

# THE IMPACT OF THE INFORMATION TECHNOLOGIES AND COMMUNICATION IN THE EDUCATIONAL SYSTEM

## *Case Study of NORTH OF PORTUGAL and SOUTH OF GALICIA*

Manuel Pérez-Cota, Luis Vilán-Crespo, Jose Paulo Machado Da Costa, Ana Isabel Díez Sánchez.  
Grupo GEAC. Departamento de Informática.  
*Escuela Universitaria de Ingeniería Técnica Industrial.*  
*Universidad de Vigo*  
*Rúa Torrecedeira, 86*  
*36208- VIGO*  
*España*

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Abstract: This article intends to synthesize the results obtained by the investigation work done in the North of Portugal, by GEAC - Group of Teaching Attended by Computer, of the Vigo University, under orientation of the PhD. Manuel Pérez Cota. The main objective, in this investigation phase, is to try to identify the teacher's profile, his sensibility for the teaching-learning process based in the technologies, in what way are or not the computer sciences tools used, how, when and where, the knowledge were acquired, in the meaning of computer science, for the teacher, try to identify the decisive causes and the importance of these, for an appropriate use of the computer science in the education process, inside of the your class

## 1 THE EDUCATIONAL CAREER IN PORTUGAL

Portugal has been coming to develop a considerable effort in the sense of adapting his education system to the demands of qualification of the national human potential with the intention of reducing the high tax of young education holders at secondary level incomplete, that results in a level of deficient qualification of the active population in comparison with average of European Community and consequent loss of competitiveness in a medium/long period.

In this sense, government political orientations are pointed in the report presented to European Consul in the Spring of 2001 by the Ministry of Education of Portugal, choosing the "the human potential valorisation as priority domain of intervention at medium period". The main orientation resulting, is the need to intensify the actions that may increase the basic knowledge in Communication and Information Technologies (in

Portugal TIC), corresponding to the intention of creating conditions for the consolidation of a knowledge economy where the people's qualification is the decisive element.

Today, in Portugal, the school career can begin just from the 4 months of age and to the 5/6 years, the children frequent the Preschool Teaching and no obligatory. Just in the last 10 years it was begun to give the due importance and to create effective access conditions to the poorer social classes, at this teaching level.

The obligatory Basic Education is split in 3 teaching cycles. The 1st Cycle, Primary, corresponds to the student's first 4 academic years.

The Portuguese government, in the last two years, through the Ministry of the Science and Technology, and of his project "Technology in movement", has been trying to put at disposition of all Preschools and 1st Cycle (Primary) a group of computers connected to the Internet, for the children begin, earlier, using the computer. On the other hand, it tries to endow of equal opportunity, the

schools of the rural environment and more supported.

With approximately 10/11 years, it begins the 2nd Cycle, corresponding to the 5th and 6th academic year.

The Basic Teaching, was reorganized recently in the sense of contemplating some obligatory components with the goal of assuring a general formation common to all students that guarantees him development of their interests and aptitudes, promoting the individual success in harmony with the values of the social solidarity, namely:

- the education for the citizenship, building a dialogue space and reflection about lived experiences and concerns felt by the students, as well as on subjects and relevant problems of the community and the society;

- the project area, with the goal of allowing the students the articulation of knowledge about several discipline areas;

- the accompanied study, seeking to promote the acquisition of study methods and of work that allow obtain a growing autonomy in the learning and the development of the capacity of learning to learn;

- The use of the technologies of the information and communication. The accompanied study areas and of project they will be privileged spaces for the development of the work with these technologies, which it will be guided in a perspective simultaneously of the students basic formation and of support of the all areas and disciplines of the curriculum, in whose essential competences should have expression;

- the inclusion, in the 3rd cycle (7th to 9th year of education), of a second foreign language as obligatory discipline.

With about 15 years, the student finishes the 3rd Cycle of Basic Teaching and the respective obligatory education, could continue their studies for the Secondary Teaching.

The reorganization of the structure curricular of the secondary teaching (10th to 12nd year of education) and the reinforcement of the mechanisms, orientation structures and information destined to the youths in the age group of the 15 to the 18 years have as central goal to assure the access of secondary level formations, consecrating, consequently, the secondary teaching in his double nature of intermediate cycle of pursuit of studies and of terminal formation cycle, being favoured the transition between the basic education and the different education courses and of secondary level formation. Like this, the new curricular organization of the secondary teaching seeks to guarantee:

- the articulation of this teaching level with the basic teaching, with the higher education and with the world of work;

- the integration of the curriculum and of the evaluation, assuring that this constitutes the element regulator of the teaching and learning;

- the existence of disciplines and curricular areas seeking the accomplishment of significant learnings and the students' integral formation, through the experimental teaching and of the articulation and the contextualization of knowledge, in a perspective of facilitating the transition for the job market;

- the creation of conditions that assure the access to the education and to the formation during the life.

The curricular revision of the secondary teaching allows to clarify the distinction among general courses, destined to the pursuit of studies in the higher education, and technological courses, destined to the integration in the job market, but it guarantees the possibility of course alteration and the existence of a common general formation, which includes the continuation of learning of one of the two foreign languages studied in the 3rd cycle of the basic teaching.

## 2 UNIVERSE OF THE STUDY

They were elaborated and later random distributed, about 1000 questionnaires, one for each teacher, of all of the teaching levels (except the higher education).

Distributed by the districts of Viana do Castelo, Braga, Vila Real, Bragança and Porto, corresponding to the North of Portugal, they were identified the following public and private schools:

In Portugal, the last data known regarding the number of teachers in the several teaching levels in study, they are summarized next:

Educators of Childhood (preschool). North of Portugal

	Ministry of Education		
	Public	Private	Total
<i>Educators of childhood</i>	1 731	778	2 509

Teachers of the 1st cycle of the basic teaching – North of Portugal

	Public	Private	Total
Teachers	11 668	815 (1)	12 483

(1) In exercise in the establishment

Teachers of the 2nd cycle of the basic teaching - North of Portugal

	Public	Private	Total
Teachers	9 160	868	10 028

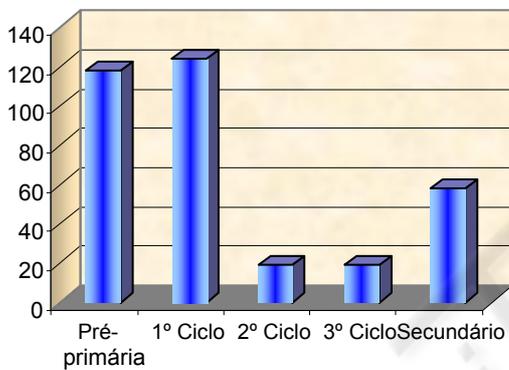
Teachers of the 3rd cycle of the basic teaching and of the secondary teaching. North of Portugal

	Public	Private	Total
Teachers	23 980	2 340	26 320

Source: Department of Prospective Evaluation and Planning (DAPP)

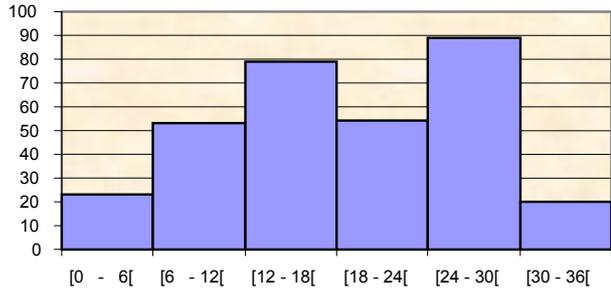
### 3 TEACHERS' PROFILE

All of the teachers inquired are in the preschool teaching, 1st Cycle, 2nd Cycle, 3rd Cycle or in the Secondary Teaching. Some of them, are in several teaching levels, for accumulation of service time.



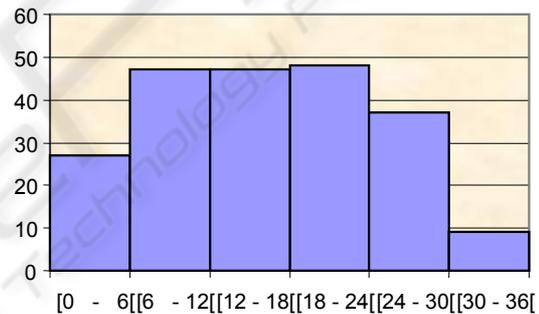
Graph 1. the teachers' representation by teaching level

From the analysis of the histogram to proceed presented, we can observe that, relatively at the time elapsed from the conclusion of their studies, most of the teachers' are concentrated in two intervals, the interval of 2 - 18 and of 24 - 30 years. From the average calculation (18,6) and of the standard deviation (8), we can conclude that exists a high degree of dispersion of the time of service, in other words, in our sample, we found individuals that are teachers at a long time and other ones much younger.



Graph 2. Histogram of the time elapsed since the conclusion of the studies

On average, the teachers' teaching the same discipline to the approximately 11 years, however, and similarity of what happened in the previous point, there are a high dispersion degree in the time they teaching the discipline (standard deviation of 10).



Graph 3. Histogram of the time in that teaching the discipline

### 4 KNOWLEDGE, AS REGARDS TO COMPUTER SCIENCE, THAT HAS THE TEACHER

During his academic formation, the teachers consider insufficient the degree of use of computer sciences tools, namely, the purpose general tools (word processors, worksheets, databases,...), and the specific tools for the teaching support. The scenery worsens, as for the use of specific tools of the discipline that they teaching (very scarce or null).

After concluding the studies, the frequency of computer science courses on purpose general (word processors, worksheets, databases,...), specific of the discipline that they teaching or specific for support to the teaching it is insufficient face to the actual needs of the teaching, for that, some teachers,

try to compensate with auto-formation, however, still in quite reduced number, revealed insufficient.

All this situation of little or any learning and use of computer sciences tools, reveals an insufficient degree of the teachers' participation in works on educational computer science.

83% of the teachers never participated in a learning process no presence, what reveals, little sensibility for teaching-learning processes no presence (tele-education).

## **5 DECISIVE CAUSES AND IMPORTANCE FOR AN APPROPRIATE USE OF THE COMPUTER SCIENCE IN THE TEACHING, INSIDE OF THE HER DISCIPLINE, CONFRONTING WITH THE REALITY**

It was intended that the teacher made a valorisation of the factors that they influence on the use of the computer science, in her discipline, at the same time that he evaluates the adaptation of those factors in the actual moment.

The appraised factors were:

- Formation institutionalized in computer science, for the teacher;
- Readiness of resources, for the teacher;
- Previous formation in computer science of the students';
- Readiness of resources for the students;
- Existence of computer science resources applicable inside of the discipline;
- The use of the computer would suppose increment of time to apply it in the discipline;
- Tools for the development of the contents;
- Increase of time for the development of the contents;
- Specialized support for the development of the contents;
- Specialized support to apply the contents.

In this evaluation, for all factors, the teachers consider to be wide or notable his importance and interest to influence a correct use of the computer science in the teaching. At the same time that they considered, for the same factors, that in reality, what's happens that's an insufficient use of the computer sciences tools.

Allied to the lack of institutionalized teachers formation, still verified, that in reality, exists a shortage of the readiness of the available resources for the teachers and students, of the existence and

consequent use of computer sciences tools and computers for the development and presentation of contents.

## **6 USE THAT THE TEACHER DOES, WITH EDUCATIONAL ENDS**

- i) In the preparation of the didactic contents, the computer science tool more used by teachers is the word processor, but still in an insufficient scale, in other words, the number of teachers that does is it quite reduced. Computer sciences tools as the worksheets, database, presentations software, CD-ROM encyclopedias, internet and other, are the most used, but usually as a complement of the word processor.
- ii) As it would be expecting, after having analyzed the results of the previous point, in the class, as teacher, for the exhibition of the class contents, the teachers don't use computer sciences tools and the ones that make it, they fall back upon CD-ROM encyclopedias or presentations software, as Power Point and similar.
- iii) On the other hand, when compared with the computer sciences tools, an increase of the use of other audiovisual ways is verified in the exhibition of the contents, especially the use of Projector and transparencies.

## **7 USE OF INFORMATICS' RESOURCES BY THE STUDENTS, INSIDE THE TEACHING-LEARNING PROCESS**

Without any surprise, at this time, the teachers verify that in the class, the students don't use or they use very little the computer sciences tools. Of the ones that use, the word processor and the CD-ROM encyclopedias, surprisingly, the two categories most used by the teachers, are the most frequent.

The teachers have been verifying equally, that their students, at home, very rarely or they never use computer sciences tools in the support to the study. When they make it, a small number of students use the same categories of the classroom (word processor and CD-ROM encyclopedias).

## 8 CONCLUSIONS

The teacher today, no longer is the source of whole knowledge, the master that the student appealed whenever he had doubts. For the easiness access to great amounts of information, he carries out now, a guiding paper of knowledge's that guide the students in the research and learning of those matters.

To value to the maximum the human potential, the teacher goes through all resources at your disposal, he doesn't stop being a teacher if someone remove him the pencil, he teaches starting from a white leaf, with a projector, some transparencies, with photocopies, with videos, televisions and even with computers. If these goes, indeed, the resources that can contribute to increase the motivation and their students' success, the teacher cannot leave of using because it is not his area, because he doesn't know, he doesn't have time or for any other reason, without before, have worried in trying, practice, investigate and learn.

Of the made study, it can be ended, relatively to the teacher's profile, that the more time elapsed, since the conclusion of their studies (academic study's), minor were the contacts with the computers, more difficulties and motivation they sit down in his use and learning, avoiding to participate and elaborate works that involve computer sciences tools, even considering them very important.

Most of them, considers of notable importance, know how to use the computer correctly and consequently the available computer sciences tools, in the teaching. They agree that her correct use may contribute to capture and to motivate their students more easily, but in reality, they stay waiting that the government given them institutionalized formation, that they put at disposition informatics resources. When the formation doesn't exist, they don't seek her, either they make a serious effort in the auto-formation as alternative, for they development or update.

As consequence of a deficient technological formation by the teachers, a scarce or null use of the computer and of the computer sciences tools is verified in the preparation, elaboration and exhibition of their didactic contents, at the same time, that they forget to motivate their students to use them, because then, appear, certainly, doubts and uncertainties that can remove him, teacher, of the center of whole knowledge.

Happily, we verified that the teachers, that in his initial formation, that by auto-formation or by institutionalized formation, they had learning and use of the computer, they serve from lever to the other ones. The computer begins to be seen, for most, as one more resource at teacher's disposal and

don't like a "contestant", start to be faced as a work tool, that it is used to reach an end and not the end in itself.

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