MINISTERSTWO INFRASTRUKTURY I ROZWOJU

PARP

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NARODOWA STRATEGIA SPÓJNOŚCI
dla rozwoju Polski

MINISTERSTWO INFRASTRUKTURY I ROZWOJU

UNIA EUROPEJSKA
EUROPEJSKI FUNDUSZ ROZWOJU REGIONALNEGO

Presidenza del Consiglio dei Ministri
Dipartimento per le Politiche di Coesione NUVAP

QSN 2007-2013 QUADROSTRATEGICONAZIONALE

PON Governance e Assistenza Tecnica 2007-2013 UNA PA PER LA CRESCITA

The effects of investments in digital equipment in southern Italian schools

Marco Gui, University of Milano-Bicocca

Tito Bianchi, Studiaresviluppo S.p.A.

Krakow 28/09/2015

Index of presentation

- Context and goals of the evaluation project
- Methodology
- Main results
- Policy recommendations

The context

In the period 2000-2013 Regional development programs (ERDF and domestic funds) have invested significant resources buying digital equipment for Italian public schools:

- Interactive whiteboards
- Computers
- Tablets
- Wifi networks

→ In 2007-13 the National ERDF program spent > 439 M€

Rationale for investing in digital equipment is convincing

- The level of education is widely considered a key factor for economic development;
- The results of standardized student tests are significantly lower in the Italian south

Results of PISA Int'l test by Italian Region (2003)
percentage of poor performers

Macro-Region	Reading	Math
South	34	47
Centre-North	12	21

- Investments in ICT seen as instrumental to increasing learning outcomes

The «mezzogiorno»: convergence and phasing-out regions

However…

- The link between digital tecnology and learning not really clear
- Schools in underdeveloped regions need many other things: maintenance, energy efficient systems, tecnical labs, school supplies, teacher training
- Unclear what is the most effective or more convenient digital device among many possible technologies

A research team was hired

Dr. Marco Gui
Dr. Andrea Parma — University of Milan Bicocca
Dr. Marina Micheli
Prof. Simone Giusti - Pedagogist, Teacher

A steering committee appointed

- Evaluation Unit - Dept. of Development Policies
- Ministry of Education – Mngt Authority of EU Structural Programs;
- National Agency for territorial cohesion
- National Institute for innovation and research on Teaching

Evaluation questions

I. **What do schools do** with the purchased technology?

II. **What effects** do technologies have **on students' learning outcomes**?

III. **Under what circumstances** technologies deliver the expected outcomes?

Evaluation Methods Employed

Research Method	In Detail	Timing
SURVEYS	**CATI survey** of principals of 300 schools of Italian South (random stratified sample) 323 performed	March - May 2014
	CAWI survey of sample of **teachers** of the same schools (approx 7500 teachers) 3649 performed	April - July 2014
QUALITATIVE INQUIRY	In-depth **on site visits** in **48 schools** (of all grades) sampled **in 8 Regions**	March – October 2014
MULTIVARIATE STATISTICAL ANALYSIS	Relationship between change in **stock of technology** and change in oucomes **of standardized student tests**	January - March 2015

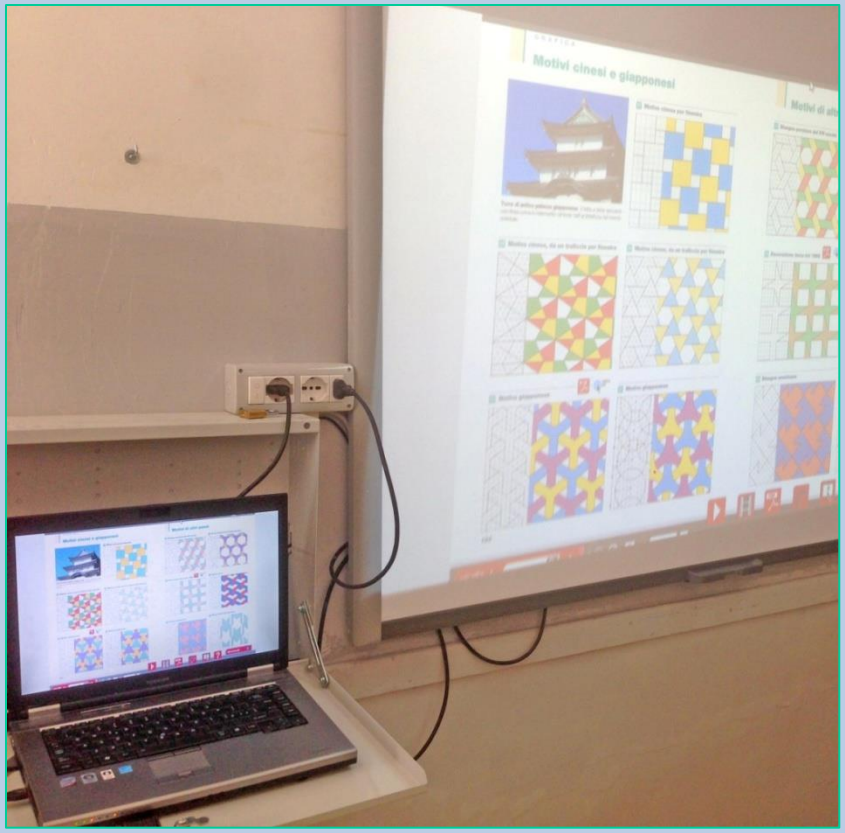
Scope and Characteristics of the Evaluation

- Policy-makers **did not ask a YES/NO question**, but needed guidelines (how, where, what);
- The study did not look for best practices or cases of excellence, but for solutions applicable in the **average school environment**;
- **Mixed methods** were suggested in the evaluation mandate to balance representativeness and depth of understanding of the school context
- Cost ~ €180.000

Results / ICT use

- A **majority of teachers use ICT in their «backstage»:** to prepare lessons (61,8%) or prepare tests to be administered on paper (45,8%).
- **A minority uses ICTs in classroom:** 18% frequently, 45,7 sometimes, **35,3% never**.
- **In-classroom use is basic: IWB as projectors** (34,63%), searching online (31,64%).
- Content **exchange among teachers is rare!**

Results / Practical obstacles



IWB without a laptop shelf: laptop has to be connected each time

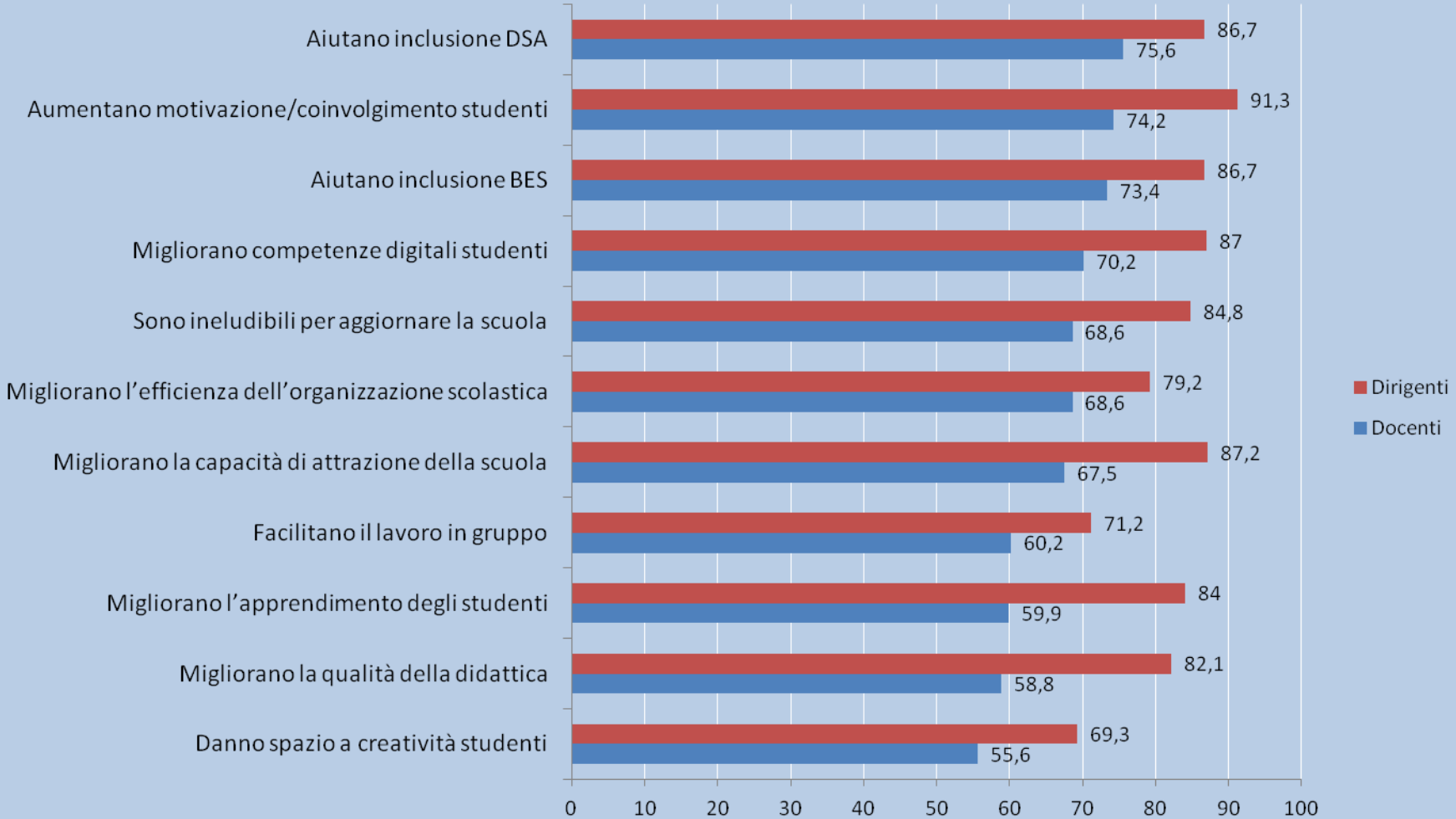
IWB with laptop shelf: laptop is ready to use!

Results / Teachers' opinions on ICT-related benefits

- 75,6% teachers think **ICTs help to include special needs students.**
- 74,2% think ICTs increase students' **motivation.**
- 70,2% think they increase students' **digital skills.**
- Only 59% think they **increase learning outcomes** (doubts in particular on benefits for above average students).

Teachers systematically less optimistic than school principals about ICTs' benefits

Chart - *Percentage of teachers (blue) and school principals (red) who perceive different benefits of ICT in schools*



Results / Effects on standardized learning achievements

- Statistical analyses **find a positive effect** of increase in technological equipment on schools' learning performance, **but concentrated in Northern Italy**.

- **Negative coefficients emerge in** the areas that were financed the most (***convergence objective*** *regions*)!

Table - *Fixed effects regression coefficients of the relationship between growth of technological equipment (index) and schools' average learning outcomes compared to national mean during the period 2010-2014*

	ITALY	NORTH	CENTER	SOUTH	CONV. OBJ.
ITALIAN	0,11***	0,23***	0,07	-0,06	-0,14**
MATHEMATICS	0,17***	0,40***	0,09	-0,16**	-0,26***

Results / Smartphone & social network

- **20,5%** allow smartphone use in classroom (45% in vocational schools)

  "They use it anyway: I just try to make them look for something they don't know"

- **25,2%** are in contact with their students on Facebook or other social networks

- In humanistic high schools, primary and lower secondary **there is a stronger resistance**

Bags to keep students' smartphones during lessons

Results / Choices which make a difference

- Awarding equipment to schools through **competitive calls** is confirmed an effective allocation method

- Introduce technology **gradually and sequentially**

- Having **technical support staff** and teachers **given formal responsibility for digital technology**

Policy recommendations

- Interactive **whiteboards no longer** a **favourite** investment (complex and costly)
- Train teachers on **smart use of slide presentation**
- Clarify the **rules and function of smartphones** in classroom.

A more strategic recommendation

Reconsider the goals of ICTs introduction!

Less focus on ICT for learning, more focus on learning how to critically use ICTs!

→ Assess digital skills with standardized tests

→ Include them in national curriculum

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THANK YOU!

marco.gui@unimib.it
ttprbianchi@gmail.com