

# **Collaborative learning in environments with restricted access to the Internet: policies to bridge the digital divide and exclusion in prisons through the development of the skills of inmates**

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## **Abstract**

The deprivation of freedom for the prisoners, involves not only physical isolation, but also digital, which implies a strong isolation particularly painful in an "information society". Spanish prison population is deprived of access Internet and all ICT that could contact inmates with outdoor life, this is mainly due to security issues. Not having enough ICT skills is a new cause of social exclusion. The objective of this research was to identify the key issues which should be focused by policy makers to avoid digital divide among prison population. A survey among inmate population in all the five penitentiary centers in Galicia, in the northwest of Spain, was undertaken to obtain a sample of 380 inmates. A Structural Equation Model (SEM) was carried out to explain prisoners' ICT Skills, in bias to inmate's social skills, general skills and attitude towards collaborative learning. For inmates, who are characterized by their low education level, results shown the relevance of having general and social skills to be able to have more ICT skills. Then, collaborative learning in prison it is shown as a way to bridge both walls: the physical (better reinsertion and no recidivism) and the digital one.

**Keywords:** prisoner; ICT skills; public policy; quantitative; social exclusion

## **1. Introduction**

Prison population constitutes a group at social exclusion risk. They usually have other causes of exclusion, as being stranger, gypsy or having a disability. Not having necessary ICT skills to use easily new technologies is a new cause of social exclusion. Living without freedom in jail in the "Information Society", implies quite total isolation with respect to the new progress that can be taken place. Spanish prison population cannot have access neither Internet nor the rest of new technologies that are been developed. The most important reason of this is the security issues.

Theoretical models proposed by scientific literature have started to incorporate this new factor of exclusion. This is the case of Helper's model (2012). Moreover, international organizations and governments, at all levels and in many areas of the world (Wong et al., 2009), are developing programs to avoid digital exclusion. One of the main reason is the important role that new technologies are playing in key areas as work. For instance, European Commission

has elaborated a Digital Agenda for Europe. Each Member State has made an own Agenda (European Commission, 2013). However, a specific program for inmates has no designed (Novo-Corti & Barreiro-Gen, 2014). Therefore, it is necessary to study how act to help this group to avoid social exclusion, and more specifically, to avoid digital exclusion, when they leave prison.

The objective of this research is to analyze the main factors to explain the inmates' ICT skills in Spain, in a specific area: the region of Galicia, in the northwest of this country.

## **2. Digital divide and social exclusion**

In the middle 70s the concept of social exclusion (Silver, 1994) arises as an attempt to refine and broaden the concept of poverty (Atkinson, 2000), which had traditionally been primarily focused on deficiencies and shortages in economic sense. The exclusion is understood as more linked to inequality and privation o deficit on access to certain goods or services (Sen, 2000). In the 80s this concept appears in the elaboration of public policies by the European Commission (Wilson, 2006). Like what happened with social exclusion, at first, the digital divide, defined on the basis of economic or technical access barriers to access to ICT (information and communication), and subsequently concluded personal motivations that should be included in the analysis (Barreiro-Gen, Novo-Corti Varela-Candamio, 2011; Zillien & Hargittai, 2009).

Most theoretical models of social exclusion include variables such as income, employment, education and health (Gallie, Paugam, & Jacobs, 2003; Naraine & Lindsay, 2011). Helsper (2012), taking into account the main variables included in studies dealing with social exclusion, a theoretical model that relates the exclusion traditional sense (offline) with digital exclusion (online). Four key areas have been considered as determinants of social and digital exclusion: the economic area, cultural area, social area and personal area. Helsper considers that such theoretical model is widespread and may be applied to diverse groups and backgrounds, as long as the features that correspond to each of them will be taken into account. Novo-Corti *et al.* (2014) have applied this theoretical model to the group of the inmate population in Spain, with the aim of facilitating the development of public policies aimed at digital inclusion. These authors have reached the following conclusions: The lack of access to ICTs in Spanish prisons acts as social exclusion factors influencing crucially on the digital exclusion of convicts. Thus, people living at prison can't improve their situation with respect to any of the areas highlighted as important in avoiding digital exclusion because they have been denied the possibility to access to ICT technologies. Therefore, some lines of policy action have been proposed. Those lines are mainly related to the compatibility of the need for security at prison and the fight against digital exclusion. Some of those main lines include basic computer training, simulated navigation or restricted Internet access.

## **3. Prison population and ICT**

### **Prison population in Spain**

The estimated rate of number of prisoners per 100,000 population stood at about 143 points in January 2014, in the lower half of European countries. Spanish imprisonment rate is similar to that of Italy, Portugal, France and Germany (Ministry Of Home Affairs, 2014). In February 2014, Spanish prisons had 66.706 inmates. 7,6% was female population. People between 41

and 60 represent the largest group in prisons making up 35 % of the population. According to Ministry of Home Affairs (2014), the profile of the majority of our prison population is represented by people who have little education and have no professional qualifications or social skills. It makes more difficult achieve the connection between new technologies and them. A significant percentage of these people are characterized as being functionally illiterate and another sizeable group has not had or has not completed primary studies. There is also a high number of foreign prisoners who do not know our language or don't understand it correctly (Ministry of Home Affairs, 2014). This situation complicates the achievement of an employment, because the relation between work and education is high (Barreiro-Gen, Novo-Corti & Ramil-Díaz, 2013).

In fact, the most of the prison population does not have income or they have it because they are working in prison. The main obstacle they have to face when leaving prison is how to achieve a lawful source of income that allows them to support (Barreiro-Gen, 2012).

### **Physical and virtual barriers**

According to the literature, the digital divide is caused by social factors such as age, gender, education, status, income and local infrastructure (Clayton & Macdonald, 2013; Hindman, 2000; Kingsley & Anderson, 1998). Therefore, not only the different types of individuals, but also the different groups could be digitally isolated without necessarily belonging to groups traditionally excluded, at least not from a social conception of exclusion; in fact, they may actually be digitally excluded people of all kinds, for any of the reasons listed above. If in addition, the risk of social exclusion is present, as is the case of the inmate population, the situation becomes complicated. While it is true that so far, most of the activities that can be performed through the Internet, can be carried out also for offline, but such action will require investing more time. The Internet allows to reduce costs and improve services (Warren, 2007), which creates differences or "charges" for those individuals who do not have access to the network or do not have the right skills (Novo-Corti et al., 2014).

Digital exclusion acts, usually in the same areas as social exclusion, namely: economic, cultural, social and personal (Helsper, 2012) and contained in these fields different forms of compromise with the Internet. Included are therefore activities such as shopping online, make friends on the network, learn and learn online.

However, people who in prison, are deprived of engage in any of such activities because access to ICTs in the penitentiary centers is prohibited. Thus, people that are in social exclusion, see their segregation is compounded by falling into the digital divide (Figure 1) and, as a consequence, the digital exclusion. In addition, the digital divide also affects the social exclusion through a number of other mediating factors. These factors are mainly the usefulness, ease of use, ownership and sustainability. Unable to interact with new technologies, these indicators are detrimental to social exclusion, working in this way a vicious circle that must be broken.

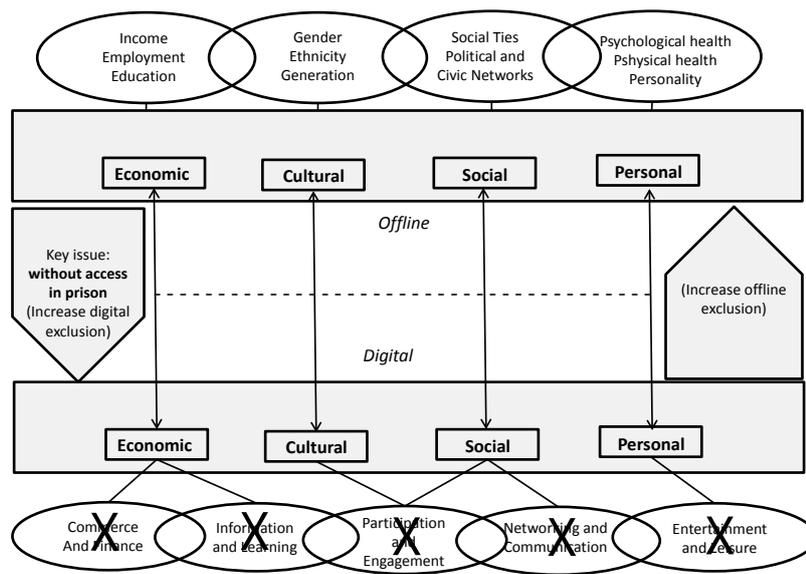


Figure 1. Helsper's (2012) theoretical model application to the case of the prison population.  
Adapted from Novo-Corti *et al.* (2014).

On the other hand, different studies showed the relevance of socio-economic and demographics variables when analyses of new technologies development are done. Employment status (Strine *et al.*, 2010), income (Venkatesh, Sykes, & Venkatraman, 2014; Warf, 2013), rurality (Novo-Corti, Varela-Candamio, & Garcia-Alvarez, 2014), gender (Caridad Sebastián & Ayuso García, 2011), age or educational level (Varela-Candamio, Novo-Corti & Barreiro-Gen, 2014) often appeared in the analysis to be associated with the use and development of new technologies.

#### 4. Methods

##### Participants

Inmates from not only all of Galician prisons (Teixeiro, in A Coruña, Bonxe and Monterroso, in Lugo, Pereiro de Aguiar, in Ourense and A Lama, in Pontevedra), but also Social Integration Centres (CIS), with semi-freedom regime (A Coruña and Vigo, depending of A Lama prison) have been the studied population of this research.

In 2011, 3701 people were in Galician prisons. Therefore, our sample, with 380 inmates, comprises 10.27% of the total, and has a structure similar to the population to what we reference. Table 2 contains detailed description. The sample was formed, as the whole prison population, by 92,4% of male population and 7,6% of female population. 64,5% of the sample has Spanish nationality and the 35,5% is stranger population. With respect to the educational level, more than the 40% of the participants has not studies or has primary studies. Only 5% has studied in the University (Table 1).

The sample has participants from the all of prisons in the same proportion of the whole prison population: Teixeira (33,2%), Bonxe (9,2%), Monterroso (9,4%), Pereiro de Aguiar (9,2%), A Lama(including CIS of Vigo) (35,5%) and the CIS of A Coruña (3,5%).

**Table 1. Description of the sample**

Variable	Category	Percentage (%)
Prison	Teixeiro	33.20
	Bonxe	9.20
	Monterroso	9.40
	Pereiro de Aguiar	9.20
	A Lama	35.5
	Social Integration Centre (SIC) A	
	Coruña	3.50
Sex	Male	92.40
	Female	7.60
Nationality	Spanish	64.50
	Foreign	35.50
Education Level	No education	12.60
	Grade School	36.10
	Secondary School	35.50
	Professional Training	10.80
	University Studies	5.00

### Instruments

The survey was formed by two parts: the first one, with classification questions, that allowed to know the main characteristics of participants and the second one, with opinion items, focused on the analysis of job skills, family relationships and their selfperspectives, from statements about which should show their degree of agreement or disagreement with a Likert scale of 5 points in which 1 indicates the position most in disagreement with the proposed statement and 5 the one most in agreement.

A Structural Equation Model (SEM) was carried out. SEM is an extension of factorial analysis and of the multiple regression analysis, which allows researchers dealing with both observable as unobservable variables, also known as latent variables or constructs (Iglesias & Lévy, 2010). To do this analysis, AMOS was used.

As we can see in Equation 1 and Figure 2, the purposed model to carry out this empirical analysis includes four latent variables.

$$\eta_1 = \gamma_{11} \xi_1 + \gamma_{12} \xi_2 + \gamma_{13} \xi_3$$

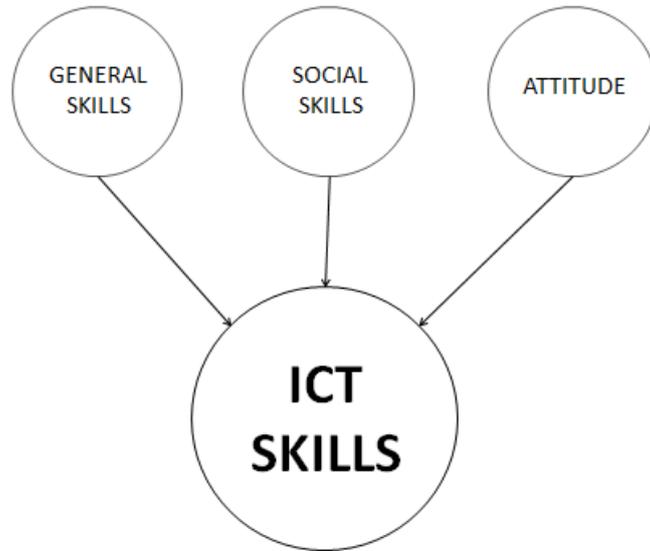


Figure 2. Proposed model.

ICT skills,  $\eta_1$ , is the endogenous variable and depends on the exogenous separate variables "social skills",  $\xi_1$ , "general skills",  $\xi_2$ , and "attitudes"  $\xi_3$ .

To summarize the information related with these variables it has been derived from the items on the questionnaire used to get the information, the constructs that constitute the inputs of the model. Each one is made up of three or more indicators, therefore, the order condition is satisfied and the model is identified (Figure 3).

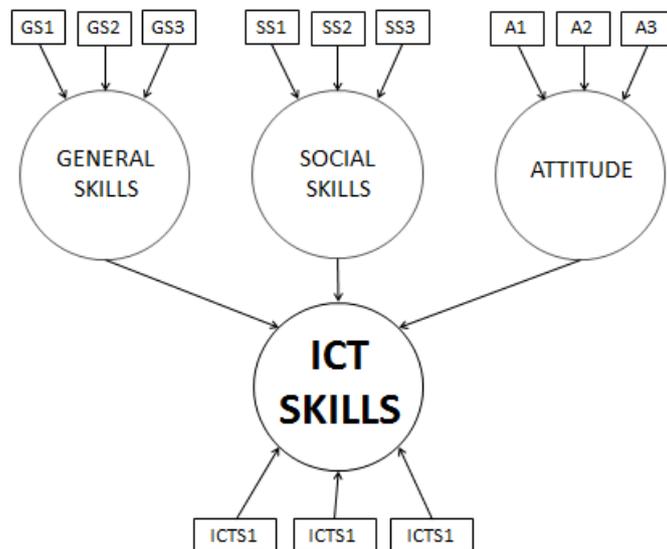


Figure 3. Model 1.

Table 2 shows items that form each construct.

Social skills' construct has been designed with items linked with family support (SS1), friends support (SS2) and a general vision of inmates and society (SS3).

General skills is formed by skills in different issues, as machines (GS1), electronic issues (GS2) or repairing small breakdowns (GS3).

**Table 2. Constructs or latent variables of the model**

	When I get out of prison, my family will be looking forward to having me back home. (SS1)
<b>Social skills</b>	When I get out of prison, my friends will accept me, they will behave normally, and I will have their support. (SS2) Society can trust inmates. (SS3)
	I know how to repair some kind of machines. (GS1)
<b>General skills</b>	I know how to solve problems with electronic equipment. (GS2) I know how to I know how to repair small breakdowns. (GS3)
	I would like to learn more about computers. (A1)
<b>Attitudes</b>	I would like to learn more about electronic issues. (A2) I would like to learn more about Internet. (A3)
	I know how to handle a computer for basic tasks. (ICTS1)
<b>ICT Skills</b>	I know how to use a mobile phone. (ICTS2) I know how to surf the Internet. (ICTS3)

Attitudes' construct has been formed with items related with attitudes to different aspects, as computers (A1), electronic issues (A2) and Internet (A3).

Endogenous variable, ICT skills, is formed by computers' knowledge (ICTS1), mobile phone's knowledge (ICTS2) and Internet skills (ICTS3).

## Procedure

One of the main difficulties in the implementation of this work has been the access to the prison population. Entry into prisons has required nominal permits for each of the members of the research team from the Ministry of Home Affairs of the Government of Spain. Once we got the required permits, we visited all these prisons and the CIS for the completion of the survey.

The questionnaire was evaluated by experts in social exclusion from the University of A Coruna and specialized consulting services, as, Consultant Company Gaela, being revised, corrected and validated through a pilot test with 20 inmates. The problems detected were eliminated.

## 5. Results

### Structural Equation Model

The results of the estimate ( $\chi^2 = 95,158$ ,  $p\text{-value} < .01$ ) imply that the model fits well. Moreover, other generally accepted measures (CFI = ,915; RMSA = .051) show good values. All the variables, both the items in which the constructs are based on, as well as the constructs themselves by acting as explanative variables, have expected signs. However, all of them have not significant coefficients: only general skills have been shown as relevant (Table 3).

Because of this, the analysis was repeated using only general skills as exogenous variable to explain the dependent variable (Figure 4).

**Table 3. Results for Model 1**

	Estimator	Standardized Estimator	Standard Error	t Student	P-Value
<b>Social Skills</b>	.010	.036	.019	.509	.611
<b>Attitudes</b>	.062	.029	.166	.372	.71
<b>General skills</b>	.269	.476	.065	4.113	***

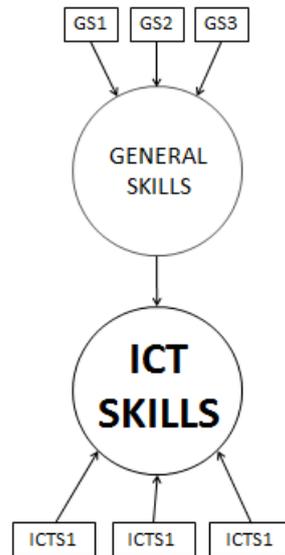


Figure 4. Model 2.

The results of the new estimate ( $\chi^2 = 16,918$ ,  $p\text{-value} < .05$ ) imply that the model's fit is moderate. However, generally accepted measures ( $CFI = .97$ ;  $RMSA = ,054$ ) suggest that it is appropriate to explain ICT Skills through general skills. All of items that compose the construct of general skills have significant coefficients with a low probability associated ( $p < .001$ ) (Table 4).

**Table 4. Results for General & ICT Skills Model**

	Estimator	Standardized Estimator	Standard Error	t Student	Probability
<b>General skills</b>	,274	,481	,066	4,161	***

## 6. Discussion and conclusion

After two Structural Equation Models, ICT Skills have been explained better using only one kind of variables: general skills. Whereas attitudes or social skills have not been shown as relevant variables to explain ICT skills of inmates, general skills of prisoners have appeared as a key construct. The level of inmates' education is in general low. This point is an obstacle to avoid the digital divide. However, inmates who have skills in other areas, have also more skills in new technologies.

According with our results, policies with the objective of bridging the gap of digital divide have to promote all kind of general skills improving inmates' training. In this way, when prison population leaves jail will have better capabilities to develop ICT skills.

General skills are directly linked with job training (GS1, GS2 and GS3 are an example of those capabilities). Then, the role of penitentiary system becomes crucial for achieving the job training goal while inmates are serving their sentences. So, a central matter on formative programs at prison should be targeted to professional training, particularly for those jobs with higher demand, once they have left the prison. A well designed strategic formative plan should be part of insertion policies for inmates.

It is worth closely examining the generalizability of the research results to other countries in EU in future studies.

On the other hand, taking into account that Spanish prison population cannot have access neither to Internet nor the rest of new technologies, based on security issues, solving these access problems is necessary as complementary action. Actions with collaborative learning components may be implemented in the Prison Administration. We propose to offer basic IT courses, where inmates need to work collaboratively in an online environment. That collaborative environment produces greater learning. Finally, according to Barreiro-Gen et al. (2011) it could be interesting the design of interactive IT applications.

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