

# Connected Learning: A Vision of Transformation for Education

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## Point of View: Connected Learning

Cisco's long-term concept of Connected Learning envisions schools and colleges that address every student's individual learning style with highly engaging, online curricula to involve, challenge, and inspire them; centers of education where the learning process is invigorated by personalized feedback, proficiency reporting, and other innovative student performance data; PDAs or laptops for all students; and the ability to provide teachers and staff with the information they need about students, scheduling, and administrative matters, around the clock, from anywhere. In short, an education system that prepares a nation's citizens for success in the global, Internet-based economy.

It is a vision that can seem a long way off for a nation with few schools, a shortage of teachers, and a lack of basic resources, such as water, food, and medical supplies. But Cisco believes that from any starting point, connected systems enable nations to take giant steps forward through the creation of better education systems.

*In Emerging Markets, Cisco IBSG works with leaders of key national and regional government agencies, businesses, communities, multilateral institutions, and NGOs to turn their technology investments into strategic national assets. Serving as trusted advisers in varied assignments spanning broadband connectivity, digital inclusion, smart communities, and business productivity, IBSG aligns ICT to support socioeconomic development in these countries. Connected Learning is IBSG's approach to harnessing the power of ICT to serve the country's national education and transformation agenda.*

## Executive Summary

It is not only the people of developing countries that are confronting a critical challenge in the world of education. Everywhere, education systems are battling cultural, political, and structural barriers that are preventing them from evolving fast enough to keep pace with the demands of the economies they serve.

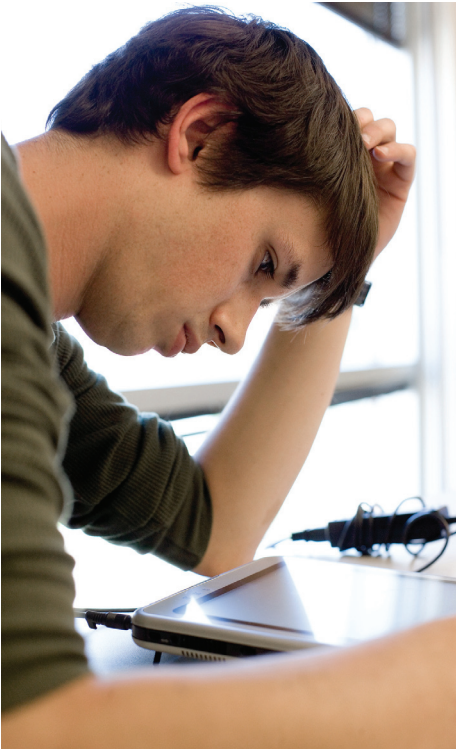
Global statistics point to a direct link between the performance of a country's education system and its ability to compete in the new world economy. Worldwide shortages of skills, and the growth of unemployment, even in developed economies, indicate that the education sector is still in the early stages of reform. Technology is a critical factor in delivering the change required, both in terms of facilitating learning and as a subject in its own right.

Cisco® Connected Learning encompasses several key concepts for the establishment of next-generation education systems such as learner-centric education, educator empowerment, and collaboration and engagement. For emerging nations, however, Connected Learning must begin with establishing the fundamentals to ensure the rudiments of education are delivered to every child. Only then can this new kind of education sector deliver the skilled and motivated working populace required to build a thriving and sustainable economic future.

This document describes, in part, the end game—the vision of what can be. More important, it explains why a Connected Learning vision must combine an honest assessment of a nation's priorities for ensuring “education for all” and development of the country's future workforce. The reality for many nations is that the evolution of a 21st-century education system will require tough decisions about priorities. Education is a culturally sensitive area and, while these choices will not be easy to make, it is crucial to show that educational services can be improved by connecting them together and making them fit for the

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world today. We make no reference to curriculum content here—it is a matter for each country to decide—but we do assert that new skills must be developed for today’s citizens: skills in digital literacy, collaboration, and lifelong learning abilities, all of which can be overlaid onto local needs.



## Introduction

For nations emerging into the competitive global economy, the ability to connect people and enable communication and collaboration is a critical driver of successful socioeconomic development. Education systems in these countries must increase their rate of change and embrace communications technologies as they prepare their citizens for success in the 21st century.

More than ever before, a country’s education system has a profound ability to impact the rate of socioeconomic change. Globalization, fueled by information and communications technology (ICT), is driving rapid and fundamental change in the education sector. All aspects of a country’s education system, from preschool through university, are being challenged to be more responsive to local and global needs. They need to accelerate a nation’s ability to become a knowledge society and compete effectively in the new world economy.

Above all, the Internet-driven global economy requires a population equipped with a new set of skills. Acquiring the ability to collaborate and communicate now is as important as learning the factual knowledge that once was one of the primary purposes of an education system.

Today, technology offers the ability to deliver highly personalized curricula to groups of students, or even individual learners. It also can provide far greater resources and capabilities to teachers and lecturers, as well as driving down the cost of delivering education for governments and learning institutions. Through technology, emerging nations have a golden opportunity to build education systems that are highly adapted to the 21st century global economy, providing strong and sustainable foundations for national competitiveness and prosperity. It is a concept defined by Cisco as Connected Learning.

## Issues and Challenges

Where education systems are not changing, and where there is a lack of investment in communications systems, GDP growth is slow, trapping a country in a cyclical inability to invest in education.

Universal primary education for all is one of the key Millennium Development Goals.<sup>1</sup> It is not being met in sub-Saharan Africa and many other parts of the world. Where children attend school at an early age, they often receive only a partial education. In Pakistan, a girl's primary schooling lasts for an average of no more than three years, while in Brazil less than 6 percent of the country's children complete schooling at the correct age.

It is estimated that sub-Saharan Africa requires up to 5 million new teachers to reach the goal of primary education for all. In Europe, the average age of teachers in some countries is above 50. Almost everywhere, there is an acute shortage of mathematics and science teachers. In many countries, the national curricula are only just beginning to incorporate 21st century skills.

In addition, the new world socioeconomic environment is questioning traditional measures of quality in education. Basic technical ability to complete a task, such as solving an equation, is no longer enough. Learners are being shown how to apply their skills in practical scenarios, while "learning to learn"—the ability to find knowledge—is becoming more important than the simple acquisition and recollection of facts.

In the workplace, workers are spending less time on individual tasks and now are expected to collaborate with co-workers across the world, at any time. Yet many classrooms still look the same as they did a hundred years ago, with generic, fact-based lessons offering little in the way of personalized, relevant experience for the learner.

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1. The Millennium Development Goals are eight aggressive goals that make up the Millennium Declaration that was signed at the 2000 UN Millennium Summit to end global extreme poverty by the year 2015. The eight goals are: 1: End Hunger and Extreme Poverty, 2: Achieve Universal Primary Education, 3: Promote Gender Equality and Empower Women, 4: Reduce Child Mortality, 5: Improve Maternal Health, 6: Combat HIV/AIDS, Malaria, and Other Disease, 7: Ensure Environmental Sustainability, 8: Develop a Global Partnership for Development

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## A Point of View: Delivering Connected Learning

With change driving the educational agenda worldwide, Emerging Markets have a unique opportunity. While their more developed competitors battle with outdated educational infrastructures and cultures, developing nations can introduce efficient, reliable, modern infrastructures that enable an educational revolution on the scale required to underpin sustainable economic success. New skills, such as collaborative and independent learning, are essential to 21st century employers, as are connected systems that can deliver learning opportunities that develop these skills within the curriculum.

Ultimately, a new generation of teachers can be developed, armed with an infrastructure that enables low-cost, high-speed collaboration across campuses, across the country, and around the world. Learners can be equipped with desktop PCs, laptops, or PDAs, with remote access to the knowledge infrastructures of their schools or universities. Even mature students can be reskilled to compete in the global economy—many of them training as teachers, of course—with technology enabling programs of lifelong learning that can be delivered cost-efficiently wherever learners need access to them. These outcomes are highly desirable goals even for more developed nations. For nations in transition, there will be more pressing priorities. But steps taken now by developing countries can lay the foundation for infrastructure that will bring this vision of a Connected Learning-driven education to reality.

Cisco has extensive experience in working with the education sector to develop successful models for the new global economy. In working with fellow professionals in emerging markets, Cisco's education specialists have gained valuable lessons not only regarding the technological challenges, but also the cultural and political issues that must be accommodated when instituting change on this scale. These provide valuable templates for other countries. Above all, the profound social and economic importance of education serves as the driving force for adoption and implementation of the proven processes now available. From the basics of broadband connectivity, to the optimization of infrastructure to deliver network-based applications across the country, any vision for a competitive education system must encompass a commitment to the deployment of a dependable and scalable ICT infrastructure.

In developing countries, the Cisco team has evolved an approach in collaboration with government, education policymakers, and their communities that places importance on three fundamental aspects: **access, quality, and reform**. In many cases, access and quality are the predominant focus, with reform being a third stage further down the road.



### Access

Providing **access** to education means focusing on teachers, resources, books, tools, and materials, as well as improving equity for underprivileged groups. In some places, there may be as many as 100 to 150 children in each classroom and not enough teachers or supplies. In best-case scenarios, there still may be at least 50 children in a classroom at any given time. To compound these challenges, in some other areas, the existing education system is sensitive neither to the gender issue nor to geographical difficulties. A lack of female teachers, proper facilities for girls, tolerance of sexual harassment in schools, and concerns about safety, particularly in rural or ghetto communities, all contribute to poor basic access to education.

Improved connectivity can address many of the issues surrounding these priorities, especially when children need not walk 15 to 20 kilometers to reach their classrooms. The uses of simple ICT in education, such as telephone, audioconferencing, and virtual classrooms, will not only solve some of these cultural and infrastructure issues, but can link children to teachers and specific course materials or information resources beyond physical borders.

Obviously, different challenges abound related to telecommunications infrastructure, expertise, costs, culture, and language context. In a growing number of places, where creating access for the majority is limited by infrastructure or terrain, schools have been creatively transformed into community centers for both parents and children, providing an environment for sharing, collaboration, and life-long learning. Adults receive access to on-demand vocational training while their children get first-hand experience learning math and history through interactive online content designed several hundred kilometers away. These are small steps but they are giving hope and opening up a world of new possibilities for youths. To ensure all of these possibilities turn into real-life opportunities, the quality of education must be addressed.



## Quality

Improving the quality of education today, however, is less about hiring the most knowledgeable and competent teachers, and more about being sensitive to user and community behaviors and needs. It is less about the physical classroom, textbooks, and computer desktops, and more about being connected to new thinking and ideas, with the capacity to enable new ways of unlearning and relearning. Addressing the **quality** of education requires an emphasis on content, culture, and language, and encouragement of attributes such as cognitive learning, reasoning, collaboration, and the ability to instill a positive attitude toward learning. The principle legacy of education today is to teach people to live and work in an ever-changing environment as part of a larger community that transcends borders, and where access to information is no longer limited.

Quality education also requires that teachers and parents are empowered to act as facilitators and managers of the education environment, including hands-on experience with essential IT. Teachers will need to unlearn traditional authoritative roles that required them to impart information to the masses and embrace a far more liberating role as mentor and knowledge-collaboration coach.

This is where the Cisco Connected Learning concept is most sensitive to the stages of development and readiness of the country in question. Not only is it dependent on a receptive and ambitious government with a clear vision for setting the education agenda on the right course, but it also advocates capacity building through effective public and private partnerships that work with the government's educational communities. With the essential framework and components in place, ICT promotes higher-quality education by offering solutions that can defray costs and facilitate effective information and experience sharing.

## Reform

Education reform is a long-term priority because it implicates the entire system: teacher training, management information systems, processes, and the tools used to evaluate the effectiveness of instructors and institutions. It may involve reform of the entire curriculum, from primary to higher learning. Needless to say, education reform is the big leap forward for many governments and can serve as a catalyst for achieving the full potential of a Connected Learning framework.

Integration of ICT should be the means of achieving required education goals and economics. By itself, technology cannot be expected to resolve education problems and should not be used to drive education goals. But with the right ecosystem in place, ICT can help to expand access, raise the quality of education, and, with sustainable policies and infrastructure, it can even galvanize the transformation of a developing education system.

Realizing the full potential of Cisco's Connected Learning framework is precisely where transformation can take effect, slowly but surely. For this to happen, several essential concepts must be considered: leadership and vision, public-private partnerships, educator empowerment, collaboration and engagement, creating a learner-centric environment, internal effectiveness, and sustainability.

### **Leadership and Vision**

Education transformation requires strong leadership at all levels, as well as a sound and meaningful vision. The nation's leadership must have a clear policy defining where education has to go, which changes are required, and the time, planning, and resources needed to sustain the change. The critical issue, ultimately, is the nation's economic need: is the education system geared appropriately to producing a workforce capable of supporting a nation's growth goals?

### **Public-Private Partnership**

Active participation of the private sector is essential if the education system is to be economically sustainable. Industry sponsorship helps make the education system more relevant and secures the commitment of the private sector to a vital element of the country's development. Partnership models, such as the Cisco Networking Academy Program,<sup>2</sup> provide a framework within which not-for-profit ventures can deliver vocational courses from industry leaders. These can be further developed by specialized teachers, giving suitable students the skills they need to succeed in the today's Knowledge Age workplace.

### **Empowering the Educator**

The best teachers see themselves as learners, working with their students, learning together, constructing their joint learning collaboratively and cooperatively. In the Connected Learning environment, teachers can become learning companions—facilitators of learning who are experts in learning how to learn. Technology has the power to deliver rich learning resources to them, simplifying management and administration, and allowing for a stronger focus on learning.

2. The Cisco Networking Academy Program is a public-private partnership between Cisco, governments, education institutions, NGOs, and industry created to teach students how to design, build, and maintain computer networks.



## Collaboration and Engagement

Providing opportunities for interactive exchange and collaboration can break down the walls of the classroom and allow students to engage with audiences far beyond their immediate social or educational community. It also serves to enhance digital literacy, adding competence in the use of video, audio, animation, graphics, and text to the fundamental skills of reading, writing, and arithmetic.

## Learner-Centric Environment

The learner should be the central focus of the 21st century education system. A truly learner-centric environment allows students to work in ways that suit their own learning styles, using a broad range of search, investigation, communication, and collaboration tools. This way of working promotes equity and unity across the nation. As the education system evolves toward a true Connected Learning environment, its focus can shift ever closer to individual needs as class sizes begin to shrink and a greater emphasis on personal learning needs is achieved.

## Internal Effectiveness

The quality and scope of internal processes required to manage the school estate, and to project and manage change, are critical themes for successful transformation. Innovative technologies offer enormous scope for increased efficiency and achieving more with lower costs. Improvements in process control, knowledge management, and management of information flows across the system can drive higher productivity and reductions in overhead.

## Sustainability

The process of transformation needs to be evaluated and measured continually, although some of the more fundamental changes will be measurable only over the long term, possibly over many years. Regular review of the process helps drive continuous improvement of the education system, while clarity of purpose from the start simplifies the measurement process, thereby helping promote genuine sustainability into the future.

The goal for an effective education transformation program is to create a truly learner-centric education system. But to ensure success, the following prerequisites must be met:

- Everyone within the system must be in accord with the vision
- Forward-thinking champions must be identified to help build community support
- A funding strategy must be articulated

With the proper support in place, education institutions can move beyond basic technology integration and turn their technical infrastructures into valuable resources that support administrative efficiency and academic excellence.

## Conclusion

Education is one of the fundamental duties of government, and a critical source of economic strength. An educated nation has a skilled and motivated workforce that achieves high productivity, one that supports innovation and commercial agility. Cisco's Connected Learning provides a proven path to an advanced, ICT-driven education system that empowers teachers and learners with capabilities that are highly adapted to success in the global economy. With an effective education system in place, countries can move from strength to strength, generating the economic success that feeds even greater advances and builds strong and enduring nations.

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### More Information

The Cisco Internet Business Solutions Group (IBSG), the global strategic consulting arm of Cisco, helps Global Fortune 500 companies and public organizations transform the way they do business—first by designing innovative business processes, and then by integrating advanced technologies into visionary roadmaps that improve customer experience and revenue growth.

For further information about IBSG, visit <http://www.cisco.com/go/ibsg>

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