# Research Highlights Key Learnings from Portugal's Ambitious 1:1 eLearning Initiative

**RESEARCH SUMMARY**
Portugal

**Intel Education Research**
*Global research that supports education transformation*

This report is based on original data collection and analysis by researchers at the University of Porto,[1] in collaboration with Intel and SRI International.

Intel conducts longitudinal research on eLearning deployments around the world and compares results to other programs. Understandings of the successes, challenges, and policy implications of eLearning programs are used to improve existing and future initiatives.

For more information on the Intel Education Research initiative, contact **educationresearch@intel.com**

## KEY OUTCOMES

- **The national government distributed locally manufactured PCs to nearly every primary school student in the country to help overcome digital illiteracy.**
- **Professional development programs helped teachers integrate technology in their classrooms. Some teachers did not feel involved in the process and were disappointed in the training provided.**
- **Funding was eliminated in 2011, but Magellan PCs continue to be popular in classrooms and homes, where parents and children report using the PCs for work, school, and play.**

## OVERVIEW

From 2008 through 2011, Portugal's government sought to integrate 1:1 eLearning in their primary schools through an initiative unprecedented in its framework, goals, and scale. The Magellan project, part of a national technology plan, enabled the families of most students in grades 1-4 to purchase a laptop. It was one of the largest and most ambitious 1:1 eLearning initiatives in Europe.

Program results were mixed. Students and families value their PCs, but parents have concerns about recreational use, and exposure to the Internet. Teachers recognize the value of improving digital literacy, but some view lack of adequate teacher training as a major flaw.

Intel commissioned a study with researchers from the University of Porto and SRI International to understand the initiative's vision, successes, and challenges. This document summarizes the research findings to share key learnings—what worked, what didn't work, what could be improved—with other interested parties. (For additional detail on the methodology, see the Intel Guide to Monitoring eLearning Programs.[2])

## GOVERNMENT OBJECTIVES

- Overcome entrenched digital illiteracy
- Connect national educational policies to European best practices
- Promote ICT as an essential learning skill
- Encourage social and economic equity by giving families affordable access to technology

## PROGRAM SOLUTIONS

- Sold or made freely available, portable "Magellan PCs" (locally manufactured PCs based on the Intel® classmate PC reference design) to nearly every primary school student in the country
- Provided teacher professional development through master-teacher programs to help teachers integrate the new technology in their classrooms
- Allowed students to take the computers home, providing technology access for families
- Offered broadband Internet access to families, while other initiatives provided access to schools

## The Vision: Modernize Schools for a New Era

The Magellan initiative began in 2008 under the leadership of José Sócrates, who served as prime minister from 2005 to 2011. His government declared it "essential to value and modernize the school … and consolidate the role of ICT as a basic skill to learn and teach in this new era."[3]

The Magellan initiative, which was part of the national Education Technological Plan, was a key element to achieve that vision. By making it affordable for thousands of families to purchase their first PC, the initiative intended to promote digital literacy and increased social and status mobility for students and their parents. Distributing the PCs to primary school students enabled the program to reach children in early learning stages, with the hope of creating a generation of technology-literate citizens.

By 2009, the Education Technological Plan had enabled Portugal to triple the number of computers in schools that were connected to the Internet.[4] However, the European economic crisis led to high unemployment and widespread criticism that the Sócrates government had overspent. When the new government took over in 2011, continued funding for the Magellan project was canceled.

## Planning: Multiple Projects Spread ICT Nationwide

Two government agencies—the Ministry of Education and the Ministry of Public Works, Transportation, and Communications—led the planning and execution of the country's education initiatives. With Intel's help, the agencies formed successful relationships with global and local companies including Cisco, Ericcson, Microsoft, Optimus, Prológica, TMN, Vodafone, and ZON.

Another key alliance was with the local manufacturer JP Sá Couto, which produced portable PCs based on the Intel classmate PC reference design. The Magellan PCs had a three-level cost structure based on family income levels and were equipped with educational resources in local languages. Other PCs were also manufactured in Portugal and sold to several countries in Africa and Central and South America.

The planning process also included development of a teacher training program. The program used a "train the trainer" model, in which master teachers conducted local training sessions for their peers. A later training plan amplified and intensified the initial effort, and tied the training program to the guidelines of the Education Technological Plan and Lisbon Strategy.

### PORTUGAL EDUCATION SYSTEM

- Access to culture and education is consecrated as a fundamental right in the country's constitution, guaranteeing universal, compulsory, and free basic education to students.
- As of 2007, only 24 percent of public schools (and an even lower percentage of primary schools) had computers.[5]
- More than 80 percent of children in Portugal now have access to pre-school education, and universal primary education has been achieved.[6]

**KEY LEARNINGS**

The experience in Portugal provides several lessons and strategies for stakeholders considering 1:1 eLearning initiatives:

- To earn buy-in from teachers and other stakeholders, it is vital to plan initiatives for the long-term and involve local municipalities throughout the planning and rollout processes.
- Teachers are the keystones of educational systems. To integrate ICT in their classrooms, they must have ongoing opportunities to receive face-to-face training, preferably from innovative master teachers.
- Enabling students to purchase and take PCs home to their families can engender a strong sense of ownership and help overcome digital literacy challenges.

The initial financing for the Magellan initiative came from Portugal's telecom service providers, particularly mobile phone companies. Later, funding was provided by the state budget. Some stakeholders perceived the initiative as a top-down, monolithic effort, although the planning process did result in successful distribution of locally manufactured PCs to thousands of young students.

## Implementation: Integrating PCs at Schools and in Homes

More than 600,000 Magellan PCs were delivered to families across Portugal. Delays in delivery generated some anxiety during the rollout, but in general, students and families now feel positively about the Magellan PCs.

At home, parents use Magellan PCs to help children with their homework assignments, and some parents report performing their own work on the PCs. Children use the PCs mostly to play, even if they may also value the skills they have learned at school. Teachers and parents indicate that they value the quality and price of the PCs, and they stress that it is a resource that many low-income families would not otherwise have been able to acquire.

Broadband Internet connections were an optional feature with the PCs, which led to differences in usage. Some families subscribed to the broadband Internet service offered through the Magellan initiative and were able to connect at home. Some of those who did not subscribe were able to connect through community access points, while other families had limited or no access at all.

To help teachers integrate PCs in their classrooms, Intel, Microsoft, JP Sá Couto, and the Ministry of Education (MoE) trained thousands of master teachers, who were supposed to spread their knowledge to colleagues. In 2009, a new training plan amplified and intensified the initial training effort, but neither proved completely successful.

Many teachers state that they do not feel capable of using Magellan PCs in their classrooms, and some claim they never received training. Stakeholders from the MoE describe the training efforts as well-intentioned but disappointing. Training was redesigned in some areas, but the general consensus was that sustained training would have been more effective.

## Re-informing the Vision: Identifying Areas for Improvement

Several sometimes contradictory studies have attempted to evaluate the impact of the Magellan initiative. In some instances, Portugal's efforts were presented as a successful and sustainable case study for 1:1 eLearning, although such reports were made before the new government ended funding for the program.

The original review of the program in 2010 found that about nine out of 10 teachers taught children to use computers, with Internet access and web searches the most common activities, followed by reading and presenting material.[7] Almost half of teachers reported using Magellan PCs in their classes at least once per week, with the highest uses in Portuguese language studies and the social sciences, followed by mathematics.[8]

Among teachers polled in 2010, 55 percent classified the Magellan initiative as "good" and only 2 percent as "bad." Nearly 80 percent of teachers valued computer use as a mean of enhancing the equality of opportunities, and 70 percent felt that it improves or facilitates child learning.[9] Currently, the University of Minho is conducting another study of the initiative.[10]

## Conclusion

The Magellan initiative was extremely ambitious, and although results were mixed, the program led to many positive changes. Hundreds of thousands of locally manufactured PCs are now owned and used by primary school students and their families, which has helped to erode the technological divide in the country. Students and families report that they strongly value PC ownership. And many teachers report at least some degree of successful PC integration in their classrooms, creating and implementing powerful curricula related to ICT educational scenarios.

Other countries can develop successful 1:1 eLearning programs that build on the challenges and successes identified in Portugal. By working with Intel and other public and private partners, governments can create sustainable, cost-effective 1:1 eLearning programs that will provide social and economic opportunities for years to come.

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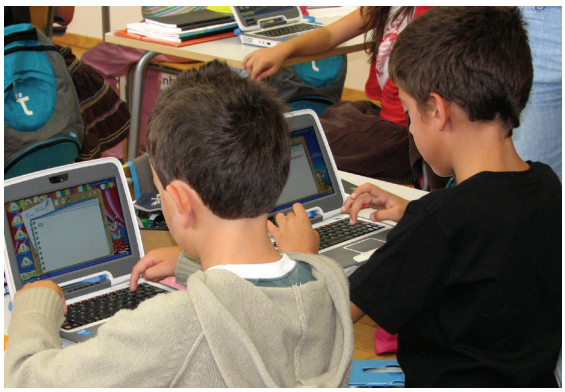

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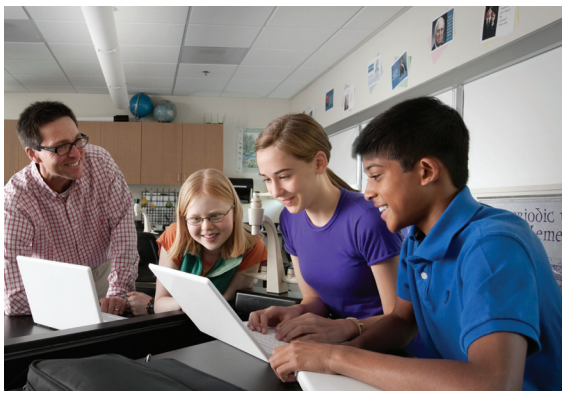

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See for yourself at **www.intel.com/itfored**

[1] Original research conducted by João Paiva (national coordinator), Luciano Moreira, Alda Teixeira, Ana Mouta, Ana Paulino, Mariana Ascenção, and Priscila Gonzaga.

[2] http://download.intel.com/education/transformation/US_EdTrans_ResearchToolkit.pdf.

[3] Resolução do Conselho de Ministros n.º 137/2007 (p. 3), *Plano Tecnológico da Educação*, Retrieved Sept. 20, 2012, from www.pte.gov.pt/idc/idcplg?IdcService=GET_FILE&dID=11496&dDocName=001952

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[8] Ibid.

[9] Ibid.

[10] Navegando com o Magalhães (2012). Retrieved July 21, 2012, from www.lasics.uminho.pt/navmag/?page_id=12&lang=pt



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