning—but its value depends on teachers' knowledge and ability to use it as an effective educational tool (UNESCO 2015). In many countries, teachers lack the competencies to harness ICT. In Chile and Colombia, only 1–2 percent of secondary teachers had basic ICT skills in 2012; in the Philippines, only 5 percent were trained to use ICT for teaching (UNESCO 2012). The challenge is how to use ICT effectively to improve learning outcomes.



### Innovation

BridgeIT, a public-private partnership founded in 2003, makes use of the wide availability of mobile phones to offer digital teaching content and professional development resources to teachers in hard-to-reach schools. It provides schools with a mobile phone equipped with the Microsoft Education Delivery system, a cloud-based platform that delivers access to educational content (short video and audio files). Using 3G connectivity, schools and teachers can download the contents and project the videos on a TV screen. BridgeIT's model features innovation at four levels:

- 1) **Combining global and local actors in each country.** BridgeIT sources technology (Microsoft) and educational content (Pearson Foundation), which it then localizes through local partners.
- 2) **Involving teachers in content creation.**
- 3) **Developing holistic capacity.** BridgeIT trains teachers on how to integrate their material.
- 4) **Providing ready-to-use material.** BridgeIT designs a comprehensive lesson plan around each video.

### Impact

BridgeIT has been implemented in 11 countries, where it has trained more than 15,000 teachers in more than 2,200 schools, reaching an estimated 700,000 students. Assessment by the Pearson Foundation (2014) suggests that it has improved teaching practice and learning outcomes. In Bangladesh, teacher performance on instructional practice criteria (as defined by the International Reading Association's Diagnostic Teaching Model) improved by 50 percent. In Chile students at BridgeIT schools scored 12 percent higher in science and 10 percent better in English than their counterparts at non-BridgeIT schools.

### Scaling Up

BridgeIT offers its service for free by relying on funding from its partners, including donors and governments. Four factors drive BridgeIT's growth: flexibility and localization of materials; emphasis on saving teachers time; government involvement in implementation; and effective use of ICT in a holistic way. BridgeIT was founded as a public-private partnership between Nokia and the Pearson Foundation. Following the 2014 merger between Nokia and Microsoft, support to BridgeIT declined. The same year, the Pearson Foundation closed, cutting off the supply of new educational content. To address the financial sustainability problem, in each country of operation, BridgeIT is working with local partners to develop long-term funding.

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