

## The use of ICT in 3rd cycle of primary education: an exploratory study in Vila Real city, Portugal

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### Abstract

*A descriptive and exploratory investigation was carried out to examine the use of ICT (Information and Communication Technologies) according to student and teacher perspectives. Two self-completion questionnaires were used to collect data. Before the questionnaires application, an authorization to the schools' Executive Board was requested. Respondents were informed that the response to the questionnaire was voluntary, confidential and anonymous and that data would be treated in an aggregated way. Students were selected from two classes from the 3rd cycle in two schools from Vila Real, a city located in Northeast of Portugal. Questionnaires were administered in January 2010. The sample comprised 111 students and 26 teachers. Data was edited and processed with PASW Statistics 18 (Predictive Analytics Software).*

*The results show that almost all students (99.1%) have computer equipment at home. The computer is, particularly, used at home on school work preparation for Project Area class. To prepare these works is, also, very frequent the use of Internet and most students spend more than 1 hour per week online. All students surveyed attend classes where they use ICT. The computer applications more used by students are PowerPoint, Word and Internet Explorer.*

*Despite incipient teacher education in computer science, computer is widespread within professors for personal and professional use. Professionally, computer is used to make exams and worksheets, to send and receive e-mails and to browse in the Internet. ICT are used by most teachers, although, more frequently in the Project Area class. Software most, frequently, used is Word, PowerPoint, Excel and Internet Explorer in which knowledge levels are good or acceptable. Professors consider that formation and training are needed in some computer programs like Moodle, multimedia educational software, among others. Teachers believe that, the use of ICT in educational context makes their job more interesting and simple. However, the teacher's lower level of knowledge in ICT, the lack of technical resources, the existence of extensive and inflexible programs are major obstacles to integrate and use of ICT in the classroom.*

### 1. Introduction

The development of new information and communication technologies (ICT) brought changes in the social organization of organizations in every activity sectors [1]. Technological advances that occur every day support changes in society and also in educational sector [2]. In Portugal, in the last two decades, the implementation of national strategies that involves the introduction of ICT in schools has taken place at different paces and impacts. This phenomenon is equivalent to what happened in other European countries [3]. The concern around the integration of new technologies in educational reality has been increasing [4]. A society in constant change poses a constant challenge to the educational system and ICT is one of the most important factors in this rapid change. In this context, the educational system must be able to respond quickly, anticipate and even promote the change [5]. For that reason, the school cannot continue to ignore the technological progress of society [3]. In this

context, teacher's role is very important to get a good level of success in what concerns to the integration of ICT in the classroom [6]. Effectively, ICT assist and complement the practices developed in the classroom [7]. Today, new technologies in educational context are an added value that justifies the development of this exploratory research that aims to analyze the use of ICT by teachers and students in Vila Real, Portugal.

## 2. Methods

Two self-completion questionnaires were used to collect the data. Before the application of the questionnaires, an authorization to the schools' Executive Board was requested. Respondents were informed that the response to the questionnaire was voluntary, confidential and anonymous and that the data would be treated in an aggregated way. Students were selected from two classes from the 3rd cycle in two schools from Vila Real, a city located in Northeast of Portugal. Questionnaires were administered in January 2010. The sample comprised 111 students and 26 teachers. Data was edited and processed with PASW Statistics 18. Descriptive statistics were used to study and describe the use of ICT.

Students were dispersed by 7th grade (34.2%), 8th grade (30.6%) and 9th grade (35.2%), 60.4% were female and 75% were aged between 12 and 14 years (Table 1).

**Table 1 – Student's characteristics**

Variables	Frequency (n=111)	Percent (%)
<b>Grade</b>		
7th	38	34,2
8th	34	30,6
9th	39	35,2
<b>Gender</b>		
Male	44	39,6
Female	67	60,4
<b>Age class</b>		
12-14	83	75
15-17	28	25

From 26 teachers that respond to the questionnaire, 69.4% were female and 80.8% belongs to the school board (Table 2).

**Table 2 – Teacher's characteristics**

Variables	Frequency (n=26)	Percent (%)
<b>Gender</b>		
Male	8	30,6
Female	18	69,4
<b>Professional situation</b>		
School board	21	80,8
Zone board	1	3,8
Contract	4	15,4

Teachers have, in average, 41.5 years old. In 2009/2010, they were responsible for teaching Portuguese (27.3%), Geography (18.2%) and English (18.2%) classes. The service time was, in average, 17.4 years. It was found that all teachers only had an undergraduate degree.

### 3. Students perspective

Most students surveyed have a computer (98.2%), printer (73%), scanner (52.3%), internet (82.9%), CD/DVD (69.4%) and game console (55.9%). A minority have a projector (8.1%) and, approximately, 3.6% have another type of equipment at home, such as a copier. From the total students surveyed, 39.6% spend less than 1 hour per day on the Internet, 32.4% spend between 1 to 2 hours and 4.5% spend no time.

Most students use the computer at home (96.4%). However, the computer is also used at the school, namely, school library (43.2%), ICT class (45%), Computer Science class (29.7%), Project Area class (40.5%) and other classes (9%). Computer is, also, used in other places like municipal library and computer courses. From 111 students surveyed, 81.1% use the computer and the internet for leisure, 94.6% to do the homework and 0.9% use computer in another context.

All students consider that school has computers and printers. Also, they consider that school is equipped with internet (94.6%), overhead projector (86.5%), projector (84.7%), scanner (84.7%), interactive whiteboard (73.9%), CD/DVD reader (66.7%) and CD/DVD burner (26.1%).

Most students (98.2%) say their teachers, usually, use some kind of technological equipment at the classroom. The technologies are, by use frequency, the computer (99.1%), the projector (67.6%), the overhead projector (61.3%), the internet (55.9%), the television (50.5%), the interactive whiteboard (46.8%) and the video (43.2%). Among the least used, with less than 20% of respondents are datashow (1.8%), film camera (3.6%), voice recorder (6.3%), CD/DVD burner (6.3%), scanner (9.9%), digital photo camera (10.8%), printer (17.1%) and CD / DVD reader (18%).

For more than 50% of students surveyed, the software most used by teachers in the classroom is PowerPoint (91%), Word (66.7%) and Internet Explorer (65.8%).

More than half of the surveyed students have a good level of knowledge on Word (55%), PowerPoint (58.6%) and Internet Explorer (59.5%). However, the level of knowledge on Webquest, E-learning, Outlook and Publisher is null or poor. This knowledge was acquired in several ways but, most of all, by self-learning and support of friends and family.

### 4. Teachers perspective

All teachers have technological equipment at home, namely, internet, printer, computer and other. Most of all have scanner (92.3%), DVD reader/burner (80.8%) and CD reader/burner (80.8%).

A significant proportion of respondents did not make an initiation to computer science. From those who had training, most had support from family (69.2%) or made self-training (34.6%).

From the 42% who responded to question about their training in computer science, 38% say that their computer training was not enough to face the reality at the classroom and only 4% felt that the training received was enough.

From the 88.5% that use the computer for personal purposes, over half (76.9%) use it to browse on the internet and to fill the tax return (73.1%). From the 84.6% that use computer for professional purposes, all say that they use this tool to prepare data sheets and evaluation tests (100%). In addition, most respondents also use the computer to send and receive e-mails (96.2%) or to browse on the internet (88.5%).

To interact directly with their students, the electronic equipment most frequently used by teachers is the computer (76.9%), the projector (50%) and the internet (42.3%). They use these technologies in two main contexts, namely, the context of their own class (80.8%) and the Project Area class (38.5%). The software used by over 50% of teachers is Word (76.9%), PowerPoint (76.9%), Internet Explorer (65.4%) and Excel (57.7%).

Most teachers use the computer to contact their students four or more times (65%), 19% always use the computer and only 12% never use the computer.

The level of Knowledge about e-learning and e-mail is low. Effectively, only 15.4% have a good level of knowledge about educational software and Outlook. However the level of Knowledge about Internet Explorer is good (53.8%) or acceptable (42.3%) Only 3.8% do not have any knowledge about Internet Explorer. The knowledge of PowerPoint software is good since only 7.7% of teachers do not have any knowledge about it. The teachers' knowledge about Excel software is poor (42.3%) or acceptable (30.8%). Finally, the Word software is the most popular computer software for teachers. In fact, over half of the teachers (73%) have good levels of knowledge and 23.1% have an acceptable knowledge.

Only 35% of teachers used e-mail software to contact their students. From these, 30.8% use it to send files with the lecture notes, 19.2% give explanation before the exam and 3.8% use it for other reasons. Most teachers (81%) do not use e-mail software to contact students' parents. In fact, only 19% use e-mail software to make these contacts. They do it for three major reasons, namely, the possibility to forward the message (19.2%), the ease of use (19.2%) and the possibility to forward messages from any location (15.4%).

More than half of surveyed teachers (69%) know e-learning software. Some of the benefits cited are the possibility of distance education, the motivation, the economy, the easy access, the possibility of developing an autonomous work, and, the interesting contents.

Most teachers would like to receive training in learning environments with Moodle (65.4%) or other multimedia educational software (65.4%). There are other areas in which teachers would like to receive training in particular Hot Potatoes, draw software and interactive whiteboard.

The surveyed teachers consider that, the main difficulties in integrating ICT in school, are lack of technical resources (53.8%) and lack of knowledge by teachers (46.2%). Other difficulties are the lack of skilled technicians and the impossibility of using this electronic equipment due to malfunction.

A significant proportion of teachers acknowledge that there are advantages in using ICT in the classroom, namely, the improvement of students' motivation, the simplification of the teacher's activity, the acquisition of technical knowledge by the students, the easy access to information and the promotion of team work. However, a small percentage of respondents (3.8%) considered that there are no advantages in using ICT in the classroom.

## 5. Conclusion

Almost all students have computer equipment at home. The computer is, particularly, used at home on school work preparation for Project Area class. To prepare these works is, also, very frequent the use of Internet and most students spend more than 1 hour per week online. All students surveyed attend classes where they use ICT. PowerPoint, Word and Internet Explorer are the computer software most used by students.

Despite incipient teacher education in computer science, computer is widespread within professors for personal and professional use. Professionally, computer is used to make exams and worksheets, to send and receive e-mail and to browse on the Internet. ICT is used by most teachers, although, more frequently in the Project Area class. The software most, frequently, used is Word, PowerPoint, Excel and Internet Explorer in which knowledge levels are good or acceptable. Professors consider that formation and training are needed in some computer software like Moodle, multimedia educational software, among others. Teachers believe that, the use of ICT in educational context makes their job more interesting and simple. However, teacher's lower level of knowledge in ICT, the lack of technical resources, the existence of extensive and inflexible programs are major obstacles to integrate and use of ICT in the classroom.

## References

- [1] Aurey, N. (2000). Politique de l'information et de l'information: les pionniers de la nouvelle frontière électronique. Thèse de Sociologie. Paris. EHESS.
- [2] Cornu, B. (1995). New Technologies: integration into education In Watson, D. & Tinsley, D. Integrating information technologies into education. London: Chapman & Hall, 3 – 11.
- [3] Vieira, P. (2008). As TIC no apoio à gestão escolar e na interacção com a comunidade: um estudo de caso numa escola secundária. Tese de Mestrado em Comércio Electrónico e Internet. Lisboa: Universidade Aberta.
- [4] Fernandes, J. (2007). Utilização das ferramentas e programas de concepção de conteúdos interactivos das Novas Tecnologias e a Internet pelos professores de Inglês do 2º e 3º ciclos do Distrito de Beja. Tese de Mestrado em Comunicação Educacional Multimédia. Lisboa: Universidade Aberta.
- [5] Missão para a Sociedade da Informação (1997). Livro Verde para a Sociedade da Informação. Lisboa: MSI.
- [6] Goodison, T. (2002). ICT and attainment at primary level. British of Educational Technology, 33 (2): 385 - 395.



[7] Castro. M. & Alves, L. (2007). The implementation and use of computers in education in Brasil: Niterói city, Rio de Janeiro. *Computers & Education*, 49 (4): 1378-1386.