

Factors affecting teachers' use of ICT as a professional tool outside the classroom

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Introduction

- In the recent decades, there has been a wide academic interest in the implementation of **ICT in schools** (Law, Pelgrum & Plomp, 2008; UNESCO, 2005).
- These studies **have highlighted how ICT** reconfigure classroom practice, create new varieties of learning practices, change teachers' and students' roles, and improve students' engagement and outcomes (OECD, 2005; Crook et al., 2010).

Introduction

- Considerable attention has also been given to the **factors that influence teachers' use of ICT** in schools ([Mumtaz, 2000](#); [Somekh, 2008](#)).
- Teachers' **attitudes to the utility of ICT as an educational tool** have been considered to be either a significant facilitator or barrier to their successful introduction to schools and high schools ([Afshari et al., 2009](#)).

The problem

- However, factors influencing ICT use as a professional tool outside the classroom **have received little attention**.
- This research addresses this gap by examining the **factors that affect teachers' professional use of ICT**, particularly, the internet, in schools and high schools.

<i>Supportive use</i>	<i>Management use</i>
<ul style="list-style-type: none">•Classroom preparation's activities such as finding supplemental information for lessons.•Preparing worksheets for the pupils	<ul style="list-style-type: none">•Performing administrative and management tasks.•Communicating with colleagues and experts.•Interacting with parents and students.

Approach and aim of the study

- The study uses a **digital inequalities (DI) framework** which reconfigures the dichotomous focus of the “digital divide” into a **complex, dynamic and multi-dimensional** phenomenon (DiMaggio & Hargittai, 2001).
- Adopting the focus of the DI, the **aim** of this study is to construct and empirically test an **exploratory model for the unequal appropriation** of the internet for professional purposes outside the classroom.
- We analyse the differences in attitudes and effective use by exploring the contribution of selected factors. We also take account of the specific effects of the **organisational development** on both variables.

Method

■ PARTICIPANTS:

- 1,405 teachers from a random sample of 809 schools in Spain completed a self-administered questionnaire in 2007.

■ MEASURES:

- *Socio-demographics and school-level information.*
- *School internet access.*
- *Educational ICT training.*
- *Digital literacy* (KMO=0.843, $p=0.000$; 72.33% of total variance explained; $\alpha=0.921$).
- *Organisational development* (KMO=0.773, $p=0.000$; 50.31%; $\alpha=0.747$).

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Method – cont'd

- **MEASURES (from PCA):**

- ***Attitudes to professional uses of ICT*** (KMO=0.786, $p=0.000$): **Positive** (30.16%; $\alpha=0.769$) and **negative** (30.11%; $\alpha=0.780$) attitudes.
- ***Use of the internet in professional practices*** (KMO=0.0.831, $p=0.000$): Supportive (37.17%; $\alpha=0.867$) and management use (25.53%; $\alpha=0.695$).

- **DATA ANALYSIS:**

- **Multivariate analysis: 4 multiple regressions** were ran to determine the relationship between teachers' attitudes and effective professional uses of the internet and every independent variable.

Findings

Table 1

	Positive Attitude	Negative Attitude
	Beta	Beta
Stage of education		
Comp. Primary	-	-
Comp. Secondary	-0.002	0.002
Funding		
Public	-	-
Private	0.060*	-0.043
Location of school		
Under 5,000 hab.	-	-
5,001 – 50,000 hab.	0.074*	0.007
50,001– 100.000 hab.	0.057*	0.003
100,001 – 500.000 hab.	0.046	0.006
500.001 hab. and over	0.056	-0.029
Age	-0.011	-0.037
Gender		
Female	-	-
Male	0.076*	0.041

- Positive attitudes are statistically **higher** among **male teachers** that belong to **private schools**, mostly located in **medium-size municipalities**.

Findings

Table 1 – cont'd

	Positive Attitude	Negative Attitude
	Beta	Beta
Internet use at school		
Never or almost never	-	-
Monthly	-0.032	-0.060
Weekly	0.012	-0.081
Daily	0.144*	-0.160*
Educational ICT training		
Not in the last 3 years	-	-
Yes, but hardly useful	-0.021	0.023
Yes, strongly useful	0.121*	-0.104*
Digital Literacy	0.180*	-0.161*
Organizational Develop.	0.100*	0.049*
Model summary		
R ² (Adjusted R ²)	0.143 (0.133)	0.070 (0.060)
F for the model	14.750*	6.692*
Sample size	1,405	1,405

- Being a **daily user of the internet at school** and having attended useful **educational ICT courses** are significantly associated with **higher positive attitudes**.
- Higher levels of reported **digital literacy** and, especially, better **organisational development** are two other significant predictors of **positive attitudes**.

Findings

Table 2

	Supportive Use	Management Use
	Beta	Beta
Stage of education		
Comp. Primary	-	-
Comp. Secondary	-0.034	0.025
Funding		
Public	-	-
Private	0.031	-0.021
Location of school		
Under 5,000 hab.	-	-
5,001 – 50,000 hab.	0.037	0.046
50,001– 100.000 hab.	-0.022	0.013
100,001 – 500.000 hab.	-0.011	0.073*
500.001 hab. and over	-0.010	0.010
Age	0.009	0.025
Gender		
Female	-	-
Male	-0.016	0.020

- Sampling variables such as **stage of education, funding and location of the school** are not associated with **professional uses**.

Findings

Table 2 – cont'd

	Supportive Use	Management Use
	Beta	Beta
Internet use at school		
Never or almost never	-	-
Monthly	0.058	0.032
Weekly	0.163*	0.063
Daily	0.305*	0.246*
Educational ICT training		
Not in the last 3 years	-	-
Yes, but hardly useful	0.036	0.027
Yes, strongly useful	0.129*	0.084*
Digital Literacy	0.342*	0.179*
Organizational Develop.	0.098*	0.177*
Model summary		
R ² (Adjusted R ²)	0.283 (0.276)	0.158 (0.149)
F for the model	36.625*	17.435*
Sample size	1,405	1,405

- More frequent **access to the internet**, useful-rated **educational ICT courses**, and higher **digital literacy** levels make a positive contribution to the appropriation of the internet in **supportive and management uses**.
- Increase in **organisational development** account for slightly more **management uses** of the internet.

Conclusions

- Teachers' professional practices outside the classroom are a key but also **under-researched area** for understanding the ICT integration in schools.
- This area **complements** the more traditional approach focused on the teaching and learning practices that usually occur during class.
- This study suggests that **technological issues** as well as **organisational practices** are involved in **higher positive attitudes** to educational uses of ICT.
- The findings also show an interesting connection between **daily organisational practices** and the **specific appropriation of ICT** beyond classroom's walls that requires further attention among scholars and practitioners.

Limitations and future research

- **More specific measures** taking into account some of the specific traits of organisational development theory may be helpful in developing more in-depth approaches to the introduction of the internet to teachers' professional practice (Thoonen et al., 2011; Tondeur et al. 2009).
- A **qualitative approach** may be considered to explore why teachers include ICT in their professional practices as well as the perspectives and beliefs in which the professional use is enacted (Jehn & Jonsen, 2010; Vitale et al., 2008).
- Additionally, **qualitative methods** could also be useful for exploring the wider picture of the factors affecting ICT use in relation to school cultures and subcultures (Mars & Ginter, 2007; Somekh, 2008).

Implications for policy and practice

- Our findings may help to **promote a managerial perspective** to enrich educational policies in the integration of ICT in schools and high schools.
- Policies may be orientated at **promoting a suitable leadership style** among school principals to improve the on-going process of implementation of ICT.
- Strategies may be implemented to **create an organisational culture** that favours ICT appropriation, as well as developing internal marketing programs, that promote organisational commitment in this process.

Thank you for your attention!!

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