I-CURRICULUM PROJECT

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SPANISH EDUCATIONAL SYSTEM:
THE IMPLEMENTATION OF THE ICT IN THE SPANISH CURRICULUM IN THE SECONDARY LEVEL

Dr. Mario Barajas
Elisabet Higueras

INDEX

1) GENERAL OVERVIEW OF THE EDUCATIONAL SYSTEM

The current situation in Spain

The LOGSE[1] gave a common framework and guidelines to a national common structure in the whole educational system. This law stated new certificates, grades, and new competencies to be achieved in each stage.

Although is a common law for all Spain, in some parts there are responsibilities and independence in the curricula stated by the department laws, as for instance, in the case of Catalonia or País Vasco. This independence gives the full responsibilities in curricula, planning, methodologies, strategies, didactics, organization and innovation.

The Structure of the Spanish Educational System

After ten years of the old educational law, the Spanish educational system has been restructured during 2003. The new law tries to run parallel to the socio-cultural changes that have occurred in Spain and within the European Union during the last years. Although the changes are not radical, they represent an update of the different stages of the educational system with respect to contents, methodology and criteria for assessment. Pursuing "quality" and promoting students "effort" are the bases of this reform.

The LOGSE[2] is the law that defines what is the educational itinerary to follow. In that sense the LOCE[3] is the law that provides with the quality that is required in each level of the educational system.

In terms of innovation, methodology, etc. as stated in the introduction and current situation of this report, the local administrations have the power of deciding what guidelines have to take into account the schools and institutions, and the institutions have the last responsibility in how they apply all this laws and guidelines.

In the graphic below you can check an overview of the operational system that is determined by the LOGSE.

[1] LOGSE: *Ley de Ordenación General del Sistema Educativo*. (Law of General Ordering of the Educational System)
[2] LOGSE: *Ley de Ordenación General del Sistema Educativo*. (Law of General Ordering of the Educational System)
[3] LOCE: Ley Orgánica de Calidad en Educación. (Organic Low of Quality in Education)

Overview of the educational Spanish system

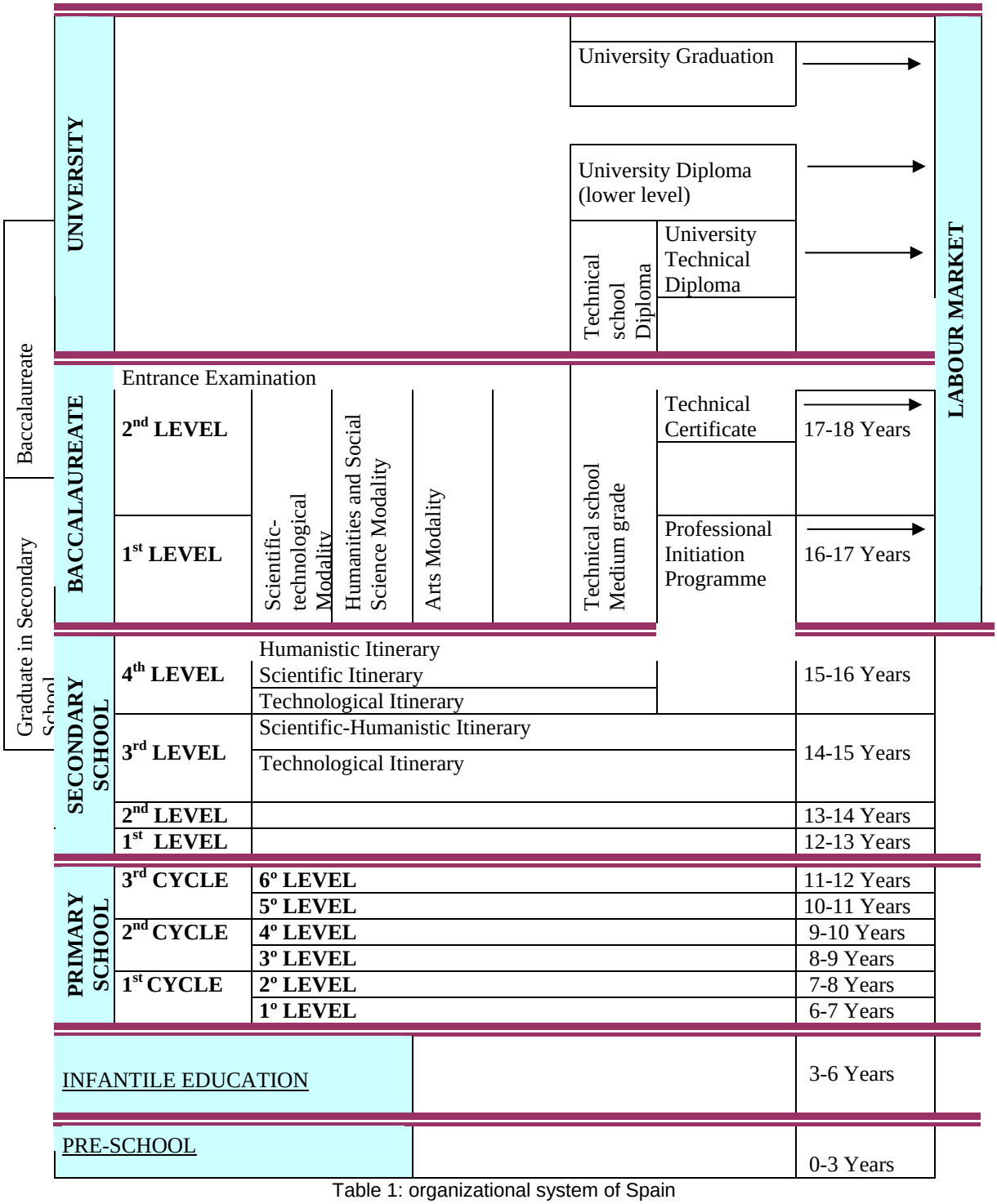

Table 1: organizational system of Spain

Levels of the educational system:

The stages of the compulsory education system are as follows:

- *Preschool and Infantile Education*

The new system changes the concept of dividing Infantile Education into two cycles (0-3 and 3-6 years) by creating a new stage. Now there is Preschool Education, for ages 0-3, which is non-compulsory and, mostly, in the hands of private institutions, and Infantile Education, a cycle of three courses for ages 3 - 6.

- *Primary Education*

This stage is composed of three cycles:

PRIMARY SCHOOL	**3rd CYCLE**	**6º LEVEL**	11-12 Years
		5º LEVEL	10-11 Years
	2nd CYCLE	**4º LEVEL**	9-10 Years
		3º LEVEL	8-9 Years
	1st CYCLE	**2º LEVEL**	7-8 Years
		1º LEVEL	6-7 Years

Table 2: primary level distribution

At the end of Primary Education, students pass to the next stage; if they do not reach the required academic level, they can remain in Primary Education for one more year.

At the end of Primary Education, there is a diagnosis assessment of key competencies. This test lacks academic consequences, and is for information and counselling purposes for the institutions, the teaching staff, the students' families and the students themselves.

LOGSE[4] and LOCE[5] in the Secondary Level

Focusing this report in the secondary level, which starts in the age of 12 and ends by the 18 year-old-students, the LOGSE states to this level different objectives depending on the stage the students are. In this way, the LOCE complements the LOGSE in terms of the quality of this stages and what is required.

[4] LOGSE: *Ley de Ordenación General del Sistema Educativo*. (Law of General Ordering of the Educational System)
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There are three types of Secondary stages: the Compulsory stage (12 – 16 years old) and the baccalaureate or post-obligatory secondary level (16 – 18 years old), and the intermediate professional training (16 – 18 years old).

- *Compulsory secondary (age: 12 – 16)*

The aim of the this stage is to provide with cultural abilities to the students, giving them concern on what are their duties and their rights. With these abilities they have to be ready to incorporate to the active social life, or to try further education as Post-obligatory secondary or Intermediate professional training.

Compulsory Secondary Education is the stage in which the Law of Quality has made a greater structural transformation consisting of the following:

- The secondary education stage is one cycle of four years duration.
- When students achieve the third year, they choose one of two Formatives Itineraries according to their interests and capacities: the Scientific-Humanistic Itinerary and the Technological Itinerary.
- The 4th year is named Course for the Academic and Professional Advice Decision. Students choose one of three itineraries: the Humanistic Itinerary, the Scientific Itinerary and the Technologic Itinerary.
- Students can change itineraries.

		Baccalaureate	Vocational education	→
			Professional Initiation Programme	16-17 Years
Graduate in Secondary School	SECONDARY SCHOOL	**4th LEVEL**	Humanistic Itinerary Scientific Itinerary Technological Itinerary	15-16 Years
		3rd LEVEL	Scientific-Humanistic Itinerary Technological Itinerary	14-15 Years
		2nd LEVEL		13-14 Years
		1st LEVEL		12-13 Years

Table 3: secondary level distribution.

Students more than fifteen years old who do not wish to attend any of the offered itineraries will be placed in a Program of Vocational Education. Students who fail more than two subjects must repeat the entire academic year.

When finalizing each course of the stage, as a result of the process of evaluation, an evaluation team decides on the promotion of each student to the following course, considering his or her maturity and capacities.

The students that are successful will receive the "Diploma of Secondary Compulsory Education". Those who are not receive the "Certificate of Schooling."

- *Post-obligatory secondary - Baccalaureate (age: 16 – 18)*

Baccalaureate consists of two academic courses, and three possible itineraries: Science and Technology, Social Sciences and Humanities, and Arts.

In order to obtain the Bachelor degree, they need to pass all the subjects and the General Test of Baccalaureate.

The final score obtained in the Baccalaureate is determined by the average between the marks obtained in the General Test and the academic file of the student in Baccalaureate.

- *Intermediate professional training - Vocational Education (age: 16 – 18)*

There are two possibilities for accessing Vocational Education. The first one is during compulsory secondary education at the age of fifteen for the students who cannot graduate. Students obtain a Technical Certificate. The second one is after compulsory secondary education, and lasts two years. Students obtain a Technical Degree. Once finished they can make the transition to the labour market or continue their studies at the University.

The curriculum in Secondary level

In the obligatory secondary level there are some common subjects in the curriculum. In the table below you can check academic course by course the subjects included in the curriculum in Catalonia:

- *Common subjects:*

FIRST	SECOND	THIRD	FOURTH
Catalan	Catalan	Catalan	Catalan
Spanish	Spanish	Spanish	Spanish
English	English	English	English
Maths	Maths	Maths	Maths
Social sciences	Social sciences	Social sciences	Social sciences
Experimental	Experimental	Experimental	Experimental

Sciences	Sciences	sciences	Sciences
Technology	Technology	Technology	Technology
Gym	Gym	Gym	Gym
Music	Visual and plastic education	Music	Visual and plastic education
Counselling	Counselling	Counselling	Counselling
Study techniques	Study techniques	Study techniques	

Table 4: Obligatory subjects in the secondary curriculum.

The ICT are used in the common subjects depending on the teachers' decision. Most of the institutions in Catalonia include some obligatory hours for each subject to use the computer – lab.

- *Other subjects:*

The institutions are free to chose the credits about synthesis, that is a common subject that might content aspects of the common subjects and other issues or competences that the institution considers as relevant or important to work in. In this type of credits is common to use the ICT in telematic projects which contents most of the competences and abilities that the secondary level aims to provide but that in the context of the common subjects are not always worked.

ICT literacy is part of these competences that the institutes try to work in their curriculum, so among the offer of subjects to the students there are in the variable-optative credits subjects based on ICT or telematic projects too.

Distribution of credits per cycle

First cycle – 1st and 2nd courses:

Common subjects:
- Languages:
  Catalan: 6 credits
  Spanish: 6 credits
- Foreign languages: 6 credits
- Natural – experimental sciences: 6 credits
- Socials sciences: 6 credits
- Gym: 4 credits
- Technology: 4 credits
- Visual and plastic education: 2 credits
- Music: 2 credits
- Maths: 6 credits
- Religion or Study techniques: 2 credits
- Counselling: 2 credits

Institution free-choice subjects:
Credits of synthesis (cross-curricular): 2 credits
Free-election credits: 6 credits

Second cycle – 3rd and 4th courses:

Common subjects:
- Languages:
  Catalan: 6 credits
  Spanish: 6 credits
- Foreign languages: 6 credits
- Natural – experimental sciences: 6 credits
- Socials sciences: 6 credits
- Gym: 4 credits
- Technology: 4 credits
- Visual and plastic education: 2 credits
- Music: 2 credits
- Maths: 6 credits
- Counselling: 2 credits

Institution free-choice subjects:
Credits of synthesis (cross-curricular): 2 credits
Free-election credits: 10 credits

Subject's common structure:
All the subjects have to follow the same structure:
- Introduction
- General objectives
- Contents: conceptual – processing – attitudinal
- Methodology
- Activities
- Schedule

In that sense the most important factor of this structure is the division of the contents into conceptual, processing and attitudinal. These division aims to work not only in how to process the information or the contents as they are, but to take into account other factors as the attitudes that the subject has to generate in the students and the concepts that are implicit to work during the subject.

This structure has more importance when working in a cross-curricular subject or an free-election subject, where the contents are more directed to provide with social skills and to combine the subjects with social abilities. In relation with the division of the contents, is visible that the Spanish, and more concretely the Catalan curriculum is not only focused to the transmission of contents and processes but focused too into how these contents may change the attitudes, and provide with more conceptual skills to these students.

2) GENERAL COMPETENCIES IN THE SPANISH CURRICULUM

The issue of Competencies in the Spanish educational System

The Spanish education system is governed by three fundamental principles:

- the comprehensive development of the individual,
- fostering full development of the individual's personality,
- contributing to the creation of a more fair and supportive society.

These principles are translated into general objectives which, in turn, are expressed in the form of "abilities" to be acquired.

The term *competencia* (competency) is used in the context of employment, but does not appear in the terminology for general education. The latter uses the term *capacidad* (ability) when referring to the educational outcome at the end of compulsory education. Although there is no official definition of *capacidad,* it can be interpreted as the potential or aptitude inherent in every person to acquire new knowledge and skills, i.e. the capacity that all human beings have and are able to develop and which allows them to learn on their own throughout life. The objective is not to reach a predefined level of these abilities but to guide learners on their path of lifelong learning. The abilities to be developed during compulsory education must, therefore, be of relevance for life after school when individuals take charge of their own further learning.

Competencies represent the knowledge, the skills and the basic attitudes that all students should achieve in agreement with the general goals of the compulsory education. From this point of view, we are using the term competencies instead of abilities

Objectives and general competencies to develop within the Compulsory Secondary Education

- Oral and written proficiency in the Spanish language, and if applicable, the co-official language of the Autonomous Communities, and elementary knowledge of literature.

- Ability to communicate in one or more foreign languages, in order to access other cultures.

- To conceive scientific knowledge as an integrated knowledge, structured in different disciplines, of mathematical and scientific nature, and to know and apply scientific and mathematical methods to problems in the diverse knowledge fields for their resolution and for decision making.

- Basic skills in the use of the sources of information for acquiring new knowledge.

- ICT skills in the learning process, applying them to find, analyse, exchange and present the acquired information and knowledge.

- Ability to assume responsibilities while respecting others and practicing tolerance, solidarity and willingness for dialogue.

- To value and to enjoy the artistic creation; to identify and critically analyse the explicit and implicit messages that the language of the different artistic manifestations contains.

- To know the basic aspects of culture and history, and to respect the artistic and cultural patrimony; to know the diversity of cultures and societies in order to be able to critically value them, and to develop attitudes of mutual respect.

- To know the social and cultural environment from a broad perspective; to value and to enjoy nature, contributing to its conservation and improvement.

- To understand how the body works, in order to strengthen and health habits, to practice the sport, and to favour personal and the social development.

- Habits of study and discipline as a necessary condition for effective achievement of learning tasks, and as a means for personal development.

- To be able to work in teams and to value the perspectives, experiences and ways of thinking of others.

3) ICT IN THE CURRICULUM

Introduction to the ICT implementation in the curriculum after the LOGSE

The first formal inclusion of the ICT in the curriculum of Catalonia were within the LOGSE law in 1992. After the LOGSE entered in education primary and secondary levels compiled contents of ICT. In the law 75/1992 in Catalonia there were some general guidelines included in the chapter 1 that stated that "*in Catalonia it is necessary to facilitate the development of learning in conceptual, processing and attitudes in order to ability the students to the comprehension of the clue elements of humanities, sciences, technology and information that characterize the current society and its evolution.*"

The problem was that about ICT, what it was stated was to include ICT as a processing contents, not as a transforming reality or reflecting about its potential. The ICT was included in some areas but the most use of it has been focused in the cross-curricular credits.

The common obligatory subject that has to work on the ICT is the subject called technology, that has 8 credits in the whole secondary compulsory level divided in 4 credits per cycle.

Specific ICT competencies in compulsory education

In 2003 the Council for the Evaluation of the Catalan Educational System undertook a study to discover the key ICT competencies necessary for all citizens and, therefore, necessary to be achieved by the end of compulsory education.

The methodology of the study combined different methods and qualitative research techniques, such as content analysis of key documents, expert interviews and group discussion, as well as quantitative techniques, such as questionnaires to social partners.

There are thirty-nine proposed competencies grouped as follows:

1. ***Basic knowledge of informatics systems***

- To know the basics of the computer and its functions
- To know the correct process to turn on and turn-off the computer
- To be able to connect the basic peripherals to the computer (printer, mouse, etc.) and perform necessary maintenance. To be

able to install software (following the instructions on the screen, or on the Manual)

2. Basic use of the Operative System

- To know the basic terminology of the operative system: archive, folder, programme, etc.
- To be able to save and retrieve the information in the computer and in different supports (diskette, disk drive, etc.)
- To be able to correctly organise the information in files and folders
- To realise basic activities of maintenance of the system (anti-virus, copies of security, deleting unnecessary information, etc.)
- To know different utility programmes: compressing files, programmes to visualise documents, etc.)
- To be able to use distributed resources in a network (printer, disk, etc.)

3. Search and selection of information on the Internet

- To have criteria to evaluate the reliability of the information found
- To know basic use of navigators: surfing the Internet, storing information, retrieving, classifying, and printing information
- To be able to utilise the search engines in order to locate specific information on the Internet
- To know how to identify the search goal, and to navigate through hyperlinks in relevant paths for the desired aim (not dummy navigation)

4. Personal communication and collaborative work in networks

- To be able to responsibly use the ICT as a mean for interpersonal group communication (chats, forums, etc.)
- To know and to respect the net etiquette
- To send and receive e-mail messages, to organise mailing addresses, and to know how to attach files

5. Word Processing

- To know the basic terminology about text editing: formatting words, paragraphs, margins, etc.
- To know how to use the basic functions of a word processor: to edit, save and print documents
- To know the use of the keyboard

- To be able to internally structure documents: to copy, cut and paste
- To be able to format a text: types of letter, margins, etc.
- To be able to add images and other graphic elements.
- To be able to use the correctors in order to assure the orthography

6. Image processing

- To be able to use the basic functions of a graphic editor: to draw, graph, store and print the work done

7. To use the spreadsheet

- To know the basic terminology about the spreadsheet: rows, columns, cells, data and formula

8. To use databases

- To know what it is and what it is for
- To be able to filter data in a database
- To be able to introduce new data in a form

9. Edutainment with ICT

- To be able to monitor the time devoted to edutainment with ICT and its addiction possibilities
- To know the multiple sources of educational materials and information available on the Internet (libraries, training courses, training resources, press, etc.)
- To be able to use the Help files in manuals and in software programmes

10. Tele-operations

- To know the necessary precautions for making monetary operations and giving or receiving information
- To know the existence of protection systems for the operations made in the net: electronic signature, privacy, encrypting, safe places, etc.

11. General attitudes in front of the ICT

- To have an open and critical attitude toward the new technologies: contents, edutainment, etc.
- To be able and willing to pursue both lifelong learning and continuous professional development
- To act prudently with the ICT: origin of messages, critical files, etc.
- To know the risks of accessing of conflictive or illegal information

Implementation of ICT in Secondary level per subjects

As stated in the part of the curriculum in the secondary level, and as exposed in the previous part of the competences that might been provided in the secondary compulsory level, in this section we will report the distribution of the ICT in the secondary compulsory curriculum with the sections that posted them by number of competency:

LANGUAGES	Section 16: To know how to use the basic functions of a word processor: to edit, save and print documents, and use the orthographic tools. Sec 19: Use the concept of index and the tools of Information included in data bases, encyclopaedias and e-dictionaries.
EXPERIMENTAL SCIENCES	Sec 50: Interpretate and elaborate graphics hand made and using an excel file: diagrams, historiograms, sectorials, etc.
SOCIAL SCIENCES	Sec 48: Make, maintain and sep in data bases with informatics support to elaborate compilations of information in a ordered and proper way.
MATHS	Sec 20: Apply mathematic formulations with Excel to find out the results.

Table 5: ICT implementations per common subjects

The subject of ***TECHNOLOGY*** is the subject that has to work on the ICT in the secondary level.

First cycle	
First course	- Physic and structural components of ICT and its terminology. - Concept of programme and application. - The Internet network. - Applications to create, edit and produce texts.
Second course	- Concept of Excel page. How it works. - Tools to sep for information, selection of information and use. - Include of text, graphics, sounds and images in a multimedia document. - Tools to communication and to work in team. - Impact of the ICT to the scientific- technical evolution.
Second cycle	
Third course	- Data base concept. Basic functions. - Selection and use of data. - Structure of the networks. - Impact of ICT in the human context of information.
Fourth course	- Tools of presentation and creation using Internet. - Evolution of the ICT. - Internet and ICT: use and privacy of the information.

Table 6: ICT in the technology subject

In the ***CROSS-CURRICULAR CREDITS*** is contemplated too the implementation of ICT.

The implementation of ICT in the curriculum in Catalonia has been recently debated in a congress of ICT that has been celebrated in the June 26th and 27th 2003. In that congress, one of the issues to debate was that there were mostly transmission of how the ICT work, not the meta-cognitive aspects that involve the ICT.

Conclusions: ICT in Spanish curriculum and I-CURRICULUM

As reported in the whole document, the use of the ICT in the curriculum has been implemented during the last ten years within the context of change that promoted the LOGSE and the LOCE.

These ICT competences are a new issue for teachers that most of the times do not have the skills to implement the ICT in the subject curriculum, or present some barriers to do it (rejecting the ICT, etc.)

In the new context of the ESO[6], the ICT has emerged principally in the subject of technology, but with a conception of ICT as a operational transmission. In this subject the competences that are required concern to how to operate with the ICT and how to use them, not in a critical or cultural way but in an operational.

Students are assessed only about the work they can produce with ICT, f.i. if they can perform a task.

After analysing the report, and paying attention on the competencies that are included in the common subjects we can conclude that in the Spanish educational system the ICT have not a meta-competences interests. The competences are focused on how to use the ICT and not in the transformation or implications that these ICT have in a superior level.

The only room to work in a critical and cultural conception of ICT combined with the operational instruction that guides the curriculum is the cross-curricular credits. In this point, it depends on each centre or institution, how the cross-curricular subject is planned and if the ICT are an important issue within the credits work.

The need of a new curricular conception more focused to meta-aspects that are not included in the current curriculum addressed to operational learning only, is were I-CURRICULUM gets importance.

Given the technological and social changes in the use of ICT, it is necessary to prevent the obsolescence of the present competences, especially with respect to terminology and abilities associated with specific hardware or software.

[6] ESO: Secondary Compulsory Education.

In a European context, and in order to maintain an equal level across all the European countries, it is necessary to provide with a new curriculum that conceives ICT in an holistic perspective.

I-CURRICULUM project has the potential to do an holistic curriculum, testing a new proposal of European integrative curriculum among five different countries.

In that case, the weaknesses of the Spanish curriculum will provide with barriers to take into account in the creation of this curricula, and to provide with valuable information of what is the main competences in what the ICT are been taught in Spain: OPERATIONAL competences.

We have to take into account that there is a difference between what is stated by law and the real context, so the action in schools will provide with real information about if this description reported is a picture of the reality or if the application takes into account more aspects than only the operational, that is the general conclusion that we have after doing this report.

Our recommendations to the following development of the project is to identify innovative experiences in the schools and try to investigate if the experiences work only on operational factors or include the other two perspectives (cultural and critical). Compile information in how they work with ICT and try to identify weaknesses and strengths to implement and create the European Curriculum, final aim of I-curriculum.

Literature

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LOCE: http://www.ugt.es/juventud/loce.pdf

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