Building and sustaining national ICT/education agencies:

Lessons from Costa Rica
(Omar Dengo Foundation)

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Acknowledgements

The World Bank Education, Technology & Innovation: SABER-ICT Technical Paper Series explores a variety of topics and issues related to the use of information and communication technologies (ICTs) in the education sector.

The Systems Approach for Better Education Results (SABER) initiative seeks to improve the global knowledge base related to education systems analyses, assessments, diagnoses, and opportunities for dialogue. SABER-ICT aims to improve the availability of policy-related data, information, and knowledge on what matters most in using ICTs to improve the quality of education.

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Executive summary

Since its creation over 25 years ago, the Omar Dengo Foundation (ODF) has played a critical role in developments related to use of educational technologies in schools in Costa Rica. The integration of technology into Costa Rican public schools took off in 1987 with the creation by the Ministry of Public Education of the National Program of Educational Informatics, which became the flagship program of the newly created Omar Dengo Foundation. This paper explores the development of ODF as a key partner institution to the Costa Rican Ministry of Public Education and how changes in key legislation went hand-in-hand with ODF’s growth and impact. It explores key lessons learned for policymakers looking for insights on how an external ICT/education agency can work productively in collaboration with the Ministry of Public Education and other government agencies to serve as main implementation agency for a large scale, national ICT in education initiative.
1. Introducing computers in schools in Costa Rica: The birth of ODF and PRONIE

As the result of a presidential campaign promise to place “one computer in every school”, in 1987 the Omar Dengo Foundation (ODF) was created to provide operational support to Costa Rica’s new National Program of Educational Informatics (commonly referred to as PRONIE; its official name is the Programa Nacional de Informática Educativa). PRONIE had a number of key objectives, including: to breach the technology gap; to promote creativity and innovation; to democratize access to technology and quality education; and to foster the development of a technology industry. The introduction of computers into schools was meant to help enable all of these objectives, while at the same time contributing to the quality of the educational system by providing learning environments that fostered the development of problem solving abilities, technological fluency, the promotion of teamwork and the development of creativity. The project was revolutionary in many aspects, including the fact that, from the very start and by design, it benefited children in rural communities who would not have normally been reached by other technology projects, and because it introduced certain new concepts and practices – including, notably, pedagogical robotics in the classroom – for the first time. From the start, PRONIE gave a strong emphasis to teacher training, introducing a well-developed in-service training program, which included a network of ‘teacher advisors’ who visited each school to provide support for teachers participating in the program. This grew to encompass a wide variety of other teacher support mechanisms, including special academic programs for teachers, annual training sessions (both virtual and face-to-face), and, beginning in 1988, a large biannual national teachers conference.

The Omar Dengo Foundation was legally registered on June 19, 1987, as a private, not-for-profit organization governed by the Law of Foundations of the Republic of Costa Rica. Its mandate specified its main objectives: “the development and increase of the quality of education, by means of the computer science and the application of new technologies to educational processes carried out in the Costa Rican educational system, which involves the application of modern educational concepts of education and their translation to practical use, aided by the use of computers as support tools.” The ODF mission was to stimulate the educational, social and economic development of people through research learning, entrepreneurship skills and the innovative and productive use of digital technologies. The idea behind its establishment was that an independent non-governmental organization closely linked with the Ministry of Public Education (MPE) would have more administrative and financial flexibility to introduce the types of activities envisioned at that time under PRONIE, than would the Ministry itself. In addition, there was a firm belief that having the main responsibilities for the implementation of PRONIE lie in a structure outside of the Ministry would help insulate the project from the political winds that often impact actions by government on a day-to-day level.

“The government of Costa Rica created a foundation to supervise the project – an unusual case in which the government itself made the decision of protecting a project from its own bureaucracy”

-- Seymour Papert, educational technology pioneer

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1 Its official name is Fundación Omar Dengo (FOD).
2 National Program of Informatics, commonly referred to as PRONIE.
3 ODF organizational profile, 2010 (internal document)
4 Ministerio de Educación Pública, commonly referred to as MEP (for its acronym in Spanish), referred to as MPE for the purposes of this paper.
Establishing a new and separate foundation, it was believed, could help issues to be resolved and related decisions made more swiftly, and allow external funds and contributions from non-governmental sources to be received more promptly. With a strong and diverse founding group of intellectuals, university professors, economists and private business representatives, the idea for the establishment of the Omar Dengo Foundation was quickly accepted. At that time, most initiatives to introduce with technology in schools were targeted at secondary schools. In a break with traditional practice, ODF decided to begin at the primary school level. (Much later, ODF was asked by the Ministry of Public Education to take leadership of educational technology initiatives in secondary schools as well.) Besides the founding members and according to the laws that regulate Costa Rican not-for-profit organizations, a public official has to be part of the Foundation’s board (currently a representative from the Executive Branch sits on the Board), as well as a representative from the Municipality’s local government where the Foundation is based. Historically, other members of the Board have concurrently been active in government positions, representing different political parties.

The Omar Dengo Foundation was established with initial funding provided for the implementation of the National Program of Educational Informatics. That same year (1987), the Foundation’s contribution to the education system and to the national development was recognized with an Executive Decree, which declared that the Omar Dengo Foundation was a ‘public interest organization’, making it possible for public institutions to transfer public funds to the Omar Dengo Foundation and providing free taxation for goods and services. This Executive Decree was an important signal of official support for the Foundation’s activities and provided an impetus for public institutions to collaborate with the Omar Dengo Foundation, given the tax advantages and simplified financial transfer procedures that the decree made possible.
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Omar Dengo Foundation Structure

Founding Assembly
Administrative Board
Board of Directors
Auditors

Finance and administration
Human resources
ICT
PRONIE MPE-ODF

Research and Evaluation for Educational Improvement
Impact and results evaluation
Knowledge management

Innov@ Institute

Educational Developments Innov@
Logic and Scientific Learning and Robotics
Digital citizenship
E-learning and digital production
Teacher professional development
Marketing and management

Source: Omar Dengo Foundation, 2011 (translated by Carla Jiménez Iglesias)
2. PRONIE & ODF: Implementation and context

The country of Costa Rica, and the institution of the Omar Dengo Foundation, are considered to be pioneers in the use of educational technologies in developing countries in the Western hemisphere. Another notable example is Chile’s Enlaces program, an initiative that began pilot operations five years after ODF was created and which quickly grew to become an often-cited and -studied model for how to introduce ICTs into a country’s education system in a systematic way using a phased approach. Although the implementation strategies for these two countries were different in many respects, they became important destinations for international researchers and policymakers interested in doing something similar in their own countries, and can be seen as paving the way for other ambitious initiatives, like Uruguay’s Plan Ceibal, that were born in the first years of the 21st century.

Three major contextual elements are identified by Omar Dengo Foundations’ first executive director, Clotilde Fonseca, as main reasons for the Foundations’ birth: the shift to an ‘information society’; the ‘crisis’ of the Costa Rican educational system; and the larger political and developmental context across Central America at that time. By the end of the 1980s and the beginning of 1990s, the mainly agricultural and production models predominant in Costa Rica began to give way to new models that would strengthen the development of skills, creativity and innovation in new ways. At the time of Omar Dengo Foundation’s creation, there was a professed need to prepare the country to transition to a ‘modern economy’ and the introduction of technology into the classroom was seen as a propeller to shift the Costa Rican society into an information society. The National Program of Educational Informatics was seen as a powerful instrument for innovation, creativity and change to bring the educational system of its perceived crisis at the time. Another determining factor in the creation of the project were highly favorable United States policies for international development in the context of the precarious peace in other Central American countries. Costa Rica was receiving substantial financial support from the United States (over $1m a day over a period of four years – a very large amount of money for an economy the size of Costa Rica’s at the time), and resulting investments to help support the education of Costa Rican youth education was hoped to be an example for the wider region. That said, there were doubts within both the international community and main sectors of Costa Rican society about the appropriateness of supporting a ‘technology project for children’ given many other pressing national developmental needs.

The United States Agency for International Development (USAID) provided the necessary funds for the launching of the program and provided an endowment to assure the sustainability of the program in its initial phases. USAID funding initially went mainly to purchase computer equipment. In the second year of the program, changes were made to have part of the budget cover operation costs as well, and this helped to strengthened ODF’s management capacities.

Now it seems to be the most usual thing in the world to place technology in learning centers. But then, it was practically a revolutionary project. When ODF intended to train teachers in the use of multimedia technologies, previous to changing the technological platform in 1997, and it required this kind of equipment in order to execute the training, we discovered that there were only 100 multimedia machines in the country, when ODF was importing 6,000 machines to be installed in public schools and high schools to be used by children and youth.

- Clotilde Fonseca, ODF Founding Member and longtime Executive Director

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6 Interview with Claudia Fonseca (1991)
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Main linkages between ODF and the Ministry of Public Education

Two key cooperation agreement frameworks were signed by ODF and the Ministry of Public Education. The first cooperation agreement in 1989 provided key guidance regulating the relationships of the two institutions with each other. With the consolidation, expansion and the rapid development of technology in education in Costa Rica in subsequent years, there was a need to review the new technological and logistics environment. As a result, a new, expanded cooperation agreement was signed in 2002 (later extended to 2010\(^8\)) detailing a more expansive set of activities, as well as administrative and financial support.

The Ministry of Public Education had important changes in its institutional structure regarding ICT, and the Omar Dengo Foundation had to adjust to these new institutional realities as a result. Originally, the coordination of ICT activities was hosted in the National Didactic Center; since 2008, most of the ICT-related activities have been concentrated in the new Technological Resources Division. This division has four departments: (1) Research, Development and Implementation; (2) Electronic Information and Documentation; (3) Technological Resources Management and Production; and (4) School Libraries and Learning and Resource Centers. Two other groups helped share the responsibility for coordinating ICT and education-related activities within the ministry: the Curricular Development Division and the Education Innovation Area.

According to the leadership at MPE, the Technological Resources Division ICT in education activities had a different scope than ODF’s activities. In addition to cooperating on PRONIE, both organizations worked on partnership initiatives such as PROMECE, which was focused on rural education; ATC21s, which focused on 21st Century skills; Labor@, which promoted entrepreneurship skills through the use of virtual management simulations; and CADE, a citizenship education program implemented in schools taking part in the National Program of Educational Informatics.

Institutional cooperation for PRONIE

There have been close historical working ties within the Ministry and the Foundation working with PRONIE. The shared responsibility for the program between ODF and the MPE guaranteed its sustainability and careful growth in coverage. Since its beginning, the Ministry of Public Education paid for the salaries of the teachers and advisors participating in the project. Part of the Omar Dengo Foundation’s staff worked on specific projects like teacher training and professional development, robotics and research and evaluation. The number of people within both organizations assigned to work on activities covered under PRONIE grew greatly over the year. Staffing numbers inside the Foundation were very telling of the project’s impact in both institutions: in 1988 a total of 30 staff members were working at ODF (specifically in PRONIE), together with 12 counterparts in the Ministry. By 2011, this number had grown to 178 people at ODF and 107 people in the MPE. At that time, the annual contribution from the national education budget for PRONIE management, including appropriate office space for PRONIE to operate and connectivity costs for all participating educational institutions, was around US$21 million.

Each year, the Foundation presented its annual operations plan for PRONIE to the Ministry. This request was then included in the MPE general budget request, which eventually debated and approved by the National Controllers Office by the end of September. The resulting financial support from the national budget was key in PRONIE’s growth, and helped considerably to strengthen the Omar Dengo Foundation.

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The Innov@ Institute at the Omar Dengo Foundation served as a supportive service platform for PRONIE. At the Institute, students, teachers; educational authorities, private sector leaders and national and international experts participated in learning and knowledge exchange activities.

**PRONIE’s reach and impact**

By December 2011, over 1,145 educational institutions were benefitting from the Program (923 primary schools with a total of 343,590 students and 222 secondary schools with a total of 128,520 students), for a total PRONIE MPE-ODF coverage of 63.2%. 57 educational institutions were part of PRONIE. Compared with early numbers, the impressive growth of the Program in 1988 is clear.

**Omar Dengo Foundation’s partnerships**

In addition to its close linkage with the Ministry for Public Education, the Omar Dengo Foundation worked hard at maintaining solid partnerships with different stakeholders to extend the impact programs. The Foundation has had long standing relationships with international donors such as the Inter-American Development Bank (IADB), Organization of American States (OAS), The World Bank and United Nations Development Program (UNDP). Other agencies, like United States Agency for International Development (USAID), International Development Research Center IDRC CANADA, Swiss Agency for Development and Cooperation (SDC), International Development Research Centre (IDRC) were strong allies in the first years. Partnerships with private companies like IBM, Intel, Microsoft, Motorola, CISCO Systems and Sun Microsystems have made possible for most initiatives to exceed their initial objectives and expand their reach. Supporting the growth of its programs, the Omar Dengo Foundation collaborated with many prestigious academic and research institutions both at a national level and internationally. Agreements and alliances were established with Costa Rican institutions like the Universidad de Costa Rica, Universidad Nacional and Universidad Estatal a Distancia, as well as with U.S.-based institutions like MIT, Stevens Institute of Technology, Buck Institute for Education, Miami Dade Community College and Harvard University. The involvement of local communities was a key component of all ODF projects, and its involvement in PRONIE was no exception. Local partners groups were expected to cooperate with the necessary infrastructure for the Program to function in their academic centers. Communities typically went to great lengths to collect the necessary resources to maintain these centers over time, which helped foster a strong commitment to the best use and good care of the facilities and equipment.

**Laws and legislation**

The existence of a set of key laws and pieces of enabling legislation was important to help provide a mandate for ODF’s work, especially in support of PRONIE, and to sustain this work over time. Costa Rica has, in many areas (including the use of educational technologies), established institutional frameworks based on special regulations and policy arrangements that aim to ensure continuity and consistency of policies.

In 1987, the Executive Decree N°17731-J-H of 1987 declared the Omar Dengo Foundation as a public interest organization. This made it possible for public institutions to transfer public funds to the Omar Dengo Foundation and provided free taxation for goods and services. Notably, the Omar Dengo Foundation also benefited from its inclusion under the Suitability for Handling of Public Funds (Law N° 7755), which certified its appropriate use of public funds and the quality of the results and efficiency achieved through its administration.

Public resources transferred to the Omar Dengo Foundation as part of its role as administrator and implementer of PRONIE were subject to various auditing processes, including an internal audit from the Ministry of Public Education, a second audit by the General Controllers Office,

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Coverage statistical report, PRONIE MPE ODF. (2010).
and an additional audit process conducted by a private firm. Other audits took place to ensure that additional controls are in place as a result of ODF’s work funded by other partners and donors.

In 2001, Costa Rica’s Congress decreed the Declaration of Public Utility of the National Program of Educational Informatics (Law N°8207), which made it possible for public institutions to transfer public funds and collaborate with technical and logistical resources as part of the National Program of Educational Informatics. In 2002, with Executive Decree N°30303-MEP/ Superiors' Council of Education agreement No. 14-2002, the ODF was recognized with a decree as the entity in charge of the National Program of Educational Informatics, and responsible for executing the national policies in educational informatics for I, II and III Cycles of the Basic General Public Education System. This meant that the Omar Dengo Foundation had executed the Program of Educational Informatics for pre-school and cycles I and II at public elementary schools (Grades K-6) since 1988 and the Program of Educational Informatics for cycle III at public high schools (Grades 7-9) since 2002, in coordination with the Ministry of Public Education, and in conformity with what was established by the Superior Council of Education. The Superior Council’s agreement established the obligation of the Ministry of Public Education to provide ODF the required funding for PRONIE.

Other important policies and plans

Besides the legal decrees and laws that aided PRONIE and ODF in its growth and strengthening, Costa Rica has had a long history with the introduction of technology in schools and has had different attempts at translating these good intentions in specific policies and normative and institutional frameworks.

In 1994 the Superior Council for Education referred to the inclusion of ICT in education in the document “Educational Policy towards the 21st century” and highlighted the responsibility of its application and follow up by the Ministry of Public Education.

In 2010, the Superior Education Council approved the document Policy for the Educational Use of Digital Technologies, that functions as the national policy framework in the area of ICT and Education. This document highlighted that PRONIE and all initiatives incorporated into the system, including the educational use of mobile digital technologies, should be formulated and implemented in full consistency with the goals, criteria and results, agreed by the Ministry of Public Education and the Superior Education Council.

Since 1994, National Development Plans included goals related to ICT in Education as well as National plans for Telecommunications and those for the Ministry of Science and Technology. There were clear efforts to articulate the ICT and education policy environment. The government in office published a Social Digital Agreement (2011) in an attempt to provide leadership at a larger scale. In this document, the government laid out a plan for Intelligent Community Centers 2.0, with the objective of ‘breaching the digital gap’, the development of digital and work skills and offering broadband access to a larger percentage of the population. Different ODF initiatives like Explor@ and Poet@ were part of the related work strategy, demonstrating how intrinsic ODF’s work was, not only for plans and policies in the education sector, but at a larger national scale as well.

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10 Ministerio de Educación Pública. (1994). Política Educativa hacia el siglo XXI.
11 Política para el aprovechamiento educativo de las tecnologías digitales. (2010).
As part of the Social Digital Agreement, starting 2011 the Ministry began partnering with a new stakeholder in the technology and education field, the Quiroz & Tanzi Foundation, a not-for-profit organization established in 2011 for the “Conectándonos” program. This project’s objective was to give out 25,000 laptops to students and teachers and the necessary connectivity infrastructure to deploy a ‘1-to-1 computing’ model.

With the change of leadership in ODF, there was a renovated urge to strengthen research efforts and to communicate project achievements more efficiently to be able to provide policymakers with the necessary evidence to take informed decisions on ICT and education-related affairs. The Omar Dengo Foundation’s solid trajectory in the field of ICT and education provided them with a unique position and expertise to be able to measure changes and suggest future directions in the development and improvement of student learning. Going forward, the organization leadership is aware there is no ‘one size fits all’ solution for all schools and is exploring new learning models, in coordination with the Ministry of Public Education, to move Costa Rican technology and education sector forward in the upcoming years.

**Omar Dengo Foundation Timeline: Key events and milestones**

1987 Omar Dengo Foundation legally created (June 19).
1987 Clotilde Fonseca appointed first Executive Director.
1987 Creation of the National Program of Educational Informatics MPE-ODF.
1987 Executive Decree N°17731-J-H: ODF declared a public interest organization.
1989 Cooperation agreement between Ministry of Public Education and ODF.
1989 Suitability for the Handling of Public Funds granted to ODF.
1997 Agreement addendum between MPE and ODF (establishes PRONIE financing will be a conjoint responsibility between MPE and ODF). ODF starts receiving state resources on a regular basis to finance equipment purchase, logistics and administrative activities necessary to expand the coverage of educational computer labs.
2000 Motorola donates property valued at US$500,000 for new ODF facilities.
2001 Declaratory of Public Utility. By means of Law N°8207, the Legislative Assembly of Costa Rica decreed the Declaration of Public Utility of the National Program of Educational Informatics MPE-ODF. (December 20)
2002 (17 April) By means of Executive Decree N°30303-MEP, it was established that the National Program of Educational Informatics undertakes the actions and educational efforts carried out in this field in public schools, including pre-school and the three cycles of the Basic General Public Education System (Grades K-9) and that the Omar Dengo Foundation is responsible for the direction of this national program, in coordination with the Ministry of Public Education (MPE) and in conformity with what is established by the Superior Council of Education in its session 14-2002 (March 19, 2002).
2002 New cooperation agreement signed between MPE and ODF.
2007 ODF moves to new facilities.
2010 Leda Muñoz is appointed as new Executive Director.
2010 Renewal of cooperation agreement between MPE and ODF.
2010 Superior Council of Education approves “Policy for the educational use of digital technologies”- that functions as the national policy framework in ICT and Education.XXX
3. Conclusion and lessons learned

Aided by its close relationship with the Ministry of Public Education, the Omar Dengo Foundation has played a critical role in the development of the use of educational technologies in Costa Rica. While some key elements are perhaps unique to the Costa Rican context, there are some key lessons that could be of relevance to institutions in other countries with similar mandates. These include:

Continued collaboration and coordination between the external organization (in this case ODF) and the Ministry of Public Education is crucial, but not easy. The Omar Dengo Foundation has proven successful in the balancing act of making the MPE’s priorities their own, while at the same time pursuing new avenues of innovation together with international agencies and private sector partners. It has also been skillful in establishing high level linkages between new Ministers of Education and new Executive Directors at ODF leading the ICT and education work in institutions, carrying out a delicate balancing act between sometimes competing mandates and interests of the political and education spheres.

Maintaining financial autonomy is key for an ICT and Education agency. In addition to its work under PRONIE, which is funded via the national budget, the Omar Dengo Foundation has been able to maintain a certain degree of financial autonomy and invest in new initiatives and programs as a result of its use of international cooperation funds including the initial endowment fund establish with USAID funds. This financial autonomy has played an important role in supporting and enabling the Foundations’ long term financial stability and independence.

Development of a complementary and coordinated ICT and education activity offer is critical. ODF has managed to successfully collaborate with MPE in the formal school setting while at the same time innovating in ‘frontier’ areas like robotics, after school programs and adult education. ODF has become an ally of the Ministry, by providing the appropriate testing, research and evaluation of innovative initiatives that can be later adopted by the formal education system (providing a complementary offer in ICT and education).

Care should be taken when navigating political changes. The Omar Dengo Foundation’s activities have become a “national” project and have successfully navigated through political party changes in office and have kept strong support from different sectors of society. Omar Dengo Foundations’ autonomy has protected its programs from different political cycles that public sector programs are subject to. Although the strong linkages between the Ministry of Public Education and the ODF have experienced some periods of weakened support due to changing political parties sitting in office. Because its solid and successful project tracks record, it has proven to become less vulnerable to changes in political leadership.

Attention should be paid to the challenge of incorporating emerging actors and stakeholders. In the changing ICT and Education landscape there is a challenge to incorporate emerging actors and stakeholders given the strong historical linkages (and perception of such linkages) between the government and one particular organization. The relationship between the ODF and the Ministry is strong and should remain as solid as new organizations and private sector stakeholders regain more territory in the landscape of ICT and Education, un-coordinated or duplicated efforts threaten to weaken the equilibrium formed between ODF and MPE. According to the Superior Education Council PRONIE and all initiatives in the education system that promote the use of digital technologies must be formulated and implemented in full consistency with the goals, criteria and results established by the Ministry of Public Education and the Superior Education Council.

Changes in legislation that facilitate government support to an ICT and Education agency or program send a strong support message and could be key to their growth and sustainability. The changes in legislation and the special contextual elements that were present
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for the Omar Dengo Foundation creation and growth might not be replicable in other countries. Nevertheless the combination of all the factors prove to be an interesting set of inputs that have helped the Omar Dengo Foundation gain the space it currently holds as a solid, renowned ICT and Education agency and an important ally to the Ministry of Public Education in Costa Rica. The changes in legislation that allow the Omar Dengo Foundation to receive public funds and have tax exemption are a responsibility and the Foundation has successfully lobbied to maintain this privilege. Even though the Omar Dengo Foundation carries out other programs and initiatives, the responsibility leading the National Program of Educational Informatics has an important impact on the organizational growth and budget.
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