



## CHAPTER 6

# **E-LEARNING GOES GLOBAL: NETWORKING ACADEMY TRANSFORMS LIVES**

### ***Key Take-Away***

The creation, rapid growth, and global presence of a massive networking talent pool trained via the Cisco Networking Academy Program would not have been possible without a solid e-learning strategy.

Never before have learning and education been as accessible as they are now over the Internet. Today, education can cross boundaries and reach the far-flung corners of the planet. It is now possible, via the Internet, to share technology, best practices, and information, making time and space barriers essentially transparent. If the Internet and education are indeed the two greatest equalizers, the Cisco Networking Academy Program has leveled the playing field for thousands of individuals worldwide with its Internet learning model.

## **Case Summary**

The Cisco Networking Academy Program offers an example of social investment, Internet learning, and educational problem solving in one case study. The program partners with more than 10,000 educational institutions located in more than 140 countries worldwide to deliver technology instruction to upward of 400,000 students. It offers a classic model of leveraging the components of an integrated learning approach—e-communication, e-training, and e-assessment—to change lives, empower institutions, and strengthen the foundation of networking talent globally.

## **Background**

George Ward, a Cisco Senior Engineer, developed training for teachers and staff for maintenance of school networks. He traveled around the country conducting his training sessions and discovered that although schools were being wired and connected to the Internet, they lacked financial and human resources to

manage and maintain networks. He felt that it was difficult to expect instructors teaching a course to rely on networks if they did not have a way to support them.

George started training the students at these institutions in school-network maintenance. The success of student seminars led to requests from participating schools across the United States for Cisco to develop a curriculum that could be integrated into an instructor-led class as an elective course taught in a semester format. Cisco management realized that a curriculum could best be delivered across multiple sites using Internet learning.

The formalized curriculum and support activities evolved into the Cisco Networking Academy Program. The program was launched in October 1997, with 64 academies in 7 U.S. states. This program was created to support schools and academic institutions that did not have IT or networking support centers and to teach students how to design, build, and maintain computer networks at their schools. Through Internet learning, the project could be scaled, if the demand warranted, without the overhead of travel and time commitments.

In just seven years, the program (a partnership between corporate, government, and individuals) demonstrated how the Internet can transform education by leveraging an Internet learning model that works. Through a combination of e-communication, e-training, and e-assessment tools, the Academy delivers its curriculum to countries around the world. The program also supports nearly 20,000 instructors through an e-learning instructor-readiness program. Through the Cisco Networking Academy Program, more than 6000 educational institutions around the world have implemented e-learning.

With more than 100,000 graduates already in the field with an estimated 50 percent employed in the industry, the Networking Academy has created a valuable talent pool for employers to tap into for recruitment. The remaining 50 percent choose to pursue further education or other careers. Wherever the networking industry experiences a labor shortage around the globe, the program delivers a steady flow of qualified, certified candidates.

## **How the Program Works**

The Networking Academy Program offers a comprehensive blended e-learning solution that provides students technology instruction in traditional classroom settings worldwide. High schools, community colleges, and universities serve as academies to the program delivering technical content to its students. A global e-learning infrastructure delivers all the learning components to more than 10,000 academies worldwide. The learning components include web-based content, online assessments, student performance tracking, hands-on-labs, and instructor training and support. The learning tools help prepare students for Cisco and other IT certifications.

## **Industry-Responsive Curriculum**

To graduate from the program, a student needs to pass the assessments offered during the four-semester program. Pursuing a Cisco or other IT certification is optional, not a mandatory requirement of the program. Initially created to prepare students for the Cisco Certified Network Associate (CCNA) and Cisco Certified Network Professional (CCNP) degrees, the Academy curriculum has expanded with other IT sponsored courses. Some of the available courses are Fundamentals of Web Design, sponsored by Adobe Systems; IT Essentials: PC Hardware and Software, and IT Essentials: Network Operating Systems, sponsored by Hewlett-Packard; Fundamentals of Voice and Data Cabling, sponsored by Panduit; and Fundamentals of UNIX and Fundamentals of Java, sponsored by Sun Microsystems.

## **Train-the-Trainer Model**

The program relies on a train-the-trainer model that is supported by the e-learning infrastructure. Cisco Systems trains 50 Cisco Academy Training Centers (CATCs) around the world that serve as lead training organizations. The CATCs help train regional instructors on the Networking Academy curriculum delivery and approach. Regional academies assume a leadership role by not only delivering content to their own students, but by also supporting a host of smaller

neighboring local academies. The regional academies train the local academy instructors. These local academies offer classes on site to students. Because all the materials are readily available on-line, the train-the-trainer model complements the e-learning infrastructure in ensuring that the instructors are well supported.

## **Blended Learning with E-Assessment**

An important component of the program is creating assessment tasks that are tightly aligned with the curriculum. The program relies on instructors in the field to generate and validate assessment items. Pre-test, practice, and post-test tools are made available to students in the program through the e-learning infrastructure. In addition to formal testing with scoring and grade books, students can also receive feedback on their skill and knowledge acquisition through chapter quizzes embedded in the curriculum as well as hands-on skill-focused exams given by instructors.

Assessment provides students with performance feedback. A personalized feedback report provides a single source of content links that helps the student quickly navigate through the curriculum for test review or further study. Proficiency reports enable students to translate the numeric value of their assessment into some level of proficiency, such as Novice, Partially Proficient, Proficient, or Advanced. Because the reports include direct links to an online version of the curriculum, the e-learning infrastructure automatically determines, and links to, the most efficient source on the network to provide students personalized and relevant material for review. The program uses a database and statistical models to monitor and maintain tests that instructors use in the classroom. Through this effort, the program offers leadership in best practices regarding test design and maintenance to help both students and teachers in the classroom.

Much of the success of the Networking Academy Program has been attributed to its hands-on nature. Developers working on the Cisco Networking Academy Program have integrated simulations into the curriculum that provide students with an exciting, virtual, hands-on experience. Students are required to work through more than 200 labs. Most of these labs include extensive technical configuration. Simulations provide students an opportunity for additional virtual practice to increase the effectiveness of hands-on lab time.

## Underserved Segment

The Cisco Networking Academy Program also works to help population segments that might have been left behind in the digital economy because of a lack of access to technology. The program offers programs in underserved areas to benefit low-income individuals, certain ethnic groups, people in disadvantaged communities, and those with disabilities. Academies located in underserved communities and countries help local people learn the IT skills they need to acquire to sustain technology growth in the region.

## Impact of the Program

Regardless of race, gender, culture, or socioeconomic status, individuals worldwide are engaged in building a better future through the Cisco Networking Academy Program, which helps communities transcend the digital divide of information “haves” and “have-nots.” As part of their project-based learning activities, students have a chance to give back to their communities by designing, building, and maintaining networks for local schools and other civic organizations. At the same time, it provides educational institutions with in-house resources to manage their technology. It provides invaluable preparation for college coursework in science, math, and engineering (as well as for employment in the IT field).

Richard Murnane, Professor of Education and Society at Harvard, submitted a study, “Can the Internet Help Solve America’s Education Problems: Lessons from the Cisco Networking Academies” (with N. Sharkey and F. Levy), to the National Research Council (NRC), an arm of the National Academy of Sciences. This study looked at how the program works, why it appeals to high schools and community colleges, and how the academy team dealt with problems that they confronted in schools and, in particular, how it made use of information technology in crafting solutions. The authors believe that the Cisco Networking Academy Program and its development provides valuable insights into how to address the challenges of the American education system and the role of the Internet in providing solutions to those challenges. The authors believe that Internet learning can

- Address skill needs in the education sector
- Find quality teachers and provide ongoing professional development
- Create equal-education opportunities for all

In a recent article in the *Harvard Business Review* (December 2002), “The Competitive Advantage of Corporate Philanthropy,” Michael Porter and Mark Kramer wrote that the program “exemplifies the powerful links that exist between a company’s philanthropic strategy, its competitive context and social benefits.” It mentions that Cisco has created a program that “no other educational institution, government agency, foundation, or corporate donor could have designed as well or expanded as rapidly.” Discussing the benefits of the program to Cisco, the article mentions that besides strengthening its market share and providing employers in the technology industry with hundreds of qualified employees, the program has helped Cisco increase “the sophistication of its customers.”

## Benefits to Cisco

So where is the value for Cisco in this effort? A list of values follows:

- Value of philanthropy

The program offers a social investment of global magnitude that offers an opportunity for those who are willing to help themselves. According to the Council of Foundations (in 2002), nearly four out of five shareholders will reinvest when a company has a high Corporate Philanthropic Index (CPI). Having a high CPI contributes toward higher customer loyalty and even higher employee loyalty.

- Government relations

With its global recognition, the Cisco Networking Academy Program helps establish contact and extend relationships with top government leaders worldwide. The program positions Cisco as a leader in both Internet technologies and education.

- Ecosystem

The partnerships and the talent pool generated through the Networking Academy Program help strengthen the ecosystem around Cisco, and the Cisco strategic partners and resellers value the commitment that Cisco has made to workforce development through the program.

- Model for Internet learning

The Cisco Networking Academy is a living example of how Internet learning continues to enable expansion of the program. Through its high-growth period, with 50 to 100 academies being set up almost every week, the Internet learning offered an expansion mechanism that would not have been sustainable through traditional learning delivery. Because of its impact on various schools and community colleges worldwide, administrators in educational institutions now consider Internet learning a viable educational delivery means for other curricula as well.

- Internet learning in the “traditional classroom”

The Networking Academy Program demonstrates a model of how e-learning can equip instructors with subject matter expertise, assessment tools, and learning management support even in the traditional classroom. Using its global e-learning infrastructure, Cisco Networking Academy delivers content to its instructors, ensuring consistency of content and assessment items. The model is unique and offers insight to organizations seeking to deliver educational or training content to geographically dispersed audiences in traditional classroom settings as well.

## Changing Lives One Life at a Time

After the genocide in Rwanda in 1994, the social fabric of the nation shifted dramatically, with women having to take lead economic roles to fend for their families. According to the Global Fund for Women, in the wake of the genocide, women now constitute approximately 70 percent of Rwanda’s population, and 50 percent of these women are widows. Rwanda Ministry of Gender has helped many women acquire skills, identify markets, and start small businesses. The ministry encourages workers to identify and acquire new skills to assist women to improve their economic well-being. Cisco Networking Academy played a role in one such effort to disseminate technical know-how in Rwanda.

Beth Murora, a program officer at the National Rwandan Ministry of Women’s Affairs, received a scholarship to attend the Networking Academy Program. The program was being offered in Addis Ababa, Ethiopia, nearly 1000 miles from her home in Kigali, Rwanda. Beth had been accepted into a Networking

Academy Program pilot project sponsored by Cisco Systems, the United Nations Economic Commission for Africa (UNECA), and the World Bank's Information for Development Program (InfoDev). The Networking Academy Program in Ethiopia was part of the Least Developed Countries (LDC) initiative, which has brought the Networking Academy Program to 31 of the world's 49 LDCs. The program was delivered through a blended-learning solution, where the instructors receive content and assessment tools through an e-learning component but deliver classes in person to students attending the program.

To participate in the Networking Academy Program, Beth had to leave her family for six months, during which time she became a mother of twin boys. "It was one of the most difficult decisions of my life," recalls Beth. "But, too often women lose opportunities to advance themselves because of family obligations. I could not pass up this opportunity, which would help me to help other women in Rwanda. I had a vision and the willingness to make it a reality."

"I wanted to be part of this program," says Beth. "It bridged both gender and digital divides—issues that are of concern to me. And it had the potential to empower women with information technology skills that lead to economic opportunities. Such empowerment is critical for Rwandan women." With the assurances that nutritional, medical, and transportation needs would be met and the guarded support of her husband and family, Beth embarked on her journey to Ethiopia accompanied by her mother-in-law. "I knew my babies would be in good hands while I attended classes," recalls Beth.

Participation in the Academy Program was fully supported by the National Rwandan Ministry of Women's Affairs. The minister of the Rwandan Ministry of Women's Affairs worked with the Rwandan embassy in Addis Ababa to ensure that Beth's medical and housing needs would be taken care of while she attended the Academy Program.

With a bachelor degree in public administration from the National University of Rwanda, Beth had but a few computer-related courses under her belt. She knew that the Networking Academy Program, which follows the 280-hour, 6-month Cisco Certified Network Associate (CCNA) curriculum, would pose a challenge. In addition, through the UNECA African Center for Women, Academy Program participants were trained in gender and development, entrepreneurship, and management skills.

“Some days it was very hard for me,” says Beth. “But the Networking Academy instructors were very helpful. They kept me going and encouraged me to succeed. I set out of my country with a goal to achieve. Despite the pains I felt some mornings, by sheer force of will I got out of bed and to my classes because of my goal. By accomplishing what I set out to do, I knew I could look forward to much happiness when I returned to my home—mission accomplished, and with my new babies.”

Achieve her missions she did. In October 2001, Beth gave birth to two healthy boys, and in February 2002, Beth completed her CCNA coursework. Upon her joyous return to Rwanda, Beth possessed a networking and IT skill set enabling her to pursue the development and implementation of technology programs championed by the Rwandan Ministry of Gender.

“The genocide left a country in need of rebuilding, both physically and emotionally,” says Beth. “The majority of Rwandan women are single mothers and very, very poor. These women must be able to earn a living and support their children. And I intend to use the knowledge gained through the Networking Academy to help raise women out of poverty with the technical training to run organizations and develop businesses, and a communications network that enables information sharing among women forums.”

## Conclusion

With its global success in transforming lives, learning, and social paradigms, the Cisco Networking Academy Program is hailed as a remarkably successful example of a productivity pyramid metaphor. The program’s rapid acceleration, global presence, and creation of a massive networking talent pool would not have been possible without Internet learning. The case study presents a strong argument that global delivery of content can best be achieved through astute deployment of Internet learning in combination with existing classroom instruction. Solid strategy and process-driven results can be achieved even by making Internet learning a complementary component of the existing learning structure.