ICTs and Teacher Training: Initial Training and Professional Development

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INTER-AMERICAN
DIALOGUE

Preparing students for the 21st century requires the use of ICTs and technology in schools. In contrast to students who grew up in the 20th century, young people today require a different set of skills in order to thrive in the global information-age and technology driven society. Technological literacy is essential to success. But technology has effects that transcend the benefits of simple mastery and everyday use – it can also have profound impacts on the way students learn.

In Latin America – and the rest of the world – there is growing pressure for technology to transform education systems, and to make education more equitable. A 2014 report produced by SITEAL titled, *ICT Policies in Education Systems in Latin America* focuses on how to best integrate ICTs and technology in education systems in Latin America. This policy brief will analyze the report's fifth chapter, "ICTs and Teacher Training: Initial Training and Professional Development". The report suggests that inadequate teacher training is the most significant barrier to the full implementation of ICTs in the classroom. The report begins with a general panorama of the education technology environment in Latin America, and then discusses the main tensions, challenges, and tendencies observed for the incorporation of teacher and management ICT training. It ends with a set of recommendations and draws on the critical importance of successful implementation of ICTs in the classroom in order to improve learning.

Regional Panorama

ICTs have not been sufficiently prioritized in Latin America. The evidence presented in the report suggests that technologies are underutilized in the region, especially in the classroom. Though there are many reasons contributing to this trend, the most significant is that teachers lack effective training on the use of ICTs for educational purposes. In other words, **teachers entering the workforce are not adequately prepared to use ICTs as resources to teach and improve student learning.**

The Facts:

- Most teachers see a positive value to ICTs, but don't know how to integrate them into their teaching practices.
- If ICTs are used in the classroom, it is for specific courses, rather than widespread use across all subjects.
- The most used technologies are computers, projection systems (PowerPoint, Prezi), and the Internet.
- Based on the various studies examined by the authors, teachers demanded more training in the use of ICTs.

The Challenges of Inserting ICTs in Initial Training

There are three main challenges that limit the integration of ICT training in initial teacher development. The first, **the institutional context**, refers to the infrastructure and digital culture of the institution. Is there infrastructure that supports the implementation of ICTs? How will the technology be maintained? Is Internet widespread throughout the school and student homes? Without the necessary infrastructure and a supportive institutional context, technologies will go unused.

A second major challenge relates to **the teacher**, and his or her attitudes and perceptions with respect to digital technologies. This challenge boils down to one main question: how much work is it for a teacher to integrate ICTs into his or her curriculum or to decide how to use a piece of

technology in his or her classroom? If integration methods are straightforward, teachers will use the suggested technology. But if teachers themselves have to decide how to integrate the technology or software (which is a lot of work), the technologies will more likely go unused (and even resented). Many of the studies analyzed in this report found that teachers wanted to "stop talking about introducing technology" and instead "show them how to actually do it".

A third major challenge relates to **innovation** and its relationship to the academic discipline. The report found that teachers were using technology for basic tasks and for communication purposes, but did not use them for central pedagogical objectives. The challenge is that technology should have a larger impact. What is technology doing that traditional teaching methods cannot? How should current teaching methods be adapted to use ICTs? How does the technology contribute to improving student learning and student motivation? How can student learning be evaluated through the use of ICTs? The authors of the report explain that there must be room for reflection and feedback when technology is used in the classroom... "In some cases, it's not only necessary but preferable to teach with a video, with tutorials or organized lectures, which are then reinforced by mechanisms of
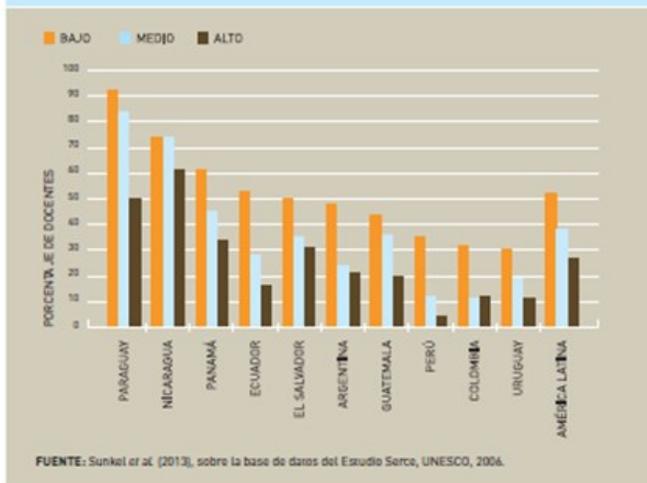
evaluation like multiple choice tests and discussions… to look for mechanisms for reflection" (p. 168). In this way, technology can have profound impacts on student learning.

Teacher Training and Development

Within the last 25 years, there have been government initiatives in every Latin American and Caribbean country to incorporate ICTs in national education practices. They haven't all been successful, but it is important to note that LAC governments have made efforts to create policies that encourage the use of ICTs. However, not every country has an official ICT in education policy, and many countries do not have national policies specifically related to ICTs and teacher training.

Teacher Feedback—The Facts:

- Slightly more than 1/3 of teachers in the region are trained to used ICTs (although that number varies greatly by country).

- All teachers said that poor

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GRÁFICO 5.3
Docentes de sexto grado que no utilizan habitualmente la computadora, según nivel del ISEC de la escuela donde enseñan, América Latina, 10 países

BAJO   MEDIO   ALTO

FUENTE: Sunkel et al. (2013), sobre la base de datos del Estudio Serce, UNESCO, 2006.

said that the course focused on a specific subject. This demonstrates the trend that teachers, even if they have basic ICT training, lack the mechanisms and know-how to integrate ICTs into their pedagogical practices.

It is also important for teachers to start using ICTs outside of the classroom. According to the authors of the report, "**a transfer of acquired knowledge or skills is preceded by a process of personal appropriation**". In some countries, like Argentina and Uruguay, national policies have successfully improved connectivity and delivered computers to teachers. These efforts have led to tremendous growth in the number of teachers with computers and Internet in their homes: in Uruguay, 90% of teachers have a personal computer and 78% have access to Internet (p. 185). While public policies help, a trend of expanded personal appropriation is also a natural one – so it can be expected that the number of teachers with personal computers will continue to rise. And when teachers have computers at home, they are more likely to use informal networks like Facebook groups to share and ask for advice, use peer-to-

peer networks or global teacher networks, take webinars, and find MOOCs related to their classes (188).

An example of a global teacher network is Microsoft's Educator Network[1], which provides "professional development to government policymakers, school leaders, and educators around the world to take new approaches to teaching and learning by using technology to help students develop 21st century skills". The program has resources for both teachers and school management; through the networks, individuals can share ideas by participating in conferences, taking courses or webinars, and trying new approaches. Webinars have the ability to transcend borders to successfully train teachers across the region. The authors of the report also discuss the importance and attractiveness of MOOCs: there are no pre-requisites, the courses have worthy content and are very prestigious, and they have the ability to reach more students in an ever-globalized and competitive world at a low cost. The authors also note that "it is an undeniable fact that the

training was the most significant barrier to integration.

- For teachers that did not receive ICT training—they received basic training on ICT use, but did not receive training on how to integrate them in the classroom, or for what purpose the ICTs would serve for educational use.

- A significant amount of teachers in the region do not have a computer at home, which greatly limits teacher comfort with technology. But this trend is starting to reverse.

It becomes clear that past initiatives have not been sufficient. Training teachers in the plain use of ICTs, though a necessary component, is only the first step. For example, a study in Chile found that 53% of professors assert that they received a certification in basic ICT use, but only 31% reported to have taken a course on its pedagogical use, and only 11%

GRÁFICO 5.1
Contexto escolar

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* CONOCIMIENTO DEL CONTENIDO TÉCNICO PEDAGÓGICO

numbers of participating universities and courses offered increased month by month", an evolution which also provides teachers with the ability to continue their own education. The most noteworthy MOOCs in Latin America are Coursera, Udacity, and edX.

Management and Principal Training

If a school as a whole – teachers, administrators, and principals – do not work together to incorporate technology into education systems, then an individual teacher will not be able to succeed at using technologies in their classes. Usually, the resources and knowledge on how to incorporate technologies in the classroom is beyond the scope of an individual teacher. Teachers need the help of administrators to obtain equipment, ensure Internet access, activate long-term support systems, and develop improved curriculums. The authors of the report explain that "as in any human organization, school performance is marked strongly by the quality of its leadership, and innovation with respect to ICTs is no exception to this rule".

Management Feedback—The Facts:

- Principals identified the fact that "students know more about computers than teachers" as the main problem with ICT integration in their schools - A Brazilian study found that 78% of

administrators said that this was the most significant problem to ICT integration.

- The same study found that 47% of administrators believed non-reliable Internet was a major barrier to ICT integration, and 42% said that the fact that teachers did not know how to use a computer or Internet was a key problem.

- Despite high levels of personal technology use, administrators do not take on leadership roles to incorporate ICTs in schools. 37% of principals said they did not apply any specific measure to incentivize teachers to use of ICTs.

In contrast to teachers in the region, administrators and principals use technology in their personal lives and outside of the school setting. A Brazilian study found that 94% of school principals in Brazil have a computer in their home, and that 94% have access to Internet. Similarly, a Chilean study found that 99% of Chilean principals have access to a computer in their home, more than 80% have Internet at home, and 96% of the principals said they use their computer weekly. The problem, according to the authors of the

report, is that despite their level of use, administrators do not do enough to integrate ICTs in their schools. Those interviewed by the authors wanted to "focus on specific training for managers and administrators of the educational system" in order to strengthen ICT policies.

There is a mismatch between the efforts to train management in the region with the potential impact of their training. According to the Education Manager for Intel Cono Sur, school principals are extremely important, and yet undervalued in this regard. He says, "But a good principal makes a difference. A principal who moves forward and says, 'Yes, look: we are going to take this course, we are going to implement this, we are going to try this other thing'… the principal must have the vision to implement things to improve the daily activity of teachers". Yet despite the critical importance of administrators and principals in the process of ICT integration in

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education, the process of management ICT training is still in the early stages of development. There are not a wide range of initiatives that specifically target management and institutional ICT training, and there is also a lack of regional studies that define the needs of management teams.

Enlaces

The report touches on a few noteworthy ICT programs in Latin America, namely the Chilean program Enlaces, for their successes in ICT promotion and integration in schools. The authors of the report often used Enlaces as an illustration of what can be done to effectively train teachers and management teams, as well as engage schools more broadly in the use of technology.

Enlaces, which began as a pilot project of the Ministry of Education in 1992, has widely been regarded as one of the most successful teacher and management training programs in the region. The schools that originally joined Enlaces received technical equipment, educational software, and Internet; and teachers received training not only on the use of ICTs, but more importantly, on their pedagogical use. The program soon extended to schools throughout the region by the means of 25 institutions, which trained teachers and provided technical assistance.

There are two crucial factors that contribute to Enlaces' achievements in education. The first is that it provides permanent pedagogical support: its objective

is to provide **"a set of standards that enable the ongoing training of teachers"**. Through its training, Enlaces demonstrates how to use ICTs as part of the teaching curriculum, and later, provides various virtual courses for teachers to take with the help of online tutors providing support and advice. Enlaces has operated in Chile for nearly 20 years, and still provides long-term teacher support.

The second factor contributing to its success is that there are training programs that specifically target school principals and administrators. Enlaces has three main criteria: the first two relate to improving the teacher and computer literacy, and the third is to "modernize the establishment" by training management teams. Enlaces has developed "competency standards for school management and principals, from which they are offered a leadership aimed at promoting the integration of ICTs in school education". Enlaces also provides advice for management teams on how to improve planning processes for ICT integration. Enlaces is distinguished from many other programs in the region in that it includes the training of school management, and therefore school principals and administrators are involved in developing content that supports the use of ICTs in the classroom.

Lessons

1. Focus on specific school subjects

ICT training for teachers should focus on the specific subjects that a given teacher is responsible for. This recommendation is consistent with the findings of an IDB report written by Elena Arias Ortiz and Julian Cristia, who argue that successful programs target a specific subject (by using a specific software for a set number of hours per week). Similarly, the authors of this report explain that each subject area has different

> Enlaces provides permanent pedagogical support and training programs that specifically target school principals and administrators.

requirements, and the role that technology can play to attain those requirements is very different across subjects. Focusing on a specific subject can minimize the time and effort it takes to incorporate ICTs and maximize their medium and long-term impact.

2. Combine theory and practice in a balanced manner, and provide long-terms support

It is important to find a good balance between initial training

and the presentation of new ideas, with the actual development of teacher skills within the context of their needs. In other words, facilitators should first provide courses or workshops to explain new ideas for ICT incorporation. Then, later, there must be formats for reflection, analysis, and evaluation of the practices and problems the teachers face (as demonstrated by Enlaces). This second component includes collaborative peer-to-peer networks and virtual exchanges. The authors write that "the exchange of experiences, the analysis of personal practices as well as the practices of others" will slowly lead to "new forms of teaching and the generation of criteria that actually works in the field".

The main lesson here is that initial teacher training falls short, and is not enough to make a lasting impact on teaching practices. There must be continued support and opportunities for discussion and deliberation in order for theories to be put in practice. The studies examined in the report show that teachers require time to link ICT use with their teaching methods, so it is important that they receive constant assistance and training. Community volunteer networks are one way to enhance long-term support. Another way

to enrich the use of ICTs in education practices is the creation of networks between institutions, especially of those with different backgrounds, in order to transfer knowledge from stakeholders with more experience to those with less.

3. Train management teams

The success of ICT innovation and implementation does not solely rely on teachers. Moving forward, it will be important to shift focus towards developing new and distinct training initiatives for management teams and school principals. According to the authors of the report, this strategy, which requires involving all stakeholders in the education process, will enable "building bridges between the principals, teachers and students, identifying strengths and barriers that foster agreements to establish innovative ways to enable the work of the school, changing content and practices, reformulating school formats, enhancing partnerships and achieving learning of significant quality for all".

Past teacher and management training programs have not been sufficient to improve student learning. Technology can and should have profound and beneficial effects on the way

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students learn, but past efforts have not had the scope and strength necessary to attain these benefits. Of course, some countries in the region – namely Chile and Uruguay – have seen stronger ICT use in the classroom, but in general, the region has much room to improve. What is consistent across the region is that teachers have had to change their teaching practices in order to more adequately prepare students for the 21st century. Providing teachers with the initial training and long-term support they require will enhance the use of ICTs in their classrooms, and more importantly, will improve the quality of education and student performance throughout the region.

ENDNOTES

[1] http://www.educatornetwork.com/about/overview#en